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## Search Pack PN193

### Coronavirus (COVID-19) in the infant

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**Created:** 08/12/2023

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# MIDIRS Search Pack

Created: 08/12/2023

## PN193 - Coronavirus (COVID-19) in the infant (844)

2023-13135

**mRNA SARS-CoV-2 Vaccination Before vs During Pregnancy and Omicron Infection Among Infants.** Goh O, Pang D, Tan J, et al (2023), JAMA Network Open vol 6, no 11, November 2023, e2342475

Full URL: <https://doi.org/10.1001/jamanetworkopen.2023.42475>

**Importance** Infants younger than 6 months are at risk of severe SARS-CoV-2 infection. Data are lacking on the optimum timing for maternal vaccination and estimated effectiveness against Omicron variants, including XBB, for infants.

**Objective** To investigate maternal vaccination against Omicron variants, including XBB, and the association of vaccination timing during pregnancy vs prior to pregnancy and risks of SARS-CoV-2 infection among infants aged 6 months or younger.

**Design, Setting, and Participants** This population-based cohort study was conducted between January 1, 2022, and March 31, 2023. Singapore's national dataset was used to study infants born at greater than 32 weeks' gestation between January 1, 2022, and September 30, 2022. The study included infants whose parents had a confirmed SARS-CoV-2 infection from the date of birth up to 6 months of age. Of 21 609 infants born during this period, 7292 (33.7%) had at least 1 parent infected with SARS-CoV-2 before the age of 7 months. Statistical analysis was performed from April to July 2023.

**Exposure** Infants' mothers were unvaccinated, vaccinated prior to pregnancy, or vaccinated with a messenger RNA (mRNA) SARS-CoV-2 vaccine during pregnancy.

**Main Outcome and Measure** Infants were considered infected if they had a positive polymerase chain reaction test.

**Results** Among 7292 infants included in this study, 4522 (62.0%) had mothers who were Chinese, 527 (7.2%) had mothers who were Indian, 2007 (27.5%) had mothers who were Malay, and 236 (3.2%) had mothers who were other ethnicity; 6809 infants (93.4%) were born at full term, and 1272 infants (17.4%) were infected during the study period. There were 7120 infants (97.6%) born to mothers who had been fully vaccinated or boosted as of 14 days prior to delivery. The crude incidence rate was 174.3 per 100 000 person-days among infants born to mothers who were unvaccinated, 122.2 per 100 000 person-days among infants born to mothers who were vaccinated before pregnancy, and 128.5 per 100 000 person-days among infants born to mothers who were vaccinated during pregnancy. The estimated vaccine effectiveness (VE) was 41.5% (95% CI, 22.8% to 55.7%) among infants born to mothers vaccinated during pregnancy. Infants of mothers who received vaccination prior to pregnancy did not have a lower risk for infection (estimated VE, 15.4% [95% CI, -17.6% to 39.1%]). A lower risk for Omicron XBB infection was only observed among mothers vaccinated with the third (booster) dose antenatally (estimated VE, 76.7% [95% CI, 12.8% to 93.8%]).

**Conclusions and Relevance** In this population-based cohort study, maternal mRNA vaccination was associated with a lower risk of Omicron SARS-CoV-2 infection among infants up to 6 months of age only if the vaccine was given during the antenatal period. These findings suggest that mRNA vaccination during pregnancy may be needed for lower risk of SARS-CoV-2 infection among newborns. (Author)

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2023-13067

**Comparison of Anti-SARS-CoV-2-Specific Antibody Signatures in Maternal and Infant Blood after COVID-19 Infection versus COVID-19 Vaccination during Pregnancy.** Sabharwal V, Taglauer E, Demos R, et al (2023), American Journal of Perinatology 31 October 2023, online

**Objective** The Advisory Committee on Immunization Practices and The American College of Obstetricians and Gynecologists recommend coronavirus disease 2019 (COVID-19) vaccine for pregnant persons to prevent severe illness and death. The objective was to examine levels of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) IgG, IgM, and IgA against spike protein receptor binding domain (RBD) and nucleocapsid protein (NCP) in maternal and infant/cord blood at delivery after COVID 19 vaccination compared with SARS-CoV-2 infection at in mother–infant dyads at specified time points.

**Study Design** Mothers with SARS-CoV-2 infection (n = 31) or COVID-19 vaccination (n = 25) during pregnancy were enrolled between July 2020 and November 2021. Samples were collected at delivery and IgG, IgM, and IgA to RBD of spike and NCPs compared in the infected and vaccinated groups. Timing of infection/vaccination prior to delivery and correlation with antibody levels was performed.

**Results** The majority of participants received vaccination within 90 days of delivery and over half received the Pfizer BioNTech vaccine. There were no significant correlations between antibody levels and timing of infection or vaccination. Infant IgG levels to the RBD domain of spike protein were higher in the vaccinated group (n = 25) as compared with the infants born to mothers with infection (n = 31). Vaccination against COVID-19 during pregnancy was associated with detectable maternal and infant anti-RBD IgG levels at delivery irrespective of the timing of vaccination.

**Conclusion** Timing of vaccination had no correlation to the antibody levels suggesting that the timing of maternal vaccination in the cohort did not matter. There was no IgM detected in infants from vaccinated mothers. Infants from vaccinated mothers had robust IgG titers to RBD, which have a lasting protective effect in infants. (Author)

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2023-12873

**Parental Perspectives on Impact of Parental Presence Restrictions in the Neonatal Intensive Care Unit During the COVID-19 pandemic A Cross-Sectional Study.** MacNeil M, Campbell-Yeo M, McCulloch H, et al (2023), Journal of Perinatal and Neonatal Nursing vol 37, no 4, October/December 2023, pp E17-E23

**Purpose:**

To describe parental experiences in the neonatal intensive care unit (NICU) during the COVID-19 restrictions. We explore what parents found most challenging, the impact these restrictions had on them and their infant, and how they coped.

**Methods:**

A cross-sectional online survey was completed by parents of infants who required care in a Canadian NICU during the early period of the COVID-19 pandemic. Data from 3 questions were coded using thematic analysis.

**Results:**

Participants (n = 161) were primarily mothers (93%), with an average length of stay of 32.1 days. Three themes were identified from responses: (1) emotional and physical closeness of the parents to their infant; (2) physical and psychosocial well-being of the infant and parent; and (3) how parents coped, and strategies for moving forward. Parents reported that parental restriction policies adversely impacted their perceived physical and emotional closeness with their infant and their infant's physical and psychosocial well-being. Parents reported that being able to be present with their infant, having their partner able to be present with them, and effective communication helped them cope.

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## Conclusion:

Despite the need for some restrictive policies to control the spread of the virus, the benefits and risks to the overall well-being of the parents and infants must be weighed. (Author)

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## 2023-12439

**COVID-19 and Newborn Care: April 2020.** Horbar JD, Edwards EM, Soll RF, et al (2020), Pediatrics vol 146, no 5, November 2020, e2020002824

Although few newborns infected with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) have been reported,<sup>1</sup> the pandemic has affected how hospitals provide care to pregnant women, infants, and families. The severity and variability of this impact are unknown. Vermont Oxford Network (VON), in partnership with the American Academy of Pediatrics Section on Neonatal-Perinatal Medicine (SONPM), conducted an audit in April 2020 to assess the impact of the coronavirus disease 2019 (COVID-19) pandemic on the care of newborn infants and families. (Author)

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## 2023-12405

**Outcomes of Maternal-Newborn Dyads After Maternal SARS-CoV-2.** Verma S, Bradshaw C, Auyeung NSF, et al (2020), Pediatrics vol 146, no 4, October 2020, e2020005637

### BACKGROUND AND OBJECTIVES:

Infection with a novel coronavirus named severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has become a global pandemic. There are limited data describing the impact of SARS-CoV-2 infection on pregnant mothers and their newborns. The objective of this study is to describe characteristics and outcomes of maternal-newborn dyads with confirmed maternal SARS-CoV-2.

### METHODS:

This was a multicenter, observational, descriptive cohort study with data collection from charts of maternal-newborn dyads who delivered at 4 major New York City metropolitan area hospitals between March 1 and May 10, 2020, with maternal SARS-CoV-2 infection.

### RESULTS:

There were a total of 149 mothers with SARS-CoV-2 infection and 149 newborns analyzed (3 sets of twins; 3 stillbirths). Forty percent of these mothers were asymptomatic. Approximately 15% of symptomatic mothers required some form of respiratory support, and 8% required intubation. Eighteen newborns (12%) were admitted to the ICU. Fifteen (10%) were born preterm, and 5 (3%) required mechanical ventilation. Symptomatic mothers had more premature deliveries (16% vs 3%,  $P = .02$ ), and their newborns were more likely to require intensive care (19% vs 2%,  $P = .001$ ) than asymptomatic mothers. One newborn tested positive for SARS-CoV-2, which was considered a case of horizontal postnatal transmission.

### CONCLUSIONS:

Although there was no distinct evidence of vertical transmission from mothers with SARS-CoV-2 to their newborns, we did observe perinatal morbidities among both mothers and newborns. Symptomatic mothers were more likely to experience premature delivery and their newborns to require intensive care. (Author)

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## 2023-12329

**SARS-CoV-2 in infant urine and fecal samples after in utero COVID-19 exposure.** Boateng JO, Wachman EM, Turcinovic J, et al (2022), Pediatric Research vol 92, no 2, August 2022, pp 536-540

### Background

Coronavirus disease 2019 (COVID-19) is a pandemic that has and will continue to affect many pregnant women. Knowledge regarding the risk of vertical transmission is limited. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) real-time reverse transcriptase-polymerase chain reaction (RT-PCR) of nasopharyngeal swabs typically

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have been used to confirm the diagnosis among infants, but whether the virus can be detected in other biological specimens, and therefore potentially transmitted in other ways, is unknown. Positive SARS-CoV-2 RT-PCR has been reported from feces and urine from adult patients. We hypothesize that the presence of SARS-CoV-2 in infant urine and fecal samples after prenatal COVID-19 exposure is low.

#### Methods

We examined the presence of SARS-CoV-2 RNA using RT-PCR in urine and fecal samples among 42 infants born to SARS-CoV-2-infected mothers during different stages of pregnancy.

#### Results

A urine sample was collected from 39 of 42 infants and fecal samples from all 42 infants shortly after birth. Although the majority of the women had the symptomatic disease (85.6%), we were unable to detect the presence of SARS-CoV-2 virus from any infant urine or fecal samples.

#### Conclusions

SARS-CoV-2 was not detected in infant urine or feces after maternal infection during pregnancy, providing further evidence for low rates of perinatal transmission. (Author)

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### 2023-12104

**Italian neonatologists and SARS-CoV-2: lessons learned to face coming new waves.** Cavicchiolo ME, Trevisanuto D, Priante E, et al (2022), *Pediatric Research* vol 91, no 3, February 2022, pp 513-521

The aim of this review was threefold: (a) to retrieve all SARS-CoV-2 evidences published by Italian neonatologists working in maternity centers and NICUs during the pandemic; (b) to summarize current evidence for the management of term and preterm infants with a SARS-CoV-2-related illness; and (c) to provide an update for dealing with the second wave of COVID-19 and discuss open questions. A review was conducted using MEDLINE/PubMed and the national COVID-19 registry of the Italian Society of Neonatology including citations from December 1, 2019 to October 28, 2020. Sixty-three articles were included. Collected data were divided into the following topics: (a) antenatal management, (b) management in delivery room, (c) postnatal management, (d) mother–baby dyad and breastfeeding management, (e) neonatal emergency transport system reorganization, (f) parents' management and perspective during SARS-CoV-2 pandemic, and (g) future perspective. Evidences have evolved over the pandemic period and the current review can be useful in the management of the mother–neonate dyad during SARS-CoV-2 future waves. Italian neonatologists have played an active role in producing official guidelines and reporting data that have contributed to improve the care of neonates. A joint European action plan is mandatory to face COVID-19 in neonates with more awareness. (Author)

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### 2023-12103

**Neonates and COVID-19: state of the art.** Ryan L, Plötz FB, van den Hoogen A, et al (2022), *Pediatric Research* vol 91, no 2, January 2022, pp 432-439

The SARS-CoV-2 pandemic has had a significant impact worldwide, particularly in middle- and low-income countries. While this impact has been well-recognized in certain age groups, the effects, both direct and indirect, on the neonatal population remain largely unknown. There are placental changes associated, though the contributions to maternal and fetal illness have not been fully determined. The rate of premature delivery has increased and SARS-CoV-2 infection is proportionately higher in premature neonates, which appears to be related to premature delivery for maternal reasons rather than an increase in spontaneous preterm labor. There is much room for expansion, including long-term data on outcomes for affected babies. Though uncommon, there has been evidence of adverse events in neonates, including Multisystem Inflammatory Syndrome in Children, associated with COVID-19 (MIS-C). There are recommendations for reduction of viral transmission to neonates, though more research is required to determine the role of passive immunization of the fetus via maternal vaccination. There is now considerable evidence suggesting that the severe visitation restrictions implemented early in the pandemic have negatively

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impacted the care of the neonate and the experiences of both parents and healthcare professionals alike. Ongoing collaboration is required to determine the full impact, and guidelines for future management. (Author)

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## 2023-11871

**Breastfeeding support during COVID-19.** Brown A, Shenker N (2020), BfN: The Breastfeeding Network Newsletter no 78, Autumn 2020, pp 3-4

**Full URL:** <https://www.breastfeedingnetwork.org.uk/wp-content/uploads/2023/05/BfN-News-Autumn-2020.pdf>

In May 2020, researchers from Swansea University and Imperial College conducted research in collaboration with the Breastfeeding Network to explore families' experiences of breastfeeding support during COVID-19. The following summary has been taken from the report, the full findings will be published in a journal later this year. (Author)

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## 2023-11835

**Twitter discussions on breastfeeding during the COVID-19 pandemic.** Jagarapu J, Diaz MI, Lehmann CU, et al (2023), International Breastfeeding Journal vol 18, no 56, November 2023

**Full URL:** <https://doi.org/10.1186/s13006-023-00593-x>

### Background

Breastfeeding is a critical health intervention in infants. Recent literature reported that the COVID-19 pandemic resulted in significant mental health issues in pregnant and breastfeeding women due to social isolation and lack of direct professional support. These maternal mental health issues affected infant nutrition and decreased breastfeeding rates during COVID-19. Twitter, a popular social media platform, can provide insight into public perceptions and sentiment about various health-related topics. With evidence of significant mental health issues among women during the COVID-19 pandemic, the perception of infant nutrition, specifically breastfeeding, remains unknown.

### Methods

We aimed to understand public perceptions and sentiment regarding breastfeeding during the COVID-19 pandemic through Twitter analysis using natural language processing techniques. We collected and analyzed tweets related to breastfeeding and COVID-19 during the pandemic from January 2020 to May 2022. We used Python software (v3.9.0) for all data processing and analyses. We performed sentiment and emotion analysis of the tweets using natural language processing libraries and topic modeling using an unsupervised machine-learning algorithm.

### Results

We analyzed 40,628 tweets related to breastfeeding and COVID-19 generated by 28,216 users. Emotion analysis revealed predominantly "Positive emotions" regarding breastfeeding, comprising 72% of tweets. The overall tweet sentiment was positive, with a mean weekly sentiment of 0.25 throughout, and was affected by external events. Topic modeling revealed six significant themes related to breastfeeding and COVID-19. Passive immunity through breastfeeding after maternal vaccination had the highest mean positive sentiment score of 0.32.

### Conclusions

Our study provides insight into public perceptions and sentiment regarding breastfeeding during the COVID-19 pandemic. Contrary to other topics we explored in the context of COVID (e.g., ivermectin, disinformation), we found that breastfeeding had an overall positive sentiment during the pandemic despite the documented rise in mental health challenges in pregnant and breastfeeding mothers. The wide range of topics on Twitter related to breastfeeding provides an opportunity for active engagement by the medical community and timely dissemination of advice, support, and guidance. Future studies should leverage social media analysis to gain real-time insight into public health topics of importance in child health and apply targeted interventions. (Author)

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## 2023-11785

**Obstetric Intervention and Perinatal Outcomes During the Coronavirus Disease 2019 (COVID-19) Pandemic.** Simon S,

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**OBJECTIVE:**

To quantify pandemic-related changes in obstetric intervention and perinatal outcomes in the United States.

**METHODS:**

We carried out a retrospective study of all live births and fetal deaths in the United States, 2015–2021, with data obtained from the natality, fetal death, and linked live birth–infant death files of the National Center for Health Statistics. Analyses were carried out among all singletons; singletons of patients with prepregnancy diabetes, prepregnancy hypertension, and hypertensive disorders of pregnancy; and twins. Outcomes of interest included preterm birth, preterm labor induction or preterm cesarean delivery, macrosomia, postterm birth, and perinatal death. Interrupted time series analyses were used to estimate changes in the prepandemic period (January 2015–February 2020), at pandemic onset (March 2020), and in the pandemic period (March 2020–December 2021).

**RESULTS:**

The study population included 26,604,392 live births and 155,214 stillbirths. The prepandemic period was characterized by temporal increases in preterm birth and preterm labor induction or cesarean delivery rates and temporal reductions in macrosomia, postterm birth, and perinatal mortality. Pandemic onset was associated with absolute decreases in preterm birth (decrease of 0.322/100 live births, 95% CI 0.506–0.139) and preterm labor induction or cesarean delivery (decrease of 0.190/100 live births, 95% CI 0.334–0.047) and absolute increases in macrosomia (increase of 0.046/100 live births), postterm birth (increase of 0.015/100 live births), and perinatal death (increase of 0.501/1,000 total births, 95% CI 0.220–0.783). These changes were larger in subpopulations at high risk (eg, among singletons of patients with prepregnancy diabetes). Among singletons of patients with prepregnancy diabetes, pandemic onset was associated with a decrease in preterm birth (decrease of 1.634/100 live births) and preterm labor induction or cesarean delivery (decrease of 1.521/100 live births) and increases in macrosomia (increase of 0.328/100 live births) and perinatal death (increase of 9.840/1,000 total births, 95% CI 3.933–15.75). Most changes were reversed in the months after pandemic onset.

**CONCLUSION:**

The onset of the coronavirus disease 2019 (COVID-19) pandemic was associated with a transient decrease in obstetric intervention (especially preterm labor induction or cesarean delivery) and a transient increase in perinatal mortality. (Author)

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**2023-11759**

**Cytokine responses to SARS-COV2 infection in mother-infant dyads: a systematic review and meta-analysis.** Jain S, Allen IE, Song D, et al (2023), *Frontiers in Pediatrics* 17 October 2023, online

**Full URL:** <https://doi.org/10.3389/fped.2023.1277697>

**Background:** The COVID-19 pandemic has affected a significant number of pregnant women worldwide, but studies on immune responses have presented conflicting results. This study aims to systematically review cytokine profiles in pregnant women with SARS-CoV-2 infection and their infants to evaluate immune responses and potential transplacental transfer of cytokines.

**Materials and methods:** A comprehensive search of 4 databases was conducted to identify relevant studies. Inclusion criteria included studies measuring individual cytokines in pregnant women and/or their neonates. Studies were evaluated for quality, and data were extracted for analysis. Meta-analyses were performed using the random-effects model.

**Results:** Seventeen studies met the inclusion criteria, including data from 748 pregnant women and 287 infants. More than three of these studies evaluated data of 20 cytokines in maternal serum, and data of 10 cytokines was available from cord blood samples. Only the serum level of CXCL10 was significantly up-regulated in SARS-CoV-2 positive

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pregnant women (n = 339) compared to SARS-CoV-2 negative pregnant women (n = 409). Subset analysis of maternal samples (n = 183) collected during the acute phase of COVID-19 infection showed elevated CXCL10 and IFN- $\gamma$ . No significant differences in cytokine levels were found between cord blood samples collected from infants born to mothers with (n = 97) and without (n = 190) COVID-19 during gestation. Subset analysis of cord blood samples collected during the acute phase of maternal infection was limited by insufficient data. The heterogeneity among the studies was substantial.

**Conclusion:** The findings suggest that maternal cytokines responses to SARS-CoV-2 infection during pregnancy are not significantly dysregulated, except for CXCL10 and IFN- $\gamma$  during the acute phase of illness. No evidence of increased cytokine levels in cord blood samples was observed, although this could be impacted by the time period between initial maternal infection and cord blood collection. These results provide some reassurance to parents and healthcare providers but should be interpreted cautiously due to study variations and limitations. (Author)

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## 2023-11591

**Breastfeeding Disparities During the COVID-19 Pandemic: Race/Ethnicity, Age, Education, and Insurance Payor.** McCloskey K, Henao D, Plummer D, et al (2023), Journal of Human Lactation vol 39, no 4, November 2023, pp 615-624

### Background:

There are well-documented disparities in rates of continued breastfeeding. Existing research regarding breastfeeding during COVID-19 has raised concerns that the pandemic may have exacerbated these disparities.

### Research Aims:

The aim of this research was first to quantify disparities in any breastfeeding associated with the maternal factors of race/ethnicity, age, insurance payor, and zip code rates of education in North Carolina. Second, we aimed to investigate any changes in these disparities before and during the COVID-19 pandemic.

### Method:

This was an observational study, with a retrospective, longitudinal design. Participants included infants who were born in one of eight medical centers across North Carolina from either September 1, 2019 to October 31, 2019 (pre-COVID: n = 1,104) or from April 1, 2020 to May 31, 2020, (during COVID: n = 1,157), and whose caregivers reported whether they were breastfeeding at either a 3-month or 6-month postnatal follow-up (N = 2,261). Mixed effects logistic models, including random effects of zip code, assessed predictors associated with probability of breastfeeding cessation at 3- and 6-month child well-check.

### Results:

Overall, younger maternal age, being non-Hispanic Black, not having commercial insurance, and residing in a zip code with lower rates of higher education, were all independently associated with earlier breastfeeding cessation across both cohorts. Disparities did not significantly change during the COVID-19 pandemic.

### Conclusion:

We did not find support for the hypothesis that the COVID-19 pandemic might have exacerbated breastfeeding disparities. Nevertheless, there is a continued need to eliminate existing disparities. (Author)

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## 2023-11367

**Hypoxia modifies levels of the SARS-CoV-2 cell entry proteins, angiotensin-converting enzyme 2, and furin in fetal human brain endothelial cells.** Mughis H, Lye P, Matthews SG, et al (2023), American Journal of Obstetrics & Gynecology MFM vol 5, no 10, October 2023, 101126

**Full URL:** <https://doi.org/10.1016/j.ajogmf.2023.101126>

### BACKGROUND

It is not known whether human fetal brain endothelial cells that form the blood-brain barrier express angiotensin-converting enzyme 2, transmembrane serine protease 2, and furin, which are SARS-CoV-2 cell entry proteins. Moreover, it is unclear whether hypoxia, commonly observed during severe maternal COVID-19, can modify their level of expression. We hypothesized that human fetal brain endothelial cells isolated from early- and midpregnancy brain microvessels express angiotensin-converting enzyme 2, transmembrane serine protease 2, and

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furin. Furthermore, we hypothesized that hypoxia modifies their expression levels in a gestational age– and time-of-exposure–dependent manner.

#### OBJECTIVE

This study aimed to investigate whether early- and midpregnancy human fetal brain endothelial cells express angiotensin-converting enzyme 2, transmembrane serine protease 2, and furin SARS-CoV-2–associated cell entry proteins and to determine the effects of hypoxia on angiotensin-converting enzyme 2, transmembrane serine protease 2, and furin expression levels in human fetal brain endothelial cells.

#### STUDY DESIGN

This was a prospective study where human fetal brain endothelial cells isolated from early-pregnancy (12.4±0.7 weeks of gestation) and midpregnancy (17.9±0.5 weeks of gestation) fetal brain microvessels (6 per group) were exposed to different oxygen tensions (20%, 5%, and 1% oxygen) for 6, 24, and 48 hours. Angiotensin-converting enzyme 2, transmembrane serine protease 2, and furin messenger RNA and protein levels and localization were assessed using quantitative polymerase chain reaction, Western blot testing, and immunofluorescence.

#### RESULTS

Angiotensin-converting enzyme 2, transmembrane serine protease 2, and furin co-localize with the endothelial cell marker von Willebrand factor in human fetal brain endothelial cells isolated from early pregnancy and midpregnancy. In early pregnancy, TMPRSS2 messenger RNA expression was decreased by 5% oxygen compared with 20% oxygen after 6 hours of exposure ( $P<.05$ ). In midpregnancy, 5% oxygen down-regulated ACE2 messenger RNA compared with 20% oxygen after 24 hours ( $P<.05$ ). Furin messenger RNA expression was decreased under 5% and 1% oxygen compared with 20% oxygen ( $P<.05$ ) after 24 hours. In midpregnancy, angiotensin-converting enzyme 2 protein levels were decreased under 5% and 1% oxygen ( $P<.001$ ) after 24 hours. In contrast, furin protein levels were increased under 1% oxygen compared with 20% oxygen after 24 hours ( $P<.05$ ). At 48 hours, 1% oxygen increased angiotensin-converting enzyme 2 protein levels compared with 20% oxygen ( $P<.01$ ).

#### CONCLUSION

Hypoxia modifies the expression of selected SARS-CoV-2 cell entry proteins in human fetal brain endothelial cells in a gestational age– and time-of-exposure–dependent manner. As severe COVID-19 may lead to maternal hypoxia, an altered expression of these proteins in the developing human blood-brain barrier could potentially lead to altered SARS-CoV-2 brain invasion and neurologic sequelae in neonates born to pregnancies complicated by SARS-CoV-2 infection. (Author)

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## 2023-11295

**Breastfeeding Behavior Within the Covid-19 Related Obstetric and Neonatal Outcome Study (CRONOS).** Zöllkau J, Heimann Y, Hagenbeck C, et al (2023), Journal of Human Lactation vol 39, no 4, November 2023, pp 625–635

#### Background:

The SARS-CoV-2 pandemic and its influence on peripartum processes worldwide led to issues in breastfeeding support.

#### Research Aim:

The aim of this study was to describe breastfeeding behavior and peripartum in-hospital management during the pandemic in Germany and Austria.

#### Methods:

This study was a descriptive study using a combination of secondary longitudinal data and a cross-sectional online survey. Registry data from the prospective multicenter COVID-19 Related Obstetric and Neonatal Outcome Study (CRONOS) cohort study (longitudinal, medical records of 1,815 parent-neonate pairs with confirmed SARS-CoV-2 infection during pregnancy) and a cross-sectional online survey of CRONOS hospitals' physicians ( $N = 67$ ) were used for a descriptive comparison of feeding outcomes and postpartum management.

#### Results:

In 93.7% ( $n = 1700$ ) of the cases in which information on the neonate's diet was provided, feeding was with the mother's own milk. Among neonates not receiving their mother's own milk, 24.3% ( $n = 26$ ) reported SARS-CoV-2 infection as the reason. Peripartum maternal SARS-CoV-2 infection, severe maternal COVID-19 including the need for intensive care unit (ICU) treatment or invasive ventilation, preterm birth, mandatory delivery due to COVID-19, and

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neonatal ICU admission were associated with lower rates of breastfeeding. Rooming-in positively influenced breastfeeding without affecting neonatal SARS-CoV-2 frequency (4.2% vs. 5.6%). CRONOS hospitals reported that feeding an infant their mother's own milk continued to be supported during the pandemic. In cases of severe COVID-19, four of five hospitals encouraged breastfeeding.

Conclusion:

Maintaining rooming-in and breastfeeding support services in the CRONOS hospitals during the pandemic resulted in high breastfeeding rates. (Author)

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## 2023-11215

**Intrauterine transmission of SARS-CoV-2 to and prenatal ultrasound abnormal findings in the fetus of a pregnant woman with mild COVID-19.** Zhang M, Hou L, Guo L, et al (2023), BMC Pregnancy and Childbirth vol 23, no 723, 2023

Full URL: <https://doi.org/10.1186/s12884-023-06053-y>

Background

Whether intrauterine transmission of COVID-19 occurs remains uncertain, and it remains unclear whether the disease affects fetuses. We present a case of intrauterine transmission of SARS-CoV-2 infection and the prenatal ultrasonographic findings of the fetus in a pregnant woman with mild COVID-19.

Case presentation

A 30-year-old woman was admitted to our hospital for ultrasound examination in January 2023 at 26+ 3 weeks' gestation. Twenty-one days prior, her COVID-19 nucleic acid test was positive, and she had mild symptoms, including fever (38.3 °C), headache, chills, ankle pain and cough. After receiving symptomatic treatment, she fully recovered. Prenatal ultrasound revealed that the placenta was diffusely distributed with punctate echogenic foci, hepatomegaly, and the volume of bilateral lungs decreased significantly, with enhanced echo. In addition, we found that the surface of the fetal brain demonstrated widened gyri with a flattened surface. The prenatal MRI confirmed these fetal abnormalities. Amniotic fluid was tested for SARS-CoV-2, and the sample tested was positive for the virus. After careful consideration, the pregnant woman decided to terminate the pregnancy.

Conclusion

The intrauterine transmission of COVID-19 is certain. Moreover, the intrauterine transmission of COVID-19 may cause abnormalities in various organs of the fetus. (Author)

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## 2023-11186

**Effect of an Intensive Nurse Home Visiting Program on Adverse Birth Outcomes in a Medicaid-Eligible Population: A Randomized Clinical Trial.** McConnell MA, Rokicki S, Ayers S, et al (2023), Obstetrical and Gynecological Survey vol 78, no 1, January 2023, pp 7-9

Mortality, morbidity, and childhood developmental challenges can all result from adverse birth outcomes. In regard to these outcomes, the United States exhibits significant racial and socioeconomic inequities, and effective interventions targeting low-income pregnant people are necessary. (Abstracted from JAMA 2022;328(1):27–37)(Author)

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## 2023-11183

**Association of COVID-19 Vaccination During Early Pregnancy With Risk of Congenital Fetal Anomalies.** Ruderman RS, Mormal J, Trawick E, et al (2023), Obstetrical and Gynecological Survey vol 78, no 1, January 2023, pp 5-6

COVID-19 infection increases the risk of maternal and neonatal morbidity in the pregnant population. While data suggest that COVID-19 vaccines are safe and effective during pregnancy, the risk to the fetus is unclear. (Abstracted from JAMA Pediatr 2022;176(7):717–719)(Author)

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## 2023-10996

**JCVI statement on the COVID-19 vaccination programme for autumn 2023, 26 May 2023.** Department of Health and Social

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The Joint Committee on Vaccination and Immunisation (JCVI) met on 18 April 2023, 2 May 2023, and 9 May 2023 to develop advice for COVID-19 vaccination ahead of winter 2023 to 2024. This statement provides advice on the eligibility for COVID-19 vaccination in autumn 2023, including persons aged 6 months to 64 years in a clinical risk group, women in all stages of pregnancy, and frontline health and social care workers. Further advice on the choice of vaccine products for use in autumn 2023 will be provided in due course. (Author, edited)

## 2023-10915

**Adapting the 'First 2000 Days maternal and child healthcare framework' in the aftermath of the COVID-19 pandemic: ensuring equity in the new world.** Diaz AM, Brooker R, Cibralic S, et al (2023), Australian Health Review vol 47, no 1, 2023, pp 72-76

**Full URL:** <https://doi.org/10.1071/AH22228>

The purpose of this perspective article is to emphasise the importance of the 'First 2000 Days' policy of life from conception to age five, and to propose new directions in which the policy's implementation could be extended for the benefit of children and families. The proposed approach highlights principles of responsiveness, integration, sustainability and equity, specifying initiatives that embody the kind of innovation each principle aspires to. The article also proposes innovations in data collection and linkages that would strengthen the implementation of first 2000 days policies and frameworks. This perspective proposes a framework that could improve health systems implementation of services in the first 5 years of life, by proposing a well-coordinated continuum of services with integrated physical and digital solutions. This has the potential to transform how the health system monitors and responds to children and families' needs in the critical early years of life during and beyond the current pandemic. (Author)

## 2023-10828

**Effect of infection with severe acute respiratory syndrome coronavirus 2 on the fetus in pregnant women who recovered from infection.** Hammad LF, Almutairi AN, Aldahlawi RH (2023), Annals of Saudi Medicine vol 43, no 4, July/August 2023, pp 213-218

**Full URL:** <https://doi.org/10.5144/0256-4947.2023.213>

**BACKGROUND:** The effect of maternal infection with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) on the fetus is unclear, and there is no data from Saudi Arabia.

**OBJECTIVE:** Assess the effect of maternal SARS-CoV-2 infection on fetal growth.

**DESIGN:** Retrospective case-control

**SETTING:** Tertiary care hospital, Riyadh, Saudi Arabia

**PATIENTS AND METHODS:** We selected pregnant women who underwent an obstetric growth scan and umbilical artery Doppler ultra-sound examination between 28 and 41 weeks of pregnancy. Women with multiple pregnancy, fetal abnormalities, maternal body mass index >30, maternal hypertension, any other chronic diseases that might affect fetal growth or pregnant women suffering from cancer were excluded. Fetal growth parameters assessed included fetal biometry (biparietal diameter, head circumference, abdominal circumference and femur length). We also did an umbilical artery Doppler assessment, which includes the umbilical artery pulsatility index, resistive index and the systolic/diastolic ratio.

**MAIN OUTCOME MEASURE:** Fetal biometry and biophysical profile

**SAMPLE SIZE:** 48 SARS-CoV-2; 98 non-SARS-CoV-2

**RESULTS:** More women who had recovered from SARS-CoV-2 infection had small for gestational age fetuses compared with the control group ( $P=.001$ ).

**CONCLUSION:** Maternal SARS-CoV-2 infection during pregnancy was associated with a higher prevalence of small for gestational age (SGA) fetuses.

**LIMITATIONS:** Retrospective, middle cerebral artery and uterine artery Doppler data were not included nor were the effect of tobacco use and socioeconomic status, the relationship between the date of infection with the date of

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## 2023-10819

**A Quality Improvement Initiative to Increase the Milk Donation to the Human Milk Bank Post-Coronavirus Disease-19 Pandemic.** Vaddi VK, Mascarenhas D, SB K, et al (2023), Breastfeeding Medicine vol 18, no 11, November 2023, pp 864–869

**Background and Objective:** Donor human milk (DHM) from the human milk bank (HMB) is the next best alternative in circumstances when mother's own milk is not available. There was a steep decline in the volume of DHM collected during the coronavirus disease-19 (COVID-19) pandemic due to various factors, while DHM demand increased. Hence, a quality improvement (QI) study was conducted to increase the volume of milk donation to HMB from postpandemic baseline of 300–400 to 1,000 mL/day over 8 weeks.

**Materials and Methods:** Fish bone analysis was used to identify the potential barriers, and four Plan-Do-Study-Act (PDSA) cycles were conducted from January 2021 to March 2021 to address the key barriers. In the first PDSA cycle, training of health care providers was done. Sessions for educating mothers in the second PDSA cycle and individualized one-to-one counseling of mothers by a mother support group were done in the third PDSA cycle. The availability of breast pump was increased in the fourth PDSA cycle. Sustainability of the interventions was studied for 6 months and data were analyzed.

**Results:** The average DHM collected per day at the end of each PDSA cycle was 900, 1,500, 1,000, and 1,100 mL. Although the sustenance phase was affected by the second COVID-19 wave, prompt identification of the issues and timely interventions prevented the donated volume from dropping to preintervention levels.

**Conclusion:** QI initiatives customized for local settings can result in significant improvement in voluntary milk donation in HMB, which can result in more availability of DHM to premature babies. (Author)

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## 2023-10752

**Breastfeeding vs. breast milk transmission during COVID-19 pandemic, which is more important?** He Y-F, Liu J-Q, Hu X-D, et al (2023), Frontiers in Pediatrics 6 September 2023, online

**Full URL:** <https://doi.org/10.3389/fped.2023.1253333>

The catastrophic coronavirus disease 2019 (COVID-19) pandemic has raised many health questions, and whether breast milk from SARS-CoV-2 infected mothers may be a vector for SARS-CoV-2 transmission has become a hot topic of concern worldwide. Currently, there are extremely limited and conflicting data on the risk of infection in infants through breastfeeding. For this reason, we investigated almost all current clinical studies and systematically analyzed the presence of SARS-CoV-2 and antibodies in the breast milk of mothers infected with SARS-CoV-2, their effects on newborns, and the mechanisms involved. A total of 82 studies were included in this review, of which 66 examined the presence of SARS-CoV-2 in breast milk samples from mothers diagnosed with COVID-19, 29 reported results of antibody detection of SARS-CoV-2 in breast milk, and 13 reported both nucleic acid and antibody test results. Seventeen studies indicated the presence of detectable SARS-CoV-2 nucleic acid in breast milk samples, and only two studies monitored viral activity, both of which reported that infectious viruses could not be cultured from RNA-positive breast milk samples. All 29 studies indicated the presence of at least one of the three antibodies, IgA, IgG and IgM, in breast milk. Five studies indicated the presence of at least one antibody in the serum of breastfed newborns. No COVID-19-related deaths were reported in all 1,346 newborns. Our study suggests that direct breastfeeding does not pose an additional risk of infection to newborns and that breast milk is a beneficial source of anti-SARS-CoV-2 antibodies that provide passive immune protection to infants. In addition, direct breastfeeding would provide maternal benefits. Our review supports the recommendation to encourage direct breastfeeding under appropriate infection control guidelines. (Author)

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## 2023-10619

**COVID-19 in Pregnancy: A Current Review of Global Cases.** Chae SY, Bhattacharyya A, Mendoza R (2021), *Obstetrical and Gynecological Survey* vol 76, no 8, August 2021, pp 504-513

### Importance

There is great concern about the impact of COVID-19 in pregnancy due to the high morbidity and mortality associated with prior coronavirus infections.

### Objective

The objective of this review is to summarize the current literature on the impact of COVID-19 on pregnant women and their newborns.

### Evidence Acquisition

The search terms COVID-19 and pregnancy were used in Medline and Clinical Key databases. Only articles written in English with outcome data on both mothers and their newborns were incorporated.

### Results

Pregnant women generally experience COVID-19 as a mild-moderate illness. However, approximately 5% become critically ill. Women with underlying comorbidities seem more likely to experience severe morbidity. Newborns also generally have a favorable course.

Vertical transmission in the intrauterine period is possible but rare. Infection control measures need to be taken to prevent transmission during the peripartum period. There is a paucity of data on infections in the first and second trimesters, but research from those infected in the third trimester indicates a possible link with preterm birth. There is a significant percentage of asymptomatic cases. Racial disparities are also being noted with disproportionate numbers of racial/ethnic minorities being affected.

### Conclusions

COVID-19 is generally experienced by pregnant women and their newborns as a mild to moderate illness, although a minority become critically ill and mortality does occur. This is more likely among those with underlying comorbidities, as in the general population. Asymptomatic cases heighten the need for increased testing and infection control measures. Racial disparities highlight underlying vulnerabilities and the need for increased research and policy changes. (Author)

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## 2023-10506

### **Nationwide Analysis of the Outcomes and Mortality of Hospitalized Infants with Concomitant Diagnosis of COVID-19.**


Krishnan P, Malik A, Isath A, et al (2023), *American Journal of Perinatology* 8 September 2023, online

**Objective** Coronavirus disease 2019 (COVID-19) generally causes milder illness in the pediatric population. However, infants represent a higher-risk population with evolving symptomatology and severity. There is a paucity of large population-based data on the impact of COVID-19 on hospitalized infants.


**Study Design** In this large cohort study, the National Inpatient Sample database was queried for all infant hospital admissions between January and December 2020 in the United States, with and without a diagnosis of COVID-19 based on ICD-10-CM U07. The mortality and morbidity of infants with and without COVID-19 were evaluated. Parent-reported race and outcomes were also analyzed.

**Results** A weighted total of 3,754,236 infants who were hospitalized were identified, of which 4,265 patients (0.11%) had a concomitant diagnosis of COVID-19. Infants with COVID-19 had similar mortality and extracorporeal membrane oxygenation utilization. Infants with concomitant COVID-19 had a higher rate of respiratory failure, congestive heart failure, acute kidney injury, and coagulopathy. Compared with Caucasian infants and Asian infants, Hispanic and African American infants were more likely to have COVID-19 hospital admissions than hospitalizations without

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COVID-19 diagnosis. Patients with lower median household income represented the majority of the COVID-19 hospitalization. The infants with COVID-19 were more likely to have Medicaid or Medicare insurance and less likely to have private insurance.

**Conclusion** In this large cohort of hospitalized infants with COVID-19, the infection was associated with complications, including respiratory failure and endotracheal intubations but not associated with a higher risk for mortality. Infants from racial minorities and lower socioeconomic strata carry the highest burden of COVID-19 infection. (Author)

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## 2023-10375

**Sleeping Like a Baby: An Investigation of Bed-Sharing, Co-Sleeping, and Breastfeeding Among Pregnant Adults During the COVID-19 Pandemic.** Schindler-Ruwisch J, Dubar RT, Casale R, et al (2023), Breastfeeding Medicine vol 18, no 9, September 2023, pp 678–687

**Introduction:** Given the lack of clarity in the literature related to the impact of breastfeeding intentions on sleeping practices, the current research aimed to investigate the relationship between co-sleeping or bed-sharing and breastfeeding intentions among a sample of pregnant adults, during the coronavirus disease 2019 (COVID-19) pandemic.

**Materials and Methods:** Pregnant adults from a large nationally representative sample, responded to a one-time, online Qualtrics survey between October and November 2020. Pregnant adults (n = 544) were asked closed and open-ended questions about their family characteristics, sociodemographic factors, sleeping and breastfeeding habits, and intentions. This protocol was approved by the Wesleyan University Institutional Review Board.

**Results:** Bed-sharing (odds ratio [OR] = 2.47) and co-sleeping (OR = 3.52) intentions doubled and tripled, respectively, intentions to breastfeed at 3 months. Additionally, income at some higher levels (i.e., \$150,000+/year) significantly increased breastfeeding intentions at 3 months compared with the lowest income category (OR = 5.74, p = 0.011). There was also a significant relationship between intentions to bed-share (OR = 2.96, p = 0.012) and co-sleep (OR = 3.62, p < 0.001) with breastfeeding at 6 months. Prior breastfeeding experience was significantly associated with breastfeeding intention at 6 months (OR = 1.88, p = 0.035). Based on the qualitative findings, breastfeeding ease was by far the most common motivation for co-sleeping or bed-sharing, followed by security/safety, closeness, and past experience.

**Conclusion:** Plans to bed-share and co-sleep, significantly increased the odds of breastfeeding intentions up to 6 months postpartum. Supporting breastfeeding should include conversations about parent–infant sleeping modality, style, and preference. Future research is necessary to understand the directional impacts of these decisions and the predictive role of prenatal intentions on postpartum behaviors in this context. (Author)

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## 2023-10015

**A literature review of 2019 novel coronavirus (SARS-CoV2) infection in neonates and children.** Di Nardo M, van Leeuwen G, Loreti A, et al (2021), Pediatric Research vol 89, no 5, 2021, pp 1101-1108

At the time of writing, there are already millions of documented infections worldwide by the novel coronavirus 2019 (2019-nCoV or severe acute respiratory syndrome coronavirus 2 (SARS-CoV2)), with hundreds of thousands of deaths. The great majority of fatal events have been recorded in adults older than 70 years; of them, a large proportion had comorbidities. Since data regarding the epidemiologic and clinical characteristics in neonates and children developing coronavirus disease 2019 (COVID-19) are scarce and originate mainly from one country (China), we reviewed all the current literature from 1 December 2019 to 7 May 2020 to provide useful information about SARS-CoV2 viral biology, epidemiology, diagnosis, clinical features, treatment, prevention, and hospital organization for clinicians dealing with this selected population. (Author)

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## 2023-10014

### **European consensus recommendations for neonatal and paediatric retrievals of positive or suspected COVID-19 patients.**

Terheggen U, Heiring C, Kjellberg M, et al (2021), Pediatric Research vol 89, no 5, 2021, pp 1094-1100

#### Background

The 2020 novel coronavirus (SARS-CoV-2) pandemic necessitates tailored recommendations addressing specific procedures for neonatal and paediatric transport of suspected or positive COVID-19 patients. The aim of this consensus statement is to define guidelines for safe clinical care for children needing inter-facility transport while making sure that the clinical teams involved are sufficiently protected from SARS-CoV-2.

#### Methods

A taskforce, composed of members of the European Society of Paediatric and Neonatal Intensive Care (ESPNIC) Transport section and the European Society for Paediatric Research (ESPR), reviewed the published literature and used a rapid, two-step modified Delphi process to formulate recommendations regarding safety and clinical management during transport of COVID-19 patients.

#### Results

The joint taskforce consisted of a panel of 12 experts who reached an agreement on a set of 17 recommendations specifying pertinent aspects on neonatal and paediatric COVID-19 patient transport. These included: case definition, personal protective equipment, airway management, equipment and strategies for invasive and non-invasive ventilation, special considerations for incubator and open stretcher transports, parents on transport and decontamination of transport vehicles.

#### Conclusions

Our consensus recommendations aim to define current best-practice and should help guide transport teams dealing with infants and children with COVID-19 to work safely and effectively. (Author)

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## 2023-10004

### **International comparison of guidelines for managing neonates at the early phase of the SARS-CoV-2 pandemic.**

Lavizzari A, Klingenberg C, Profit J, et al (2021), Pediatric Research vol 89, no 4, 2021, pp 940-951

#### Background

The COVID-19 pandemic threatens global newborn health. We describe the current state of national and local protocols for managing neonates born to SARS-CoV-2-positive mothers.

#### Methods

Care providers from neonatal intensive care units on six continents exchanged and compared protocols on the management of neonates born to SARS-CoV-2-positive mothers. Data collection was between March 14 and 21, 2020. We focused on central protocol components, including triaging, hygiene precautions, management at delivery, feeding protocols, and visiting policies.

#### Results

Data from 20 countries were available. Disease burden varied between countries at the time of analysis. In most countries, asymptomatic infants were allowed to stay with the mother and breastfeed with hygiene precautions. We detected discrepancies between national guidance in particular regarding triaging, use of personal protection equipment, viral testing, and visitor policies. Local protocols deviated from national guidance.

#### Conclusions

At the start of the pandemic, lack of evidence-based guidance on the management of neonates born to SARS-CoV-2-positive mothers has led to ad hoc creation of national and local guidance. Compliance between collaborators to share and discuss protocols was excellent and may lead to more consensus on management, but future guidance should be built on high-level evidence, rather than expert consensus. (Author)

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2023-09854

**In uncharted territory “together each achieves more”: a United Nations interagency collaboration for continuity of maternal and newborn health services during the coronavirus pandemic in the Eastern and Southern Africa region.** Bergh A-M, Gohar F, Kidula NA, et al (2023), *Frontiers in Global Women's Health* 31 August 2023, online

**Full URL:** <https://doi.org/10.3389/frhs.2023.1230414>

The frangible collaboration between three United Nations agencies (UNICEF, UNFPA and WHO) in the Eastern and Southern Africa Region was strengthened by the outbreak of the coronavirus pandemic. The aim was to combine existing resources and expertise to support countries to respond to the pandemic more effectively and efficiently regarding the provision of maternal and newborn health services. Three kinds of activities were conducted: 15 webinars on a variety of topics and issues impacted by the pandemic; virtual training on maternal and perinatal death surveillance and response as well as on quality improvement; and the development of online e-learning modules for continuous professional development. Key dimensions of the collaboration included: a common vision; commitment to the process; dialogue; building relationships and trust; communication and information sharing; sharing of technical and financial resources and expertise; mobilization of additional resources; celebration of intermediate outcomes; facilitative leadership; and institutional design. Start-up lessons revolved around shared risk taking, while retaining agency autonomy. Collaboration lessons included forming a “united front”, harnessing technology to accelerate results, and mitigating adverse structural and contextual factors. There are widespread perceptions that collaborative initiatives tend to yield minimum results in terms of increased efficiency or effectiveness. This particular collaborative effort demonstrated elements of feasibility, value addition, synergy, cost effectiveness and demonstrable results where UN agencies delivered as one. The emergency in healthcare as a ripple effect of the coronavirus pandemic has caused a rethink of collaboration models and levels of engagement. (Author)

2023-09822

**Serologic evolution and follow-up to IgG antibodies of infants born to mothers with gestational COVID.** Vigil-Vázquez S, Manzanares Á, Hernanz-Lobo A, et al (2023), *BMC Pregnancy and Childbirth* vol 23, no 623, August 2023

**Full URL:** <https://doi.org/10.1186/s12884-023-05926-6>

#### Background

It is known that SARS-CoV-2 antibodies from pregnant women with SARS-CoV-2 infection during pregnancy cross the placenta but the duration and the protective effect of these antibodies in infants is scarce.

#### Methods

This prospective study included mothers with SARS-COV-2 infection during pregnancy and their infants from April 2020 to March 2021. IgG antibodies to SARS-CoV-2 spike protein were performed on women and infants at birth and at two and six months during follow-up. Anthropometrical measures and physical and neurological examinations and a clinical history of symptoms and COVID-19 diagnosis were collected. Simple linear regression was performed to compare categorical and continuous variables. To compare the mother's and infant's antibody titers evolution, a mixed linear regression model was used. A predictive model of newborn antibody titers at birth has been established by means of simple stepwise linear regression.

#### Results

51 mother-infant couples were included. 45 (90%) of the mothers and 44 (86.3%) of the newborns had a positive serology at birth. These antibodies were progressively decreasing and were positive in 34 (66.7%) and 7 (13.7%) of infants at 2 and 6 months, respectively. IgG titers of newborns at birth were related to mothers' titers, with a positive moderate correlation (Pearson's correlation coefficient: 0.82,  $p < 0.001$ ). Fetal/maternal antibodies placental transference rate was 1.3 (IQR: 0.7–2.2). The maternal IgG titers at delivery and the type of maternal infection (acute, recent, or past infection) was significantly related with infants' antibody titers at birth. No other epidemiological or clinical factors were related to antibodies titers. Neurodevelopment, psychomotor development, and growth were normal in 94.2% of infants in the third follow-up visit. No infants had a COVID-19 diagnosis during the follow-up

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period.

## Conclusions

Transplacental transfer of maternal antibodies is high in newborns from mothers with recent or past infection at delivery, but these antibodies decrease after the first months of life. Infant's IgG titers were related to maternal IgG titers at delivery. Further studies are needed to learn about the protective role of maternal antibodies in infants. (Author)

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## 2023-09712

### **Quality Indices and Outcomes of a Neonatology Telerounding Program in a Level II Neonatal Intensive Care Unit:**

**Single-Center Experience during the COVID-19 Pandemic.** Cooper C, Mastroianni R, Bosque E, et al (2023), American Journal of Perinatology 29 July 2023, online

**Objective** The objective of this program evaluation was to describe the outcomes of daily neonatologist telerounding with the onsite advanced practice provider (APP) in a Level II neonatal intensive care unit (NICU), before and during the coronavirus disease 2019 (COVID-19) pandemic.

**Study Design** Bedside telerounding occurred with an onsite APP using a telehealth cart and paired Bluetooth stethoscope. Data collected by longitudinal and cross-sectional surveys and chart review before (May 2019–February 2020) and during (March 2020–February 2021) the COVID-19 pandemic were analyzed using descriptive statistics and thematic analysis.

**Results** A total of 258 patients were admitted to the Level II NICU before (May 2019–February 2020) and during (March 2020–February 2021) the COVID-19 pandemic. Demographic characteristics and outcomes, including breastfeeding at discharge and length of stay were similar pre- and postonset of the COVID-19 pandemic. Postrounding surveys by 10 (response rate 83%) neonatologists indicated parents were present in 80 (77%) of rounds and video was at least somewhat helpful in 94% of cases. Cross-sectional survey responses of 23 neonatologists and APPs (response rate 62%) indicated satisfaction with the program. Common themes on qualitative analysis of open-ended survey responses were “need for goodness of fit” and “another set of eyes” and “opportunities for use.”

**Conclusion** Daily telerounding with neonatologists and APPs in a Level II NICU supported neonatal care. Quality metrics and clinical outcomes are described with no differences seen before and during the COVID-19 pandemic. (Author)

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## 2023-09584

**Monoclonal Antibody Therapy of Breastfeeding Patient Infected with SARS-CoV-2: A Case Report.** Marshall NE, Blanton MB, Doratt BM, et al (2023), Breastfeeding Medicine vol 18, no 8, August 2023

**Introduction:** Although safety data demonstrated the efficacy and effectiveness of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) vaccination for all individuals over 6 months of age, including pregnant and breastfeeding individuals, optimal treatment courses for symptomatic pregnant and lactating individuals infected with SARS-CoV-2 remain to be defined.

**Case Description:** A coronavirus disease 2019 (COVID-19)-vaccinated breastfeeding woman received anti-SARS-CoV-2 monoclonal antibody treatment casirivimab–imdevimab 5 days after diagnosis of a symptomatic breakthrough SARS-CoV-2 infection.

**Results and Conclusions:** The patient did not present with obvious defects in innate or adaptive cellular subsets, but compared with controls had minimal maternal antibody response to recommended pregnancy vaccinations including SARS-CoV-2 and tetanus, diphtheria, pertussis (Tdap). The outcome of the monoclonal antibody infusion treatment was favorable as it transiently increased SARS-CoV-2 antibody titers in plasma and human milk compartments.

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## 2023-09582

**Sustained and Boosted Antibody Responses in Breast Milk After Maternal SARS-CoV-2 Vaccination.** Ware J, McElhinney K, Latham T, et al (2023), Breastfeeding Medicine vol 18, no 8, August 2023

Background: Pregnant and lactating women were not included in the initial large vaccine clinical trials for SARS-CoV-2 (COVID) infection. Delineating the antibody titers in serum and breast milk of lactating women is important to determine the safety and benefits of vaccination in this special population.

Objective: To investigate COVID vaccinations in breastfeeding dyads and effects on lactation, the Antibody Detection of Vaccine-Induced Secretory Effects trial (ADVISE) prospectively evaluated anti-COVID antibodies in serum and breast milk after initial paired and booster vaccines.

Methods: This is a prospective longitudinal surveillance cohort study of lactating women. Eligibility criteria included  $\geq 18$  years of age, currently lactating, and at enrollment either received COVID vaccination within the past 60 days or planning vaccination within 60 days.

Results: Among 63 lactating mothers, COVID vaccination led to breast milk secretory IgA (sIgA) and IgG antibodies with consistent viral neutralizing activity. Milk sIgA titers increased further after second vaccination and were prolonged after a third booster dose, including women with extended breastfeeding beyond 12 months. Milk IgG antibody titers were higher and more sustained than sIgA. Antibody titers were not associated with individual dyad characteristics or vaccine manufacturer. Vaccine-induced antibodies from milk were not detected in infant circulation.

Conclusions and Relevance: Maternal COVID vaccination during lactation is well tolerated and generates sustained and boosted antibody responses in breast milk. COVID-specific sIgA and IgG antibodies with neutralizing activity are found in breast milk, including boosted mothers who continue breastfeeding beyond 12 months. These data support universal COVID vaccinations for all lactating mothers, including booster immunizations during extended breastfeeding (NCT04895475). (Author)

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## 2023-09581

**The Secretory IgA Response in Human Milk Against the SARS-CoV-2 Spike Is Highly Durable and Neutralizing for At Least 1 Year of Lactation Postinfection.** Yang X, Fox A, DeCarlo C, et al (2023), Breastfeeding Medicine vol 18, no 8, August 2023

Background: Although in the early pandemic period COVID-19 pathology among young children and infants was typically less severe compared with that observed among adults, this has not remained entirely consistent as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) variants have emerged. There is an enormous body of evidence demonstrating the benefits of human milk antibodies (Abs) in protecting infants against a wide range of enteric and respiratory infections. It is highly plausible that the same holds true for protection against SARS-CoV-2 as this virus infects cells of the gastrointestinal and respiratory mucosae. Understanding the durability of a human milk Ab response over time after infection is critical.

Objective: Previously, we examined the Abs present in milk of those recently infected with SARS-CoV-2 and concluded that the response was secretory immunoglobulin A (sIgA) dominant and that these titers were highly correlated with neutralization potency. The present study aimed to monitor the durability of the SARS-CoV-2 IgA and secretory Ab (sAb) response in milk from COVID-19-recovered lactating individuals over 12 months in the absence of vaccination or reinfection.

Results: This analysis revealed a robust and durable spike-specific milk sIgA response, and at 9–12 months after infection, 88% of the samples exhibited titers above the positive cutoff for IgA and 94% were above the cutoff for sAb. Fifty percent of participants exhibited less than twofold reduction of spike-specific IgA through 12 months. A strong,

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significant positive correlation between IgA and sAb against spike persisted throughout the study period. Nucleocapsid-specific Abs were also assessed, which revealed significant background or cross-reactivity of milk IgA against this immunogen, as well as limited/inconsistent durability compared with Spike titers.

**Conclusion:** These data suggest that lactating individuals are likely to continue producing spike-specific Abs in their milk for 1 year or more, which may provide critical passive immunity to infants against SARS-CoV-2 throughout the lactation period.  
(Author)

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**2023-09390**

**The humbled pivoting voyeur and the shelved and boxed grieving parent - a story of real-time qualitative research in the COVID-19 pandemic.** Carruthers K, Hannis D, Robinson J, et al (2023), Journal of Neonatal Nursing 14 July 2023, online

**Full URL:** <https://doi.org/10.1016/j.jnn.2023.07.008>

This reflexive piece uniquely discusses the challenges faced by a researcher (PhD Student) conducting real-time longitudinal research during the COVID-19 pandemic. It draws on data gathered from the author's reflexive diary and participant transcripts from an interpretative phenomenological analysis (IPA) study utilising online diaries and semi-structured interviews. Participants were asked about their experiences of shielding their children, who were born preterm, during the COVID-19 pandemic. The note, reflectively and transparently, describes the research experience from the perspective of the PhD student. It explores the complex relationship formed between the researcher and participant, and the impact of this relationship throughout the research process. The piece highlights unforeseen and unintended psychological consequences of research during a global pandemic. (Author)

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**2023-09377**

**Health education for preterm infants families during the COVID-19 pandemic from the perspective of Indonesian nurses: A qualitative descriptive study.** Herlina, Rustina Y, Thewanda D (2023), Journal of Neonatal Nursing 21 July 2023, online

**Background**

Before the COVID-19 pandemic, Indonesia was the fifth highest country in premature birth rates, and caring for preterm infants requires quite high costs. During the COVID-19 pandemic, the Government of Indonesia spent a lot of money to handle COVID-19 cases and improve the economy affected by COVID-19. Meanwhile, the cost of treating preterm infants in hospitals has added to the country's economic burden. Thus, proper discharge planning is needed so that preterm infants can immediately meet the discharge criteria and preterm infants who have been discharged are not readmitted.

**Objective**

This study aims to explore the nurses' perspectives on health education as part of the discharge planning of preterm infants.

**Methods**

This research is a qualitative descriptive study using focus group discussions (FGD) to obtain data from 17 nurses in the nursery who have experience caring for and conducting health education. Data from the two FGD groups were recorded, transcribed, and analyzed using thematic analysis.

**Results**

Three themes were obtained that described health education to families of preterm infants from a nurse's perspective, namely (1) the preparation of nurses before conducting education (2) several activities of nurses and mothers when conducting education (3) objectives and evaluation of health education.

**Conclusion**

Health education is necessary for the discharge planning of preterm infants. The purpose of providing nurse education to parents is to improve the confidence of parents in caring for their preterm infant. Education is personalized

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according to each mother's readiness to learn and the preterm infant's condition. Structured education is needed so families can actively participate in their infant's care while in the hospital as well as at home. (Author)

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## 2023-09338

**Breast Milk Feeding of Infants at Birth Among People With Confirmed SARS-CoV-2 Infection in Pregnancy: SET-NET, 5 States, March 29, 2020–December 31, 2020.** Lewis EL, Smoots AN, Woodworth KR, et al (2022), American Journal of Public Health vol 112, supplement 8, October 2022, pp S787-S796

**Full URL:** <https://doi.org/10.2105/AJPH.2022.307023>

**Objectives.** To describe prevalence of breast milk feeding among people with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection during pregnancy and examine associations between breast milk feeding, timing of maternal infection before delivery, and rooming-in status during delivery hospitalization.

**Methods.** We performed a retrospective cohort study using data from Massachusetts, Minnesota, Nebraska, Pennsylvania, and Tennessee of whether people with confirmed SARS-CoV-2 infection during pregnancy in 2020 initiated breast milk feeding at birth.

**Results.** Among 11 114 (weighted number) people with SARS-CoV-2 infection in pregnancy, 86.5% (95% confidence interval [CI] = 82.4%, 87.6%) initiated breast milk feeding during birth hospitalization. People with infection within 14 days before delivery had significantly lower prevalence of breast milk feeding (adjusted prevalence ratio [APR] = 0.88; 95% CI = 0.83, 0.94) than did those with infection at least 14 days before delivery. When stratified by rooming-in status, the association between timing of infection and breast milk feeding remained only among infants who did not room in with their mother (APR = 0.77; 95% CI = 0.68, 0.88).

**Conclusions.** Pregnant and postpartum people with SARS-CoV-2 infection should have access to lactation support and be advised about the importance of breast milk feeding and how to safely feed their infants in the same room. (Author)

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## 2023-09041

**Prenatal Health Care Outcomes Before and During the COVID-19 Pandemic Among Pregnant Individuals and Their Newborns in an Integrated US Health System.** Ferrara A, Greenberg M, Zhu Y, et al (2023), JAMA Network Open vol 6, no 7, July 2023, e2324011

**Full URL:** <https://doi.org/10.1001/jamanetworkopen.2023.24011>

**Importance** The COVID-19 pandemic accelerated the use of telemedicine. However, data on the integration of telemedicine in prenatal health care and health outcomes are sparse.

**Objective** To evaluate a multimodal model of in-office and telemedicine prenatal health care implemented during the COVID-19 pandemic and its association with maternal and newborn health outcomes.

**Design, Setting, and Participants** This cohort study of pregnant individuals using longitudinal electronic health record data was conducted at Kaiser Permanente Northern California, an integrated health care system serving a population of 4.5 million people. Individuals who delivered a live birth or stillbirth between July 1, 2018, and October 21, 2021, were included in the study. Data were analyzed from January 2022 to May 2023.

**Exposure** Exposure levels to the multimodal prenatal health care model were separated into 3 intervals: unexposed (T1, birth delivery between July 1, 2018, and February 29, 2020), partially exposed (T2, birth delivery between March 1, 2020, and December 5, 2020), and fully exposed (T3, birth delivery between December 6, 2020, and October 31, 2021).

**Main Outcomes and Measures** Primary outcomes included rates of preeclampsia and eclampsia, severe maternal morbidity, cesarean delivery, preterm birth, and neonatal intensive care unit (NICU) admission. The distributions of

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demographic and clinical characteristics, care processes, and health outcomes for birth deliveries within each of the 3 intervals of interest were assessed with standardized mean differences calculated for between-interval contrasts. Interrupted time series analyses were used to examine changes in rates of perinatal outcomes and its association with the multimodal prenatal health care model. Secondary outcomes included gestational hypertension, gestational diabetes, depression, venous thromboembolism, newborn Apgar score, transient tachypnea, and birth weight.

**Results** The cohort included 151 464 individuals (mean [SD] age, 31.3 [5.3] years) who delivered a live birth or stillbirth. The mean (SD) number of total prenatal visits was similar in T1 (9.41 [4.75] visits), T2 (9.17 [4.50] visits), and T3 (9.15 [4.66] visits), whereas the proportion of telemedicine visits increased from 11.1% (79 214 visits) in T1 to 20.9% (66 726 visits) in T2 and 21.3% (79 518 visits) in T3. NICU admission rates were 9.2% (7014 admissions) in T1, 8.3% (2905 admissions) in T2, and 8.6% (3615 admissions) in T3. Interrupted time series analysis showed no change in NICU admission risk during T1 (change per 4-week interval, -0.22%; 95% CI, -0.53% to 0.09%), a decrease in risk during T2 (change per 4-week interval, -0.91%; 95% CI, -1.77% to -0.03%), and an increase in risk during T3 (change per 4-week interval, 1.75%; 95% CI, 0.49% to 3.02%). There were no clinically relevant changes between T1, T2, and T3 in the rates of risk of preeclampsia and eclampsia (change per 4-week interval, 0.76% [95% CI, 0.39% to 1.14%] for T1; -0.19% [95% CI, -1.19% to 0.81%] for T2; and -0.80% [95% CI, -2.13% to 0.55%] for T3), severe maternal morbidity (change per 4-week interval, 0.12% [95% CI, 0.40% to 0.63%] for T1; -0.39% [95% CI, -1.00% to 1.80%] for T2; and 0.99% [95% CI, -0.88% to 2.90%] for T3), cesarean delivery (change per 4-week interval, 0.06% [95% CI, -0.11% to 0.23%] for T1; -0.03% [95% CI, -0.49% to 0.44%] for T2; and -0.05% [95% CI, -0.68% to 0.59%] for T3), preterm birth (change per 4-week interval, 0.23% [95% CI, -0.11% to 0.57%] for T1; -0.37% [95% CI, -1.29% to 0.55%] for T2; and -0.15% [95% CI, -1.41% to 1.13%] for T3), or secondary outcomes.

**Conclusions and Relevance** These findings suggest that a multimodal prenatal health care model combining in-office and telemedicine visits performed adequately compared with in-office only prenatal health care, supporting its continued use after the pandemic. (Author)

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## 2023-08822

**A narrative review of COVID-19 vaccination in pregnancy and breastfeeding.** Devera JL, Gonzalez Y, Sabharwal V (2023), Journal of Perinatology 26 July 2023, online

The Coronavirus pandemic has affected millions of people due to the spread of the Severe acute respiratory syndrome Coronavirus-2 (SARS-CoV-2) virus. Pregnant individuals and infants are most vulnerable given the increased risk of developing severe complications from SARS-CoV-2 infection. Recently, COVID-19 vaccination is recommended for pregnant women and infants starting at 6 months of age to prevent disease contraction and minimize disease severity. We conducted a review of the literature on COVID-19 vaccination to discuss vaccine safety and efficacy, immunity after maternal vaccination, transplacental transfer and persistence of antibodies, and public health implications. Current evidence supports the safety and efficacy of vaccination during pregnancy. Maternal vaccination provides greater antibody persistence in infants compared to immunity from natural infection. Furthermore, vaccination has demonstrated an increased rate of passive antibody transfer through the placenta and breast milk. Public health interventions are important in achieving herd immunity and ultimately ending the pandemic. (Author)

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## 2023-08816

**Trends in COVID-19 diagnoses and outcomes in infants hospitalized in the neonatal intensive care unit.** Heyward EB, Clark RH, Smith PB, et al (2023), Journal of Perinatology 14 July 2023, online

### Objective

Characterize the prevalence of coronavirus disease 2019 (COVID-19) diagnosis among mothers with infants hospitalized in 294 neonatal intensive care units (NICUs), and demographics and outcomes of infants with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) exposure in utero.

### Study design

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Cohort study of infants discharged from NICUs 01/2020–09/2021. We defined groups based on infant diagnosis, infant testing, and maternal SARS-CoV-2 infection status. We compared demographics, clinical characteristics, and outcomes.

## Results

Of 150,924 infants, 94% had no COVID-related diagnosis or test; 247 (0.2%) infants tested positive for COVID-19 and were more likely to require mechanical ventilation. Infants with unknown maternal status and negative testing were more commonly premature, outborn, and had longer hospitalizations.

## Conclusion

In this large cohort of hospitalized infants, most had no known exposure to COVID-19. Adverse outcomes and mortality were rare. Further studies are needed to evaluate the long-term effects of COVID-19 in this population. (Author)

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### 2023-08391

**Supraventricular Tachycardia in the Setting of Neonatal COVID-19 Infection: A Case Report.** Karamantzianni T, Lianou L, Zampouni D, et al (2023), *Advances in Neonatal Care* vol 23, no 5, October 2023, pp E114-E119

#### Background:

COVID-19 infection, caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), may present with a wide range of clinical presentations and a variety of symptoms in neonates. The cardiovascular manifestations that have been described in the setting of COVID-19 infection in neonates are tachycardia and hypotension, but information regarding cardiac arrhythmias is scarce, while the effect of SARS-CoV-2 on myocardial function is still not well established.

#### Clinical Findings:

We present a case of a neonate admitted with fever and nasal congestion.

#### Primary Diagnosis:

The neonate was tested positive for SARS-CoV-2. Supraventricular tachycardia (SVT) was diagnosed during his hospitalization in the neonatal intensive care unit.

#### Interventions:

The neonate was under treatment with intravenous fluid repletion, intravenous broad-spectrum antibiotics, and continuous hemodynamic monitoring. SVT resolved spontaneously, while the team was preparing application of further supportive measures with a bag of ice on the infant's face.

#### Outcomes:

The neonate was discharged in good condition on day 14 post-admission, with no further recurrence of SVT. Follow-up visits were scheduled with the cardiologist.

#### Practice Recommendations:

SVT in full-term or premature neonates can be a clinical manifestation of COVID-19 infection. Both neonatologists and neonatal nurse practitioners should be prepared to deal with cardiological manifestations of COVID-19 infection in neonates. (Author)

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### 2023-08261

**Vertical transmission of SARS-CoV-2 – are there differences in rates of neonatal SARS-CoV-2 infection in two classification systems?** Mand N, Hutten M, Maier RF, et al (2023), *Archives of Disease in Childhood: Fetal and Neonatal Edition* 7 July 2023, online

Neonatal SARS-CoV-2 infection due to vertical transmission has been summarised in recent reviews.<sup>1 2</sup> However, the

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comparability of the underlying case reports and case series might be limited because of the often inconsistent use of different classification systems.<sup>1</sup>

COVID-19-Related Obstetric and Neonatal Outcome Study (CRONOS) was a prospective German registry enrolling pregnant women with confirmed SARS-CoV-2 infection during their pregnancy.<sup>3 4</sup> The registry collected data between 3 April 2020 and 10 February 2023 with 130 of 686 (18.9%) German obstetric hospitals actively participating.<sup>4</sup> To classify the timing and the probability of mother-to-child transmission of SARS-CoV-2-positive newborns in the CRONOS cohort we used the classification systems of the Nordic Federation of Societies of Obstetrics and Gynecology (NFSOG)<sup>5</sup> and WHO. (Author)

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## 2023-08165

**Developmental and behavioural outcomes at 2 years in babies born during the COVID-19 pandemic: communication concerns in a pandemic birth cohort.** Byrne S, Sledge H, Hurley S, et al (2023), Archives of Disease in Childhood 21 June 2023, online

**Full URL:** <http://dx.doi.org/10.1136/archdischild-2022-325271>

**Introduction** The CORAL (Impact of Corona Virus Pandemic on Allergic and Autoimmune Dysregulation in Infants Born During Lockdown) study reported a reduction in social communication milestones in 12-month-old infants born into the COVID-19 pandemic.

**Aims** To look at 24-month developmental and behavioural outcomes in the CORAL cohort.

**Design** The CORAL study is a longitudinal prospective observational study of Irish infants born in the first 3 months of the pandemic. At 24 months of age, the Ages and Stages Developmental Questionnaire (ASQ24) and the Child Behaviour Checklist (CBCL) were completed and compared with prepandemic BASELINE (Babies After SCOPE: Evaluating the Longitudinal Impact Using Neurological and Nutritional Impact) cohort.

**Results** 917 babies (312 CORAL infants and 605 BASELINE infants) were included. At 24 months of age, infants in the CORAL and BASELINE cohorts had similar developmental ASQ24 scores in fine motor, problem solving and personal and social domains but ASQ24 communication scores were significantly lower in the CORAL group compared with the BASELINE cohort (mean (SD) 49.5 (15.1) vs 53.7 (11.6),  $p < 0.01$ ). Infants from the CORAL cohort were more likely to score below standardised cut-offs for developmental concern in the communication domain (11.9% CORAL compared with 5.4% BASELINE,  $p < 0.01$ ). Unadjusted ASQ24 gross motor scores were lower for the pandemic cohort. Fewer CORAL infants fell under 2 SD cut-off in personal-social subdomain. For CBCL, there was no evidence of difference in scores between the cohorts on multivariable analysis.

**Conclusion** 24-month-old pandemic-born infants had largely similar developmental and behavioural scores compared with their prepandemic counterparts. Concerns have been raised in the communication developmental domain. (Author)

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## 2023-08154

**Increasing Awareness of the Low Risk of Severe Reaction at Infant Peanut Introduction: Implications During COVID-19 and Beyond.** Abrams EM, Primeau M-N, Kim H, et al (2020), The Journal of Allergy and Clinical Immunology: In Practice vol 8, no 10, November 2020, pp 3259-3260

**Full URL:** <https://doi.org/10.1016/j.jaip.2020.08.044>

Multiple guidelines have emerged on the management of care during COVID-19, including a North American guideline on contingency planning for allergy/immunology clinics and a phased approach to resuming suspended allergy/immunology clinical services. These guidelines advocate health care resource reallocation that restricts access to all but the most essential ambulatory visits by shifting to virtual visits for most ongoing care. In addition, in the face of a very highly contagious pandemic, some have been hesitant about face-to-face interactions in the emergency

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department (ED).

As a result, COVID-19 may make some families more reluctant to introduce peanut early at home, especially among infants at a higher risk of developing peanut allergy. Little guidance exists about early food introduction during the COVID-19 pandemic. The goal of this article is to provide reassurance about the safety of early peanut food introduction, even during the current COVID-19 pandemic. (Author)

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## 2023-08125

**The Impact of COVID-19 on Infant Maltreatment Emergency Department and Inpatient Medical Encounters.** Rebbe R, Reddy J, Kuelbs CL, et al (2023), The Journal of Pediatrics 21 June 2023, online

### Objective

To assess the counts of infant maltreatment-related medical encounters at a large medical system during a 21-month span of the COVID-19 pandemic.

### Methods

Retrospective data for this study came from all inpatient and emergency department medical encounters for infants from January 1, 2016, through November 30, 2021, at a single children's hospital system in California. Distributions of medical encounters were tabulated and plotted over time. Interrupted time series models were used to evaluate changes in child maltreatment medical encounters.

### Results

Medical encounters for infants with child maltreatment diagnoses increased following the onset of COVID-19. Monthly counts of encounters with indicated maltreatment trended upward following the start of the pandemic. Interrupted time series models showed the count of maltreatment encounters increased 64% with the onset of COVID-19.

### Conclusions

We found an increase in infant maltreatment medical encounters during a 21-month period following the onset of COVID-19. These findings suggest that the pandemic may have adversely affected the safety of infants and ongoing work is needed to understand better the pandemic impacts on child maltreatment. (Author)

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## 2023-08099

**Covid-19 omicron variant infection in neonates of Guangdong province-a report of 52 cases.** Yang Y-K, Lin F, Lin J-F, et al (2023), Frontiers in Pediatrics 20 June 2023, online

**Full URL:** <https://doi.org/10.3389/fped.2023.1191651>

**Objective:** To analyze the clinical characteristics of neonatal infection during the outbreak of COVID-19 omicron variant in Guangdong province of China.

**Method:** The clinical data of neonates infected with COVID-19 omicron variant were collected from three hospitals of Guangdong province, their epidemiological history, clinical manifestation and prognosis were summarized.

**Results:** From December 12, 2022 to January 15, 2023, a total of 52 neonates with COVID-19 infection were identified across three hospitals in Guangdong Province, including 34 males and 18 females. The age of diagnosis was  $18.42 \pm 6.32$  days. 24 cases had clear contact history with adults who were suspected to be infected with COVID-19. The most common clinical manifestation was fever (43/52, 82.7%), the duration of fever was 1–8 days. The other clinical manifestations were cough (27/52, 51.9%), rales (21/52, 40.4%), nasal congestion (10/52, 19.2%), shortness of breath (2/52, 3.8%), and vomiting (4/52, 7.7%). C-reactive protein was only increased in 3 cases. Chest radiological examination was performed in 42 neonates, twenty-three cases showed abnormal chest radiographic findings, including ground-glass opacity and consolidation. Fifty cases were admitted with COVID-19 presentation, two cases were admitted for jaundice. The hospital stay was  $6.59 \pm 2.77$  days. The clinical classification included 3 cases of severe COVID-19 and one critical case. Fifty-one cases were cured and discharged after general treatment, and one critical case with respiratory failure was intubated and transferred to another hospital.

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Conclusion: The COVID-19 omicron variant infection in neonates is usually mild. The clinical manifestation and laboratory results are not specific, and the short-term prognosis is good. (Author)

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## 2023-08056

**Comparing the emotional impact of the UK COVID-19 lockdown in very preterm and full-term born children: a longitudinal study.** Sun Z, Hadaya L, Leoni M, et al (2023), *Frontiers in Global Women's Health* 13 June 2023, online

**Full URL:** <https://doi.org/10.3389/frcha.2023.1193258>

**Introduction:** The COVID-19 pandemic has caused a global mental health crisis, especially for those individuals who are vulnerable to stress and anxiety due to pre-existing mental health problems. This study aimed to understand the emotional impact of the COVID-19 lockdown on children who were born very preterm (VPT, <32 weeks' gestation), as they are vulnerable to mental health difficulties and are at increased risk of developing psychiatric problems during childhood compared to their full-term-born counterparts.

**Methods:** The parents of 32 VPT children (mean age = 8.7) and 29 term-born controls (mean age = 8.8), who had previously taken part in a study of brain development and psychopathology following VPT birth, completed an online modified version of the Coronavirus Health and Impact Survey (CRISIS). The emotional impact of the COVID-19 lockdown on the child and the parent, measured by the CRISIS, was studied in relation to pre-existing mental health, assessed with the parent-rated Strengths and Difficulties Questionnaire (SDQ), evaluated before the CRISIS completion (mean time gap 15 months). Linear regression model comparisons were conducted to study the effects of COVID-19-related stressors on children's and parents' behavior, relationships and mental health.

**Results:** There were no significant group differences in pre-existing SDQ internalizing/externalizing symptoms, child's emotions or parent's emotions during the COVID-19 lockdown. However, higher pre-existing internalizing symptoms in VPT children were associated with greater lockdown-related emotional problems and worries (simple slope = 1.95,  $p < 0.001$ ), whereas this was not observed in term-born children.

**Conclusion:** Our results suggest that VPT children with pre-existing internalizing problems may be more vulnerable to the negative impact of certain societal and familial stressors, such as social restrictions during the national COVID-19 lockdown periods. Further rigorous studies are therefore needed to assess the severity of increased risks for this particularly vulnerable group in the context of potentially stressful life changes and adjustments. (Author)

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## 2023-08010

**Higher NICU admissions in infants born at  $\geq 35$  weeks gestational age during the COVID-19 pandemic.** Jegatheesan P, Narasimhan SR, Huang A, et al (2023), *Frontiers in Global Women's Health* 7 July 2023, online

**Full URL:** <https://doi.org/10.3389/fped.2023.1206036>

**Background:** Increasing evidence has shown that the COVID-19 pandemic has had a profound negative impact on vulnerable populations and a significant effect on maternal and neonatal health. We observed an increase in the percentage of infants admitted to NICU from 8% to 10% in the first year of the pandemic. This study aimed to compare the delivery room outcomes, NICU admissions and interventions, and neonatal outcomes two years before and during the pandemic.

**Methods:** This was a retrospective study in a public hospital between pre-COVID-19 (April 2018–December 2019) and COVID-19 (April 2020–December 2021). Data were obtained from all live births at  $\geq 35$  weeks gestation (GA). Maternal and neonatal demographics, delivery room (DR), and NICU neonatal outcomes were compared between the study periods using simple bivariable generalized estimating equations (GEE) regression. Multivariable GEE logistic regression analysis was performed to adjust for the effects of baseline differences in demographics on the outcomes.

**Results:** A total of 9,632 infants were born  $\geq 35$  weeks gestation during the study period (pre-COVID-19  $n = 4,967$ , COVID-19  $n = 4,665$ ). During the COVID-19 period, there was a small but significant decrease in birth weight (33 g);

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increases in maternal diabetes (3.3%), hypertension (4.1%), and Hispanic ethnicity (4.7%). There was a decrease in infants who received three minutes (78.1% vs. 70.3%,  $p < 0.001$ ) of delayed cord clamping and increases in the exclusive breastfeeding rate (65.9% vs. 70.1%,  $p < 0.001$ ), metabolic acidosis (0.7% vs. 1.2%,  $p = 0.02$ ), NICU admission (5.1% vs. 6.4%,  $p = 0.009$ ), antibiotic (0.7% vs. 1.7%,  $p < 0.001$ ), and nasal CPAP (1.2% vs. 1.8%,  $p = 0.02$ ) use. NICU admissions and nasal CPAP were not significantly increased after adjusting for GA, maternal diabetes, and hypertension; however, other differences remained significant. Maternal hypertension was an independent risk factor for all these outcomes.

**Conclusion:** During the COVID-19 pandemic period, we observed a significant increase in maternal morbidities, exclusive breastfeeding, and NICU admissions in infants born at  $\geq 35$  weeks gestation. The increase in NICU admission during the COVID-19 pandemic was explained by maternal hypertension, but other adverse neonatal outcomes were only partly explained by maternal hypertension. Socio-economic factors and other social determinants of health need to be further explored to understand the full impact on neonatal outcomes. (Author)

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## 2023-07948

**Depressive symptoms in mothers of preterm infants before and during COVID-19 restrictions in neonatal intensive care units.** Itoshima R, Tuura K, Toome L, et al (2023), Acta Paediatrica vol 112, no 10, October 2023, pp 2164-2171

**Full URL:** <https://doi.org/10.1111/apa.16886>

### Aim

Little is known about the specific restriction measures used in intensive care units (NICUs) during the COVID-19 pandemic and their impact on parental well-being. Hence, this study aimed to assess the association between restriction measures and mothers' post-partum depressive symptoms.

### Methods

This comparative cohort study included mothers who gave birth before 35 weeks of gestation in Estonia. The outcome measure was mothers' post-partum depressive symptoms at the time of infant discharge, evaluated using the Edinburgh Postnatal Depression Scale (EPDS). In addition to the pandemic itself, the number of restriction measures in the NICUs was analysed as a potential explanatory factor for depressive symptoms.

### Results

The study included 55 mothers before the pandemic in 2018–2019 and 54 mothers during the COVID-19 pandemic in 2021. No significant difference was found in the median EPDS scores between the cohorts: 7.0 [interquartile range (IQR): 4.0–12.0] and 8.0 (IQR: 5.0–12.8) respectively. The number of restriction measures was not associated with mothers' EPDS scores in either unadjusted or adjusted models.

### Conclusion

The COVID-19 pandemic or the number of restriction measures used in Estonian NICUs did not associate with mothers' post = partum depressive symptoms. (Author)

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## 2023-07937

**Increased newborn NICU admission for evaluation of hypoxic-ischemic encephalopathy during COVID-19 pandemic in a public hospital.** Song D, Narasimhan SR, Huang A, et al (2023), Frontiers in Pediatrics 29 June 2023, online

**Full URL:** <https://doi.org/10.3389/fped.2023.1206137>

**Background:** Prenatal and perinatal care of pregnant mothers has been adversely affected during the COVID-19 pandemic. Hypoxic-ischemic encephalopathy (HIE) is a leading cause of neonatal death and long-term neurological disabilities. Therapeutic hypothermia is effective for neonatal HIE. This study evaluated the effect of the pandemic on neonatal HIE.

**Methods:** This retrospective single-center study compared neonatal HIE evaluation and hypothermia treatment

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between pre-COVID-19 pandemic (1 January 2018–31 December 2019) and COVID-19 pandemic (1 January 2020–31 December 2021) periods. Infants with abnormal neurological examination and/or significant metabolic acidosis were admitted to NICU for evaluation of HIE and therapeutic hypothermia. Demographics, NICU admission and interventions, and neonatal outcomes were compared between infants born during the two periods using  $\chi^2$ , t-test, and Wilcoxon rank-sum test as appropriate. Statistical Process Control charts show the yearly proportion of infants evaluated for HIE and those treated with therapeutic hypothermia.

**Results:** From the pre-pandemic to the pandemic period, the proportion of infants that met HIE screening criteria increased from 13% to 16% ( $p < 0.0001$ ), the proportion of infants admitted to NICU for HIE evaluation increased from 1% to 1.4% ( $p = 0.02$ ), and the maternal hypertension rates of the admitted infants increased from 30% to 55% ( $p = 0.006$ ). There was no difference in the proportions of the infants diagnosed with HIE (0.7% vs. 0.9%,  $p = 0.3$ ) or treated with therapeutic hypothermia (0.2% vs. 0.3%,  $p = 0.3$ ) between the two periods. There were no differences in the HIE severity and outcomes of the infants treated with therapeutic hypothermia between the two periods.

**Conclusion:** During the COVID-19 pandemic, we observed a significant increase in NICU admission for HIE evaluation. While we did not find significant increases in neonatal HIE and the need for therapeutic hypothermia, larger studies are needed for a comprehensive assessment of the impact of the COVID-19 pandemic on neonatal HIE. (Author)

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**2023-07892**

**Assessment of Adverse Reactions, Antibody Patterns, and 12-month Outcomes in the Mother-Infant Dyad After COVID-19 mRNA Vaccination in Pregnancy.** Cassidy AG, Li L, Golan Y (2023), JAMA Network Open vol 6, no 7, July 2023, e2323405

**Full URL:** <https://doi.org/10.1001/jamanetworkopen.2023.23405>

**Importance** Longitudinal data on COVID-19 messenger RNA (mRNA) vaccine reactogenicity and immunogenicity in pregnancy and for the mother-infant dyad are needed.

**Objective** To examine COVID-19 mRNA vaccine reactogenicity and immunogenicity in pregnancy and observe longitudinal maternal and infant outcomes.

**Design, Setting, and Participants** This prospective cohort study of pregnant individuals enrolled in the COVID-19 Vaccination in Pregnancy and Lactation study from December 1, 2020, through December 31, 2021, with follow-up through March 31, 2022, was conducted at a large academic medical center in an urban metropolitan area in California. Pregnant individuals receiving COVID-19 mRNA vaccines (mRNA-1273 [Moderna] and BNT162b2 [Pfizer-BioNTech]) were eligible. Of 81 participants enrolled, 5 were excluded after enrollment: 1 terminated pregnancy, 1 received the third vaccine dose prior to delivery, and 3 delivered prior to completing the initial vaccine series.

**Exposure** COVID-19 mRNA vaccination at any time during pregnancy.

**Main Outcomes and Measures** The primary outcomes were vaccine response as measured by blood Immunoglobulin G (IgG) titers after each vaccine dose and self-reported postvaccination symptoms. Patients' IgG titers were measured in cord blood and in infant blood at intervals up to 1 year of life; IgG and IgA titers were measured in maternal milk. Clinical outcomes were collected from medical records.

**Results** Of 76 pregnant individuals included in final analyses (median [IQR] maternal age, 35 [29-41] years; 51 [67.1%] White; 28 [36.8%] primigravid; 37 [48.7%] nulliparous), 42 (55.3%) received BNT162b2 and 34 (44.7%) received mRNA-1273. There were no significant differences in maternal characteristics between the 2 vaccine groups. Systemic symptoms were more common after receipt of the second vaccine dose than after the first dose (42 of 59 [71.2%] vs 26 of 59 [44.1%];  $P = .007$ ) and after mRNA-1273 than after BNT162b2 (25 of 27 [92.6%] vs 17 of 32 53.1%;  $P = .001$ ). Systemic symptoms were associated with 65.6% higher median IgG titers than no symptoms after the second vaccine dose (median [IQR], 2596 [1840-4455] vs 1568 [1114-4518] RFU;  $P = .007$ ); mean cord titers in individuals with local or

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systemic symptoms were 6.3-fold higher than in individuals without symptoms. Vaccination in all trimesters elicited a robust maternal IgG response. The IgG transfer ratio was highest among individuals vaccinated in the second trimester. Anti-SARS-CoV-2 IgG was detectable in cord blood regardless of vaccination trimester. In milk, IgG and IgA titers remained above the positive cutoff for at least 5-6 months after birth, and infants of mothers vaccinated in the second and third trimesters had positive IgG titers for at least 5 to 6 months of life. There were no vaccine-attributable adverse perinatal outcomes.

**Conclusions and Relevance** The findings of this cohort study suggest that mRNA COVID-19 vaccination in pregnancy provokes a robust IgG response for the mother-infant dyad for approximately 6 months after birth. Postvaccination symptoms may indicate a more robust immune response, without adverse maternal, fetal, or neonatal outcomes. (Author)

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## 2023-07891

**Care-seeking behaviours of mothers and associated factors for possible serious bacterial infection in young infants during COVID-19 pandemic in Ethiopia: mixed-methods formative research.** Tiruneh GT, Hirschhorn LR, Fesseha N, et al (2023), BMJ Open vol 13, no 7, June 2023

**Full URL:** <http://dx.doi.org/10.1136/bmjopen-2023-073118>

**Objectives** Implementation research was employed to examine rates and contextual factors associated with mothers' care-seeking for their sick neonates and identify challenges for community-based possible serious bacterial infection (PSBI) services access and implementation during the COVID-19 pandemic.

**Design** We conducted formative research involving household survey and programmatic qualitative study.

**Setting** This formative study was conducted in Dembecha and Lume woredas of Amhara and Oromia regions.

**Participants** Data were captured from 4262 mothers aged 15–49 years who gave live birth 2–14 months before data collection, and interviews with 18 programme managers and 16 service providers in April to May 2021.

**Analysis** A multilevel regression model was employed to identify predictors of maternal care-seeking for PSBI and thematic qualitative analysis to inform strategy development to strengthen PSBI implementation.

**Results** Overall, 12% (95% CI 11.0% to 12.9%) and 8% (95% CI 7.9% to 9.6%) of mothers reported any newborn illness and severe neonatal infection (PSBI), respectively. More than half of mothers sought formal medical care, 56% (95% CI 50.7% to 60.8%) for PSBI. Women who received postnatal care within 6 weeks (adjusted OR (AOR) 2.08; 95% CI 1.12 to 3.87) and complete antenatal care (ie, weight measured, blood pressure taken, urine and blood tested) (AOR 2.04; 95% CI 1.12 to 3.75) had higher odds of care-seeking for PSBI. Conversely, fear of COVID-19 (AOR 0.27; 95% CI 0.15 to 0.47) and residing more than 2 hours of walking distance from the health centre (AOR 0.39; 95% CI 0.16 to 0.93) were negatively associated with care-seeking for severe newborn infection. Multiple pre-existing health system bottlenecks were identified from interviews as barriers to PSBI service delivery and exacerbated by the COVID-19 pandemic.

**Conclusion** We found gaps in and factors associated with care-seeking behaviour of mothers for their sick young infants including fear of COVID-19 and pre-existing health system-level barriers. The findings of the study were used to design and implement strategies to mitigate COVID-19 impacts on management of PSBI. (Author)

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## 2023-07890

**Determinants of early initiation of breast feeding during COVID-19 pandemic among urban-dwelling mothers from Tigray, Northern Ethiopia: a community-based cross-sectional study.** Gebretsadik GG, Berhe K, Gebregziabher H (2023), BMJ Open vol 13, no 7, June 2023

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Full URL: <http://dx.doi.org/10.1136/bmjopen-2022-070518>

**Objectives** The objective of this study was to assess the practice of early initiation of breast feeding (EIBF) and its determinant factors among urban-dwelling mothers from Tigray during the COVID-19 pandemic.

**Design** A community-based cross-sectional study was conducted from April to June 2021. Data were analysed using StataSE Version 16 software. To identify determinant factors of the dependent variable, multivariate logistic regression analyses was used at a statistical significance of  $p < 0.05$ . The strength of the association was measured by OR and 95% CI.

**Setting and participants** The study was conducted among 633 lactating mothers of infants under the age of 6 months living in Mekelle city, Tigray, Northern Ethiopia from April to June 2021. A three-stage cluster sampling was used to select study participants.

**Main outcome measure** EIBF or no EIBF.

**Results** Three hundred and sixty eight (59.6%) mothers/caregivers practised EIBF. Maternal education (adjusted OR, AOR 2.45, 95 % CI 1.01 to 5.88), parity (AOR 1.20, 95 % CI 1.03 to 2.20), caesarean section delivery (AOR 0.47, 95 % CI 0.32 to 0.69) and breastfeeding information and support postdelivery (AOR 1.59, 95% CI 1.10 to 2.31) were found to be significant determinants of EIBF.

**Conclusions** EIBF is defined as initiation of breastfeeding within 1 hour after delivery. EIBF practice was far from optimal. During the COVID-19 pandemic, maternal education, parity, type of delivery and the provision of up-to-date breastfeeding information and support right after delivery determined the time of breastfeeding initiation. (Author)

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## 2023-07757

**COVID-19 threatens maternal mental health and infant development: possible paths from stress and isolation to adverse outcomes and a call for research and practice.** Venta A, Bick J, Bechelli J (2021), Child Psychiatry & Human Development vol 52, no 2, April 2021, pp 200-204

The COVID-19 pandemic exposed mothers to stress and social isolation during the pre- and post-natal periods. The deleterious effects of stress on both pregnant women and their infants are well documented, with research suggesting that effects are exacerbated by reduced social support. In this brief report, we summarize evidence linking stress and social isolation to negative outcomes for mothers and infants and present a conceptual model featuring inflammation as a driving mechanism. There is strong evidence that the coronavirus pandemic will affect mothers and infants through immune pathways that, in previous research, have been shown to link stress and social isolation during the pre- and post-natal periods with deficits in maternal mental health and infant well-being and development across developmental stages. We close with recommendations for novel research, policy changes, and integrated clinical care that can address these biological threats to infants and mothers while leveraging the anti-inflammatory effects of social support. (Author)

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## 2023-07751

**Impact of the COVID-19 pandemic on early intervention utilization and need for referral after NICU discharge in VLBW infants.** David J, Wambach CG, Kraemer M, et al (2023), Journal of Perinatology 6 July 2023, online

**Objective**

To examine the impact of COVID-19 pandemic on early intervention (EI) services in VLBW infants.

**Study design**

208 VLBW infants seen in NICU follow-up (FU) pre-COVID-19 were compared to 132 infants seen during COVID-19 at 4, 8 and 20 months corrected age (CA) in terms of enrollment in Child and Family Connections (CFC; intake agency for EI), EI therapies, need for CFC referral and Bayley scores.

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## Results

Infants seen during COVID-19 at 4, 8 and 20 months CA were 3.4 (OR, 95% CI 1.64, 6.98), 4.0 (1.77, 8.95) and 4.8 (2.10, 11.08) times more likely to need CFC referral at FU based on severity of developmental delay. Infants followed during COVID-19 had significantly lower mean Bayley cognitive and language scores at 20 months CA.

## Conclusions

VLBW infants seen during COVID-19 had significantly higher odds of needing EI and significantly lower cognitive and language scores at 20 months CA. (Author)

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### 2023-07683

**Comparatively low rates of COVID-19 in women admitted in labor and their newborns prior to routine vaccination of pregnant women: insights from Denmark.** Nielsen SY, Murra M, Pedersen LH, et al (2023), Journal of Maternal-Fetal and Neonatal Medicine vol 36, no 2, 2023, 2229933

Full URL: <https://doi.org/10.1080/14767058.2023.2229933>

Background: In a country with a high-test frequency, societal lockdown, and pregnancy leave granted from 28 gestational weeks, we investigated SARS-CoV-2 infection in women admitted in labor and their newborn in the pre-vaccine period.

Material and methods: A total of 1042 women admitted for delivery in two Danish hospitals agreed to a plasma sample and nasopharyngeal, vaginal, and rectal swabs and to sampling of umbilical cord blood and a nasopharyngeal swab from their newborn at delivery. Plasma samples from women were examined for SARS-CoV-2 antibodies. If antibodies were detected, or the woman had a positive nasopharyngeal swab upon admission or had a household contact with symptoms consistent with COVID-19, SARS-CoV-2 PCR was performed on plasma and swab samples from mother and child.

Results: Seventeen women (1.6%) were seropositive. Half the newborn (n = 9 (53%)) of seropositive mothers were also seropositive. None of the seropositive women or newborns had clinical signs of COVID-19 and all had SARS-CoV-2 PCR negative plasma and swab samples.

Conclusion: Adherence to specific national guidelines pertaining to testing, self-imposed isolation, and cautious behaviors among pregnant women likely contributed to the exceptionally low prevalence of both prior and current COVID-19 infections detected at the time of childbirth preceding the routine vaccination of pregnant women in Denmark. (Author)

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### 2023-07346

**Coronavirus Disease 2019 Infection in Newborns.** Perlman JM, Salvatore CM (2022), Clinics in Perinatology vol 49, no 1, March 2022, pp 73-92

Maternal severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection can present with or without symptoms at the time of birth. Symptomatic mothers are more likely to be associated with preterm births. Population studies demonstrate a consistent association of SARS-CoV-2 infection and a reduction in preterm birth rate. Newborns with positive SARS-CoV-2 test results appear to have minimal burden of illness that is directly associated with a viral infection. Neonatal mortality directly related to SARS-CoV-2 is extremely rare. Maternal vaccination in pregnant women leads to maternal antibody production, and this can occur as early as 5 days after the first vaccination dose. (Author)

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### 2023-07109

**Evidence of mother-to-newborn infection with COVID-19.** Sun M, Xu G, Yang Y, et al (2020), British Journal of Anaesthesia vol 125, no 2, August 2020

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Full URL: <https://doi.org/10.1016/j.bja.2020.04.066>

Some patients with confirmed or suspected coronavirus disease 2019 (COVID-19) need emergency or urgent surgery, including Caesarean delivery. Vertical and perinatal mother-to-newborn transmission of COVID-19 has not yet been confirmed, although there are reports of COVID-19 infections in newborns.

We report three mothers with COVID-19 and the outcomes of their newborns in Henan Province, China. Whilst there is a common belief that general anaesthesia, associated with more aerosol generation during intubation, may increase the risk of transmission of SARS-CoV-2, our case series included a case of potential transmission under regional anaesthesia. The limited case number in this series precludes conclusions about the association between risk of newborn SARS-CoV-2 transmission and type of anaesthesia, such that it is not yet known whether general or neuraxial anaesthesia for Caesarean delivery can lead to different outcomes. (CP)

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## 2023-07061

**Breastfeeding during the COVID-19 pandemic.** Chanda BM, Chen X-Q (2023), *Frontiers in Pediatrics* 5 June 2023, online

Full URL: <https://doi.org/10.3389/fped.2023.1120763>

The coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has caused many significant changes to all aspects of day to day life. The disease has spread and reached pandemic proportions. The principle route of transmission is the respiratory route. Infants, pregnant women and breastfeeding mothers have all been affected. Many interventions and guidelines from important societies have been instituted in order to curb the transmission of the disease. These have involved both pharmacological and non-pharmacological methods. COVID-19 vaccines have also emerged as important methods of primary prevention of the disease. But several questions have been raised concerning the safety and efficacy of their use in pregnant and breastfeeding mothers. It has also not been clear if the vaccines are effective in generating a robust immune response in the pregnant women and breastfeeding mothers to confer passive immunity to the fetuses and infants, respectively. And they have not been tested in infants. The aspect of infant feeding has equally been affected. Although breast milk has not been known to serve as the vehicle of transmission of the virus, there is still some lack of uniformity of practice regarding breastfeeding when a mother has SARS-CoV-2 infection. This has led to infant feeding being done by the use of commercial formula feeds, pasteurized human donor breast milk, feeding on the mother's own expressed breast milk by a care giver and directly breastfeeding with skin to skin contact. This is despite breast milk being the most physiologically appropriate type of feed for infants. Therefore the pertinent question remains; should breastfeeding continue during the pandemic continue? This review also seeks to analyse the vast amount of scientific information regarding the subject and to synthesize science-based information. (Author)

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## 2023-06931

**Observational study on the neonatal outcome during the COVID-19 pandemic in Germany.** Lau M, Kraus V, Schulze AF, et al (2023), *Acta Paediatrica* vol 112, no 9, September 2023, pp 1892-1897

Full URL: <https://doi.org/10.1111/apa.16873>

### Aim

We aimed to determine stillbirth, preterm birth, perinatal complications, and the developmental outcome of children born preterm during the COVID-19 pandemic in Germany.

### Methods

National data from the perinatal survey of preterm and term infants born in 2017–2020 between 22 March and 31 December were evaluated. Neurodevelopment of preterm infants at 2 years corrected age was tested with the Parent Report of Children's Abilities-Revised questionnaire and by clinical testing with Bayley scales, either before or during the COVID-19 pandemic. Statistical significance was calculated using a Pearson's chi-square-independence test and a linear regression model.

### Results

In 2020, there was an increase of stillbirths of 0.02% ( $p = 0.01$ ) and a decrease in preterm births by 0.38% ( $p < 0.001$ ). No

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changes were found in a representative subgroup of infants with regard to neurodevelopmental scores (mental developmental index and psychomotor developmental index) or in parent survey data (non-verbal cognition scale and language development scale).

## Conclusion

Increasing rates of stillbirths and decreasing preterm births in Germany were observed. Existing networks might stabilise neurodevelopment of preterm infants during the COVID-19 pandemic. (Author)

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## 2023-06752

**Factors associated with exclusive breastfeeding in Israel during the COVID-19 pandemic: a subset of the IMAGINE EURO cross-sectional study.** Artzi-Medvedik R, Mariani I, Valente EP, et al (2023), International Breastfeeding Journal vol 18, no 30, June 2023

**Full URL:** <https://doi.org/10.1186/s13006-023-00568-y>

## Background

Evidence has shown that restrictions during the COVID-19 pandemic have negatively affected breastfeeding support and outcomes in hospitals in many countries. The aims of the study were to describe exclusive breastfeeding rates and identify factors associated with exclusive breastfeeding at hospital discharge among women who gave birth during the COVID-19 pandemic in Israel.

## Methods

A cross-sectional online anonymous survey based on WHO standards for improving quality of maternal and newborn care in health facilities was conducted among a sample of women who gave birth to a healthy singleton infant in Israel during the pandemic (between March 2020 and April 2022). The socio-ecological approach was employed to examine intrapersonal, interpersonal, organizational, and community/society factors associated with exclusive breastfeeding at hospital discharge according to women perspectives.

## Results

Among the 235 Israeli participants, 68.1% exclusively breastfed, 27.7% partially breastfed, and 4.2% did not breastfeed at discharge. Results of the adjusted logistic regression model showed that factors significantly associated with exclusive breastfeeding were the intrapersonal factor of multiparity (adjusted OR 2.09; 95% Confidence Interval 1.01,4.35) and the organizational factors of early breastfeeding in the first hour (aOR 2.17; 95% CI 1.06,4.45), and rooming-in (aOR 2.68; 95% CI 1.41,5.07).

## Conclusions

Facilitating early breastfeeding initiation and supporting rooming-in are critical to promoting exclusive breastfeeding. These factors, reflecting hospital policies and practices, along with parity, are significantly associated with breastfeeding outcomes and highlight the influential role of the maternity environment during the COVID-19 pandemic. Maternity care in hospitals should follow evidence-based breastfeeding recommendations also during the pandemic, promoting early exclusive breastfeeding and rooming-in among all women, with particular attention to providing lactation support to primiparous women.

## Trial registration

Clinical Trials NCT04847336. (Author)

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## 2023-06719

**Babies in Lockdown: No one wants to see my baby: Challenges to building back better for babies.** Best Beginnings, Home-Start UK, Parent-Infant Foundation (2021), London: Best Beginnings, Home-Start UK, and the Parent-Infant Foundation November 2021. 22 pages

**Full URL:** <https://parentinfantfoundation.org.uk/wp-content/uploads/2021/11/211108-FINAL-No-one-wants-to-see-my-baby.pdf>

This latest report shows that COVID-19 and the measures introduced to control it are still having a significant impact on

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babies, their families and the services that support them. The UK Government's recent focus on, and investment in, the first 1001 days through their Best Start for Life vision and funding is very welcome. However, there remains a "baby blindspot" in COVID-19 recovery efforts and a shortage of funding for voluntary sector organisations and core services like health visiting to offer the level of support required to meet families' needs. Without urgent action to secure recovery, we fear that the pandemic will leave permanent scars on the provision of support for babies and young children. The impact of new initiatives and policies will be limited if services around the country have not recovered from the pandemic, let alone had the opportunity to build back better. (Author, edited)

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## 2023-06597

**Impact of COVID-19 infection in pregnancy and neonates: A case control study..** Daclin C, Carbonnel M, Rossignol M, et al (2022), Journal of Gynecology, Obstetrics and Human Reproduction vol 51, no 5, May 2022, 102366

### Objective

To evaluate maternal and neonatal outcomes of pregnant women who were infected by COVID-19 during pregnancy.

### Study design

A Case control retrospective study was conducted in an Obstetrical Department of a west Parisian area during the first year of COVID-19 pandemic. Maternal and neonatal outcomes were compared between a group of women infected by the SARS-CoV-2 virus during pregnancy (March 2020- February 2021) and a control group of women delivering before pandemic. They were matched according to age and parity. Subgroups of SARS-CoV-2 infection occurring before vs after 37 weeks of gestations and symptomatic vs asymptomatic patients were analyzed. The rate of preterm birth, preeclampsia, placental abruption and stillbirth were compared between the year of pandemic and the year before for all deliveries.

### Results

Maternal and neonatal outcomes were similar. Among the 86 pregnant women with SARS-CoV-2 infection, five were admitted to Hospital (5.8%). One was transferred in intensive care unit for respiratory distress (1.2%). All patients had favorable outcomes. Patients with symptoms had more associated comorbidities (34.5%, n = 20/58, with symptoms, vs 9.1%, n = 2/22, without symptoms, p = 0.023). No differences in preeclampsia, placenta abruption and stillbirth, but less preterm births (4.9%, n = 160/3383 vs 6.2%, n = 209/3235, p = 0.04) were observed between the year of pandemic and the year before.

### Conclusion

There were few complications associated with COVID-19 infection among pregnant patients and their neonates. A low rate of associated comorbidities, a good access to healthcare services in this area and the small sample size of patients could explain these results. (Author)

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## 2023-06469

**Critical care among newborns with and without a COVID-19 diagnosis, May 2020–February 2022.** Wallace B, Chang D, Olsen EO'M, et al (2023), Journal of Perinatology vol 43, no 6, June 2023, pp 766–774

### Objective

To assess COVID-19 association with newborn critical care outcomes, including nursery level of care and ventilation, during three time periods: Pre-delta (May 2020–June 2021), Delta (July–November 2021), and Omicron (December 2021–February 2022).

### Study design

In a retrospective cohort of newborns born May 2020–February 2022 using the Premier Healthcare Database, we classified COVID-19 status and critical care using International Classification of Diseases 10th Revision and Current Procedural Terminology codes, laboratory data, and billing records and assessed for variation during three time periods.

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## Results

Of 1,388,712 newborns, 0.06% had COVID-19 during the birth hospitalization (Pre-delta period: 0.03%; Delta: 0.07%; Omicron: 0.21%). Among newborns with COVID-19, the risks for admission to a higher-level nursery and for invasive or non-invasive ventilation were lower in the Omicron period compared to Pre-delta and Delta periods.

## Conclusion

From May 2020–February 2022, COVID-19 in newborns was rare and cases were less severe during the period of Omicron predominance. (Author)

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### 2023-06445

**Effect of COVID-19 infection on pregnancy and the possibility of vertical transmission from infected pregnant mothers to fetuses.** AbdRabou MA (2022), African Journal of Reproductive Health vol 26, no 1, 2022, pp 120-124

Coronavirus disease 19 has been predominant in China then transmitted to different countries. The study aimed to evaluate the recent evidences from published papers of potential risks of COVID-19 contagion through gestation and if vertical transmission is possible?. We reviewed several studies on the effect of COVID-19 through pregnancy by using published articles up to June, 2021. Infection with COVID-19 during pregnancy may increase risk of pregnancy problems such as preterm birth and PPRM in few cases, but other researchers establish no COVID-19 contagion was revealed in neonates. Vertical transmission of COVID-19 is feasible, and happens in a small percentage of infected mothers, but other researchers demonstrated no vertical transmission of COVID-19. According to the narrow data, there is no enough evidence for congenital defects to fetuses of infected mother and no sure for vertical transmission. More research must be done to prove the effect of COVID-19 on the fetuses and vertical transmission. (Author)

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### 2023-06320

**Case report: Fatal lung hyperinflammation in a preterm newborn with SARS-CoV-2 infection.** Aguilar-Caballero D, Capcha JMC, Caballero V, et al (2023), Frontiers in Pediatrics 23 May 2023, online

**Full URL:** <https://doi.org/10.3389/fped.2023.1144230>

Vertical transmission of SARS-CoV-2 from mother to fetus is widely accepted. Whereas most infected neonates present with mild symptoms or are asymptomatic, respiratory distress syndrome (RDS) and abnormal lung images are significantly more frequent in COVID-19 positive neonates than in non-infected newborns. Fatality is rare and discordant meta-analyses of case reports and series relating perinatal maternal COVID-19 status to neonatal disease severity complicate their extrapolation as prognostic indicators. A larger database of detailed case reports from more extreme cases will be required to establish therapeutic guidelines and allow informed decision making. Here we report an unusual case of a 28 weeks' gestation infant with perinatally acquired SARS-CoV-2, who developed severe protracted respiratory failure. Despite intensive care from birth with first line anti-viral and anti-inflammatory therapy, respiratory failure persisted, and death ensued at 5 months. Lung histopathology showed severe diffuse bronchopneumonia, and heart and lung immunohistochemistry confirmed macrophage infiltration, platelet activation and neutrophil extracellular trap formation consistent with late multisystem inflammation. To our knowledge, this is the first report of SARS CoV-2 pulmonary hyperinflammation in a preterm newborn with fatal outcome. (Author)

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### 2023-06197

**Impact of COVID-19 mandatory lockdown on maternal gestational weight gain and neonatal macrosomia rate at an academic medical center in Israel.** Benyamini Raischer H, Garma G, Malchi D, et al (2023), Journal of Maternal-Fetal and Neonatal Medicine vol 36, no 1, 2023, 2204391

**Full URL:** <https://doi.org/10.1080/14767058.2023.2204391>

## Background

In an effort to prevent the spread of coronavirus disease 2019 (COVID-19), governments restricted outdoor activities and imposed lockdown quarantine. This change in lifestyle probably affected individuals' eating habits and physical

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activity.

## Objective

To examine the effect of lockdown due to the COVID-19 pandemic on maternal antenatal weight gain, neonatal macrosomia, and other maternal and neonatal outcomes of women delivering at an academic medical center in Israel.

## Method

A retrospective, two-period cohort study conducted at a university teaching medical center in Afula, Israel. The study period was between April and September 2020. This period signifies worsening in pandemic situations, during which citizens experienced strict prolonged lockdown measures. The parallel unexposed period (control period) was between April and September 2019. Singleton pregnancies delivered at >24 weeks were eligible. Primary outcome was incidence of macrosomia. Secondary outcomes included gestational weight gain, body mass index (BMI) at delivery, rates of gestational diabetes mellitus (GDM), mode of delivery, postpartum hemorrhage (PPH), and neonatal outcomes reflecting neonatal birth weight and condition at delivery.

## Results

A total of 4,765 women were included, 2,442 in the study group and 2,323 in the control group. The incidence of macrosomia was significantly higher in 2020 (6.2%) than in 2019 (4.9%), ( $p = .048$ ; OR: 1.29; 95% CI: 1.002–1.65). Women gained significantly more weight (median 1 kg more), weighed more at delivery (median 1 kg), and had higher BMI at delivery in 2020 compared with those in 2019 ( $p < .01$ ). The incidence of GDM was 9.5% and 8.5% in the study and control groups respectively ( $p = .26$ ; OR: 1.12; 95% CI: 0.92–1.37). Greater percentage of women did not perform the glucose challenge test in 2020 (9.9%) compared with those in 2019 (7.5%) ( $p = .003$ , OR: 1.36; 95% CI: 1.11–1.67). The incidence of any hypertension related to pregnancy was significantly higher in 2020 compared to 2019 (5.8% vs 4.4% respectively, ( $p = .042$ ; OR: 1.32; 95% CI: 1.02–1.71). The proportion of women who smoked during pregnancy was also significantly higher in 2020 than in 2019 (5.1% vs 3.7%, respectively,  $p = .02$ ; OR: 1.40; 95% CI: 1.06–1.86). Delivery mode did not differ, while the incidence of PPH was significantly higher in 2020 than in 2019 (5.6% vs 3.4%, respectively,  $p = .001$ ; OR: 1.65; 95% CI: 1.25–2.19). Neonatal condition at delivery was comparable.

## Conclusion

COVID-19-related lockdown was associated with the increased rate of macrosomic infants. This indirect effect of the pandemic is probably related to poorer maternal antenatal metabolic health status. Long-term consequences should be further examined. (Author)

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## 2023-06026

### Prevalence of Urinary Tract Infection, Bacteremia, and Meningitis Among Febrile Infants Aged 8 to 60 Days With SARS-CoV-2.

Aronson PL, Louie JP, Kerns E, et al (2023), JAMA Network Open vol 6, no 5, May 2023, e2313354

Full URL: <https://doi.org/10.1001/jamanetworkopen.2023.13354>

**Importance** The prevalence of urinary tract infection (UTI), bacteremia, and bacterial meningitis in febrile infants with SARS-CoV-2 is largely unknown. Knowledge of the prevalence of these bacterial infections among febrile infants with SARS-CoV-2 can inform clinical decision-making.

**Objective** To describe the prevalence of UTI, bacteremia, and bacterial meningitis among febrile infants aged 8 to 60 days with SARS-CoV-2 vs without SARS-CoV-2.

**Design, Setting, and Participants** This multicenter cross-sectional study was conducted as part of a quality improvement initiative at 106 hospitals in the US and Canada. Participants included full-term, previously healthy, well-appearing infants aged 8 to 60 days without bronchiolitis and with a temperature of at least 38 °C who underwent SARS-CoV-2 testing in the emergency department or hospital between November 1, 2020, and October 31, 2022. Statistical analysis was performed from September 2022 to March 2023.

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**Exposures** SARS-CoV-2 positivity and, for SARS-CoV-2–positive infants, the presence of normal vs abnormal inflammatory marker (IM) levels.

**Main Outcomes and Measures** Outcomes were ascertained by medical record review and included the prevalence of UTI, bacteremia without meningitis, and bacterial meningitis. The proportion of infants who were SARS-CoV-2 positive vs negative was calculated for each infection type, and stratified by age group and normal vs abnormal IMs.

**Results** Among 14 402 febrile infants with SARS-CoV-2 testing, 8413 (58.4%) were aged 29 to 60 days; 8143 (56.5%) were male; and 3753 (26.1%) tested positive. Compared with infants who tested negative, a lower proportion of infants who tested positive for SARS-CoV-2 had UTI (0.8% [95% CI, 0.5%-1.1%]) vs 7.6% [95% CI, 7.1%-8.1%]), bacteremia without meningitis (0.2% [95% CI, 0.1%-0.3%] vs 2.1% [95% CI, 1.8%-2.4%]), and bacterial meningitis (<0.1% [95% CI, 0%-0.2%] vs 0.5% [95% CI, 0.4%-0.6%]). Among infants aged 29 to 60 days who tested positive for SARS-CoV-2, 0.4% (95% CI, 0.2%-0.7%) had UTI, less than 0.1% (95% CI, 0%-0.2%) had bacteremia, and less than 0.1% (95% CI, 0%-0.1%) had meningitis. Among SARS-CoV-2–positive infants, a lower proportion of those with normal IMs had bacteremia and/or bacterial meningitis compared with those with abnormal IMs (<0.1% [0%-0.2%] vs 1.8% [0.6%-3.1%]).

**Conclusions and Relevance** The prevalence of UTI, bacteremia, and bacterial meningitis was lower for febrile infants who tested positive for SARS-CoV-2, particularly infants aged 29 to 60 days and those with normal IMs. These findings may help inform management of certain febrile infants who test positive for SARS-CoV-2. (Author)

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## 2023-05836

**Epidemiology and Clinical Features of COVID-19 among 4,015 Neonates in Iran: Results of the National Study from the Iranian Maternal and Neonatal Network.** Schwartz DA, Mohagheghi P, Moshfegh F, et al (2023), American Journal of Perinatology 18 May 2023, online

**Full URL:** <https://doi.org/10.1055/a-2065-4714>

**Objective** The coronavirus disease 2019 (COVID-19) pandemic had a significant impact on pregnant women and neonates in Iran. This retrospective study describes the national experience among neonates having suspected and confirmed severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection following hospital admission to examine the epidemiology, demographic, and clinical features.

**Study Design** All nationwide cases of suspected and confirmed neonatal SARS-CoV-2 infection were drawn from the Iranian Maternal and Neonatal Network (IMaNN) between February 2020 and February 2021. IMaNN registers demographic, maternal, and neonatal health data throughout Iran. Statistical analysis of demographic, epidemiological, and clinical data were performed.

**Results** There were 4,015 liveborn neonates having suspected or confirmed SARS-CoV-2 infection that fulfilled the study inclusion criteria identified in the IMaNN registry from 187 hospitals throughout Iran. There were 1,392 (34.6%) neonates that were preterm, including 304 (7.6%) less than 32 weeks' gestation. Among the 2,567 newborns admitted to the hospital immediately after birth, the most common clinical problems were respiratory distress (1,095 cases; 42.6%), sepsis-like syndrome (355; 13.8%), and cyanosis (300 cases; 11.6%). Of 683 neonates transferred from another hospital, the most frequent problems were respiratory distress (388; 56.8%), sepsis-like syndrome (152; 22.2%), and cyanosis (134; 19.6%). Among 765 neonates discharged home after birth and subsequently admitted to the hospital, sepsis-like syndrome (244 cases; 31.8%), fever (210; 27.4%), and respiratory distress (185; 24.1%) were most frequent. A total of 2,331 (58%) of neonates required respiratory care, with 2,044 surviving and 287 having a neonatal death. Approximately 55% of surviving neonates received respiratory support, compared with 97% of neonates who expired. Laboratory abnormalities included elevations of white blood cell count, creatine phosphokinase, liver enzymes, and C-reactive protein.

**Conclusion** This report adds the national experience of Iran to the list of reports from multiple countries describing

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their experience with COVID-19 in neonates, demonstrating that newborns are not exempt from COVID-19-morbidity and mortality. (Author)

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## 2023-05768

**Case report: Tissue positivity for SARS-CoV-2 in a preterm born infant death of thrombosis: possible intrauterine transmission.** Greco S, Sanz JM, Bortolotti D, et al (2023), *Frontiers in Medicine* 11 May 2023, online

**Full URL:** <https://doi.org/10.3389/fmed.2023.1127529>

Intrauterine transmission of SARS-CoV-2 (Severe Acute Respiratory Syndrome Corona Virus 2) is still matter of debate among scientists and there is limited information concerning this aspect of research. This could lead to severe complications of the growing fetus and, theoretically, of the newborn as well. We report the case of a male infant of 1,100 grams, born at 27th week of gestation to a SARS-CoV-2 mother, tested negative for viral detection at delivery. He was immediately admitted to neonatal Intensive Care Unit (ICU) for severe complications, where he died after 37 days by pulmonary embolism and thrombosis of the superior vena cava. After autopsy, SARS-CoV-2 N-protein and Spike RBD were detected in several tissues, particularly in the esophagus, stomach, spleen, and heart, with a significantly higher H-Score than the placenta. In conclusion, immunohistochemical analysis demonstrated SARS-CoV-2 NP and Spike RBD positivity in different tissues suggesting a possible intrauterine transmission. Newborn thrombo-embolism could be a complication of SARS-CoV-2 infection as observed in adult patients. (Author)

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## 2023-05554

**Neonatal and Paediatric Pharmacists Conference 2022.** Various (2023), *Archives of Disease in Childhood* vol 108, no 5, May 2023

**Full URL:** <https://adc.bmj.com/content/108/5>

A collection of abstracts from the Neonatal and Paediatric Pharmacists Group's (NPPG) 28th annual professional conference and exhibition, which took place on 7-9 October at The Old Swan Hotel in Harrogate. (MB)

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## 2023-05540

**Case report: Acute hepatitis in neonates with COVID-19 during the Omicron SARS-CoV-2 variant wave: a report of four cases.** Wang J, Hu W, Wang K, et al (2023), *Frontiers in Pediatrics* 5 May 2023, online

**Full URL:** <https://doi.org/10.3389/fped.2023.1179402>

Background: Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), first emerging in December 2019 and continuously evolving, poses a considerable challenge worldwide. It was reported in the literature that neonates had mild upper respiratory symptoms and a better outcome after Omicron SARS-CoV-2 variant infection, but there was insufficient data about complications and prognosis.

Case Presentation: In this paper, we present the clinical and laboratory characteristics of four COVID-19 neonate patients with acute hepatitis during the Omicron SARS-CoV-2 variant wave. All patients had a clear history of Omicron exposure and were infected via contact with confirmed caregivers. Low to moderate fever and respiratory symptoms were the primary clinical manifestations, and all patients had a normal liver function at the initial stage of the course. Then, the fever lasted 2 to 4 days, and it was noted that hepatic dysfunction might have occurred 5 to 8 days after the first onset of fever, mainly characterized by moderate ALT and AST elevation (>3 to 10-fold of upper limit). There were no abnormalities in bilirubin levels, blood ammonia, protein synthesis, lipid metabolism, and coagulation. All the patients received hepatoprotective therapy, and transaminase levels gradually decreased to the normal range after 2 to 3 weeks without other complications.

Conclusions: This is the first case series about moderate to severe hepatitis in COVID-19 neonatal patients via horizontal transmission. Besides fever and respiratory symptoms, the clinical doctor should pay much attention to evaluating the risk of liver function injury after SARS-CoV-2 variants infection, which is usually asymptomatic and has a delayed onset. (Author)

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2023-05465

**Skin-to-skin contact in mothers with suspected, probable, or confirmed COVID-19.** Saus-Ortega C (2023), Birth vol 50, no 3, September 2023, pp 486-495

#### Background

The World Health Organization recommends skin-to-skin contact (SSC) in newborns of mothers with COVID-19, applying infection prevention and control measures, and after a process of antenatal counseling on the possible risks and benefits. In this study, the reasons given for and against postnatal SSC in mothers with COVID-19 were reviewed.

#### Method

Between November and December 2020, we conducted a scoping review. Twenty-six relevant studies were identified. The results were extracted and presented narratively.

#### Results

The reasons described for avoiding SSC have include contradictory recommendations, risk of virus transmission, impossibility of universal antepartum maternal screening for COVID-19, work overload, and ethical considerations. The reasons given for the maintenance of SSC include maternal and infant benefits of SSC, previous experiences in viral outbreaks, protection of newborns against infections, decreased contact with professionals, caregivers and surfaces, and preservation of natural processes.

#### Conclusions

The recommendation to allow SSC is based primarily on the acceptance that horizontal perinatal transmission is unlikely if correct hygiene precautions are taken and that the benefits of SSC outweigh the potential risks of neonatal COVID-19 infection. Knowing the reasons that have motivated the current recommendations on SSC is essential to be able to carry out an effective prenatal parental education that allows a shared decision to be made. (Author)

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2023-05404

**The role of doulas in providing breastfeeding support during the COVID-19 pandemic.** Ochapa M, Baptiste-Roberts K, Barrett SE, et al (2023), International Breastfeeding Journal vol 18, no 23, April 2023

**Full URL:** <https://doi.org/10.1186/s13006-023-00558-0>

#### Background

Doulas have been instrumental in providing breastfeeding support to nursing mothers before and during the COVID-19 pandemic, as they can significantly impact a mother's ability to initiate and maintain breastfeeding. However, the COVID-19 pandemic, subsequent lockdowns, and social isolation created challenges for nursing mothers to access doulas' services, usually provided in person. In this study, we examined the role of doulas in providing breastfeeding support during the COVID-19 pandemic, exploring adaptation to COVID-19 guidelines and the challenges doulas face in providing breastfeeding support during the pandemic.

#### Methods

A systematic review was conducted following the PRISMA guidelines. Thirteen scientific databases and twenty peer-reviewed journals were searched for journal articles published in English between January 2020 and March 2022 using key search terms (e.g., Doula, Breastfeeding, COVID-19). Studies evaluating the role of doulas in providing breastfeeding support during COVID-19, and the impact of COVID-19 Guidelines on doula services, were included. Two reviewers independently performed the risk of bias assessment and data extraction. Summative content analysis was used to analyze the data.

#### Results

The majority of studies were conducted in developed nations. This systematic review includes eight articles, four qualitative, one survey, two mixed-methods studies, and one prospective research study. Seven of the eight studies were conducted in the United States, and the eighth was conducted in multiple countries. These studies have three

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main themes: (1) virtual breastfeeding support provided by doulas during the pandemic; (2) remote social support provided by doulas to breastfeeding mothers during the pandemic; and (3) barriers to doula service delivery due to COVID-19 restrictions, primarily the exclusion of doulas as essential workers. The eight studies showed that doulas found innovative ways to serve the needs of birthing and nursing mothers during the difficulties brought on by the pandemic.

## Conclusion

Doulas provided breastfeeding support during the COVID-19 pandemic by utilizing innovative service delivery methods while navigating changes in COVID-19 guidance. However, system-level integration of doulas' work and the acknowledgment of doulas as essential healthcare providers are needed to enhance doula service delivery capacity, especially during a pandemic, to help improve maternal health outcomes. (Author)

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## 2023-05233

**Supporting breastfeeding in rural Newfoundland and Labrador communities during COVID-19.** La Croix (2021), Canadian Journal of Public Health vol 112, no 4, August 2021, pp 595-598

**Full URL:** <https://link.springer.com/article/10.17269/s41997-021-00513-8>

Exclusive breastfeeding for the first 6 months of life has become the global standard of infant feeding for its extensive benefits to maternal and infant health. Public health programs, such as the Baby-Friendly Initiative, have helped increase the national breastfeeding initiation rate to 90%. However, initiation rates in Newfoundland and Labrador (NL) continue to rank the lowest in the country at 70%, with a 6-month exclusivity rate of 16%. This commentary will discuss the influence of geographical location, societal norms, and accessibility to health care services on breastfeeding in rural and remote NL communities. While the SARS-CoV-2 virus itself does not impact the mother's ability to breastfeed, the indirect impacts of COVID-19 on health care services, social isolation, and economic burden challenge breastfeeding initiation and continuation. Priority solutions will draw on capacity building by emphasizing relationships within the community to deliver innovative and appropriate support programs. Continued education with health practitioners and further research into breastfeeding barriers in rural communities is critical moving forward. (Author)

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## 2023-05067

**Maternal and perinatal COVID-19 – The past, present and the future.** Lakshminrusimha S, Hedriana HL (2023), Seminars in Fetal and Neonatal Medicine 1 April 2023, online

This editorial discusses the impact of COVID-19 on obstetric and perinatal care that has evolved over the past 3 years. (JM)

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## 2023-05066

**Multisystem inflammatory syndrome in neonates (MIS-N) associated with perinatal SARS CoV-2 infection: Does it exist?.**

Lakshminrusimha S, More K, Shah PS, et al (2023), Seminars in Fetal and Neonatal Medicine vol 28, no 2, April 2023, 101433

**Full URL:** <https://doi.org/10.1016/j.siny.2023.101433>

This article reviews various case reports, literature, systematic reviews and research to discuss the association between neonates with MIS-N and perinatal SARS CoV-2 infections. (JM)

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## 2023-05063

**Impact of perinatal COVID on fetal and neonatal brain and neurodevelopmental outcomes.** Brum AC, Vain NE (2023), Seminars in Fetal and Neonatal Medicine vol 28, no 2, April 2023, 101427

**Full URL:** <https://doi.org/10.1016/j.siny.2023.101427>

After three years of the COVID-19 pandemic, we have learned many aspects of the disease and the virus: its molecular structure, how it infects human cells, the clinical picture at different ages, potential therapies, and the effectiveness of prophylaxis. Research is currently focused on the short- and long-term consequences of COVID-19. We review the

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available information on the neurodevelopmental outcome of infants born during the pandemic from infected and non-infected mothers, as well as the neurological impact of neonatal SARS-CoV-2 infection. We also discuss the mechanisms that could potentially affect the fetal or neonatal brain including direct impact after vertical transmission, maternal immune activation with a proinflammatory cytokine storm, and finally the consequences of complications of pregnancy secondary to maternal infection that could affect the fetus. Several follow-up studies have noted a variety of neurodevelopmental sequelae among infants born during the pandemic. There is controversy as to the exact etiopathogenesis of these neurodevelopmental effects: from the infection itself or as a result of parental emotional stress during that period. We summarize case reports of acute neonatal SARS-CoV-2 infections associated with neurological signs and neuroimaging changes. Many infants born during previous pandemics caused by other respiratory viruses demonstrated serious neurodevelopmental and psychological sequelae that were only recognized after several years of follow-up. It is essential to warn health authorities about the need for very long-term continuous follow up of infants born during the SARS-CoV-2 pandemic for early detection and treatment that could help mitigate the neurodevelopmental consequences of perinatal COVID-19. (Author)

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## 2023-05062

**Maternal and neonatal outcomes following SARS-CoV-2 infection.** Boettcher LB, Metz TD (2023), Seminars in Fetal and Neonatal Medicine vol 28, no 1, February 2023, 101428

Infection with SARS-CoV-2 causing COVID-19 in pregnancy is known to confer risks to both the pregnant patient and fetus. A review of the current literature demonstrates that pregnant individuals with SARS-CoV-2 infection are at risk for higher composite morbidity, intensive care unit admission, ventilatory support, pre-eclampsia, preterm birth, and neonatal intensive care unit admissions compared to pregnant individuals without SARS-CoV-2. Worse obstetric morbidity and mortality generally correlate with the severity of COVID-19. Comorbidities such as diabetes increase the risk of severe COVID-19. An increased risk of stillbirth appears to be predominantly confined to pregnancies affected in the Delta variant time period. Further, vaccination against SARS-CoV-2 has been demonstrated to be safe and effective in pregnancy and while breastfeeding. Therefore, continued counseling encouraging vaccination remains imperative. The long-term maternal and neonatal consequences of pregnancies affected by SARS-CoV-2 remain unknown, and therefore continued research in this regard is warranted. (Author)

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## 2023-05061

**Transmission of SARS-CoV-2 from mother to fetus or neonate: What to know and what to do?.** De Luca D, Vauloup-Fellous C, Benachi A, et al (2023), Seminars in Fetal and Neonatal Medicine vol 28, no 1, February 2023, 101429

SARS-CoV-2 can be vertically transmitted from the mother to the fetus and the neonate. This transmission route is rare compared to the environmental or horizontal spread and therefore, the risk can be deemed inconsequential by some medical providers. However, severe, although just as rare, fetoneonatal consequences are possible: fetal demise, severe/critical neonatal COVID-19 and multi-inflammatory syndrome (MIS-N) have been described. Therefore, it is important for the clinicians to know the mechanism of vertical transmission, how to recognize this, and how to deal with neonatal COVID-19 and MIS-N. Our knowledge about this field has significantly increased in the last three years. This is a summary of the pathophysiology, diagnostics, and therapeutics of vertical SARS-CoV-2 transmission that clinicians apply in their clinical practice. (Author)

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## 2023-05060

**Clinical features of neonatal COVID-19.** Galderisi A, Lista G, Caviglioli F, et al (2023), Seminars in Fetal and Neonatal Medicine vol 28, no 2, April 2023, 101430

**Full URL:** <https://doi.org/10.1016/j.siny.2023.101430>

The COVID-19 (SARS-Cov-2) pandemic has put a strain on healthcare systems around the world from December 2019 in China, and then rapidly spreading worldwide. The impact of the virus on the entire population and its differential effect on various age groups was unknown at the outset, specifically its severity in elders, children or those living with other comorbidities, thus defining the syndemic, rather than pandemic, character of the infection. The effort of clinicians was initially to organize differential paths to isolate cases or contacts. This impacted the maternal-neonatal

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care adding an additional burden to this dyad and raising several questions. Can SARS-Cov-2 infection in the first days of life put the health of the newborn at risk? Could the separation of a healthy newborn from an infected mother create further physical and psychological health problems in the dyad? The rapid and massive research effort in these three years of the pandemic has provided wide answers to these initial questions. In this review, we report epidemiological data, clinical features, complications, and management of the neonates affected by SARS-Cov-2 infection. (Author)

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## 2023-05059

**Multisystem inflammatory disease in neonates (MIS-N) due to maternal COVID-19.** Ramaswamy VV, Abiramalatha T, Pullattayil AKS, et al (2023), Seminars in Fetal and Neonatal Medicine vol 28, no 2, April 2023, 101431

**Full URL:** <https://doi.org/10.1016/j.siny.2023.101431>

Multisystem inflammatory disease in neonates (MIS-N) is a disease of immune dysregulation presenting in the newborn period. Though its etiopathogenesis is proposed to be similar to multisystem inflammatory disease in Children (MIS-C), the exact pathophysiology is largely unknown as of present. The definition of MIS-N is contentious. The evidence for its incidence, the clinical features, profile of raised inflammatory markers, treatment strategies and outcomes stem from case reports, case series and cohort studies with small sample sizes. Though the incidence of MIS-N in severe acute respiratory syndrome caused by the coronavirus CoVID-2 (SARS-CoV-2) infected asymptomatic neonates is low, its incidence in symptomatic neonates is relatively higher. Further, amongst the neonates who are treated as MIS-N, the mortality rate is high. The review also evaluates the various other unresolved aspects of MIS-N from limited published literature and identifies knowledge gaps which could be areas of future research. (Author)

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## 2023-05039

**Vaccination and treatment options for SARS-CoV2 infection affecting lactation and breastfeeding.** Chen MJ, Cheema R, Hoyt-Austin A, et al (2023), Seminars in Fetal and Neonatal Medicine vol 28, no 1, February 2023, 101425

**Full URL:** <https://doi.org/10.1016/j.siny.2023.101425>

The COVID-19 pandemic has posed considerable challenges to the health of lactating individuals. Vaccination remains one of the most important strategies for prevention of moderate to severe COVID-19 infection and is associated with protective benefits for lactating individuals and their breastfed infants with overall mild side effects. The current recommendations for COVID-19 treatment in lactating individuals includes remdesivir and dexamethasone for hospitalized patients and Paxlovid® (nirmatrelvir + ritonavir) as outpatient treatment in those with mild disease. As the pandemic continues to evolve with new COVID-19 variants, alternative therapeutic options are potentially needed, and it is critical to include lactating individuals in research to evaluate the safety and efficacy of COVID-19 treatment options in this population. (Author)

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## 2023-04939

**Early effects of COVID-19 on maternal and child health service disruption in Mozambique.** Augusto O, Roberton T, Fernandes Q, et al (2023), Frontiers in Public Health 17 April 2023, online

**Full URL:** <https://doi.org/10.3389/fpubh.2023.1075691>

**Introduction:** After the World Health Organization declared COVID-19 a pandemic, more than 184 million cases and 4 million deaths had been recorded worldwide by July 2021. These are likely to be underestimates and do not distinguish between direct and indirect deaths resulting from disruptions in health care services. The purpose of our research was to assess the early impact of COVID-19 in 2020 and early 2021 on maternal and child healthcare service delivery at the district level in Mozambique using routine health information system data, and estimate associated excess maternal and child deaths.

**Methods:** Using data from Mozambique's routine health information system (SISMA, Sistema de Informação em Saúde para Monitoria e Avaliação), we conducted a time-series analysis to assess changes in nine selected indicators representing the continuum of maternal and child health care service provision in 159 districts in Mozambique. The dataset was extracted as counts of services provided from January 2017 to March 2021. Descriptive statistics were used

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for district comparisons, and district-specific time-series plots were produced. We used absolute differences or ratios for comparisons between observed data and modeled predictions as a measure of the magnitude of loss in service provision. Mortality estimates were performed using the Lives Saved Tool (LiST).

**Results:** All maternal and child health care service indicators that we assessed demonstrated service delivery disruptions (below 10% of the expected counts), with the number of new users of family planning and malaria treatment with Coartem (number of children under five treated) experiencing the largest disruptions. Immediate losses were observed in April 2020 for all indicators, with the exception of treatment of malaria with Coartem. The number of excess deaths estimated in 2020 due to loss of health service delivery were 11,337 (12.8%) children under five, 5,705 (11.3%) neonates, and 387 (7.6%) mothers.

**Conclusion:** Findings from our study support existing research showing the negative impact of COVID-19 on maternal and child health services utilization in sub-Saharan Africa. This study offers subnational and granular estimates of service loss that can be useful for health system recovery planning. To our knowledge, it is the first study on the early impacts of COVID-19 on maternal and child health care service utilization conducted in an African Portuguese-speaking country. (Author)

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## 2023-04902

**Multisystem inflammatory syndrome in a neonate with severe hemophilia - a diagnostic challenge in COVID times: a case report.** Arun S, Cherian TG, Philip C (2022), BMC Pediatrics vol 22, no 397, July 2022

**Full URL:** <https://doi.org/10.1186/s12887-022-03463-3>

### Background

Multisystem Inflammatory Syndrome in Neonates (MIS-N) can occur following antenatal COVID-19 infection in the mother. Here we report a rare case of a neonate with Hemophilia A and MIS-N.

### Case presentation

A 2-day-old baby presented with an intramuscular hematoma, neonatal seizures, and isolated activated partial thromboplastin time (APTT) prolongation. The neurosonogram showed a subdural hematoma. A diagnosis of Hemophilia A was made and was confirmed by factor 8 assay and genetic analysis. Supportive measures and Factor 8 replacement was initiated. A rising trend of inflammatory markers and an ongoing need for mechanical ventilation were noted. As there was a history of COVID-19 in the mother in the third trimester, MIS-N was diagnosed. The baby was treated with intravenous immunoglobulin (IVIG) and steroids, and there was an improvement in the clinical and laboratory markers. However, the baby developed seizures on day 16. There was an increase in the subdural hemorrhage and a further rise in inflammatory markers. A craniostomy and hematoma evacuation was done and the baby improved.

### Conclusion

The concurrent occurrence of hemophilia A with intracranial bleed, and MIS-N in a neonate is a diagnostic challenge. It is important to have a high index of suspicion to ensure timely diagnosis and treatment of MIS-N in this pandemic era. (Author)

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## 2023-04880

**Neurodevelopmental outcomes of infants born to mothers with SARS-CoV-2 infections during pregnancy: a national prospective study in Kuwait.** Ayed M, Embaireeg A, Kartam M, et al (2022), BMC Pediatrics vol 22, no 319, May 2022

**Full URL:** <https://doi.org/10.1186/s12887-022-03359-2>

### Background

An increasing proportion of women are infected with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) during pregnancy. Intrauterine viral infections induce an increase in the levels of proinflammatory cytokines, which inhibit the proliferation of neuronal precursor cells and stimulate oligodendrocyte cell death, leading to abnormal

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neurodevelopment. Whether a maternal cytokine storm can affect neonatal brain development is unclear. The objective of the present study was to assess neurodevelopmental outcomes in neonates born to mothers with SARS-CoV-2 infections during pregnancy.

#### Methods

In this prospective cohort study, the neurodevelopmental status of infants (N = 298) born to women with SARS-CoV-2 infections during pregnancy was assessed at 10–12 months post-discharge using the Ages and Stages Questionnaire, 3rd edition (ASQ-3). The ASQ-3 scores were classified into developmental delays (cutoff scores  $\leq 2$  standard deviations (SDs) below the population mean) and no delays (scores  $> 2$  SDs above the population mean).

#### Results

The majority (90%) of the infants born to mothers with SARS-CoV-2 infections during pregnancy had favorable outcomes and only 10% showed developmental delays. Two of the 298 infants tested positive for SARS-CoV-2, and both had normal ASQ-3 scores. The majority of the pregnant women had SARS-CoV-2 infections during their third trimester. The risk of developmental delays among infants was higher in those whose mothers had SARS-CoV-2 infections during the first ( $P = 0.039$ ) and second trimesters ( $P = 0.001$ ) than in those whose mothers had SARS-CoV-2 infections during the third trimester.

#### Conclusion

The neurodevelopmental outcomes of infants born to mothers with SARS-CoV-2 infections seem favorable. However, more studies with larger sample sizes and longer follow-up periods are required. (Author)

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#### 2023-04824

**Developmental screening of full-term infants at 16 to 18 months of age after in-utero exposure to maternal SARS-CoV-2 infection.** Shah AV, Howell HB, Kazmi SH, et al (2023), Journal of Perinatology vol 43, no 5, May 2023, pp 659–663

#### Objective

To screen for neurodevelopmental delays in a cohort of full-term infants born to mothers with SARS-CoV-2.

#### Study design

This was a prospective, descriptive cohort study of full-term infants born to mothers with SARS-CoV-2 during pregnancy. Subjects underwent neurodevelopmental screening using the Ages and Stages Questionnaires®-Third Edition (ASQ®-3) at 16 to 18 months age.

#### Results

Of 51 subjects, twelve (24%) were below cutoff, and twenty-seven (53%) were either below or close to the cutoff in at least one developmental domain. Communication (29%), fine motor (31%), and problem-solving (24%) were the most affected domains. There were no differences in outcomes between infants born to asymptomatic and mildly symptomatic mothers.

#### Conclusion

We observed increased risk of neurodevelopmental delays during screening of infants born at full-term to mothers with SARS-CoV-2 at 16 to 18 months age. These results highlight the urgent need for follow-up studies of infants born to mothers with SARS-CoV-2. (Author)

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#### 2023-04817

**Sociodemographic characteristics and healthcare utilization of infants with SARS-CoV-2 in the U.S.** Yieh L, Song AY, Gong CL, et al (2023), Journal of Perinatology vol 43, no 5, May 2023, pp 673–674

**Full URL:** <https://doi.org/10.1038/s41372-023-01659-8>

This research correspondence discusses a retrospective cohort analysis of the sociodemographic characteristics and

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## 2023-04745

### **Assessment of Neurodevelopment in Infants With and Without Exposure to Asymptomatic or Mild Maternal SARS-CoV-2 Infection During Pregnancy.** Firestein MR, Shuffrey LC, Hu Y, et al (2023), JAMA Network Open vol 6, no 4, April 2023, e237396

**Full URL:** <http://dx.doi.org/10.1001/jamanetworkopen.2023.7396>

**Importance** Associations between prenatal SARS-CoV-2 exposure and neurodevelopmental outcomes have substantial public health relevance. A previous study found no association between prenatal SARS-CoV-2 infection and parent-reported infant neurodevelopmental outcomes, but standardized observational assessments are needed to confirm this finding.

**Objective** To assess whether mild or asymptomatic maternal SARS-CoV-2 infection vs no infection during pregnancy is associated with infant neurodevelopmental differences at ages 5 to 11 months.

**Design, Setting, and Participants** This cohort study included infants of mothers from a single-site prospective cross-sectional study (COVID-19 Mother Baby Outcomes [COMBO] Initiative) of mother-infant dyads and a multisite prospective cohort study (Epidemiology of Severe Acute Respiratory Syndrome Coronavirus 2 in Pregnancy and Infancy [ESPI]) of pregnant individuals. A subset of ESPI participants was subsequently enrolled in the ESPI COMBO substudy. Participants in the ongoing COMBO study were enrolled beginning on May 26, 2020; participants in the ESPI study were enrolled from May 7 to November 3, 2021; and participants in the ESPI COMBO substudy were enrolled from August 2020 to March 2021. For the current analysis, infant neurodevelopment was assessed between March 2021 and June 2022. A total of 407 infants born to 403 mothers were enrolled (204 from Columbia University Irving Medical Center in New York, New York; 167 from the University of Utah in Salt Lake City; and 36 from the University of Alabama in Birmingham). Mothers of unexposed infants were approached for participation based on similar infant gestational age at birth, date of birth, sex, and mode of delivery to exposed infants.

**Exposures** Maternal symptomatic or asymptomatic SARS-CoV-2 infection.

**Main Outcomes and Measures** Infant neurodevelopment was assessed using the Developmental Assessment of Young Children, second edition (DAYC-2), adapted for telehealth assessment. The primary outcome was age-adjusted standard scores on 5 DAYC-2 subdomains: cognitive, gross motor, fine motor, expressive language, and receptive language.

**Results** Among 403 mothers, the mean (SD) maternal age at delivery was 32.1 (5.4) years; most mothers were of White race (240 [59.6%]) and non-Hispanic ethnicity (253 [62.8%]). Among 407 infants, 367 (90.2%) were born full term and 212 (52.1%) were male. Overall, 258 infants (63.4%) had no documented prenatal exposure to SARS-CoV-2 infection, 112 (27.5%) had confirmed prenatal exposure, and 37 (9.1%) had exposure before pregnancy or at an indeterminate time. In adjusted models, maternal SARS-CoV-2 infection during pregnancy was not associated with differences in cognitive ( $\beta = 0.31$ ; 95% CI,  $-2.97$  to  $3.58$ ), gross motor ( $\beta = 0.82$ ; 95% CI,  $-1.34$  to  $2.99$ ), fine motor ( $\beta = 0.36$ ; 95% CI,  $-0.74$  to  $1.47$ ), expressive language ( $\beta = -1.00$ ; 95% CI,  $-4.02$  to  $2.02$ ), or receptive language ( $\beta = 0.45$ ; 95% CI,  $-2.15$  to  $3.04$ ) DAYC-2 subdomain scores. Trimester of exposure and maternal symptom status were not associated with DAYC-2 subdomain scores.

**Conclusions and Relevance** In this study, results of a novel telehealth-adapted observational neurodevelopmental assessment extended a previous finding of no association between prenatal exposure to maternal SARS-CoV-2 infection and infant neurodevelopment. Given the widespread and continued high prevalence of COVID-19, these data offer information that may be helpful for pregnant individuals who experience asymptomatic or mild SARS-CoV-2 infections. (Author)

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2023-04673

**Evaluation of clinical manifestations of coronavirus delta variant in neonates admitted to a hospital in northern Iran during the sixth wave: A case series.** Mehrpishheh S, Farhadi R, Saravi VG, et al (2023), Journal of Neonatal Nursing 18 April 2023, online

Eleven newborns infected with COVID-19 delta variant admitted to a hospital in northern Iran during the sixth wave were evaluated. Fever, poor breastfeeding, lethargy, and lung involvement were the most prevalent symptoms in COVID-19 delta variant infected neonates. Infected mothers may be a main cause of infection for neonates. (Author)

2023-04657

**Vaccination Beliefs and Attitudes of Lactating People During the SARS-CoV-2 Pandemic.** Mark EG, Demirci JR, Megli C, et al (2023), vol 39, no 3, August 2023, pp 415–425

Background:

Pregnant and recently pregnant people have lower vaccination rates against SARS-CoV-2 than the general population, despite increased risk of adverse outcomes from infection. Little is known about vaccine hesitancy in this population.

Research Aim:

To characterize SARS-CoV-2 and other vaccine attitudes of lactating people who accepted the SARS-CoV-2 vaccine, describing their vaccine experiences to further contextualize their beliefs.

Methods:

A prospective cross-sectional online survey design was used. We administered the survey to 100 lactating people in Pennsylvania from April to August 2021, upon enrollment into a longitudinal study investigating SARS-CoV-2 vaccine antibodies in human milk. This survey assessed SARS-CoV-2 vaccine attitudes, vaccine counseling from providers, and vaccine decision making. Associations between vaccination timing and beliefs were analyzed by Pearson chi-square.

Results:

Of 100 respondents, all received  $\geq 1$  SARS-CoV-2 vaccine before or shortly after enrollment, with 44% ( $n = 44$ ) vaccinated in pregnancy and 56% ( $n = 56$ ) while lactating. Participants reported vaccination counseling by obstetric ( $n = 48$ ; 70%) and pediatric ( $n = 25$ ; 36%) providers. Thirty-two percent ( $n = 32$ ) received no advice on SARS-CoV-2 vaccination from healthcare providers, while 69% ( $n = 69$ ) were counseled that vaccination was safe and beneficial.

While 6% ( $n = 6$ ) and 5% ( $n = 5$ ) reported concerns about the safety of maternal vaccines for lactating people or their infants, respectively, 12% ( $n = 12$ ) and 9% ( $n = 9$ ) expressed concerns about the safety of maternal SARS-CoV-2 vaccination in particular.

Conclusions:

Despite high uptake of SARS-CoV-2 vaccine among participants, safety concerns persisted, with many reporting a lack of direct counseling from providers. Future research should investigate how variability in provider counseling affects SARS-CoV-2 vaccine uptake in perinatal populations. (Author)

2023-04633

**Neonatal Hearing Screening: Challenges of COVID-19 Pandemic.** Rockwell M, Gungor A, Mankekar G, et al (2023), Clinical Pediatrics vol 62, no 11, November 2023, pp 1380–1384

This is a retrospective chart review of newborns referred to audiology between June and December 2020. Newborns who failed or did not have an initial newborn hearing screening (NBHS) at an academic, tertiary care medical center, either in the nursery or in the neonatal intensive care unit (NICU) prior to discharge, were referred for a follow-up audiology appointment.

Forty-three patients were included who failed or did not receive an NBHS. Of 43 patients, 15 (34.9%) did not receive an initial hearing test due to coronavirus disease 2019 (COVID-19 protocols). Of the 15, 7 (16.3% of total 43) newborns had mothers who refused COVID-19 screening, and 5/7 were lost to follow-up (11.6% of total). Another 7/15 newborns (16.3% of total) had a COVID-19-positive mother, and 1 of these 7 was lost to follow-up (2.3% of total). One of the 15 newborns (2.3% of total) had a pending maternal COVID-19 test result at discharge, and this patient was also lost to follow-up. (Author)

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**2023-04536**

**Parental Perceptions of the Impact of NICU Visitation Policies and Restrictions Due to the COVID-19 Pandemic: A**

**Qualitative Study.** Yance B, Do K, Heath J, et al (2023), Advances in Neonatal Care vol 23, no 4, August 2023, pp 311-319

**Background:**

The COVID-19 pandemic has impacted parents' ability to participate in their infants' care during the neonatal intensive care unit (NICU) stay in unprecedented ways.

**Purpose:**

The purpose of this study was to explore the lived experience of parents whose infants was in the NICU during the COVID-19 pandemic.

**Methods:**

A qualitative telephone interview survey was conducted. Participants included parents of preterm infants who were born less than 34 weeks' gestation during the first wave of the COVID-19 pandemic (March 2020-August 2020). Telephone surveys were conducted through open-ended questions. A thematic content analysis identifying themes was performed after interviews were completed and transcribed.

**Results:**

A total of 8 mothers completed the telephone survey. Key themes from this study include parents experiencing increased stress due to the restricted visitation policies, limited opportunities to care for their infant, lack of support, and inconsistent communication regarding their infant status and COVID-19 protocols.

**Implications for Practice:**

Suggestions provided to enhance NICU services during the pandemic include increasing parental engagement opportunities to care for their infant in the NICU, enhanced empathy and compassion from the neonatal team, and open and transparent communication.

**Implications for Research:**

Further research investigating cultural impact on parents' perspectives, perspectives of fathers, long-term impact of how parents coped after discharge from the NICU, and emotional impact on NICU staff members may be beneficial to aid improvements in NICU service delivery during the ongoing and future pandemic. (Author)

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**2023-04535**

**Experiences of Mothers of Preterm Infants in the Neonatal Intensive Care Unit During the COVID-19 Pandemic.** Richter LL, Ku C, Mak MYY, et al (2023), Advances in Neonatal Care vol 23, no 4, August 2023, pp 295-303

**Background:**

The neonatal intensive care unit (NICU) stay following the birth of a preterm infant can be stressful and traumatic for families. During the COVID-19 pandemic, the NICU environment changed precipitously as infection control and visitor restriction measures were implemented.

**Purpose:**

Our study aimed to examine the impact of the pandemic policies on the experiences of mothers of preterm infants during their stay in the NICU.

**Methods:**

Semistructured interviews were conducted with mothers of preterm infants hospitalized in a Canadian tertiary-level NICU. Informed by interpretive description methodology, interview content was transcribed and analyzed using a thematic analysis approach. The identified themes were validated, clarified, or refined using investigator triangulation.

**Results:**

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Nine English-speaking mothers, aged 28 to 40 years, were interviewed. Four themes emerged from the analysis of their experiences: (1) disrupted family dynamic, support, and bonding; (2) physical and emotional isolation; (3) negative psychological impact compounded by added concerns, maternal role change, and survival mode mentality; and (4) positive aspects of the pandemic management measures.

#### Implications for Practice:

During the pandemic, the way that care was provided in the NICU changed. This study helps to explore how neonatal clinicians can foster individual and organizational resilience to keep patients and families at the center of care, even when the healthcare system is under intense stress.

#### Implications for Research

: Our results show that these changes heightened mothers' distress, but also had a modest positive impact. Further research about long-term consequences of pandemic policies on the mother and preterm infant after NICU discharge is warranted.

(Author)

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#### 2023-04511

**Breastfeeding provides a protective hug and the benefits have outweighed the risks during the COVID-19 pandemic.** Briana DD, Malamitsi-Puchner A (2023), Acta Paediatrica vol 112, no 6, June 2023, pp 1177-1181

Full URL: <https://doi.org/10.1111/apa.16769>

Mothers have been very hesitant about breastfeeding when they have COVID-19 infection or vaccinations. Maternal milk protects neonates through its high biological value, immune factors and anti-infectious molecules and this review shows that the virus that causes COVID-19 is not transmitted through breast milk. COVID-19 vaccines induce anti-spike antibodies with neutralising capacity, and phagocytosis, and no vaccine particles or messenger ribonucleic acid have been detected in breast milk. Most drugs used for maternal COVID-19 infections are safe for breastfed infants.

#### Conclusion

The clear benefits of breastfeeding by far outweigh the very low risk of infant infections from COVID-19. (Author)

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#### 2023-04376

**A Year to Evaluate the Neonatal and Obstetric Outcome in Covid 19 Positive Pregnant Women in Abu Dhabi UAE.** Farah R, Datta R, et al (2022), Open Journal of Pediatrics vol 12, no 1, March 2022, pp. 26-32

Full URL: <https://doi.org/10.4236/ojped.2022.121004>

Covid 19 epidemic has caused a lot of concern especially in the obstetric and neonatal populations. The fact that it is a new disease and the fact that there are sparse studies available have doubled our worries. Our study provides some answers. This a retrospective study carried out in Mediclinic Al-Noor hospital in Abu Dhabi. Our study revealed no adverse effects on the neonates and no vertical transmission. Given the physiologic and immune function changes in pregnancy, they might be considered at a higher risk of developing more complications, but it needs a longer duration of the study with larger sample size. Statistical analysis could not be possible in our study due to the smaller sample size, and we plan to continue the study further in the future to obtain a larger pool of data to validate the findings more accurately. The incidence of covid positive mothers might not reflect today's covid situation because we carried out the study during the lockdown and there might be an increase in the incidence after lockdown. (Author)

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#### 2023-04331

**The impact of COVID-19 on breastfeeding rates: An international cross-sectional study.** Ganho-Ávila A, Guiomar R, Sobral M, et al (2023), Midwifery vol 120, May 2023, 103631

#### Background

Breastfeeding promotes children's health and is associated with positive effects to maternal physical and mental health. Uncertainties regarding SARS-CoV-2 transmission led to worries experienced by women and health

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professionals which impacted breastfeeding plans. We aimed to investigate the impact of self-reported and country-specific factors on breastfeeding rates during the COVID-19 pandemic.

## Methods

This study is part of a broader international prospective cohort study about the impact of the COVID-19 pandemic on perinatal mental health (Riseup-PPD-COVID-19). We analysed data from 5612 women, across 12 countries. Potential covariates of breastfeeding (sociodemographic, perinatal, physical/mental health, professional perinatal care, changes in healthcare due to the pandemic, COVID-19 related, breastfeeding support, governmental containment measures and countries' inequality levels) were studied by Generalized Linear Mixed-Effects Models.

## Results

A model encompassing all covariates of interest explained 24% of the variance of breastfeeding rates across countries (first six months postpartum). Overall, first child ( $\beta = -0.27$ ), age of the child ( $\beta = -0.29$ ), preterm birth ( $\beta = -0.52$ ), admission to the neonatal/pediatric care ( $\beta = -0.44$ ), lack of breastfeeding support ( $\beta = -0.18$ ), current psychiatric treatment ( $\beta = -0.69$ ) and inequality ( $\beta = -0.71$ ) were negatively associated with breastfeeding ( $p < .001$ ). Access to postnatal support groups was positively associated with breastfeeding ( $\beta = 0.59$ ;  $p < .001$ ). In countries with low-inequality, governmental measures to contain virus transmission had a deleterious effect on breastfeeding ( $\beta = -0.16$ ;  $p < .05$ ) while access to maternity leave protected breastfeeding ( $\beta = 0.50$ ;  $p < .001$ ).

## Discussion

This study shows that mother's COVID-19 diagnosis and changes in healthcare and birth/postnatal plans did not influence breastfeeding rates. Virtual support groups help women manage breastfeeding, particularly when their experiencing a first child and for those under psychiatric treatment. The complex associations between covariates and breastfeeding vary across countries, suggesting the need to define context-specific measures to support breastfeeding. (Author)

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### 2023-04302

#### **COVID-19 vaccination of children aged 6 months to 4 years: JCVI advice, 9 December 2022 (updated 26 April 2023).**

Department of Health & Social Care (2023), 6 April 2023

**Full URL:** <https://www.gov.uk/government/publications/covid-19-vaccination-of-children-aged-6-months-to-4-years-jcvi-advice-9-december-2022/covid-19-vaccination-of-children-aged-6-months-to-4-years-jcvi-advice-9-december-2022>

Offers advice on the administration of COVID-19 vaccinations in the UK to children aged between six months and four years of age. This advice has been formulated following a review of data by the Joint Committee on Vaccination and Immunisation (JCVI) on the 31 October and 1 November 2022. (JSM)

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### 2023-04298

**Health and Social Care Secretary statement on vaccination of at-risk children aged 6 months to 4 years.** Department of Health and Social Care (2023), 6 April 2023

**Full URL:** <https://www.gov.uk/government/news/health-and-social-care-secretary-statement-on-vaccination-of-at-risk-children-aged-6-months-to-4-years>

Press release from Health and Social Care Secretary Steve Barclay which states that children aged six months to four years of age in a clinical risk group will be eligible for a Covid vaccine. Acknowledges that while children are at very low risk of harm from covid, there are a small number of children with health conditions which make them more vulnerable, and in these cases, parents should be given the choice of whether or not to have their child vaccinated. (Author, edited)

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### 2023-04261

**Neonatal care during the COVID-19 pandemic - a global survey of parents' experiences regarding infant and family-centred developmental care.** Kostenzer J, Hoffmann J, von Rosenstiel-Pulver C, et al (2021), EClinicalMedicine vol 39,

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**Background:** The COVID-19 pandemic restrictions affect provision and quality of neonatal care. This global study explores parents' experiences regarding the impact of the restrictions on key characteristics of infant and family-centred developmental care (IFCDC) during the first year of the pandemic.

**Methods:** For this cross-sectional study, a pre-tested online survey with 52 questions and translated into 23 languages was used to collect data between August and November 2020. Parents of sick or preterm infants born during the pandemic and receiving special/intensive care were eligible for participation. Data analysis included descriptive statistics and statistical testing based on different levels of restrictive measures.

**Findings:** In total, 2103 participants from 56 countries provided interpretable data. Fifty-two percent of respondents were not allowed to have another person present during birth. Percentages increased with the extent of restrictions in the respondents' country of residence ( $p = 0.002$ ). Twenty-one percent of total respondents indicated that no-one was allowed to be present with the infant receiving special/intensive care. The frequency ( $p < 0.001$ ) and duration ( $p = 0.001$ ) of permitted presence largely depended on the extent of restrictions. The more restrictive the policy measures were, the more the respondents worried about the pandemic situation during pregnancy and after birth.

**Interpretation:** COVID-19 related restrictions severely challenged evidence-based cornerstones of IFCDC, such as separating parents/ legal guardians and their newborns. Our findings must therefore be considered by public health experts and policy makers alike to reduce unnecessary suffering, calling for a zero separation policy.

**Funding:** EFCNI received an earmarked donation by Novartis Pharma AG in support of this study.

**Keywords:** Covid-19; Infant and Family-Centred Developmental Care; Kangaroo Mother Care; Low Birth Weight; Neonatal Intensive Care Unit; Newborn Infant; Pandemic; Parents; Preterm Birth; SARS-CoV-2; Survey.

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## 2023-04250

**The Clinical Features and Outcomes of Four Neonates Born to Mothers with a Severe Form of COVID-19 and a Positive RT-PCR for SARS Co-V2 in Douala Gynaeco-Obstetric and Pediatric Hospital in Cameroon.** Enyama D, Njinkui DN, Rakya I, et al (2020), Open Journal of Pediatrics vol 10, no 4, December 2020, pp. 642-651

Full URL: <https://doi.org/10.4236/ojped.2020.104066>

**Background:** A novel viral respiratory disease caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), is responsible for a worldwide pandemic. The effects of this new disease in pregnant women and newborns are actually not well known. **Methods:** We investigated the clinical features and outcomes of four neonates born to mothers with a severe form of COVID-19 and a positive RT-PCR for SARS Co-V2 in Douala Gynaeco-Obstetric and Pediatric Hospital (Cameroon) from April 20 to June 5, 2020. **Results:** All four mothers were symptomatic and had a positive RT-PCR for SARS CoV-2 from nasopharyngeal swab on admission. All of them delivered prematurely through cesarean section because of severe respiratory distress and one died shortly after delivery. The four premature male infants were born between 30 weeks and 35 weeks 2 days of gestation and had birth weights ranging from 1090 g to 2950 g. All infants had 1-minute Apgar scores that ranged from 7 to 8 and 5-minute Apgar scores varying between 8 and 9. They were isolated from their mothers immediately after birth and received formula feeding. Three of the four infants were tested using nasopharyngeal swab specimens for RT-PCR 24 to 48 hours after birth and were negative for COVID-19. All the infants were treated in a dedicated area at the neonatal care unit and presented with mild respiratory distress on admission with a Silverman score that varied between 2 and 4/10. During their hospitalization, all the infants also presented with jaundice and underwent phototherapy. Three of them had anemia with hemoglobin levels ranging from 105 to 123 g/L requiring for blood transfusion. The hospital stay varied between 3 and 48 days. Three infants were discharged healthy and one died. **Conclusion:** This case series suggests the possibility of

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poor maternal and neonatal outcomes in case of severe COVID-19 in mothers. It also suggests that severe COVID-19 in pregnant women may be a risk factor for prematurity for the newborns. It is crucial to screen pregnant women, to implement infection prevention, control measures and to provide close monitoring of neonates born to mothers with a severe form of COVID-19. (Author)

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## 2023-04176

**Covid jabs for under fives in at-risk groups.** Anon (2023), BBC News 6 April 2023

**Full URL:** [https://www.bbc.co.uk/news/health-65181057?at\\_medium=RSS&at\\_campaign=KARANGA](https://www.bbc.co.uk/news/health-65181057?at_medium=RSS&at_campaign=KARANGA)

Short news item reporting that, following recommendations from the government's vaccine advisors, children from the age of six months to four years, deemed to be in a high-risk category, are to be offered the covid vaccination for the first time. States that the inoculations will be offered from June in England, with the other UK nations yet to announce roll-out dates. (JSM)

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## 2023-04115

**Clinical Outcomes of Positive Newborns for COVID-19 in Rio de Janeiro, Brazil.** Martins-Cardoso K, de Toledo LFM, Paz JAS, et al (2021), Open Journal of Obstetrics and Gynecology vol 11, no 12, December 2021, pp. 1851-1861

**Full URL:** <https://doi.org/10.4236/ojog.2021.1112172>

The disease caused by the SARS-CoV-2 virus has spread very rapidly throughout the world, causing various clinical manifestations and affecting several organs and systems. However, the possibility of vertical transmission of COVID-19 in symptomatic pregnant women has been questioned. The aim of this work was to report cases of possible vertical transmission in pregnant women affected by the SARS-CoV-2 virus, as well as its clinical repercussions on the newborn. In this paper, we conducted a cross-sectional retrospective study by analyzing medical records of pregnant women admitted at the military hospital, in Rio de Janeiro, Brazil, diagnosed with COVID-19 and who had positive newborns. To evaluate epidemiological data, clinical manifestations, laboratorial and histopathological changes were related to such vertical transmission. Only six tested newborns were positive for COVID-19. The mothers had no respiratory symptoms, and the gestational age was at term, except for one newborn born prematurely due to detection of pericardial effusion. Three neonates had respiratory symptoms, requiring ventilatory support. None of the mothers or newborns died. During the pandemic, possible vertical transmission cases of infected pregnant women in the third trimester of pregnancy were observed. According to the case reports published in the literature, they illustrate phenotypes of neonatal involvement with varied clinical manifestations and severity; however, further scientific studies are needed to prove the effective vertical transmission of SARS-CoV-2 in positive pregnant women. (Author)

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## 2023-03981

**COVID-19 and obstetric outcomes: a single-center retrospective experience in a predominantly Black population.** Kuriloff M, Patel E, Mueller A, et al (2023), Journal of Maternal-Fetal and Neonatal Medicine vol 36, no 1, 2023, 2196364

**Full URL:** <https://doi.org/10.1080/14767058.2023.2196364>

**Objective:** This retrospective, single-center case series was designed to characterize the effects of perinatal COVID-19 diagnosis on obstetric and neonatal outcomes in a predominantly high-risk, urban Black population.

**Study Design:** Data were collected via retrospective chart review on all COVID-19-positive obstetric patients and their neonates who presented to the University of Chicago Medical Center between March 2020 and November 2020, before the availability of the COVID-19 vaccine. Patient demographics, delivery outcomes, COVID-19 symptoms, treatment, and outcomes were analyzed.

**Results:** A total of 56 COVID-19-positive obstetric patients were included in the study, of which four were lost to follow-up before delivery. The median age of patients was 27 years (IQR 23, 32), with 73.2% publicly insured and 66.1% Black. Patients had a median body mass index (BMI) of 31.6 kg/m<sup>2</sup> (IQR 25.9, 35.5). 3.6% of patients had chronic hypertension, 12.5% had diabetes, and 16.1% had asthma. Perinatal complications were common. Twenty-six patients

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(50.0%) had a diagnosis of a hypertensive disorder of pregnancy (HDP). 28.8% had gestational hypertension, and 21.2% had preeclampsia (with and without severe features). The rate of maternal ICU admission was 3.6%. Furthermore, 23.5% of patients delivered preterm (<37 weeks gestation), and 50.9% of infants were admitted to the Neonatal Intensive Care Unit (NICU).

**Conclusion:** In our study of a predominantly Black, publicly-insured, unvaccinated group of COVID-19-positive pregnant patients, we found high rates of hypertensive disorders of pregnancy, preterm delivery, and NICU admission compared to rates reported in existing literature before widespread vaccine availability. Our findings suggest that SARS-CoV-2 infection during pregnancy, irrespective of maternal disease severity, may exacerbate existing obstetric health disparities by disproportionately impacting Black, publicly insured patients. Larger comparative studies are needed to better characterize possible racial and socioeconomic disparities in obstetric outcomes in the setting of SARS-CoV-2 infection during pregnancy. These studies should examine the pathophysiology of SARS-CoV-2 infection during pregnancy, as well as potential associations between adverse perinatal outcomes and disparities in access to care, COVID-19 vaccination, and other social determinants of health amongst more vulnerable populations infected with SARS-CoV-2 during pregnancy. (Author)

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**2023-03883**

**Preterm care during the COVID-19 pandemic: A comparative risk analysis of neonatal deaths averted by kangaroo mother care versus mortality due to SARS-CoV-2 infection.** Minckas N, Medvedev M, Adejuyigbe EA, et al (2021), EClinicalMedicine vol 33, March 2021, 100733

**Full URL:** <https://doi.org/10.1016/j.eclinm.2021.100733>

**Background:** COVID-19 is disrupting health services for mothers and newborns, particularly in low- and middle-income countries (LMIC). Preterm newborns are particularly vulnerable. We undertook analyses of the benefits of kangaroo mother care (KMC) on survival among neonates weighing  $\leq 2000$  g compared with the risk of SARS-CoV-2 acquired from infected mothers/caregivers.

**Methods:** We modelled two scenarios over 12 months. Scenario 1 compared the survival benefits of KMC with universal coverage (99%) and mortality risk due to COVID-19. Scenario 2 estimated incremental deaths from reduced coverage and complete disruption of KMC. Projections were based on the most recent data for 127 LMICs (~90% of global births), with results aggregated into five regions.

**Findings:** Our worst-case scenario (100% transmission) could result in 1,950 neonatal deaths from COVID-19. Conversely, 125,680 neonatal lives could be saved with universal KMC coverage. Hence, the benefit of KMC is 65-fold higher than the mortality risk of COVID-19. If recent evidence of 10% transmission was applied, the ratio would be 630-fold. We estimated a 50% reduction in KMC coverage could result in 12,570 incremental deaths and full disruption could result in 25,140 incremental deaths, representing a 2.3-4.6% increase in neonatal mortality across the 127 countries.

**Interpretation:** The survival benefit of KMC far outweighs the small risk of death due to COVID-19. Preterm newborns are at risk, especially in LMICs where the consequences of disruptions are substantial. Policymakers and healthcare professionals need to protect services and ensure clearer messaging to keep mothers and newborns together, even if the mother is SARS-CoV-2-positive.

**Funding:** Eunice Kennedy Shriver National Institute of Child Health & Human Development; Bill & Melinda Gates Foundation; Elma Philanthropies; Wellcome Trust; and Joint Global Health Trials scheme of Department of Health and Social Care, Department for International Development, Medical Research Council, and Wellcome Trust.

**Keywords:** Breastfeeding; Covid-19; Kangaroo mother care; Low birthweight; Neonatal mortality; Newborn; Preterm; SARS-CoV-2.

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## 2023-03850

**Reducing MRSA Infection in a New NICU During the COVID-19 Pandemic.** Barrett RE, Fleiss N, Hansen C, et al (2023), Pediatrics vol 151, no 2, February 2023, e2022057033

**Full URL:** <https://doi.org/10.1542/peds.2022-057033>

**Background and objectives:** Methicillin-resistant Staphylococcus aureus (MRSA) is prevalent in most NICUs, with a high rate of skin colonization and subsequent invasive infections among hospitalized neonates. The effectiveness of interventions designed to reduce MRSA infection in the NICU during the coronavirus disease 2019 (COVID-19) pandemic has not been characterized.

**Methods:** Using the Institute for Healthcare Improvement's Model for Improvement, we implemented several process-based infection prevention strategies to reduce invasive MRSA infections at our level IV NICU over 24 months. The outcome measure of invasive MRSA infections was tracked monthly utilizing control charts. Process measures focused on environmental disinfection and hospital personnel hygiene were also tracked monthly. The COVID-19 pandemic was an unexpected variable during the implementation of our project. The pandemic led to restricted visitation and heightened staff awareness of the importance of hand hygiene and proper use of personal protective equipment, as well as supply chain shortages, which may have influenced our outcome measure.

**Results:** Invasive MRSA infections were reduced from 0.131 to 0 per 1000 patient days during the initiative. This positive shift was sustained for 30 months, along with a delayed decrease in MRSA colonization rates. Several policy and practice changes regarding personnel hygiene and environmental cleaning likely contributed to this reduction.

**Conclusions:** Implementation of a multidisciplinary quality improvement initiative aimed at infection prevention strategies led to a significant decrease in invasive MRSA infections in the setting of the COVID-19 pandemic.

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## 2023-03836

**Maternal and Newborn Hospital Outcomes of Perinatal SARS-CoV-2 Infection: A National Registry.** Hudak ML, Flannery DD, Barnette K, et al (2023), Pediatrics vol 151, no 2, February 2023, e2022059595

**Full URL:** <https://doi.org/10.1542/peds.2022-059595>

**Objectives:** The American Academy of Pediatrics National Registry for the Surveillance and Epidemiology of Perinatal coronavirus disease 2019 (COVID-19) (NPC-19) was developed to provide information on the effects of perinatal severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection.

**Methods:** National Registry for the Surveillance and Epidemiology of Perinatal COVID-19 participating centers entered maternal and newborn data for pregnant persons who tested positive for SARS-CoV-2 infection between 14 days before and 10 days after delivery. Incidence of and morbidities associated with maternal and newborn SARS-CoV-2 infection were assessed.

**Results:** From April 6, 2020 to March 19, 2021, 242 centers in the United States reported data for 7524 pregnant persons; at the time of delivery, 78.1% of these persons were asymptomatic, 18.2% were symptomatic but not hospitalized specifically for COVID-19, 3.4% were hospitalized for COVID-19 treatment, and 18 (0.2%) died in the hospital of COVID-related complications. Among 7648 newborns, 6486 (84.8%) were tested for SARS-CoV-2, and 144 (2.2%) were positive; the highest rate of newborn infection was observed when mothers first tested positive in the immediate postpartum period (17 of 125, 13.6%). No newborn deaths were attributable to SARS-CoV-2 infection. Overall, 15.6% of newborns were preterm: among tested newborns, 30.1% of polymerase chain reaction-positive and 16.2% of polymerase chain reaction-negative were born preterm ( $P < .001$ ). Need for mechanical ventilation did not

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differ by newborn SARS-CoV-2 test result, but those with positive tests were more likely to be admitted to a NICU.

**Conclusions:** Early in the pandemic, SARS-CoV-2 infection was acquired by newborns at variable rates and without apparent short-term effects. During a period that preceded widespread availability of vaccines, we observed higher than expected numbers of preterm births and maternal in-hospital deaths.

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#### 2023-03819

**Safety of Tocilizumab and Remdesivir in Treating COVID-19 Pneumonia in Premature Twins.** Bihm D, Huang J, Yi B, et al (2023), Pediatrics vol 151, no 4, April 2023, e2022058196

Describes the case of two premature twins with severe COVID-19 pneumonia who were treated with remdesivir and tocilizumab. Both infants were discharged from hospital without experiencing major adverse effects. (MB)

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#### 2023-03615

**Use of Wireless Ultrasound Probe in Isolated Infants: A Case Report of Two SARS-CoV-2-Positive Mothers' Newborns.**

Prontera G, Perri A, Vento G, et al (2022), Neonatology vol 119, no 1, 2022, pp. 129-132

The COVID-19 pandemic has upset habits in any workplace. In hospitals, several precautions have been taken to maintain health-care workers' safety and to avoid disease spread or the possible creation of new epidemic outbreaks. The use of medical devices makes the contamination and the nosocomial virus spread possible, causing infection in medical operators and hospitalized patients. In the neonatal intensive care unit, ultrasound has been an increasingly used tool because it is a non-invasive, repeatable method and it is side effect-free as the newborn is not exposed to radiation. It makes a fast diagnosis and then therapy possible such as in the lung diseases and other life-threatening conditions. The use of portable devices such as the wireless probe has many advantages in routine clinical practice, and during the COVID-19 pandemic, it has proved to be fundamental for the patient and the physician's safety because it reduced the risk of contamination. We report the use of the wireless ultrasound probe in 2 isolated neonates born to SARS-CoV-2-positive mothers. (Author)

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#### 2023-03569

**Social Support for Breastfeeding Practice During the COVID-19 Second Wave in Thailand: A Cross-Sectional Study.** Nuampa S, Kuesakul K, Sudphet M, et al (2023), vol 39, no 2, May 2023, pp 206–216

**Background:**

Since December 2020, the second wave of COVID-19 in Thailand has had a considerable impact, and mothers have struggled to receive breastfeeding support in hospitals. In this situation, there has been limited research that addresses social support for breastfeeding and the influences of support in determining breastfeeding outcomes.

**Research Aims:**

(1) To describe the influence of COVID-19 on social support for breastfeeding and breastfeeding practices in the Thai context, and (2) to examine breastfeeding duration with different levels of social support from families and healthcare providers.

**Method:**

This descriptive, cross-sectional online survey design was part of a larger multi-methods project about breastfeeding behaviors and experiences among postpartum mothers during the COVID-19 pandemic. Online questionnaires were administered from August to November 2021 to participants (N = 390) who were from three provinces in Thailand and had given birth 6–12 months prior to the survey.

**Results:**

Exclusive breastfeeding for 6 months was observed in less than half of the participants (n = 146, 37.4%). Perceptions of breastfeeding support were generally high overall among both family (Mdn = 45, IQR = 7) and healthcare providers (Mdn = 43, IQR = 7). Participants who perceived more breastfeeding support from families than the median had significantly longer exclusive breastfeeding durations than those who perceived less breastfeeding support than the

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median ( $z = -2.246$ ,  $p = .025$ ). The same pattern was present for breastfeeding support from healthcare providers ( $z = -2.380$ ,  $p = 0.017$ ).

#### Conclusions:

While the exclusive breastfeeding rate was better than the pre-pandemic rate, successful breastfeeding was more common when participants perceived that they had received breastfeeding support. Policymakers should execute breastfeeding support systems along with COVID-19 management. (Author)

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#### 2023-03512

**Probable Case of Vertical Transmission of SARS-CoV-2 in a Newborn in Mexico.** Mendoza-Hernández M, Huerta-Niño de Rivera I, Yoldi-Negrete M, et al (2021), Neonatology vol 118, no 3, 2021, pp. 364-367

Background: Much remains unknown about the transmission of the SARS-CoV-2 virus. Pregnant women are considered part of the risk population, and vertical transmission of other coronaviruses has been suggested; however, this type of transmission in SARS-CoV-2 is believed to be unlikely. Case Report: A newborn delivered in term via cesarean section to an asymptomatic but COVID-19-positive 35-year-old woman started with respiratory distress in the first 30 min of life. A chest radiograph revealed pneumothorax and ground glass opacities. Ventilatory support with continuous positive airway pressure was needed. Given the respiratory failure and the positive test from the mother, the patient was sampled for SARS-CoV-2 (RT-PCR) at minute 30 of life, with a positive result reported at 36 h of life. No complications had been present during pregnancy, and cardiac screening and blood cultures revealed no other etiologies. Conclusion: Vertical transmission was highly likely in this case. Clinicians should be alert and report similar cases. (Author)

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#### 2023-03278

**Nirmatrelvir–Ritonavir (Paxlovid) for Mild Coronavirus Disease 2019 (COVID-19) in Pregnancy and Lactation.** Lin C, Cassidy AG, Li L, et al (2023), Obstetrics & Gynecology vol 141, no 5, May 2023, pp 957-960

Nirmatrelvir–ritonavir (Paxlovid) is recommended to reduce the risk of hospitalization from coronavirus disease 2019 (COVID-19) in pregnancy. Data on use in pregnancy, including prescribing patterns and patient experience (adverse effects, incidence of rebound), are limited. We performed a cross-sectional study in which we surveyed a cohort of vaccinated pregnant or lactating individuals with breakthrough COVID-19. Of 35 pregnant respondents, 51.4% were prescribed and 34.3% took nirmatrelvir–ritonavir; of these, 91.7% experienced dysgeusia and 50.0% had rebound (50.0% positive test result, 33.3% return of symptoms). Three of five lactating respondents were prescribed and two took nirmatrelvir–ritonavir. There were no significant adverse outcomes. Unknown risk was the most common reason for declining nirmatrelvir–ritonavir. More research is needed to establish the safety of nirmatrelvir–ritonavir in pregnancy and lactation, to improve public health messaging, and to increase uptake of this treatment.

Nirmatrelvir–ritonavir (Paxlovid) reduces the risk of hospitalization and death resulting from coronavirus disease 2019 (COVID-19) in populations at high risk,<sup>1</sup> but data in pregnancy and lactation are lacking. Leading professional societies support its use in pregnancy.<sup>2,3</sup> Patient experience, such as adverse effects and incidence of rebound symptoms, has not been reported in these groups.

We surveyed a vaccinated cohort of pregnant or lactating individuals about their experience with nirmatrelvir–ritonavir for COVID-19. We aimed to assess the patient clinical experience after treatment, including the rate of rebound symptoms. (Author)

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#### 2023-03174

**Clinical outcome in newborns of perinatally COVID-19 infected women.** Syridou G, Kapsabeli E, Mavridi A, et al (2023), Journal of Maternal-Fetal and Neonatal Medicine vol 36, no 1, 2023, 2183752

Full URL: <https://doi.org/10.1080/14767058.2023.2183752>

#### Objective

Maternal COVID-19 infection during pregnancy has been associated with adverse neonatal outcomes, such as

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prematurity and neonatal morbidity. Those adverse events are mainly attributed to maternal factors, rather than to the neonatal infection itself. Our aim is to add our experience and present the neonatal outcome of neonates born to mothers with perinatal SARS-CoV-2 infection.

## Methods

This is a prospective case-control study with data from two Academic Tertiary Referral Hospitals in Greece. Electronic records of all births from SARS-CoV-2 positive mothers between March 2020 and April 2021 were analyzed. Demographic data, the severity of maternal COVID-19 disease, gestational age (GA), mode of delivery, birth weight (BW), need for resuscitation and/or supplemental oxygen and duration of hospitalization were recorded. A comparison with 2:1 matched neonates according to sex, GA, and BW born to SARS-CoV-2 negative mothers during the same period was performed. Chi-square and Mann–Whitney U test were used for categorical and non-categorical variables respectively.

## Results

A total of eighty-one neonates were born to SARS-CoV-2 positive mothers during this period. Forty-three percent of pregnant mothers were asymptomatic. Median GA and median BW were 38 weeks (Interquartile range (IQR): 36–39 weeks) and 2940 gr (IQR: 2560–3340 gr) respectively. Prematurity was observed in 24.7% of the cases. Only 2 (2.4%) neonates were PCR positive after delivery. SARS-CoV-2 positive women were more likely to undergo Cesarean section. APGAR score at 5 min and the need for resuscitation did not differ between the two groups. In comparison with the control group, neonates born to SARS-CoV-2 positive mothers presented with gastrointestinal symptoms (53.6% vs 5.1%, p-value= <.001) and hospitalization was longer, mostly due to maternal factors.

## Conclusion

In our study neonatal positivity was limited and no vertical transmission was noted. Neonatal outcomes were comparable to the control group. However, the presence of gastrointestinal symptoms in neonates born to PCR-positive women compared to controls needs further investigation. (Author)

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## 2023-03112

**First do no harm overlooked: Analysis of COVID-19 clinical guidance for maternal and newborn care from 101 countries shows breastfeeding widely undermined.** Gribble K, Cashin J, Marinelli K, et al (2023), *Frontiers in Global Women's Health* 17 January 2023, online

**Full URL:** <https://doi.org/10.3389/fnut.2022.1049610>

**Background:** In March 2020, the World Health Organization (WHO) published clinical guidance for the care of newborns of mothers with COVID-19. Weighing the available evidence on SARS-CoV-2 infection against the well-established harms of maternal-infant separation, the WHO recommended maternal-infant proximity and breastfeeding even in the presence of maternal infection. Since then, the WHO's approach has been validated by further research. However, early in the pandemic there was poor global alignment with the WHO recommendations.

**Methods:** We assessed guidance documents collected in November and December 2020 from 101 countries and two regional agencies on the care of newborns of mothers with COVID-19 for alignment with the WHO recommendations.

**Recommendations considered were:** (1) skin-to-skin contact; (2) early initiation of breastfeeding; (3) rooming-in; (4) direct breastfeeding; (5) provision of expressed breastmilk; (6) provision of donor human milk; (7) wet nursing; (8) provision of breastmilk substitutes; (9) relactation; (10) psychological support for separated mothers; and (11) psychological support for separated infants.

**Results:** In less than one-quarter of country guidance were the three key breastfeeding facilitation practices of skin-to-skin contact, rooming-in, and direct breastfeeding recommended. Donor human milk was recommended in under one-quarter of guidance. Psychological support for mothers separated from their infants was recommended in 38%. Few countries recommended relactation, wet nursing, or psychological support for infants separated from mothers. In three-quarters of country guidance, expressed breastmilk for infants unable to directly breastfeed was

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recommended. The WHO and the United Kingdom's Royal College of Obstetricians and Gynecologists were each cited by half of country guidance documents with the United States Centers for Disease Control and Prevention directly or indirectly cited by 40%.

**Conclusion:** Despite the WHO recommendations, many COVID-19 maternal and newborn care guidelines failed to recommend skin-to-skin contact, rooming-in, and breastfeeding as the standard of care. Irregular guidance updates and the discordant, but influential, guidance from the United States Centers for Disease Control may have been contributory. It appeared that once recommendations were made for separation or against breastfeeding they were difficult to reverse. In the absence of quality evidence on necessity, recommendations against breastfeeding should not be made in disease epidemics. (Author) [Erratum: *Frontiers in Global Women's Health*, 2 March 2023, Fig 6. <https://doi.org/10.3389/fnut.2023.1166221>]

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## 2023-03020

**Early Discharge of Newborns Born to Mothers with COVID-19: A Possible Safe Strategy.** Costa S, Coppola M, Fattore S, et al (2023), *American Journal of Perinatology* 24 January 2023, online

**Objective** In this study, we evaluated the safety of early discharge (ED) of newborns born to coronavirus disease 2019 (COVID-19)-positive mothers.

**Study Design** All ED newborns from the postpartum wards of the Fondazione Policlinico Gemelli between January 1, 2022, and February 28, 2022, were retrospectively analyzed. Newborns from mothers with COVID-19 and those from uninfected mothers were considered. The primary outcome was to evaluate whether the rate of the composite outcome, which was the percentage of rehospitalization/access in emergency room (RH/ER) within the first week from discharge, differed between neonates born to mother with COVID-19 (COVID-19 group) and those born to uninfected mothers (no COVID-19 group). The secondary outcomes were to assess the quality of feeding and number of outpatient visits in the follow-up clinic between the two cohorts of patients.

**Results** One hundred and thirty-four newborns in the no COVID-19 group and 26 in the COVID-19 group were analyzed. The rate of RH/ER in the no COVID-19 group was of 6 over 134 newborns (0.045, 95% confidence interval [CI]: 0.017–0.095), while in COVID-19 group, it was of 2 over 26 newborns (0.077), which does not differ from the expected rate (1.17 over 26 newborns, 0.045, 95% CI: 0.017–0.095).

**Conclusion** ED for newborns from mothers with COVID-19 could be an actionable safe strategy. (Author)

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## 2023-03004

**Webcam Use in the Neonatal Intensive Care Unit during the First Year of the SARS-CoV-2 Pandemic.** Mangla S, Stolfi A, Jasin L, et al (2023), *American Journal of Perinatology* 16 January 2023, online

**Objective** The aim of this study was to evaluate patterns of webcam use in families of patients admitted to a neonatal intensive care unit (NICU) during the first year of the pandemic and characterize the families who used the technology.

**Study Design** Retrospective chart review of the medical records and logins of our live webcam system was conducted for 2020.

**Results** From January 1, 2020 to December 31, 2020, 843 infants were admitted to the NICU, with lengths of stay range of 1 to 169 days. More than half ( $n = 496$ , 58.8%) of all families of infants admitted to the NICU used the webcam system during the period of study. The number of webcam users did not change between the pre-coronavirus disease 2019 (COVID-19) and during COVID-19 time periods, or during versus after NICU visitor restrictions. Among webcam users, the median (interquartile range) number of logins per day was 2.9 (2.9) and ranged from 0 to 44. There were significant differences among races, site of admission, and diagnosis groups. Families of White infants had more

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frequent use compared with families of Black infants. Families of infants admitted for surgical reasons had more frequent use compared with those admitted for medical reasons. Among 284 of the 496 (57.3%) webcam users, we documented logins from 37 states in the United States and from 10 different countries.

**Conclusion** Webcam use is common in the NICU. There was no increase in webcam use within the first year of the COVID-19 pandemic in the NICU. More studies are needed to evaluate how this technology is used in the NICU and its impact on patients and families. (Author)

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## 2023-03003

### **Impact of COVID-19 on Infants followed after Discharge from the Neonatal Intensive Care Unit Using a Telemedicine Model.**

Montoya-Williams D, Gualy S, Mazur M, et al (2023), American Journal of Perinatology 16 January 2023, online

**Objective** Coronavirus disease 2019 (COVID-19) continues to have a profound impact on infant health care and health outcomes. In this study, we aimed to characterize the social impact of the first COVID-19 lockdown on families in a neonatal follow-up program (NFP). Given the ongoing increased use of telehealth across the medicine, we also evaluated for patient-level differences in virtual visit rates to identify patients at risk of follow-up challenges.

**Study Design** To assess the impact of virtual health care utilization, we conducted a retrospective cohort study to describe challenges associated with telemedicine use in this vulnerable patient population during our telemedicine epoch (March 13, 2020–July 31, 2020). We also looked for patient-level factors associated with attending NFP visits as scheduled. Finally, we summarized caregiver responses to a COVID-19 Obstacles Assessment Survey and assessed for racial disparities in these responses.

**Results** When comparing patients who completed their virtual visit to those who did not, we found no differences by infants' sex, birthweight, gestational age at birth, or caregiver self-reported race and ethnicity. However, infants whose visits did not occur were more often discharged with equipment or covered by public insurance. Nine percent of families reported food insecurity.

**Conclusion** During the initial COVID-19 lockdown, families with infants discharged from a neonatal intensive care unit (NICU) faced significant obstacles caring for their infants and attending scheduled follow-up visits. Infants in families with lower socioeconomic status or with increased medical complexity faced increased challenges in attending virtual follow-up visits during this epoch. Given the ongoing reliance on telemedicine in health care and the need to better prepare for future epidemics/pandemics, this study offers critical information that can assist neonatal teams in bolstering transitions to home and creating stronger safety nets for their patients after discharge. (Author)

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## 2023-02976

### **Bilious Emesis and Failure to Pass Meconium in the Nursery: A Case Study.** Bencze JM, Crotteau JA, Urbina TM, et al (2023), Neonatal Network: the Journal of Neonatal Nursing vol 42, no 1, January 2023, pp 31-36

We present a case of an infant born to a mother with COVID-19, who at 24 hours of life was treated with a glycerin suppository for failure to pass meconium and went on to develop bilious emesis and abdominal distention as feeding continued over the next several hours. After a barium enema identified the distal obstruction, the pediatric surgical team used rectal irrigation to remove a large meconium plug, which mimicked the appearance of the descending colon on plain film, in a case of small left colon syndrome. Although intestinal obstruction in the newborn is rare, it is imperative that it is promptly diagnosed and treated appropriately to avoid negative outcomes; which, even in perhaps the mildest form of functional distal obstruction, meconium plug syndrome, can lead to an impressive clinical illness with risk of intestinal perforation and subsequent meconium peritonitis if the obstruction is not relieved. (Author)

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## 2023-02974

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**Impact of the Covid-19 Pandemic on Breastfeeding Establishment in Preterm Infants: An Exploratory Study.** Fucile S, Heath J, Dow K (2023), Neonatal Network: the Journal of Neonatal Nursing vol 42, no 1, January 2023, pp 7-12

Purpose: To evaluate breastfeeding outcomes in preterm infants born during the Covid-19 pandemic. Design: An observational cohort study of 33 infants born  $\leq 34$  weeks' gestation was conducted. Sample: The study sample consisted of 33 infants divided into 2 groups: infants born during the Covid-19 pandemic (Covid group,  $n = 11$ ) and those born prior to the pandemic (pre-Covid group,  $n = 22$ ). Main Outcome Variable: Breastfeeding at hospital discharge. Results: Fewer infants in the Covid group received breastfeeds at full oral feed ( $p = .015$ ) and none breastfeeding at hospital discharge ( $p = .001$ ). In addition, fewer infants in the Covid group received non nutritive sucking ( $p = .612$ ) and more infants in the Covid group required milk supplementation ( $p = .032$ ). Study results suggest that breastfeeding establishment at hospital discharge in preterm infants is significantly impacted by the Covid-19 pandemic. There is a critical need, in low-risk disease transmission areas, to enhance parental access and to increase in-hospital lactation supports to help safeguard breastfeeding outcomes in preterm infants. (Author)

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## 2023-02775

**COVID-19 babies: auto-videosomnography and parent reports of infant sleep, screen time, and parent well-being in 2019 vs 2020.** Kahn M, Barnett N, Glazer A, et al (2021), Sleep Medicine vol 85, September 2021, pp 259-267

### Objective

The COVID-19 pandemic has profoundly impacted families, yet studies on its effects on infants and their parents have thus far been sparse and based mostly on retrospective parent reporting. This study aimed to prospectively evaluate the impact of COVID-19 living conditions on infant and parent sleep, as well as infant screen exposure, parent daytime sleepiness, and parent depression levels, using multi-method assessment.

### Methods

Infant and parent data collected in 2020 were compared with a matched cohort collected in 2019. The total sample included 1518 US infants aged 1–18 months ( $M = 8.5$ ,  $SD = 4.6$ ; 54% boys). Auto-videosomnography metrics were obtained from the 14-day period prior to survey completion (number of analyzed nights:  $M = 12.11$   $SD = 2.66$  in the 2019 cohort; and  $M = 11.91$   $SD = 2.41$  in the 2020 cohort). Parents completed online questionnaires regarding their infant's sleep and screen exposure, as well as their own sleep quality, daytime sleepiness, and depression levels.

### Results

Compared to 2019, infants in 2020 slept  $\sim 40$  min more per night on average, as indicated by auto-videosomnography. Infants additionally had earlier sleep timing, and increased parent-reported sleep-onset latency and nocturnal wakefulness. Infant screen time rose by 18.3 min per day for older infants, but remained stable for younger infants. Parents reported lower daytime sleepiness and higher depression symptomology during 2020, whereas no change was apparent in their sleep quality ratings.

### Conclusions

Restricted living conditions during COVID-19 in the USA led to increased infant screen exposure and parental depression, but also to increased infant sleep duration and reduced parent sleepiness. Future research is needed to examine the mechanistic pathways through which COVID-19 impacted on infant and parent well-being. (Author)

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## 2023-02734

**Women's experiences and views on early breastfeeding during the COVID-19 pandemic in Norway: quantitative and qualitative findings from the IMAGINE EURO study.** Vik ES, Kongslien S, Nedberg IH, et al (2023), International Breastfeeding Journal vol 18, no 15, March 2023

Full URL: <https://doi.org/10.1186/s13006-023-00553-5>

### Background

Little is known about women's experience of care and views on early breastfeeding during the COVID-19 pandemic in Norway.

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## Methods

Women (n = 2922) who gave birth in a facility in Norway between March 2020 and June 2021 were invited to answer an online questionnaire based on World Health Organization (WHO) Standard-based quality measures, exploring their experiences of care and views on early breastfeeding during the COVID-19 pandemic. To examine associations between year of birth (2020, 2021) and early breastfeeding-related factors, we estimated odds ratios (ORs) with 95% confidence intervals (CIs) using multiple logistic regression. Qualitative data were analysed using Systematic Text Condensation.

## Results

Compared to the first year of the pandemic (2020), women who gave birth in 2021 reported higher odds of experiencing adequate breastfeeding support (adjOR 1.79; 95% CI 1.35, 2.38), immediate attention from healthcare providers when needed (adjOR 1.89; 95% CI 1.49, 2.39), clear communication from healthcare providers (adjOR 1.76; 95% CI 1.39, 2.22), being allowed companion of choice (adjOR 1.47; 95% CI 1.21, 1.79), adequate visiting hours for partner (adjOR 1.35; 95% CI 1.09, 1.68), adequate number of healthcare providers (adjOR 1.24; 95% CI 1.02, 1.52), and adequate professionalism of the healthcare providers (adjOR 1.65; 95% CI 1.32, 2.08). Compared to 2020, in 2021 we found no difference in skin-to-skin contact, early breastfeeding, exclusive breastfeeding at discharge, adequate number of women per room, or women's satisfaction. In their comments, women described understaffed postnatal wards, early discharge and highlighted the importance of breastfeeding support, and concerns about long-term consequences such as postpartum depression.

## Conclusions

In the second year of the pandemic, WHO Standard-based quality measures related to breastfeeding improved for women giving birth in Norway compared to the first year of the pandemic. Women's general satisfaction with care during COVID-19 did however not improve significantly from 2020 to 2021. Compared to pre-pandemic data, our findings suggest an initial decrease in exclusive breastfeeding at discharge during the COVID-19 pandemic in Norway with little difference comparing 2020 versus 2021. Our findings should alert researchers, policy makers and clinicians in postnatal care services to improve future practices. (Author)

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### 2023-02704

**Electrostatic Filters to Reduce COVID-19 Spread in Bubble CPAP: An in vitro Study of Safety and Efficacy.** Davis JW, Pillow JJ, Cooper MN, et al (2020), *Neonatology* vol 117, no 6, 2020, pp. 736-741

**Full URL:** <https://doi.org/10.1159/000512146>

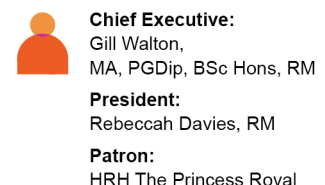
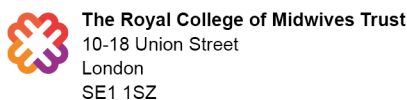
**Background:** Bubble CPAP may be used in infants with suspected or confirmed COVID-19. Electrostatic filters may reduce cross infection. This study aims to determine if including a filter in the bubble CPAP circuit impacts stability of pressure delivery. **Methods:** A new electrostatic filter was placed before (pre) or after (post) the bubble CPAP generator, or with no filter (control) in an in vitro study. Pressure was recorded at the nasal interface for 18 h (6 L/min; 7 cm H<sub>2</sub>O) on 3 occasions for each configuration. Filter failure was defined as pressure >9 cm H<sub>2</sub>O for 60 continuous minutes. The filter was weighed before and after each experiment. **Results:** Mean (SD) time to reach the fail point was 257 (116) min and 525 (566) min for filter placement pre- and post-CPAP generator, respectively. Mean pressure was higher throughout in the pre-generator position compared to control. The filter weight was heavier at end study in the pre- compared to the post-generator position. **Conclusions:** Placement of the filter at the pre-generator position in a bubble CPAP circuit should be avoided due to unstable mean pressure. Filters are likely to become saturated with water over time. The post-generator position may accommodate a filter, but regular pressure monitoring and early replacement are required. (Author)

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### 2023-02690

**Neonates Hospitalized with Community-Acquired SARS-CoV-2 in a Colorado Neonatal Intensive Care Unit.** White A, Mukherjee P, Stremming J, et al (2020), *Neonatology* vol 117, no 5, 2020, pp. 641-645

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**Importance:** The novel coronavirus 2019 (SARS-CoV-2) has been well described in adults. Further, the impact on older children and during the perinatal time is becoming better studied. As community spread increases, it is important to recognize that neonates are vulnerable to community spread as well. The impact that community-acquired SARS-CoV-2 has in the neonatal time period is unclear, as this population has unique immunity considerations. **Objective:** To report on a case series of SARS-CoV-2 in neonates through community acquisition in the USA. **Design:** This is an early retrospective study of patients admitted to the Neonatal Intensive Care Unit (NICU) identified as having SARS-CoV-2 through positive real-time polymerase chain reaction assay of nasopharyngeal swabs. **Findings:** Three patients who required admission to the NICU between the ages of 17 and 33 days old were identified. All 3 had ill contacts in the home or had been to the pediatrician and presented with mild to moderate symptoms including fever, rhinorrhea, and hypoxia, requiring supplemental oxygen during their hospital stay. One patient was admitted with neutropenia, and the other 2 patients became neutropenic during hospitalization. None of the patients had meningitis or multiorgan failure. **Conclusions and Relevance:** Infants with community-acquired SARS-CoV-2 may require hospitalization due to rule-out sepsis guidelines if found to have fever and/or hypoxia. Caregivers of neonates should exercise recommended guidelines before contact with neonates to limit community spread of SARS-CoV-2 to this potentially vulnerable population, including isolation, particularly as asymptomatic cases become prevalent. (Author)

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## 2023-02683

**Managing Preterm Infants Born to COVID-19 Mothers: Evidence from a Retrospective Cohort Study in Wuhan, China.** Hu X, Gao J, Wei Y, et al (2020), Neonatology vol 117, no 5, 2020, pp. 592-598

Full URL: <https://doi.org/10.1159/000509141>

**Background:** COVID-19 has spread rapidly over the world. Little is known about the outcomes of infections in pregnant women. The management and characteristics of preterm infants born to COVID-19 mothers need to be clarified. **Methods:** In this retrospective, single-center cohort study, we describe the clinical courses of 6 preterm infants born to COVID-19 mothers, the management protocol, and related outcomes. **Results:** Six preterm infants were admitted to Tongji Hospital between January 23 and March 19, 2020. Gestational age ranged from 28+5 to 36+3 weeks. One late preterm infant was delivered early due to maternal dyspnea from COVID-19. Five infants were delivered by Caesarean section. None had perinatal asphyxia. Two infants required respiratory support due to respiratory distress syndrome and apnea of prematurity. All infants did not develop severe complications of prematurity and are negative for severe acute respiratory syndrome (SARS)-CoV-2 nucleic acid testing. **Conclusion:** With an expedited and adequate delivery protocol, less invasive treatment principle, and active infection precautions, we found a limited impact of COVID-19 mothers on preterm delivery and neonatal short-term outcomes. The risk of vertical transmission of SARS-CoV-2 is low in preterm infants born to COVID-19 mothers if appropriate management is implemented. (Author)

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## 2023-02651

**Policies and practices in a cohort of Mississippi birthing hospitals during the COVID-19 pandemic.** Berger J, Burnham L, Nickel N, et al (2023), Breastfeeding Medicine vol 18, no 2, February 2023, pp 138-148

**Background and Objectives:** Guidance around maternity care practices and infant feeding during the COVID-19 pandemic changed over time and was sometimes conflicting. Hospital maternity practices influence breastfeeding, an important preventive strategy against viral illness. Most birthing hospitals in Mississippi are enrolled in CHAMPS, a quality improvement initiative to support breastfeeding and continuously collect maternity care data. The aims of this study were to (1) assess changes to maternity care policies in response to COVID-19, and (2) compare hospital-level breastfeeding, skin-to-skin, and rooming-in rates, at cohort hospitals, before and during the pandemic, overall and stratified by race.

**Methods:** Hospitals responded to a survey on maternity policies in May and September 2020 (Aim 1); hospitals submitted data on breastfeeding and maternity care practices before and during the pandemic (Aim 2). We tested for differences in survey responses using chi-squared statistics and performed an interrupted time series analysis on

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breastfeeding and maternity care practices data.

Results: Twenty-six hospitals responded to the May and September 2020 surveys. Hospitals used different sources to create maternity care policies, and policies differed between institutions. Trends in rates of any and exclusive breastfeeding in the hospital cohort plateaued during the pandemic, in comparison to previous gains, and rates of skin-to-skin and hospital rooming-in decreased. No differences were evident between races.

Conclusions: Policies (Aim 1) and practices in the quality improvement cohort hospitals were inconsistent during the COVID-19 pandemic, and changes measured to practices were detrimental (Aim 2). Ongoing monitoring is recommended. (Author)

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## 2023-02641

**Comparison of cord blood pro-BNP levels in newborns of SARS-COV-2-positive and -negative women, and its association with adverse perinatal outcomes.** Besimoglu B, Akgün B, Ayhan ŞG, et al (2023), International Journal of Gynecology & Obstetrics vol 161, no 1, April 2023, pp 308-313

### Objective

To compare umbilical cord blood pro-B-type natriuretic peptide (BNP) levels in newborns of severe acute respiratory syndrome coronavirus 2 (SARS-COV-2) positive pregnancies to those of SARS-COV-2 negative pregnancies.

### Methods

Prospectively cord blood samples from newborns of 42 SARS-COV-2 positive women, and 42 negative pregnant were collected at birth and analyzed for pro-BNP levels.

### Results

The mean cord blood pro-BNP level was significantly higher in newborns of SARS-COV-2 positive women than in controls. Furthermore, the pro-BNP level was an independent predictor of NICU admission in both SARS-COV-2 positive and control patients.

### Conclusion

Cord blood pro-BNP level may be a parameter that can predict the under-stress fetus and adverse perinatal outcomes especially, in cases where placental involvement is present as in SARS-COV-2 infection. (Author)

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## 2023-02617

**Either 'a blessing in disguise', or 'I couldn't get help': Australian and Aotearoa NZ women's experiences of early infant feeding during COVID-19.** Atchan M, Graham K, Hartney N, et al (2023), Women and Birth: Journal of the Australian College of Midwives vol 36, no 3, May 2023, pp e305-e313

**Full URL:** <https://doi.org/10.1016/j.wombi.2022.11.003>

### Background

To manage the COVID-19 pandemic, public health restrictions and a rapid pivot to telehealth occurred. Peripartum services were significantly affected by a strained infrastructure. Decreased face to face access to health services and support affected maternal experiences and confidence internationally, yet little was reported with the Australian and Aotearoa New Zealand context.

### Aim

To explore the early parenting and infant feeding experiences of new mothers from Australia and Aotearoa New Zealand in the context of a pandemic.

### Methods

An interpretive qualitative approach and thematic analysis obtained an in-depth understanding of the experiences of 27 mothers who gave birth during the first wave of the COVID-19 pandemic in 2020.

### Findings

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Australian and Aotearoa New Zealand women reported similar experiences, which varied contextually. Restrictions and requirements impacted favourably and unfavourably. Many women found the peace and space of social distancing an unexpected benefit and were proud of their achievements, whilst others shared feelings of isolation and distress. Some women felt they instinctively did what they needed to do. Experiences correlated with differing levels of self-efficacy.

#### Discussion

While many women relished the freedom from social obligations when faced with feeding challenges, there was general dissatisfaction with the level of support available. Care was fragmented, and health care needs were unmet, impacting feeding and parenting decisions and mental health.

#### Conclusion

Access to timely and appropriate professional support is an important factor in establishing breastfeeding and developing parenting confidence, particularly in the context of a pandemic and should be a health policy priority. (Author)

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## 2023-02599

**Safety and Efficacy of Coronavirus Disease 2019 (COVID-19) mRNA Vaccines During Lactation.** Shook LL, Edlow AG (2023), Obstetrics & Gynecology vol 141, no 3, March 2023, pp. 483-491

**Full URL:** <https://doi.org/10.1097/AOG.0000000000005093>

In this review, we summarize the data on the safety and side-effect profile of coronavirus disease 2019 (COVID-19) vaccines during lactation to date, review what is known about mRNA vaccine components in breast milk, and discuss the efficacy of COVID-19 vaccines in providing immune protection for the breastfeeding infant. The Centers for Disease Control and Prevention and the American College of Obstetricians and Gynecologists recommend that lactating individuals receive COVID-19 mRNA vaccines and stay up to date on booster doses, including the bivalent COVID-19 booster. The lack of serious side effects in mothers or infants across numerous large studies and registries of COVID-19 vaccination in pregnancy and lactation is reassuring. Although small quantities of mRNA may be transiently detectable in breast milk after maternal vaccination, there are no data demonstrating that vaccine mRNA can survive the infant gastrointestinal tract and no evidence that breast milk from lactating individuals who have received a COVID-19 mRNA vaccine can cause harm to breastfeeding infants. In contrast, numerous studies demonstrate that the breast milk of vaccinated individuals contains severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)-specific functional antibodies and T cells, which benefit the breastfeeding infant's developing immune system. Transfer of SARS-CoV-2-specific antibodies from mother to infant is highest when vaccination occurs during pregnancy compared with lactation, because the breastfeeding infant receives both long-lasting antibodies through the placenta and breast-milk antibodies through breast milk. With clear data demonstrating efficacy and safety and no data demonstrating harm to mother or infant after COVID-19 vaccine administration during lactation, any recommendations to avoid vaccination while breastfeeding or to withhold breast milk from the infant for any period of time after vaccination are not supported by available evidence. (Author)

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## 2023-02505

**Delivery and neonatal outcomes of pregnant women during the Shanghai lockdown: A retrospective analysis.** Zhou F-Y, Li C, Qin K-Z, et al (2023), Frontiers in Pediatrics 2 February 2023, online

**Full URL:** <https://doi.org/10.3389/fped.2023.992908>

**Objectives:** Shanghai witnessed an unprecedented outbreak of COVID-19 and experienced a strict lockdown from March 28, 2022 to May 31, 2022. Most studies to date are on the first lockdown after the outbreak in December 2019. This study aimed to examine the impact of lockdown on delivery and neonatal outcomes among uninfected pregnant women in the new phase of the COVID-19 outbreak.

**Methods:** A retrospective analysis was conducted in the Obstetrics and Gynecology Hospital of Fudan University. Pregnant women without COVID-19 who delivered from March 28, 2022 to May 31, 2022 (lockdown group) and the same period in 2021 (non-lockdown group) were recruited for this study. Logistic regression models and 1 : 1

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propensity score matching (PSM) were used to assess the effect of lockdown on delivery outcomes.

**Results:** A total of 2,962 patients were included in this study, 1,339 of whom were from the lockdown group. Compared with the non-lockdown group, pregnant women giving birth during lockdown had an increased risk of term prelabor rupture of membranes (TPROM) (aOR = 1.253, 95% CI: 1.026–1.530), and decreased risks of postpartum hemorrhage (PPH) (aOR = 0.362, 95% CI: 0.216–0.606) and fetal malformation (aOR = 0.309, 95% CI: 0.164–0.582). The risk of large for gestational age (LGA) (aOR = 0.802, 95% CI: 0.648–0.992) and rate of admission to the neonatal intensive care unit (NICU) (aOR = 0.722, 95% CI: 0.589–0.885) also significantly declined. After 1 : 1 PSM, the impact of lockdown on the risk of TPROM (aOR = 1.501, 95% CI: 1.083–2.080), PPH (aOR = 0.371, 95% CI: 0.211–0.654), fetal malformation (aOR = 0.332, 95% CI: 0.161–0.684), LGA (aOR = 0.749, 95% CI: 0.594–0.945) and rate of admission to the NICU (aOR = 0.700, 95% CI: 0.564–0.869) all remained. There were no other delivery or neonatal outcomes affected by the lockdown after the COVID-19 outbreak.

**Conclusion:** This study indicated a significant increase in the risk of term PROM, significant decreases in the risk of PPH, fetal malformation and LGA, and a marked decline in the rate of admission to the NICU during Shanghai Lockdown. (Author)

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## 2023-02430

**Adverse effects of COVID-19 pandemic on a multicenter randomized controlled trial.** Abu Jawdeh EG, Hunt CE, Eichenwald E, et al (2023), Journal of Perinatology vol 43, no 5, May 2023, pp 653–658

**Full URL:** <https://doi.org/10.1038/s41372-022-01592-2>

### Objective

Describe the effects of the COVID-19 pandemic on subject enrollment in a multicenter randomized controlled trial.

### Study design

We assessed the number of eligible infants approached and consented for enrollment over five separate epochs including baseline, peak pandemic, and gradual but incomplete recovery.

### Result

The pandemic had a major effect on ability to approach parents for consent. Parents approached dropped from 95.4% baseline to 13.1% in the peak pandemic epoch and has not recovered to baseline even in the just-completed post-pandemic epoch (84.9%). Despite the decrease in subjects approached, there was no significant change in the overall consent rate for the study

### Conclusion

The pandemic has significantly limited ability to approach parents of eligible infants for consent, with only partial recovery. Opportunities for interactions of investigators and study coordinators with parents continue to present challenges limiting full recovery. (Author)

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## 2023-02422

**Detection of SARS-CoV-2 IgA and IgG in human milk and breastfeeding infant stool 6 months after maternal COVID-19 vaccination.** Stafford LS, Valcarce V, Henry M, et al (2023), Journal of Perinatology vol 43, no 6, June 2023, pp 775–781

### Objective

Assess presence, durability, and neutralization capacity of SARS-CoV-2-specific antibodies in breastfeeding infants' stool, mother's plasma and milk following maternal vaccination.

### Design

Thirty-seven mothers and 25 infants were enrolled between December 2020 and November 2021 for this prospective observational study. All mothers were vaccinated during lactation except three, which were vaccinated during

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pregnancy. Milk, maternal plasma, and infants' stool was collected pre-vaccination and at periods up to 6 months following COVID-19 vaccine series initiation/completion. SARS-CoV-2 antibody levels and their neutralization capacities were assessed.

## Results

SARS-CoV-2-specific IgA and IgG levels were higher in infant stool post-maternal vaccination amongst milk-fed compared to controls. Maternal SARS-CoV-2-specific IgA and IgG concentrations decreased over 6 months post-vaccination but remained higher than pre-vaccination levels. We observed improved neutralization capacity in milk and plasma after COVID-19 vaccination.

## Conclusions

The presence of SARS-CoV-2-specific antibodies in infant stool following maternal vaccination offers further evidence of the lasting transfer of these antibodies through breastfeeding. (Author)

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## 2023-02184

**Evaluation of an Evidence-Based Prenatal Breastfeeding Education Curriculum Adapted for the COVID-19 Pandemic: Ready, Set, Baby Live COVID-19 Edition.** Wouk K, Parry KC, Bridgman J, et al (2023), The Journal of Perinatal Education vol 32, no 1, Winter 2023, pp 48-66

In response to the cessation of in-person prenatal education services during the COVID-19 pandemic, we adapted an evidence-based curriculum to a live virtual format entitled Ready, Set, Baby Live COVID-19 Edition (RSB Live). In a sample of 146 pregnant people, participation in RSB Live was associated with high levels of knowledge about the benefits of breastfeeding, early infant hunger cues, and recommended maternity care practices, as well as high levels of satisfaction with adaptations to the session's content and virtual delivery. Participation was also associated with a significant increase in prenatal breastfeeding intention, a known predictor of breastfeeding outcomes. This study supports live, virtual education with a standardized curriculum as an effective and acceptable means of providing prenatal education. (Author)

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## 2023-02160

**Changes in Breastfeeding and Lactation Support Experiences During COVID.** DeYoreo M, Kapinos K, Lawrence L, et al (2023), Journal of Women's Health vol 32, no 2, February 2023, pp 150–160

**Background:** We surveyed parents who gave birth from 2019 to 2021 to examine changes in breastfeeding experiences and professional and lay breastfeeding support services due to the coronavirus disease 2019 (COVID-19) pandemic. We also examined racial and ethnic disparities in breastfeeding support.

**Materials and Methods:** A cross-sectional opt-in survey of 1,617 parents was administered on Ovia's parenting app in January 2022. Respondents were 18–45 years of age and delivered in one of three birth cohorts: August–December 2019, March–May 2020, or June–August 2021. We fit linear and logistic regression models wherein the outcomes were six breastfeeding support and experience measures, adjusting for birth cohort and respondent demographics.

**Results:** Parents who gave birth in the early pandemic versus those in the prepandemic had reduced odds of interacting with lactation consultants (odds ratio [OR]: 0.63; 95% confidence interval [CI]: 0.44–0.90), attending breastfeeding classes (OR: 0.71; 95% CI: 0.54–0.94), meeting breastfeeding goals (OR: 0.65; 95% CI: 0.46–0.92), and reporting it was easy to get breastfeeding help (estimate: –0.36; 95% CI: –0.55 to –0.17). Birth cohort was not associated with use of donor milk or receipt of in-hospital help. The later pandemic cohort differed from the prepandemic cohort for one outcome: they were less likely to meet their breastfeeding goals (OR: 0.67; 95% CI: 0.48–0.95). There were racial and ethnic disparities in the use of multiple types of breastfeeding support. Although one-third of respondents felt that the pandemic facilitated breastfeeding because of more time at home, 18% felt the pandemic posed additional challenges including disruptions to lactation support.

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Conclusions: Parents who gave birth in the later pandemic did not report significant disruptions to professional breastfeeding support, likely as a result of the growth of virtual services. However, disparities in receipt of support require policy attention and action. (Author)

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## 2023-02137

**Maternal mRNA covid-19 vaccination during pregnancy and delta or omicron infection or hospital admission in infants: test negative design study.** Jorgensen SCJ, Hernandez A, Fell DB, et al (2023), British Medical Journal vol 380, no 8370, February 2023, e074035

**Full URL:** <https://doi.org/10.1136/bmj-2022-074035>

**Objective** To estimate the effectiveness of maternal mRNA covid-19 vaccination during pregnancy against delta and omicron severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) infection and hospital admission in infants.

**Design** Test negative design study.

**Setting** Community and hospital testing in Ontario, Canada.

**Participants** Infants younger than six months of age, born between 7 May 2021 and 31 March 2022, who were tested for SARS-CoV-2 between 7 May 2021 and 5 September 2022.

**Intervention** Maternal mRNA covid-19 vaccination during pregnancy.

**Main outcome measures** Laboratory confirmed delta or omicron infection or hospital admission of the infant. Multivariable logistic regression estimated vaccine effectiveness, with adjustments for clinical and sociodemographic characteristics associated with vaccination and infection.

**Results** 8809 infants met eligibility criteria, including 99 delta cases (4365 controls) and 1501 omicron cases (4847 controls). Infant vaccine effectiveness from two maternal doses was 95% (95% confidence interval 88% to 98%) against delta infection and 97% (73% to 100%) against infant hospital admission due to delta and 45% (37% to 53%) against omicron infection and 53% (39% to 64%) against hospital admission due to omicron. Vaccine effectiveness for three doses was 73% (61% to 80%) against omicron infection and 80% (64% to 89%) against hospital admission due to omicron. Vaccine effectiveness for two doses against infant omicron infection was highest with the second dose in the third trimester (53% (42% to 62%)) compared with the first (47% (31% to 59%)) or second (37% (24% to 47%)) trimesters. Vaccine effectiveness for two doses against infant omicron infection decreased from 57% (44% to 66%) between birth and eight weeks to 40% (21% to 54%) after 16 weeks of age.

**Conclusions** Maternal covid-19 vaccination with a second dose during pregnancy was highly effective against delta and moderately effective against omicron infection and hospital admission in infants during the first six months of life. A third vaccine dose bolstered protection against omicron. Effectiveness for two doses was highest with maternal vaccination in the third trimester, and effectiveness decreased in infants beyond eight weeks of age. (Author)

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## 2023-01930

**Breastfeeding in the pandemic: A qualitative analysis of breastfeeding experiences among mothers from Canada and the United Kingdom.** Turner SE, Brockway M, Azad MB, et al (2023), Women and Birth: Journal of the Australian College of Midwives vol 36, no 4, July 2023, pp e388-e396

**Full URL:** <https://doi.org/10.1016/j.wombi.2023.01.002>

### Background

Previous research shows that the COVID-19 pandemic resulted in both barriers and facilitators to breastfeeding. However, little research has looked specifically at first-time mothers' experiences of breastfeeding during the pandemic or compared experiences of mothers living in different countries.

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## Aim

This research explores mothers' breastfeeding experiences to describe how the COVID-19 pandemic has affected breastfeeding journeys in Canada and the United Kingdom.

## Methods

Ten semi-structured online interviews were undertaken with first-time mothers who breastfed their baby at least once during the COVID-19 pandemic and are living in Canada or the United Kingdom. Interview transcripts were coded inductively using thematic analysis.

## Findings

One overarching theme (all on mother) and four sub-themes were identified: 1) accessing and advocating for health care, 2) social support, 3) becoming a mother in isolation, and 4) breastfeeding baby. Similar themes were constructed for both countries.

## Discussion

Mothers reported that diminished health care and social support created challenges in their breastfeeding journey. Many mothers reported receiving virtual breastfeeding support, which was largely experienced as unhelpful. Some mothers reported fewer distractions from visitors and more one-on-one time with their infant, which helped them to establish breastfeeding and a strong mother-infant bond.

## Conclusion

In both Canada and the United Kingdom, new mothers need consistent, reliable health care and social support when breastfeeding. This study supports the need to protect breastfeeding support in the midst of a global emergency and beyond to ensure positive breastfeeding experiences for both mother and baby. (Author)

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## 2023-01716

**Development of SARS-CoV-2 specific IgG and IgA antibodies in serum and milk with different SARS-COV-2 vaccines in lactating women.** Lechosa-Muñiz C, Paz-Zulueta M, Irure-Ventura J, et al (2023), International Breastfeeding Journal vol 18, no 3, January 2023

**Full URL:** <https://doi.org/10.1186/s13006-022-00536-y>

## Background

Our main objective was to determine the evolution of IgG and IgA antibodies directed against SARS-CoV-2 protein S in the blood of lactating women and in breast milk.

## Methods

A cohort of 110 uninfected and vaccinated breastfeeding women was followed-up for 6 months at the Marqués de Valdecilla University Hospital, Spain, in 2020. An additional group of 23 breastfeeding mothers who had no previously documented infection and had not been vaccinated against SARS-CoV-2 were included as a control group. The antibodies in blood and breast milk and their evolution at 6 months post-vaccination were analysed.

## Results

One hundred ten breastfeeding mothers were included; 70 women (63.6%) were vaccinated with two doses of BNT162b2, 20 women (18.2%) received two doses of mRNA-1273, and 20 women (18.2%) received a single dose of ChAdOx1-S. No evidence of differences between concentrations of antibodies was found according to the type of vaccine, with the exception of serum IgA antibodies, which was higher in women vaccinated with mRNA-1273: mean [95%CI]: 0.05 AU/mL [0.03,0.06] with mRNA-1273, 0.02 AU/mL [0.01,0.03] with BNT162b2 and 0.01 AU/mL [0.00,0.03] with ChAdOx1-S, ANOVA p value = 0.03. The lack of difference between vaccines was also found when anti-S1 specific IgG in serum and breast milk were measured.

## Conclusions

In lactating women vaccinated against COVID-19, anti-SARS-CoV-2 antibodies can be detected in both serum and breastmilk 6 months after receiving the second dose, although their concentrations decreased when compared with concentrations reached immediately after vaccination. (Author)

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**2023-01710**

**Sequential interventions to maintain the safety and service provisions of human milk banking in India: keeping up with the call to action in response to the COVID-19 pandemic.** Bhasin M, Nangia S, Kumar G, et al (2022), International Breastfeeding Journal vol 17, no 85, December 2022

**Full URL:** <https://doi.org/10.1186/s13006-022-00525-1>

#### Background

WHO recommends donor milk as the next best choice if Mothers' own milk (MOM) is unavailable. At our milk bank, during the COVID 19 pandemic, we observed a steep decline in the collection of donor milk, while Pasteurised Donor human milk (PDHM) demand increased. This called for active intervention.

#### Methods

We employed the quasi-experimental quality improvement initiative. During September 2020 (baseline period) the team members identified modifiable bottlenecks and suggested interventions (using WhatsApp to increase follow up, telehealth and digital tools) which were implemented in October 2020 and the impact was evaluated till March 2021. The SMART aim was "to meet the demand (estimated as 15,000 ml/month) of donor milk for adjoining 80-bedded NICU". Process measures were; daily amount of donor milk collected, pasteurized donor milk disbursed to NICU, number of donors and frequency of donations. The balancing measure was that the collection of donor milk should not undermine the provision of freshly expressed MOM for babies.

#### Results

Collection of donor milk increased by 180% from baseline during the Intervention phase. This was sustained throughout the sustenance phase (November 2020 and March 2021) with an average monthly collection of 16,500 ml. Strikingly, the increased follow-up of mothers with emphasis on MOM decreased the NICU's donor milk requirement from 13,300 ml (baseline) to 12,500 ml (intervention) to 8,300 ml (sustenance). Monitoring of daily MOM used in the NICU revealed a 32% surge from 20,000 ml (baseline) to 27,000 ml (intervention) sustained at 25,000 ml per month.

#### Conclusion

By improving the provisions of human milk banks, near-exclusive human milk feeding can be ensured even during the pandemic time. (Author)

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**2023-01643**

**Neuromotor repertoires in infants exposed to maternal COVID-19 during pregnancy: a cohort study.** Martinez VF, Zhang D, Paiola S, et al (2023), BMJ Open vol 13, no 1, January 2023, 069194

**Full URL:** <http://dx.doi.org/10.1136/bmjopen-2022-069194>

**Objective** To evaluate neuromotor repertoires and developmental milestones in infants exposed to antenatal COVID-19.

**Design** Longitudinal cohort study.

**Setting** Hospital-based study in Los Angeles, USA and Rio de Janeiro, Brazil between March 2020 and December 2021.

**Participants** Infants born to mothers with COVID-19 during pregnancy and prepandemic control infants from the Graz University Database.

**Interventions** General movement assessment (GMA) videos between 3 and 5 months post-term age were collected and clinical assessments/developmental milestones evaluated at 6–8 months of age. Cases were matched by gestational age, gender and post-term age to prepandemic neurotypical unexposed controls from the database.

**Main outcome measures** Motor Optimality Scores Revised (MOS-R) at 3–5 months. Presence of developmental delay

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(DD) at 6–8 months.

Results 239 infants were enrolled; 124 cases (83 in the USA/41 in Brazil) and 115 controls. GMA was assessed in 115 cases and 115 controls; 25% were preterm. Median MOS-R in cases was 23 (IQR 21–24, range 9–28) vs 25 (IQR 24–26, range 20–28) in controls,  $p < 0.001$ . Sixteen infants (14%) had MOS-R scores  $< 20$  vs zero controls,  $p < 0.001$ . At 6–8 months, 13 of 109 case infants (12%) failed to attain developmental milestones; all 115 control infants had normal development. The timing of maternal infection in pregnancy (first, second or third trimester) or COVID-19 disease severity (NIH categories asymptomatic, mild/moderate or severe/critical) was not associated with suboptimal MOS-R or DD. Maternal fever in pregnancy was associated with DD (OR 3.7; 95% CI 1.12 to 12.60) but not suboptimal MOS-R (OR 0.25; 95% CI 0.04 to 0.96).

Conclusions Compared with prepandemic controls, infants exposed to antenatal COVID-19 more frequently had suboptimal neuromotor development. (Author)

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## 2023-01546

**The effect of counseling with stress management approach on postpartum anxiety and distress and breastfeeding self-efficacy during COVID-19 pandemic: a randomized controlled trial.** Shamsdanesh S, Nourizadeh R, Hakimi S, et al (2023), BMC Pregnancy and Childbirth vol 23, no 26, January 2023

Full URL: <https://doi.org/10.1186/s12884-023-05356-4>

### Background

Successful breastfeeding is related to the psychosocial conditions of the mother. Covid19 pandemic resulted in psychological consequences in women during postpartum period. Maternal anxiety and distress reduce the chances of exclusive breastfeeding. The present study aimed to investigate the effect of counseling with stress management approach on postpartum anxiety and distress and breastfeeding self-efficacy (BSE) during COVID-19 pandemic.

### Method

This randomized controlled clinical trial was conducted on 64 breastfeeding mothers referred to health care centers in Tabriz, Iran in 2021. Participants were assigned into the intervention and control groups in a ratio of 1: 1 using block randomization in a block size of 4 and 6. The intervention group participated in six individual 60–90 min sessions. Spielberger State-Trait Anxiety Inventory (STAI), postpartum distress (PMD), and BSE questionnaires were completed before and 4-week after the intervention by the control and intervention groups. Independent t-test and ANCOVA were used to compare the outcomes between two groups.

### Results

According to the ANCOVA results by controlling the baseline values and after the intervention, the mean score of anxiety in the intervention group was lower than that in the control group [Adjusted Mean Difference (AMD): -13.82, 95%, confidence interval (CI): -12.35 to -15.29, ( $p < 0.001$ )]. Further, the mean score of postpartum distress after intervention was lower in the intervention group compared with that in the control group [AMD:5.31 95% CI: -3.00 to -7.37 ( $p < 0.001$ )]. After the intervention, the mean score of BSE in the intervention group was significantly higher than that in the control group [AMD: 25.57, 95% CI: 22.85 to 28.29 ( $p < 0.001$ )].

### Conclusion

Stress management counseling can improve postpartum anxiety and distress and BSE and increase breastfeeding. However, more studies are needed for a definitive conclusion.

### Trial registration

Iranian Registry of Clinical Trials (IRCT): IRCT20171007036615N6. Date of registration: 15/09/2021. (Author)

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## 2023-01313

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**Confirmed SARS-CoV-2 infection in Scottish neonates 2020–2022: a national, population-based cohort study.** Goulding A, McQuaid F, Lindsay L, et al (2023), Archives of Disease in Childhood: Fetal and Neonatal Edition vol 108, no 4, July 2023, pp 367-372

**Full URL:** <http://dx.doi.org/10.1136/archdischild-2022-324713>

**Objectives** To examine neonates in Scotland aged 0–27 days with SARS-CoV-2 infection confirmed by viral testing; the risk of confirmed neonatal infection by maternal and infant characteristics; and hospital admissions associated with confirmed neonatal infections.

**Design** Population-based cohort study.

**Setting and population** All live births in Scotland, 1 March 2020–31 January 2022.

**Results** There were 141 neonates with confirmed SARS-CoV-2 infection over the study period, giving an overall infection rate of 153 per 100 000 live births (141/92 009, 0.15%). Among infants born to women with confirmed infection around the time of birth, the confirmed neonatal infection rate was 1812 per 100 000 live births (15/828, 1.8%). Two-thirds (92/141, 65.2%) of neonates with confirmed infection had an associated admission to neonatal or (more commonly) paediatric care. Six of these babies (6/92, 6.5%) were admitted to neonatal and/or paediatric intensive care; however, none of these six had COVID-19 recorded as their main diagnosis. There were no neonatal deaths among babies with confirmed infection.

**Implications and relevance** Confirmed neonatal SARS-CoV-2 infection was uncommon over the first 23 months of the pandemic in Scotland. Secular trends in the neonatal confirmed infection rate broadly followed those seen in the general population, although at a lower level. Maternal confirmed infection at birth was associated with an increased risk of neonatal confirmed infection. Two-thirds of neonates with confirmed infection had an associated admission to hospital, with resulting implications for the baby, family and services, although their outcomes were generally good. Ascertainment of confirmed infection depends on the extent of testing, and this is likely to have varied over time and between groups: the extent of unconfirmed infection is inevitably unknown. (Author)

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## 2023-00992

**An integrative literature review on the impact of COVID-19 on maternal and child health in Africa.** Senkyire EK, Ewetan O, Azuh D, et al (2023), BMC Pregnancy and Childbirth vol 23, no 6, January 2023

**Full URL:** <https://doi.org/10.1186/s12884-022-05339-x>

Africa has the highest rates of maternal deaths globally which have been linked to poorly functioning health care systems. The pandemic revealed already known weaknesses in the health systems in Africa, such as workforce shortages, lack of equipment and resources. The aim of this paper is to review the published literature on the impact of the COVID-19 pandemic on maternal and child health in Africa. The integrative review process delineated by Whittemore and Knafl (2005) was used to meet the study aims. The literature search of Ovid Medline, CINAHL, PubMed, WHO, Google and Google scholar, Africa journals online, MIDIRS was limited to publications between March 2020 and May 2022. All the studies went through the PRISMA stages, and 179 full text papers screened for eligibility, 36 papers met inclusion criteria. Of the studies, 6 were qualitative, 25 quantitative studies, and 5 mixed methods. Thematic analysis according to the methods of Braun and Clark (2006) were used to synthesize the data. From the search the six themes that emerged include: effects of lockdown measures, COVID concerns and psychological stress, reduced attendance at antenatal care, childhood vaccination, reduced facility-based births, and increase maternal and child mortality. A review of the literature revealed the following policy issues: The need for government to develop robust response mechanism to public health emergencies that negatively affect maternal and child health issues and devise health policies to mitigate negative effects of lockdown. In times of pandemic there is need to maintain special access for both antenatal care and child delivery services and limit a shift to use of untrained birth attendants to reduce maternal and neonatal deaths. These could be achieved by soliciting investments from various sectors to provide high-quality care that ensures sustainability to all layers of the population. (Author)

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2023-00988

**Impact of the COVID-19 pandemic on expectant and new parents' experience of pregnancy, childbirth, breast feeding, parental responsiveness and sensitivity, and bonding and attunement in high-income countries: a systematic review of the evidence.** Adesanya AM, Barrett S, Moffat M, et al (2022), BMJ Open vol 12, no 12, December 2022, e066963

**Full URL:** <http://dx.doi.org/10.1136/bmjopen-2022-066963>

**Objectives** To review the evidence on how pregnancy, birth experience, breast feeding, parental responsiveness and sensitivity, and bonding and attunement were impacted by COVID-19.

**Methods** We searched eight literature databases and websites of relevant UK-based organisations. The review focused on evidence during pregnancy and the early years (0–5 years). Studies of any study design published in English from 1 March 2020 to 15 March 2021 and conducted in high-income countries were included. Screening and data extraction were undertaken in duplicate. Evidence was synthesised using a narrative approach. Study quality of included studies was assessed using the Mixed Methods Appraisal Tool.

**Results** The search yielded 9776 publications, of which 26 met our inclusion criteria. Significant knowledge gaps on how COVID-19 affected pregnancy and breast feeding limited healthcare providers' ability to provide consistent evidence-based information and care at the start of the pandemic. There was an enduring sense of loss about loved ones being restricted from taking part in key moments. Parents were concerned about the limitations of virtual healthcare provision. Some parents reported more opportunities for responsive breast feeding and improved parent–infant bonding due to reduced social and work pressures. Women from minoritised ethnic groups were less likely to continue breast feeding and attributed this to a lack of face-to-face support.

**Conclusions** The evidence suggests that new and expectant families have been both negatively and positively impacted by the COVID-19 pandemic and the resulting restrictions. The impacts on parents' opportunities to bond with their young children and to be attuned to their needs were felt unequally. It is important that emergency response policies consider the mother and the partner as a family unit when making changes to the delivery of maternal and child health and care services, so as to mitigate the impact on the family and existing health inequalities.

PROSPERO registration number CRD42021236769. (Author)

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2023-00957

**Provision of mother's own milk for preterm infants during the COVID-19 pandemic: Differential effect of insurance.**

Boudreau LE, Vohr BR, Tucker R, et al (2022), 22 December 2022, online

**Full URL:** <https://doi.org/10.3389/fped.2022.1064931>

Mother-infant dyads faced many challenges during the COVID-19 pandemic; however, the impact was different depending on socio-economic determinants. This study aims to investigate the impact of the COVID-19 pandemic on maternal provision of mother's own milk (MOM) at neonatal intensive care unit (NICU) discharge among preterm infants. We hypothesized that fewer infants would be discharged home on any MOM during the pandemic period compared to a pre-pandemic period. This is a retrospective analysis of infants born <34 weeks' gestation admitted to the Women and Infant's Hospital NICU. Infants born pre-pandemic (1/1/2019 to 2/29/2020) were compared to infants born during the pandemic (3/1/2020 to 4/30/2021). Maternal and neonatal variables were analyzed by group. The primary outcome was provision of MOM (defined as feeding exclusively MOM, or a combination of MOM and formula) at NICU discharge. Analyses were performed for time periods, and multivariable regression analyses were run for the total cohort and by insurance type. Analysis included 268 infants born pre-pandemic and 262 infants born during the pandemic. Pandemic group mothers vs. pre-pandemic were less likely to be single (27%, 63/233 vs. 38%, 93/243;  $p = 0.01$ ) and more likely to have a diagnosis of chorioamnionitis (16%, 38/236 vs. 7%, 17/243;  $p = 0.002$ ). Rates of public insurance were similar (55% pre-pandemic and 50% pandemic). There was no significant change in provision of MOM between time periods. In multivariable analysis, public insurance decreased the odds of MOM at discharge for the entire study period (aOR 0.31, 95% CI: 0.19–0.50;  $p = 0.0001$ ). On analysis by insurance type, rates of MOM increased from 77% pre-pandemic to 88% during the pandemic ( $p = 0.03$ ) for mothers with private insurance and remained

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unchanged for mothers with public insurance (52% pre-pandemic and 53% pandemic;  $p = 0.86$ ). Mothers with private insurance had twice the odds (aOR 2.02, 95% CI: 1.02–3.97;  $p = 0.04$ ) of providing MOM during the pandemic vs. pre-pandemic. For those with public insurance, the odds for any MOM provision during the pandemic were unchanged (aOR 0.95, 95% CI: 0.5–1.7;  $p = 0.86$ ). These differences may be related to health care disparities requiring additional exploration of risk factors and the need for equitable opportunities for all mother-infant dyads. (Author)

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## 2023-00897

**Breastfeeding and human milk bank in a neonatal intensive care unit: impact of the COVID-19 pandemic in an Italian cohort of very low birth weight infants.** Bresesti I, Morlacchi L, Cazzaniga C, et al (2022), International Breastfeeding Journal vol 17, no 94, December 2022

**Full URL:** <https://internationalbreastfeedingjournal.biomedcentral.com/articles/10.1186/s13006-022-00529-x>

### Background

Parental stress in neonatal intensive care units (NICU) is well known, as is the stress induced by the COVID-19 pandemic. This combination might increase stress to the extent of affecting the availability of maternal expressed milk and the success of establishing breastfeeding. This is particularly relevant in very preterm infants.

### Methods

We conducted a single-centre retrospective analysis in two cohorts of very low birth weight infants born in a hospital in Italy. Babies born before the pandemic (September 2017 – December 2019) ( $n = 101$ ) and during the pandemic (March 2020 – December 2021) ( $n = 67$ ) were included in the analysis. We compared the rate of babies fed with maternal milk (both expressed and / or donated) at the achievement of full enteral feeding and the rate of those exclusively breastfed at discharge in the two groups. Then, we analysed the impact of donated human milk availability on infant formula use. We also compared mother's need for psychological support during NICU stay and the duration of psychological follow-up after discharge.

### Results

In our NICU the availability of expressed maternal milk significantly decreased during the COVID-19 pandemic (86.1% before the pandemic vs 44.8% during the pandemic,  $p < 0.001$ ) at the time of full enteral feeding achievement. Thanks to the availability of donated human milk, the rate of formula-fed babies remained almost unchanged (13.9% vs 14.9%). At discharge, the rate of breastfeeding was similar (73.3% vs 72.7%). The maternal need for psychological support was significantly higher during the pandemic (33% vs 64%,  $p < 0.001$ ), as well as the duration of follow-up > 6 months (1% vs 15%,  $p < 0.001$ ). No differences in the main clinical outcomes were found.

### Conclusion

Pandemic-induced stress had a significant impact on the availability of expressed maternal milk in NICU. However, the presence of human donated milk was fundamental in preventing increased use of infant formula during NICU stays. This underlines how strategies to implement the widespread establishment of donor milk banks on a national level are warranted. Further research is desirable to optimise the use of donated human milk banks during emergency situations. (Author)

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## 2023-00886

**Factors associated with exclusive breastfeeding at discharge during the COVID-19 pandemic in 17 WHO European Region countries.** Chertok IA, Artzi-Medvedik R, Arendt M, et al (2022), International Breastfeeding Journal vol 17, no 83, December 2022

**Full URL:** <https://internationalbreastfeedingjournal.biomedcentral.com/articles/10.1186/s13006-022-00517-1>

### Background

Exclusive breastfeeding is the optimal infant nutrition, providing infants immunoprotection against many diseases including SARS-CoV-2 infection. Restrictions during the COVID-19 pandemic may have negatively affected breastfeeding practices in maternity care facilities. The aims of the study were to examine exclusive breastfeeding

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rates at discharge over time and to identify factors associated with exclusive breastfeeding during the pandemic.

## Methods

A cross-sectional survey was conducted among mothers who gave birth in a maternity care facility in the World Health Organization (WHO) European Region countries during the COVID-19 pandemic. The socio-ecological model was employed to examine intrapersonal, interpersonal, organizational, and community/society factors associated with maternal report of exclusive breastfeeding at the time of discharge.

## Results

There were 26,709 participating mothers from 17 European Region countries who were included in the analysis. Among the mothers, 72.4% (n = 19,350) exclusively breastfed and 27.6% (n = 7,359) did not exclusively breastfeed at discharge. There was an overall decline in exclusive breastfeeding rates over time (p = 0.015) with a significantly lower rate following the publication of the WHO breastfeeding guidelines on 23 June 2020 (AOR 0.88; 95% CI 0.82, 0.94). Factors significantly associated with exclusive breastfeeding outcomes in the logistic regression analysis included maternal age, parity, education, health insurance, mode of birth, inadequate breastfeeding support, lack of early breastfeeding initiation, lack of full rooming-in, birth attendant, perceived healthcare professionalism and attention, facility room cleanliness, timing of birth, and location of birth.

## Conclusions

Results from the study indicate the decline in exclusive breastfeeding rates in the WHO European Region during the COVID-19 pandemic. Using the socio-ecological model to identify factors associated with breastfeeding outcomes facilitates an integrated and holistic approach to address breastfeeding needs among women across the region. These findings demonstrate the need to augment breastfeeding support and to protect exclusive breastfeeding among mother-infant dyads, in an effort to reverse the declining exclusive breastfeeding rates. The study highlights the need to educate mothers and their families about the importance of exclusive breastfeeding, reduce maternal-infant separation, increase professional breastfeeding support, and follow evidence-based practice guidelines to promote breastfeeding in a comprehensive and multi-level manner. (Author)

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## 2023-00767

**Paediatrics: Intensive Care [written answer].** House of Lords (2023), Hansard Written question HL4873, 18 January 2023

**Full URL:** <https://questions-statements.parliament.uk/written-questions/detail/2023-01-18/hl4873>

Lord Markham responds to a written question from Baroness Ritchie of Downpatrick to His Majesty's Government, regarding what steps they will take to ensure that hospitals can manage the influx of respiratory-related paediatric intensive care patients; and what lessons they have learned from the COVID-19 pandemic in this regard. (JSM)

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## 2023-00741

**Barriers and enablers of breastfeeding in mother–newborn dyads in institutional settings during the COVID-19 pandemic: A qualitative study across seven government hospitals of Delhi, India.** Maria A, Mukherjee R, Upadhyay S, et al 2022

**Full URL:** <https://doi.org/10.3389/fnut.2022.1052340>

**Introduction:** The COVID-19 pandemic disrupted newborn care and breastfeeding practices across most healthcare facilities. We undertook this study to explore the barriers and enablers for newborn care and breastfeeding practices in hospitals in Delhi, India for recently delivered mother (RDM)–newborn dyads during the first wave of the COVID-19 pandemic (2020) and inductively design a “pathway of impactation” for informing mitigatory initiatives during the current and future pandemics, at least in the initial months.

**Materials and methods:** We used an exploratory descriptive design (qualitative research method) and collected information from seven leading public health facilities in Delhi, India. We conducted separate interviews with the head and senior faculty from the Departments of Pediatrics/Neonatology (n = 12) and Obstetrics (n = 7), resident

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doctors (n = 14), nurses (labor room/maternity ward; n = 13), and RDMs (n = 45) across three profiles: (a) COVID-19-negative RDM with healthy newborn (n = 18), (b) COVID-19-positive RDM with healthy newborn (n = 19), and (c) COVID-19 positive RDM with sick newborn needing intensive care (n = 8) along with their care-giving family members (n = 39). We analyzed the data using grounded theory as the method and phenomenology as the philosophy of our research.

**Results:** Anxiety among clients and providers, evolving evidence and advisories, separation of the COVID-positive RDM from her newborn at birth, providers' tendency to minimize contact duration and frequency with COVID-positive mothers, compromised counseling on breastfeeding, logistic difficulties in expression and transportation of COVID-positive mother's milk to her baby in the nursery, COVID restrictions, staff shortage and unavailable family support in wards and nursery, and inadequate infrastructure were identified as major barriers. Keeping the RDM–newborn together, harmonization of standard operating procedures between professional associations and within and between departments, strategic mobilization of resources, optimization of human resources, strengthening client–provider interaction, risk triaging, leveraging technology, and leadership-in-crisis-situations were notable enablers.

**Conclusion:** The separation of the RDM and newborn led to a cascade of disruptions to newborn care and breastfeeding practices in the study institutions. Separating the newborn from the mother should be avoided during public health emergencies unless there is robust evidence favoring the same; routine institutional practices should be family centered. (Author)

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## 2023-00688

**The evolving relationship between COVID-19 and serious bacterial infection evaluation in febrile neonates.** Guernsey III D, Kostin S, Silver M, et al (2023), *Acta Paediatrica* vol 112, no 7, July 2023, pp 1398-1403

### Aim

The COVID-19 omicron variant surge highlighted the evolving impact of COVID-19. Febrile infants <60 days old are high risk for serious bacterial infections (SBI). This study evaluated the rate of SBI based on COVID-19 infection.

### Methods

We conducted a retrospective chart review at an urban, academic paediatric emergency department. The study enrolled infants 60 days old or less with documented fever. The primary outcome was SBI diagnosed by blood, urine, and/or cerebrospinal fluid cultures. We compared the rate of SBI between COVID-19 groups with an omicron variant and 29- to 60-day-old subgroup analyses.

### Results

Two hundred and thirty-three (233) infants meet the criteria. The incidence of SBI was 18.7% in the COVID-19 negative and 1.7% in the COVID-19-positive group which is statistically significant ( $p < 0.001$ ). Omicron subgroup analysis did not achieve statistical significance ( $p = 0.62$ ) while COVID-19-positive infants 29–60 days old had a statistically significant lower rate of SBI ( $p = 0.006$ ).

### Conclusion

The omicron variant surge provided an additional understanding of the impact of COVID-19 on these high-risk infants. These results can lead to decreased invasive testing and exposure to antibiotics as well as examine the utility of viral testing for risk stratification. (Author)

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## 2023-00356

**Knowledge, attitude, and determinants of exclusive breastfeeding during COVID-19 pandemic among lactating mothers in Mekelle, Tigray: a cross sectional study.** Gebretsadik GG, Tadesse Z, Mamo L, et al (2022), *BMC Pregnancy and Childbirth* vol 22, no 850, November 2022

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**Full URL:** <https://doi.org/10.1186/s12884-022-05186-w>

#### Background

Due to the nutritive and immunologic benefits of breastmilk, children should be exclusively breastfed for the first 6 months of life, even during the corona virus pandemic. However, fear of transmission risk and pandemic-related restrictions could undermine the practice of breastfeeding. This study aimed to assess the knowledge, attitude, and determinants of exclusive breastfeeding (EBF) during COVID-19 among lactating mothers in Mekelle, Tigray, Ethiopia.

#### Methods

A community based cross-sectional study was conducted among 621 lactating mothers living in Mekelle city, Tigray, from April to June, 2021. Data were collected using an adapted form of a standard KAP questionnaire. Binary logistic regression was used to determine the independent determinants of EBF at a statistical significance of  $p < 0.05$ . The strength of the association was measured by odds ratio and 95% confidence interval.

#### Results

Four hundred (64.4%) mothers exclusively breastfed their children. Infants from female-headed households had twice (AOR 2.21; 95% CI 1.31, 3.71) higher odds of EBF. Higher educational status was associated with higher odds of EBF practice. A unit increase in parity was associated with a 23% increase in the odds of EBF. Mothers who received breastfeeding information had a 73% (AOR 1.73; 95% CI 1.17, 2.56) higher odds of EBF. Moreover, mothers with high knowledge score and positive attitude showed a 74% higher (AOR 1.74; 95% CI 1.20, 2.51) and more than double (AOR 2.35; 95% CI 1.50, 3.70) odds of EBF, respectively.

#### Conclusion

About two-thirds of the mothers practiced EBF. Household head, maternal educational, parity, breastfeeding information, knowledge of breastfeeding, and attitude towards EBF were significant determinants of EBF. Our study findings highlighted that programs that enhance women's participation in education and decision-making could improve EBF practice. Besides, during the COVID-19 pandemic, providing lactating mothers with adequate and up-to-date breastfeeding information could be significant in improving EBF practice. (Author)

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#### 2023-00197

**Cardiac Effects of COVID-19 Infection, MIS-C, and the Vaccine in Infants and Children: What Is Known and Future Implications.** Schwartz BN, Harahsheh AF, Krishnan A, et al (2022), American Journal of Perinatology 28 October 2022, Online

**Full URL:** <https://www.thieme-connect.com/products/ejournals/abstract/10.1055/s-0042-1757238>

The cardiac effects of novel coronavirus disease 2019 (COVID-19) infection on the pediatric heart has become an area of particular interest as elevated cardiac enzymes and abnormalities on echocardiogram and electrocardiogram were seen in a portion of children affected by the virus. In this article, we review the cardiac manifestations of acute COVID-19 infection, multisystem inflammatory syndrome in children, and postvaccine myocarditis. The limited research on the effects of COVID-19 on neonates and infants is also reported. (Author)

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#### 2022-10907

**No infectious SARS-CoV-2 in breast milk from a cohort of 110 lactating women.** Krogstad P, Contreras D, Ng H, et al (2022), Pediatric Research vol 92, no 4, October 2022, pp 1140-1145

**Full URL:** <https://doi.org/10.1038/s41390-021-01902-y>

#### Background

Genomic RNA of severe acute respiratory syndrome-associated coronavirus type 2 (SARS-CoV-2) has been detected in the breast milk of lactating women, but its pathological significance has remained uncertain due to the small size of prior studies.

#### Methods

Breast milk from 110 lactating women was analyzed by reverse transcription-polymerase chain reaction (285 samples)

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and viral culture (160 samples). Those containing SARS-CoV-2 viral RNA (vRNA) were examined for the presence of subgenomic RNA (sgRNA), a putative marker of infectivity.

## Results

Sixty-five women had a positive SARS-CoV-2 diagnostic test, 9 had symptoms but negative diagnostic tests, and 36 symptomatic women were not tested. SARS-CoV-2 vRNA was detected in the milk of 7 (6%) women with either a confirmed infection or symptomatic illness, including 6 of 65 (9%) women with a positive SARS-CoV-2 diagnostic test. Infectious virus was not detected in any culture and none had detectable sgRNA. In control experiments, infectious SARS-CoV-2 could be cultured after addition to breastmilk despite several freeze–thaw cycles, as it occurs in the storage and usage of human milk.

## Conclusions

SARS-CoV-2 RNA can be found infrequently in the breastmilk after recent infection, but we found no evidence that breastmilk contains an infectious virus or that breastfeeding represents a risk factor for transmission of infection to infants.

## Impact

This article goes beyond prior small studies to provide evidence that infectious SARS-CoV-2 is not present in the milk of lactating women with recent infection, even when SARS-CoV-2 RNA is detected.

Recent SARS-CoV-2 infection or detection of its RNA in human milk is not a contraindication to breastfeeding. (Author)

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## 2022-09833

**Viral whole-genome sequencing to assess impact of universal masking on SARS-CoV-2 transmission among pediatric healthcare workers.** Kociolek LK, Patel AB, Hultquist JF, et al (2022), Infection Control and Hospital Epidemiology vol 43, no 10, October 2022, pp 1408-1412

### Objective:

To identify the impact of universal masking on COVID-19 incidence and putative SARS-CoV-2 transmissions events among children's hospital healthcare workers (HCWs).

### Design:

Quasi-experimental study.

### Setting:

Single academic free-standing children's hospital.

### Methods:

We performed whole-genome sequencing of SARS-CoV-2- PCR-positive samples collected from HCWs 3 weeks before and 6 weeks after implementing a universal masking policy. Phylogenetic analyses were performed to identify clusters of clonally related SARS-CoV-2 indicative of putative transmission events. We measured COVID-19 incidence, SARS-CoV-2 test positivity rates, and frequency of putative transmission events before and after the masking policy was implemented.

### Results:

HCW COVID-19 incidence and test positivity declined from 14.3 to 4.3 cases per week, and from 18.4% to 9.0%, respectively. Putative transmission events were only identified prior to universal masking.

### Conclusions:

A universal masking policy was associated with reductions in HCW COVID-19 infections and occupational acquisition of SARS-CoV-2. (Author)

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2022-09579

**A Term Infant Presenting with COVID-19 Disease at Birth and a Croup-Like Cough.** Arnold M, Wade C, Micetic B, et al (2022), American Journal of Perinatology 2 September 2022, online

**Objective** Since the global outbreak of the novel coronavirus disease 2019 (COVID-19), there have been increasing reports of children developing a croup-like cough associated with concurrent COVID-19 infection. Currently, there is not much information available regarding newborn infants and COVID-19 infection and the incidence of vertical transmission is thought to be rare. This novel case report depicts a term newborn infected at the time of birth with COVID-19 and includes details about the course of their complicated hospitalization.

**Study Design** A term infant, found to be infected at birth with COVID-19, developed respiratory distress resulting in transfer to our neonatal intensive care unit. Due to the increasing respiratory support requirements, endotracheal intubation was required on day of life (DOL) 7. Later, when the infant was extubated, on DOL 21, a croup-like cough developed.

**Results** Despite respiratory treatment with albuterol, budesonide, racemic epinephrine, lidocaine, dornase alfa, and a 10-day course of dexamethasone, the cough persisted. A prolonged hospitalization was required and eventually the infant was discharged home on 0.4 L/minute of oxygen via nasal cannula on DOL 95.

**Conclusion** As the COVID-19 virus mutates over time, there are some seemingly different presentations in both the pediatric and adult populations. The hypervigilance and sharing of new findings among providers are paramount in the treatment of infants with COVID-19 disease. (Author)

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2022-09513

**Multisystem Inflammatory Syndrome in Neonates following Maternal SARS-CoV-2 COVID-19 Infection.** Lakshminrusimha S, Hudak ML, Dimitriades VR, et al (2022), American Journal of Perinatology vol 39, no 11, August 2022, pp 1166-1171

No abstract available.

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2022-09116

**Barriers and facilitators of access to maternal, newborn and child health services during the first wave of COVID-19 pandemic in Nigeria: findings from a qualitative study.** Akaba GO, Dirisu O, Okunade KS, et al (2022), BMC Health Services Research vol 22, no 611, 6 May 2022

**Full URL:** <https://doi.org/10.1186/s12913-022-07996-2>

**Background**


COVID-19 pandemic may have affected the utilization of maternal and newborn child health services in Nigeria but the extent, directions, contextual factors at all the levels of healthcare service delivery in Nigeria is yet to be fully explored.

The objective of the study was to explore the barriers and facilitators of access to MNCH services during the first wave of COVID-19 pandemic in Nigeria.


**Methods**

A qualitative study was conducted among different stakeholder groups in 18 public health facilities in Nigeria between May and July, 2020. In-depth interviews were conducted among 54 study participants (service users, service providers and policymakers) selected from across the three tiers of public health service delivery system in Nigeria (primary health centers, secondary health centers and tertiary health centers). Coding of the qualitative data and identification of themes from the transcripts were carried out and thematic approach was used for data analyses.

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## Results

Barriers to accessing MNCH services during the first wave of COVID-19-pandemic in Nigeria include fear of contracting COVID-19 infection at health facilities, transportation difficulties, stigmatization of sick persons, lack of personal protective equipment (PPE) /medical commodities, long waiting times at hospitals, shortage of manpower, lack of preparedness by health workers, and prioritization of essential services.

Enablers to access include the COVID-19 non-pharmacological measures instituted at the health facilities, community sensitization on healthcare access during the pandemic, and alternative strategies for administering immunization service at the clinics.

## Conclusion

Access to MNCH services were negatively affected by lockdown during the first wave of COVID-19 pandemic in Nigeria particularly due to challenges resulting from restrictions in movements which affected patients/healthcare providers ability to reach the hospitals as well as patients' ability to pay for health care services. Additionally, there was fear of contracting COVID-19 infection at health facilities and the health systems inability to provide enabling conditions for sustained utilization of MNCH services. There is need for government to institute alternative measures to halt the spread of diseases instead of lockdowns so as to ensure unhindered access to MNCH services during future pandemics. This may include immediate sensitization of the general public on modes of transmission of any emergent infectious disease as well as training of health workers on emergency preparedness and alternative service delivery models. (Author)

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## 2022-09075

**Infant, pediatric and adult well visit trends before and during the COVID-19 pandemic: a retrospective cohort study.** Salas J, Hinyard L, Cappellari A, et al (2022), BMC Health Services Research vol 22, no 328, 11 March 2022

**Full URL:** <https://doi.org/10.1186/s12913-022-07719-7>

## Background

Adult well visits declined during COVID-19, but literature is inconsistent in regard to whether childhood well visits declined. We determined if the COVID-19 pandemic was associated with a change in well visits among infants, children, adolescents and adults before, compared to during the COVID-19 pandemic, including through the emergence of the Delta variant.

## Methods

De-identified electronic health care data came from a multi-state Midwest health care system. Eligible patients (n = 798,571) had ≥ 1 well visit between 7/1/2018 and 6/30/2021. Trends in well visits per month for children (< 1, 1–4, 5–11, 12–17 years) and adults (18–39, 40–64, ≥ 65 years) over 3-years were assessed using Joinpoint regression models and monthly percent change (MPC).

## Results

Well visits remained stable for infants (< 1 year of age) (MPC = -0.1; 95% CI = -0.3, 0.1). For children 1–4 years and all adults, visits were stable prior to 2020, decreased from 1/2020 to 4/2020 (MPC range -20 to -40), increased from 4/2020–7/2020 (MPC range 30 to 72), and remained stable after 7/2020. Children 5–17 had seasonal variation in visits where low points occurred in Jan/Feb 2019 and high points in Aug 2019 (start of school year); however, the low point in 2020 occurred in April 2020 and the seasonal variation normalized after this.

## Conclusions

In a large Mid-western health care system, infant well visits did not decline at the onset (3/1/2020) of the COVID-19 pandemic. Although well visits for all other ages decreased to a low point in 4/2020, a rapid return to pre-pandemic utilization rates occurred by 7/2020. The brief decrease in preventive care may have had little impact on health. (Author)

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2022-08977

**The Effects of COVID-19 Hospital Practices on Breastfeeding Initiation and Duration Postdischarge.** Rostomian L, Angelidou A, Sullivan K, et al (2022), *Breastfeeding Medicine* Vol 17, no 9, September 2022, pp 736-744

Background: Early in the COVID-19 pandemic, many birth hospitals separated SARS-CoV-2-positive mothers from their newborn infants and advised against breastfeeding to decrease postnatal SARS-CoV-2 transmission. Information on how these practices impacted breastfeeding postdischarge is limited.

Objectives: In a statewide sample of SARS-CoV-2-positive mothers, we aimed to determine the extent to which (1) mother–infant separation and (2) a lack of breastfeeding initiation in-hospital were associated with breast milk feeding postdischarge.

Design/Methods: From 11 birthing hospitals in Massachusetts, we identified 187 women who tested positive for SARS-CoV-2 from 14 days before to 72 hours after delivery (March 1–July 31, 2020) and their newborn infants. We abstracted chart data from the delivery hospitalization on main exposure variables (mother–infant separation, in-hospital breast milk feeding [expressed milk feeding and/or direct breastfeeding]) and from outpatient visits until 30 days postdischarge. We evaluated associations of in-hospital practices with outcomes up to 30 days postdischarge, adjusting for confounders using multivariable logistic and linear regression.

Results: Mother–infant separation in-hospital was associated with a shorter duration of any breast milk feeding (regression coefficient estimate –5.29 days, 95% confidence intervals [CI] [–8.89 to –1.69]). Direct breastfeeding in-hospital was associated with higher odds of any breast milk feeding (adjusted odds ratios [AOR] 5.68, 95% CI [1.65–23.63]) and direct breastfeeding (AOR 8.19, 95% CI [2.99–24.91]) postdischarge; results were similar for any breast milk feeding in-hospital.

Conclusions: Perinatal hospital care practices implemented early in the COVID-19 pandemic, specifically mother–infant separation and prevention of breast milk feeding initiation, were associated with adverse effects on breast milk feeding outcomes assessed up to 1 month postdischarge. (Author)

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2022-08641

**Perspectives on challenges and opportunities for birth defects surveillance programs during and after the COVID-19 era.**

Ludorf KL, Salemi JL, Kirby RS, et al (2020), *Birth Defects Research* vol 112, no 14, August 2020, pp 1039-1042

Full URL: <https://doi.org/10.1002/bdr2.1710>

In recent months, various public health measures have been implemented throughout the world in response to the coronavirus disease 2019 (COVID-19) pandemic. This outbreak, and the subsequent containment policies, may have a range of potential short- and long-term impacts on the monitoring and surveillance of other conditions, such as birth defects. In this commentary, we provide a perspective on these potential impacts on birth defects surveillance and analysis. We discuss possible effects on clinical birth defect diagnoses, routine birth defects surveillance system activities, and epidemiologic considerations, as well as opportunities for mitigating the impact of COVID-19. Like many other sectors of public health and medicine, birth defects surveillance programs may be faced with organizational and methodological obstacles in the wake of a changing landscape. A better understanding of these potential challenges faced by birth defects surveillance programs could facilitate better planning and collaboration across programs to overcome barriers to core activities and to prepare for novel opportunities for research and prevention. (Author)

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2022-08508

**Ukulele Class in the Neonatal Intensive Care Unit: Support for Parents Before and During COVID-19.** Negrete B (2021), *Pediatric Nursing* vol 47, no 2, March-April 2021, pp 97-99

A ukulele class developed and taught by a music therapist provided peer support to fathers of infants in neonatal intensive care. With the advent of COVID-19, the class not only continued but expanded. Faced with COVID-19

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restrictions on family presence, mothers joined the class for safe social connection, and through the use of an online platform, even parents at home were able to participate. (Author)

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## 2022-08503

**Family Presence in the NICU: Constraints and Opportunities in the COVID-19 Era.** Bainter J, Fry M, Miller B, et al (2020), *Pediatric Nursing* vol 46, no 5, September-October 2020, pp 256-259

**Full URL:** <http://pediatricnursing.net/issues/20septoct/256.pdf>

With the advent of COVID-19, many hospitals changed their 'visiting' policies to protect staff and patients. Rather than welcoming families as partners in care, family presence was prohibited or sharply limited. The authors of this article, Family Faculty with the Vermont Oxford Network, describe the difficult impact these changes had on families with babies in NICUs – both on participation in care and also on integration of the family 'voice' at the policy level. The authors urge that the core concepts of patient- and family-centered care provide the foundation for future changes in policy as the pandemic continues. (Author)

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## 2022-08275

**Impact of the COVID-19 pandemic on breastfeeding in Israel: a cross-sectional, observational survey.** Magnazi MB, Sartena G, Goldberg M, et al (2022), *International Breastfeeding Journal* vol 17, no 61, 26 August 2022

**Full URL:** <https://doi.org/10.1186/s13006-022-00505-5>

### Background

Since March 2020, the world has been coping with the COVID-19 pandemic. One group particularly affected were mothers of newborns. The Israeli government imposed three lockdowns, with the first from 14 March to 11 May 2020. It had the strictest rules, with effects among mothers including panic and stress. These mothers coped with new challenges as they were often without help from the extended family, could not meet lactation counsellors in person, and stayed longer on maternity leave.

### Methods

A cross-sectional, observational study collected data via an online anonymous survey in Israel. From 27 April 2020 to 11 May 2020, the survey was distributed through Facebook groups for breastfeeding mothers. It contained 32 multiple choice and 10 open questions. Multivariate logistic regression analysis, with adjustment for potential factors, was performed to determine the pandemic-related factors influencing breastfeeding, including the decision to breastfeed longer than planned.

### Results

Five hundred eighty women participated in the survey. Most mothers were over 30, (mean age 32.55), married with an academic degree (81.5%). 127 (22%) women reported changes in their lactation plans. 85 (15%) responded that due to the COVID-19 pandemic they extended their breastfeeding period and 42 (7%) reported shortening it. A significant relationship was found between this extension and returning to work later than expected adjusted OR = 2.38 95% CI 1.46,3.87). When asked to rank steps national health authorities should take to encourage breastfeeding, the highest agreement (96%) was with maternity leave extension. More than 90% believed that receiving breastfeeding counselling at home and/or in hospital will encourage breastfeeding.

### Conclusions

This study demonstrated that most women did not change their breastfeeding patterns because of the lockdown though some did experience difficulties. Some lengthened their breastfeeding period, as, due to the pandemic, they stayed home longer than expected. This finding should be considered for future emergency situations. (Author)

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## 2022-08157

**Maternal and Neonatal Outcomes During the First Year of the Covid-19 Pandemic.** McDonnell S, Lindow SW, Sloan J, et al (2022), *Irish Medical Journal* vol 115, no 7, July/August 2022, p 639

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## 2022-08103

**Predictors and impact of women's breastfeeding self-efficacy and postnatal care in the context of a pandemic in Australia and Aotearoa New Zealand.** Sweet L, Muller A, Kearney L, et al (2022), Midwifery vol 114, November 2022, 103462

Full URL: <https://doi.org/10.1016/j.midw.2022.103462>

### Objective

To investigate predictors of breastfeeding self-efficacy, postnatal care experiences, and their subsequent impact on breastfeeding outcomes in Australia and Aotearoa New Zealand in the context of the COVID-19 pandemic.

### Design

A cross-sectional online survey collected data between August and October 2020 with recruitment via social media. Quantitative data were analyzed using descriptive analyses, and linear and logistic regression analysis related to the Breastfeeding Self-Efficacy Scale-Short Form findings. Open text responses were analyzed using content analysis.

### Findings

There were 1001 complete responses. Visitor restrictions impacted the woman's early parenting experience in both positive and negative ways. One third of participants stated their postnatal needs were not met with 82 stating that they had no postnatal care at all. During the first six weeks postnatal, 48.1% felt not very or not at all confident caring for their baby. Despite 94.3% of participants initiating breastfeeding, only 70% were exclusively breastfeeding at six weeks. The mean self-efficacy score was 49.98 suggesting the need for additional help, with first time mothers having a statistically significant lower score.

### Discussion/conclusion

Sub-optimal postnatal care and support negatively influence breastfeeding self-efficacy. Women desired additional help during the COVID-19 pandemic inclusive of support and education to meet their postnatal needs and exclusively breastfeed.

### Implications for practice

Women require appropriate and timely postnatal care and support to promote confidence in caring for baby and achieve their breastfeeding goals. Preferably this care should be provided face-to-face. (Author)

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## 2022-08072

**COVID-19 Virus in a 6-Day-Old Girl Neonate: A Case Report.** Eghbalian F, Esfahani AM, Jenabi E (2020), Clinical Pediatrics vol 59, no 14, December 2020, pp 1288-1289

Full URL: <https://doi.org/10.1177/0009922820946010>

Case report of a six-day-old newborn girl who tested positive for COVID-19 after suspected COVID-19 in the mother. The neonate had no respiratory distress and was asymptomatic, and was discharged from the hospital after a reverse transcription-polymerase chain reaction (RT-PCR) negative test. (AS)

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## 2022-07945

**Postnatal women's breastfeeding beliefs, practices, and support during the COVID-19 pandemic: a cross-sectional comparative study across five countries.** Coca KP, Lee EY, Chien LY, et al (2022), International Breastfeeding Journal vol 17, no 58, 17 August 2022

Full URL: <https://doi.org/10.1186/s13006-022-00497-2>

### Background

Women with COVID-19 experienced numerous concerns and doubts about the safety of breastfeeding their babies,

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and lack of support may have impacted breastfeeding practices. This study aims to compare breastfeeding beliefs, practices, and contact with healthcare professionals regarding the level of postnatal feeding support provided during the COVID-19 pandemic in Brazil, South Korea, Taiwan, Thailand, and the United Kingdom.

## Methods

A multi-country cross-sectional study was conducted with postnatal women in five countries. Women up to six months postpartum were invited to complete an online survey concerning the transmission of preventative measures, beliefs toward breastfeeding, infant feeding practices in the last 24 hours and experiences of postnatal infant feeding support between July to November 2021. Bivariate and multivariate analyses were performed to identify the association.

## Results

Of the 3,253 eligible responses received, 39.5% of children were aged between one and two months, but in Taiwan (36%) and South Korea (42.8%) they were between three and four months. The mean of the belief score was significantly different among countries ( $p < 0.0001$ ). Women in Brazil and the UK had a higher rate of breastfeeding at the breast (90.7% and 85.4%, respectively) compared to the three Asian countries ( $p < 0.0001$ ) while feeding with expressed breastmilk in Thailand (59.9%), Taiwan (52.6%), and South Korea (50.4%) was higher than the others ( $p < 0.0001$ ). Brazil and UK mothers (mean = 16.0 and 14.5 respectively) had a higher mean score for belief toward breastfeeding during the COVID-19 than the others. These results are inversely associated with breastfeeding but positively related to formula feeding practice. Postnatal feeding support during the COVID-19 pandemic was mainly provided by healthcare professionals (67.1%) and peers / family through face-to-face personal contact (51.6%) in all countries.

## Conclusion

Some differences were found in breastfeeding beliefs during the COVID-19 pandemic in Asian countries. A positive breastfeeding belief was associated with the practice of breastfeeding at the breast. Women from all countries received postpartum infant feeding support from health professionals and peers / family through personal contacts. Governments need to emphasize and disseminate the importance of breastfeeding safety, especially in Asian countries. (Author)

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## 2022-07772

**Management of neonatal sepsis with COVID-19 infection in a premature newborn - A case report.** Kaveh M, Sadatinejad SM (2023), Journal of Neonatal Nursing vol 29, no 2, April 2023, pp 409-412

**Full URL:** <https://doi.org/10.1016/j.jnn.2022.07.028>

## Introduction

Neonates appear to be less affected by COVID-19 than adults, yet COVID-19 has been a challenge for all medical specialties, including neonatal intensive care unit (NICU) specialists. Unfortunately, current knowledge about the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection is limited. This case report explains how COVID-19 neonatal sepsis was treated with immunomodulatory agents.

## Case presentation

In this case, we present a premature male newborn who was ill. He was born to a mother with a negative nasopharyngeal swab test for SARS-CoV-2. On the fifth day of life, the baby developed respiratory distress, and a nasopharyngeal swab test for SARS-CoV-2 tested positive. The baby was Intubated, and intratracheal surfactant was administered. The infant was treated with intravenous immunoglobulin (IVIg) and corticosteroids for 14 days.

## Patient's demographics

Age: under 1 month, Sex: Male, Ethnicity: Iranian.

## Conclusion

The basics of treatment for neonatal COVID-19 is supportive care. Some studies have treated infants with various

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drugs such as Hydroxychloroquine, Favipiravir, and Remdesivir; however, in our case, a 5-day-old baby boy was treated with corticosteroids and IVIg. We achieved good outcomes after 2 weeks of treatment with dexamethasone 0.3 mg/kg per day and IVIg 2 g/kg/day (for 3 days). It appears that these treatments, along with adjuvant ventilation and the administration of endotracheal surfactant, can improve a patient's general condition. (Author)

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## 2022-07722

**Perinatal COVID-19 maternal and neonatal outcomes at two academic birth hospitals.** Flannery DD, Barboza AZ, Pfeifer MR, et al (2022), Journal of Perinatology vol 42, no 10, October 2022, pp 1338–1345

**Full URL:** <https://doi.org/10.1038/s41372-022-01446-x>

### Objective

Describe 1-month outcomes among newborns of persons with perinatal COVID-19.

### Study design

Prospective observational study of pregnant persons who tested positive for SARS-CoV-2 between 14 days before and 3 days after delivery and their newborns, from 3/2020 to 3/2021 at two urban high-risk academic hospitals. Phone interviews were conducted to determine 1-month newborn outcomes.

### Results

Among 9748 pregnant persons, 209 (2.1%) tested positive for perinatal SARS-CoV-2. Symptomatically infected persons were more likely to have a preterm delivery due to worsening maternal condition and their newborns were more likely to test positive for SARS-CoV-2 compared with asymptomatic persons. Six of 191 (3.1%) infants tested were positive for SARS-CoV-2; none had attributable illness before discharge. Of 169 eligible families, 132 (78.1%) participated in post-discharge interviews; none reported their newborn tested positive for SARS-CoV-2 by 1 month of age.

### Conclusion

Symptomatic perinatal COVID-19 had a substantial effect on maternal health but no apparent short-term effect on newborns. (Author)

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## 2022-07701

**Antibodies in the breastmilk of COVID-19 recovered women.** Szczygiół P, Łukianowski B, Kościelska-Kasprzak K, et al (2022), BMC Pregnancy and Childbirth vol 22, no 635, 11 August 2022

**Full URL:** <https://doi.org/10.1186/s12884-022-04945-z>

### Objective

Human milk contains antibodies against Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) which may serve as a protective factor through passive immunization in infants. The objective of this study was to measure the levels of anti-SARS-CoV-2 IgG and IgA in human milk and serum after a SARS-CoV-2 infection.

### Design

Breast milk and serum samples from 72 lactating mothers with confirmed SARS-CoV-2 asymptomatic or symptomatic infection were collected 1–229 days after the onset of clinical symptoms related to COVID-19. Seventeen mothers with no history of COVID-19 served as a control group. Enzyme-Linked ImmunoSorbent Assay was performed to analyze antibodies against SARS-CoV-2.

### Results

SARS-CoV-2-IgA human milk antibodies were detected in mothers and their concentrations were consistently higher than SARS-CoV-2-IgG antibodies. The serum and breastmilk samples of women with COVID-19 was characterized by a higher concentration of anti-RBD IgA and IgG than the serum from the control group without COVID-19. No statistically significant difference was observed between the antibody levels in the serum samples obtained from symptomatic

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and asymptomatic women exposed to SARS-CoV-2 and between the antibody level and the time from a positive SARS-CoV-2 test result over the period studied.

## Conclusion

Our results confirm the presence of SARS-CoV-2 IgA and IgG antibodies in the breastmilk of COVID-19 recovered women and the possibility of these antibodies in providing specific immunologic benefits to breastfeeding infants such as protection against the virus transmission and severity of the acquired COVID-19 disease. (Author)

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## 2022-07683

**Evaluation of Newborns Diagnosed with COVID-19: A Single-Center Experience.** Aydoğan S, Zenciroglu A, Çitli R, et al (2023), American Journal of Perinatology vol 40, no 5, April 2023, pp 567-574

**Introduction** The causative agent of the severe acute respiratory syndrome is a new type of coronavirus infection called coronavirus disease-2019 (COVID-19) which has spread around the world. COVID-19 is thought to rarely affect infants, so pandemic planning focuses on adults. This study aimed to share our 1-year experience with COVID-19-positive newborns in a tertiary neonatal intensive care unit (NICU).

**Material and Methods** Hospitalized newborns after a reverse transcription polymerase chain reaction (RT-PCR) for COVID-19 were evaluated in this retrospective, cohort study between March 2020 and March 2021. The clinical course, laboratory tests, imaging studies, and outcomes of affected newborns were collected from medical records.

**Results** Eleven COVID-19-diagnosed newborns were analyzed in our study. Four (36.6%) patients had contact with a COVID-19-positive individual in their families. The main symptoms were fever (81.8%), hypoxemia (63.6%), and tachypnea (63.6%). Bacterial coinfection was identified in two newborns. Aortic coarctation was detected as an accompanied disease by a newborn who was referred to our hospital with a suspicion of congenital heart disease and two patients had a bacterial coinfection. We did not detect any cases of neonatal multisystem inflammatory syndrome. All patients were discharged in good health. None of the newborns had any complications and repeated infection with another variant during the first-year follow-up.

**Conclusion** Contrary to popular belief, newborns are a sensitive age group for COVID-19 and need a high rate of hospitalization. Congenital heart diseases and coinfections should not be overlooked in COVID-19-infected newborns. The acquired immunity due to COVID-19 infection protects newborns from recurrent COVID-19 infections in their first year of life. The absence of COVID-19-positive individual in the family in most cases suggests that PCR-negative adults may also play a role in the transmission of the disease.

## Key Points

COVID-19 is still a pandemic all over the world.

COVID-19 is dangerous for newborns.

PCR-negative adults may also play a role in the transmission of the disease to the newborn. (Author)

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## 2022-07418

**Maternal and neonatal outcomes of COVID-19 in a high-risk pregnant cohort with and without HIV.** de Waard L, Langenegger E, Erasmus K, et al (2021), South African Medical Journal (SAMJ) vol 111, no 12, December 2021, pp 1174-1180

**Full URL:** <http://dx.doi.org/10.7196%2FSAMJ.2021.v111i12.15683>

**Background.** The impact of SARS-CoV-2 infection in pregnant women living with HIV (PLHIV) has not been described previously.

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**Objectives.** To describe the clinical presentation and outcomes of a cohort of women with high-risk pregnancies with confirmed COVID-19 to determine whether risk factors for disease severity and adverse outcomes of COVID-19 differed in pregnant women without HIV compared with PLHIV.

**Methods.** We prospectively enrolled pregnant women with COVID-19 attending the high-risk obstetric service at Tygerberg Hospital, Cape Town, South Africa, from 1 May to 31 July 2020, with follow-up until 31 October 2020. Women were considered high risk if they required specialist care for maternal, neonatal and/or anaesthetic conditions. Common maternal or obstetric conditions included hypertensive disorders, morbid obesity (body mass index (BMI)  $\geq 40$  kg/m<sup>2</sup>) and diabetes. Information on demographics, clinical features, and maternal and neonatal outcomes was collected and compared for PLHIV v. pregnant women without HIV.

**Results.** One hundred women (72 without HIV and 28 PLHIV) with high-risk pregnancies had laboratory-confirmed COVID-19. Among the 28 PLHIV, the median (interquartile range) CD4 count was 441 (317 - 603) cells/ $\mu$ L, and 19/26 (73%) were virologically suppressed. COVID-19 was diagnosed predominantly in the third trimester (81%). Obesity (BMI  $\geq 30$  in n=61/81; 75%) and hypertensive disorders were frequent comorbidities. Of the 100 women, 40% developed severe or critical COVID-19, 15% required intensive care unit admission and 6% needed invasive ventilation. Eight women died, 1 from advanced HIV disease complicated by bacteraemia and urosepsis. The crude maternal mortality rate was substantially higher in women with COVID-19 compared with all other deliveries at our institution during this period (8/91 (9%) v. 7/4 058 (0.2%);  $p < 0.001$ ). Neonatal outcomes were favourable. No significant differences in COVID-19 risk factors, disease severity, and maternal/neonatal outcome were noted for PLHIV v. those without HIV.

**Conclusions.** In this cohort of high-risk pregnant women, the impact of COVID-19 was severe, significantly increasing maternal mortality risk compared with baseline rates. Virally suppressed HIV infection was not associated with worse COVID-19 outcomes in pregnancy. (Author)

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#### 2022-07347

**An evidence-based initiative to increase use of own mother's milk in a NICU: the impact of COVID-19.** Garcia C, Marques T, Antunes L, et al (2022), *Infant* vol 18, no 4, July 2022, pp 159-163

This article describes a quality improvement approach to increase the use of own mother's milk (OMM) during the first 14 days of life for infants admitted to the neonatal intensive care unit of a neonatal tertiary centre in Portugal. The project coincided with the COVID-19 pandemic, providing an opportunity to assess the impact of COVID-19 on lactation practices and OMM doses. (Author)

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#### 2022-07342

**SHEA Pediatric Leadership Council commentary: Ambulatory management of neonates born to mothers infected with severe acute respiratory coronavirus 2 (SARS-CoV-2).** Rubin LG, Kocielek LK, Schaffzin JK, et al for the Pediatric Leadership Council (2021), *Infection Control and Hospital Epidemiology* vol 42, no 9, September 2021, pp 1105-1107

Guidelines offered during the COVID-19 pandemic to help primary care and other ambulatory staff decide on the appropriate infection control measures for patient visits. Advises discussion between clinics, providers and local health authorities as local practices are subject to variation. (JSM)

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#### 2022-07338

**Maintaining quality of care through a pandemic and setting goals for future improvement.** Oddie S, Winch R (2022), *Infant* vol 18, no 4, July 2022, pp 134-136

The National Neonatal Audit Programme (NNAP) was established in 2006 and continues to play an important role in driving and supporting improvements in neonatal care. The past two years have been a period of change for the NNAP, bringing a new data flow methodology, exciting opportunities to further develop the NNAP, and a new contract for the Royal College of Paediatrics and Child Health (RCPCH) to deliver the audit until 2025. (Author)

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2022-07277

**SARS-CoV-2 in asymptomatic Danish infants and their mothers from April 2020 to January 2022.** Malon M, Jensen A, Hjort J, et al (2022), Acta Paediatrica vol 111, no 9, September 2022, pp 1779-1780

Full URL: <https://doi.org/10.1111/apa.16461>

Brief report aiming to document SARS-CoV-2 RNA and serology in children below 2 years of age and their mothers. Results suggest that the youngest children and their mothers had a low prevalence of SARS-CoV-2 and were not significant drivers of the COVID-19 epidemic at the beginning of the COVID-19 pandemic. (LDO)

2022-07099

**Vertical transmission of SARS-CoV-2: A systematic review.** Jeganathan K, Paul ABM (2021), Obstetric Medicine vol 15, no 2, June 2022, pp 91-98

Full URL: <https://doi.org/10.1177%2F1753495X211038157>

In this study, we discuss vertical transmission of SARS-CoV-2, and assess various maternal and neonatal outcomes based on the current evidence available. This systematic review using PRISMA guidelines revealed a total of 47 eligible studies describing 1188 SARS-CoV-2 positive pregnant women and 985 neonates for review. Utilizing the 'Shah's Classification System for Maternal-Fetal-Neonatal SARS-CoV-2 Intrauterine Infections' by Shah et al., we found vertical transmission confirmed in 0.3% (n = 3), probable in 0.5% (n = 5), possible in 1.8% (n = 17), unlikely in 80.3% (724) and not infected in 17% (n = 153). (Author)

2022-06918

**Continuing essential Sexual Reproductive, Maternal, Neonatal, Child and Adolescent Health services during COVID-19 pandemic.** World Health Organization, UNFPA, UNICEF (2020), April 2020. 10 pages

Full URL: <https://www.who.int/publications/i/item/SRMNCAH-Covid>

This document has been prepared to provide generic operational guidance to countries in the regions for preparing a continuity plan for maintaining good quality and equitable sexual, reproductive, maternal, newborn, child, and adolescent health (SRMNCAH) services during the COVID-19 pandemic. It is commonly observed that response to a pandemic stresses the health systems in the countries and poses the risk of disruption in provision and use of ongoing health services that are essential for population groups that are particularly vulnerable.

This document builds upon the global guidance issued by WHO and UN agencies and encourages countries to adapt the guidance, based on local conditions to sustain essential SRMNCAH and nutrition services, while implementing prevention, infection control and curative services for COVID-19. This guidance shall be updated as the new information and evidence emerges on the nature and stage of the pandemic. (Author)

2022-06905

**Definition and categorization of the timing of mother-to-child transmission of SARS-CoV-2.** World Health Organization (2021), February 2021. 14 pages

Full URL: <https://www.who.int/publications/i/item/WHO-2019-nCoV-mother-to-child-transmission-2021.1>

This scientific brief was prepared based on results of evidence synthesis and a WHO expert consultation. The WHO COVID-19 LENS (Living Evidence Synthesis) working group consolidated available evidence, based on rapid reviews of the literature and results of a living systematic review on pregnancy and COVID-19 (up to October 7, 2020), on potential mechanisms of vertical transmission of infectious pathogens, feasibility of vertical transmission of SARS-CoV-2, data related to interpretation of positive SARS-CoV-2 virologic and serologic neonatal tests, lessons from diagnosis of other congenital infections, and existing proposed definitions to classify timing of vertical transmission of SARS-CoV-2. WHO convened a multidisciplinary, international panel of experts between October and November 2020 to review the evidence and propose a consensus initial classification system for the timing of vertical transmission of SARS-CoV-2. The panel included experts in obstetrics, neonatology, paediatrics, epidemiology, virology, infectious

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disease, congenital infections, and placental pathology. The selection of the panel ensured geographic representation, gender balance, and no important conflicts of interest, in accordance with WHO standard procedures. (Author)

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## 2022-06900

**Frequently asked questions: COVID-19 vaccines and breastfeeding based on WHO interim recommendations, 12 August 2021.** IFE Core Group, UNICEF, USAID, World Health Organization (2021), September 2021. 2 pages

**Full URL:** <https://www.who.int/publications/i/item/WHO-2019-nCoV-FAQ-Breast-feeding-Vaccines-2021.1>

The FAQs are intended to provide answers to health care providers and the public, including mothers who are breastfeeding or expressing milk, on breastfeeding and the following COVID-19 vaccines:

- Pfizer-BioNTech BNT162b2
  - Moderna mRNA-1273
  - Oxford University - AstraZeneca AZD1222
  - Janssen Ad26.COV2.S
  - Sinopharm - BIBP vaccine
  - Sinovac - CoronaVac. (Author)
- 

## 2022-06885

**Global breastfeeding scorecard 2021: protecting breastfeeding through bold national actions during the COVID-19 pandemic and beyond.** World Health Organization, UNICEF (2021), November 2021. 4 pages

**Full URL:** <https://www.who.int/publications/i/item/WHO-HEP-NFS-21.45>

Breastfeeding is one of the most effective ways to ensure child health and survival. Breastmilk contains antibodies that help protect against many common childhood illnesses. Breastfed children perform better on intelligence tests and are less likely to be overweight or obese later in life. Women who breastfeed also have a reduced risk of cancer and type II diabetes. It is estimated that inadequate breastfeeding is responsible for 16% of child deaths each year.

The Global Breastfeeding Collective has identified seven policy priorities for countries to protect, promote and support breastfeeding. The COVID-19 pandemic has highlighted the urgency of implementing these policy priorities but has also created new challenges for their implementation. The Global Nutrition Summit in December 2021 will draw worldwide attention on the extent to which countries are ready to boldly commit to the health and nutrition of their mothers and children. Committing to significant action in support of breastfeeding will be critical.

The Global Breastfeeding Scorecard examines national performance on key indicators of the seven policy priorities. The Scorecard is designed to encourage and document progress on the promotion, protection and support of breastfeeding. (Author)

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## 2022-06763

**Maternal Vaccination and Risk of Hospitalization for Covid-19 among Infants.** Halasa NB, Olson SM, Staat MA, et al (2022), The New England Journal of Medicine vol 387, no 2, 14 July 2022, pp 109-119

**Full URL:** <https://doi.org/10.1056/NEJMoa2204399>

### BACKGROUND

Infants younger than 6 months of age are at high risk for complications of coronavirus disease 2019 (Covid-19) and are not eligible for vaccination. Transplacental transfer of antibodies against severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) after maternal Covid-19 vaccination may confer protection against Covid-19 in infants.

### METHODS

We used a case-control test-negative design to assess the effectiveness of maternal vaccination during pregnancy against hospitalization for Covid-19 among infants younger than 6 months of age. Between July 1, 2021, and March 8,

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2022, we enrolled infants hospitalized for Covid-19 (case infants) and infants hospitalized without Covid-19 (control infants) at 30 hospitals in 22 states. We estimated vaccine effectiveness by comparing the odds of full maternal vaccination (two doses of mRNA vaccine) among case infants and control infants during circulation of the B.1.617.2 (delta) variant (July 1, 2021, to December 18, 2021) and the B.1.1.259 (omicron) variant (December 19, 2021, to March 8, 2022).

## RESULTS

A total of 537 case infants (181 of whom had been admitted to a hospital during the delta period and 356 during the omicron period; median age, 2 months) and 512 control infants were enrolled and included in the analyses; 16% of the case infants and 29% of the control infants had been born to mothers who had been fully vaccinated against Covid-19 during pregnancy. Among the case infants, 113 (21%) received intensive care (64 [12%] received mechanical ventilation or vasoactive infusions). Two case infants died from Covid-19; neither infant's mother had been vaccinated during pregnancy. The effectiveness of maternal vaccination against hospitalization for Covid-19 among infants was 52% (95% confidence interval [CI], 33 to 65) overall, 80% (95% CI, 60 to 90) during the delta period, and 38% (95% CI, 8 to 58) during the omicron period. Effectiveness was 69% (95% CI, 50 to 80) when maternal vaccination occurred after 20 weeks of pregnancy and 38% (95% CI, 3 to 60) during the first 20 weeks of pregnancy.

## CONCLUSIONS

Maternal vaccination with two doses of mRNA vaccine was associated with a reduced risk of hospitalization for Covid-19, including for critical illness, among infants younger than 6 months of age. (Funded by the Centers for Disease Control and Prevention.) (Author)

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## 2022-06698

**Human Milk Antibody Response After Combining Two Different COVID-19 Vaccines: Mix-and-Match.** Mulleners SJ, Juncker HG, van Gils MJ, et al (2022), Journal of Human Lactation vol 38, no 3, August 2022, pp 401-406

### Background

SARS-CoV-2-specific antibodies are secreted into human milk after women are vaccinated against COVID-19, which might protect the breastfed infant. Due to several reports of severe side-effects of the Oxford-AstraZeneca ChAdOx1 (AZD1222) vaccine against COVID-19, some lactating women followed a heterologous vaccination schedule consisting of the first dose of AZD1222 and a second dose of an mRNA-based vaccine. However, it is unclear whether this generates a significant SARS-CoV-2-specific antibody response in human milk.

### Main Issue

To quantify the SARS-CoV-2-specific antibody response in human milk of two lactating women receiving a heterologous vaccination schedules: AZD1222 and mRNA-based vaccine (Pfizer-BioNTech [BNT162b2] and Moderna [mRNA-1273]).

### Management

Both participants collected 16 samples of human milk longitudinally. SARS-CoV-2-specific Immunoglobulin A was measured using an enzyme-linked immunosorbent assay.

### Conclusion

Based on our results, it could be suggested that heterologous vaccination with AZD1222 and an mRNA-based vaccine can elicit a significant SARS-CoV-2 specific IgA response in human milk. (Author)

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## 2022-06656

**Changes in Clinical Care of the Newborn During COVID-19 Pandemic: From the Womb to First Newborn Visit.** Doctor PN, Kamat D, Sood BG (2021), Pediatric Clinics of North America vol 68, no 5, October 2021, pp 1055-1070

COVID-19 has afflicted the health of children and women across all age groups. Since the outbreak of the pandemic in

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December 2019, various epidemiologic, immunologic, clinical, and pharmaceutical studies have been conducted to understand its infectious characteristics, pathogenesis, and clinical profile. COVID-19 affects pregnant women more seriously than nonpregnant women, endangering the health of the newborn. Changes have been implemented to guidelines for antenatal care of pregnant women, delivery, and newborn care. We highlight the current trends of clinical care in pregnant women and newborns during the COVID-19 pandemic. (Author)

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## 2022-06630

**SARS-CoV-2 infection and neonates: Evidence-based data after 18 months of the pandemic.** Pietrasanta C, Artieri G, Ronchi A, et al (2022), *Pediatric Allergy and Immunology* vol 33, no S27, January 2022, pp 96-98

**Full URL:** <https://doi.org/10.1111/pai.13643>

After 18 months of the COVID-19 pandemic, data concerning SARS-CoV-2 infection in pregnant women and their neonates are progressively taking the place of complete uncertainty. Here, we summarize updated evidence regarding several critical aspects of perinatal SARS-CoV-2 infection, including 1) vertical transmission of the virus in utero, which is possible but seems rare according to current epidemiological data; 2) how COVID-19 during pregnancy can shape maternal and neonatal outcomes, either directly or indirectly; 3) how recommendations regarding the management of infected dyads have been progressively modified in light of new scientific evidence; and 4) how maternal infection or vaccination can induce the passive protection of fetuses and neonates against the infection, through the transfer of specific antibodies before and after birth.(Author)

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## 2022-06594

**Antibody levels to SARS-CoV-2 spike protein in mothers and children from delivery to six months later.** Martin-Vicente M, Carrasco I, Muñoz-Gomez MJ, et al (2023), *Birth* vol 50, no 2, June 2023, pp 418-427

**Full URL:** <https://onlinelibrary.wiley.com/doi/epdf/10.1111/birt.12667>

### Introduction

Pregnant women are vulnerable to severe acute respiratory syndrome coronavirus (SARS-CoV-2) infection. Neutralizing antibodies against the SARS-CoV-2 spike (S) protein protect from severe disease. This study analyzes the antibody titers to SARS-CoV-2 S protein in pregnant women and their newborns at delivery, and six months later.

### Methods

We conducted a prospective study on pregnant women with confirmed SARS-CoV-2 infection and newborns. Antibody (IgG, IgM, and IgA) titers were determined using immunoassays in serum and milk samples. An angiotensin-converting enzyme 2 (ACE2) receptor-binding inhibition assay to the S protein was performed on the same serum and milk samples.

### Results

At birth, antibodies to SARS-CoV-2 spike protein were detected in 81.9% of mothers' sera, 78.9% of cord blood samples, and 63.2% of milk samples. Symptomatic women had higher antibody titers (IgG, IgM, and IgA) than the asymptomatic ones ( $P < 0.05$ ). At six months postpartum, IgG levels decreased drastically in children's serum ( $P < 0.001$ ) but remained high in mothers' serum. Antibody titers correlated positively with its capacity to inhibit the ACE2–spike protein interaction at baseline in maternal sera ( $R^2 = 0.203$ ;  $P < 0.001$ ), cord sera ( $R^2 = 0.378$ ;  $P < 0.001$ ), and milk ( $R^2 = 0.564$ ;  $P < 0.001$ ), and at six months in maternal sera ( $R^2 = 0.600$ ;  $P < 0.001$ ).

### Conclusions

High antibody levels against SARS-CoV-2 spike protein were found in most pregnant women. Due to the efficient transfer of IgG to cord blood and high IgA titers in breast milk, neonates may be passively immunized to SARS-CoV-2 infection. Our findings could guide newborn management and maternal vaccination policies. (Author)

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## 2022-06522

**The younger the milder clinical course of COVID-19: Even in newborns?.** Leung C (2021), *Pediatric Allergy and Immunology*

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#### Background

Milder symptoms were observed in children with COVID-19. However, whether this also holds true for neonates is not known.

#### Methods

The clinical data of a total of 3213 patients aged 2 years or below, including 749 neonates, in Brazil nationwide were studied. Comparisons were made between neonate and infant patients by conducting statistical tests.

#### Results

Neonates appeared to bear more severe clinical courses. In addition to higher case fatality rates, newborns with COVID-19 had much shorter time from symptom onset to death and longer time from symptom onset to discharge. Dyspnoea, sore throat and cough were more prominent in neonate patients, suggestive of both upper and lower respiratory tract infection, as opposed to upper respiratory tract symptoms mostly observed in children.

#### Conclusion

Findings suggested that trained immunity provides a possible explanation because the innate immune system in newborns is not "well-trained" while that in adult tends to hyperactive. (Author)

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### 2022-06450

**COVID-19 restrictions and psychological well-being of fathers with infants admitted to NICU—An exploratory cross-sectional study.** Adama EA, Koliouli F, Provenzi L, et al (2022), *Acta Paediatrica* vol 111, no 9, September 2022, pp 1771-1778

Full URL: <https://doi.org/10.1111/apa.16455>

#### Aim

To describe the impact of the COVID-19 restrictions on the caregiving activities and psychological well-being of fathers with infants admitted to neonatal units.

#### Methods

Cross-sectional study using adapted COPE-IS and COPE-IU tools. Participants' recruitment occurred online via social media and parents' associations. Online survey in English, French and Italian were distributed and promoted via websites and social media platforms of parent's associations. The study was undertaken across 12 countries in Asia, Australia, Africa and Europe.

#### Results

A total of 108 fathers of NICU infants completed the survey. COVID-19 related restrictions were categorised into 3 types: no restrictions, partial and severe restrictions. Fathers who experienced partial restrictions reported more involvement in caregiving activities but high levels of emotional difficulties and sleeping problems compared to those who experienced full or no restrictions.

#### Conclusion

Given the impact on the psychological well-being of fathers, restrictions should be avoided as much as possible in the neonatal unit and fathers given free access to their infants if they follow appropriate infection control precautions. (Author)

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### 2022-06427

**Indirect impacts of the COVID-19 pandemic at two tertiary neonatal units in Zimbabwe and Malawi: an interrupted time series analysis.** Chimhuya S, Neal SR, Chimhini G, et al (2022), *BMJ Open* vol 12, no 6, June 2022, e048955

Full URL: <http://dx.doi.org/10.1136/bmjopen-2021-048955>

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**Objectives** To examine indirect impacts of the COVID-19 pandemic on neonatal care in low-income and middle-income countries.

**Design** Interrupted time series analysis.

**Setting** Two tertiary neonatal units in Harare, Zimbabwe and Lilongwe, Malawi.

**Participants** We included a total of 6800 neonates who were admitted to either neonatal unit from 1 June 2019 to 25 September 2020 (Zimbabwe: 3450; Malawi: 3350). We applied no specific exclusion criteria.

**Interventions** The first cases of COVID-19 in each country (Zimbabwe: 20 March 2020; Malawi: 3 April 2020).

**Primary outcome measures** Changes in the number of admissions, gestational age and birth weight, source of admission referrals, prevalence of neonatal encephalopathy, and overall mortality before and after the first cases of COVID-19.

**Results** Admission numbers in Zimbabwe did not initially change after the first case of COVID-19 but fell by 48% during a nurses' strike (relative risk (RR) 0.52, 95% CI 0.41 to 0.66,  $p < 0.001$ ). In Malawi, admissions dropped by 42% soon after the first case of COVID-19 (RR 0.58, 95% CI 0.48 to 0.70,  $p < 0.001$ ). In Malawi, gestational age and birth weight decreased slightly by around 1 week (beta -1.4, 95% CI -1.62 to -0.65,  $p < 0.001$ ) and 300 g (beta -299.9, 95% CI -412.3 to -187.5,  $p < 0.001$ ) and outside referrals dropped by 28% (RR 0.72, 95% CI 0.61 to 0.85,  $p < 0.001$ ). No changes in these outcomes were found in Zimbabwe and no significant changes in the prevalence of neonatal encephalopathy or mortality were found at either site ( $p > 0.05$ ).

**Conclusions** The indirect impacts of COVID-19 are context-specific. While our study provides vital evidence to inform health providers and policy-makers, national data are required to ascertain the true impacts of the pandemic on newborn health. (Author)

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## 2022-06400

**Mother to Newborn Transmission of SARS-CoV-2 Infection: Evolution of Evidence in 1.5 Years of COVID-19 Pandemic.** Gupta A, Kamity R, Sharma R, et al (2022), American Journal of Perinatology vol 39, no 16, December 2022, pp 1764-1778

Coronavirus disease 2019 (COVID-19) pandemic caused significant mortality and morbidity in people of all age groups worldwide. Given the uncertainty regarding the mode of transmission and potential effects of COVID-19 on pregnant mothers and their newborns, guidelines for taking care of maternal–newborn dyads have evolved tremendously since the pandemic began. There has been an enormous influx of published materials regarding the outcomes of mothers and newborns. Still, multiple knowledge gaps regarding comprehensive information about risk to the mothers and newborns exist, which need to be addressed. Current evidence suggests that mothers with symptomatic COVID-19 infection are at increased risk of severe illness during pregnancy, with a higher need for respiratory support and premature deliveries. Neonates born to mothers with COVID-19 are at increased risk of needing intensive care; however, most newborns do well after birth. As new mutant variants arise, we need to be cautious while proactively understanding any new evolving patterns. All leading health authorities strongly recommend COVID-19 vaccination before or during pregnancy to reduce the risk of maternal morbidities and benefit from passing antibodies to newborns prenatally and via breastmilk. Additionally, there are racial, ethnic, and socioeconomic disparities in outcomes and vaccination coverage for pregnant women. This article summarizes the rapidly evolving evidence for the last 1.5 years and aims to help health care professionals care for mothers with COVID-19 and their newborns. (Author)

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## 2022-06397

### Association between SARS-CoV-2 Infection and Adverse Perinatal Outcomes in a Large Health Maintenance

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**Organization.** Getahun D, Peltier MR, Lurvey LD, et al (2022), American Journal of Perinatology 23 June 2022, online

**Objective** This study aimed to examine whether severe acute respiratory syndrome-coronavirus-2 (SARS-CoV-2) infection during pregnancy is associated with increased odds of perinatal complications and viral transmission to the infant.

**Study Design** A retrospective cohort study of women who delivered at Kaiser Permanente Southern California hospitals (April 6, 2020–February 28, 2021) was performed using data extracted from electronic health records (EHRs). During this time polymerase chain reaction (PCR)-based tests for SARS-CoV-2 was universally offered to all pregnant women at labor and delivery admission, as well as earlier in the pregnancy, if they were displaying symptoms consistent with SARS-CoV-2 infection or a possible exposure to the virus. Adjusted odds ratio (aOR) was used to estimate the strength of associations between positive test results and adverse perinatal outcomes.

**Results** Of 35,123 women with a singleton pregnancy, 2,203 (6%) tested positive for SARS-CoV-2 infection with 596 (27%) testing positive during the first or second trimester and 1,607 (73%) during the third trimester. Women testing positive were younger than those who tested negative (29.7 [5.4] vs. 31.1 [5.3] years; mean [standard deviation (SD)];  $p < .001$ ). The SARS-CoV-2 infection tended to increase the odds of an abnormal fetal heart rate pattern (aOR: 1.10; 95% confidence interval [CI]: 1.00, 1.21;  $p = 0.058$ ), spontaneous preterm birth (aOR: 1.28; 95% CI: 1.03, 1.58;  $p = 0.024$ ), congenital anomalies (aOR: 1.69; 95% CI: 1.15, 2.50;  $p = 0.008$ ), and maternal intensive care unit admission at delivery (aOR: 7.44; 95% CI: 4.06, 13.62;  $p < 0.001$ ) but not preeclampsia/eclampsia (aOR: 1.14; 95% CI: 0.98, 1.33;  $p = 0.080$ ). Eighteen (0.8%) neonates of mothers who tested positive also had a positive SARS-CoV-2 test after 24 hours of birth, but all were asymptomatic during the neonatal period.

**Conclusion** These findings suggest that prenatal SARS-CoV-2 infection increases the odds of some adverse perinatal outcomes. The likelihood of vertical transmission from the mother to the fetus was low (0.3%), suggesting that pregnancy complications resulting from SARS-CoV-2 infection pose more risk to the baby than transplacental viral transmission. (Author)

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## 2022-06314

**A mother's perspective of consent for maternal and neonatal COVID-19 testing: can we do more?.** East NA, Ramaiah S, Morris K, et al (2022), British Journal of Midwifery vol 30, no 7, July 2022, pp 376-382

### Background

There is ongoing research on the effects of COVID-19 on pregnancy and whether vertical viral transmission occurs.

### Aims

This study aimed to determine maternal opinions of COVID-19 testing for pregnant women and newborns in order to influence future clinical practice while advancing global knowledge of the impact of testing on patient experiences.

### Methods

This service evaluation assessed the opinions of 292 pregnant women who were tested for COVID-19 along with their newborn babies using nasopharyngeal swabs and the SARS-CoV-2 reverse transcription polymerase chain reaction test between 28 April and 21 May 2020.

### Results

Many women felt their own (60%) and their baby's (61%) swab was compulsory and did not feel sufficiently informed about the risks and benefits for themselves (43%) or their baby (52%) being tested. Some women did not understand the implications of a positive test for themselves (43%) or their baby (42%). Most participants reported they would agree to themselves (97%) and their baby (86%) being tested in future pregnancies.

### Conclusion

Communication to pregnant women regarding the COVID-19 swabbing process is critical and requires improvement.

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## 2022-06293

**Covid-19 in pregnant women and babies: What pediatricians need to know.** Rozycki HJ, Kotecha S (2020), Paediatric Respiratory Reviews vol 35, September 2020, pp 31-37

**Full URL:** <https://doi.org/10.1016/j.prrv.2020.06.006>

Beginning in late 2019, a novel coronavirus labeled SARS-CoV-2 spread around the world, affecting millions. The impact of the disease on patients and on health care delivery has been unprecedented. Here, we review what is currently known about the effects of the virus and its clinical condition, Covid-19 in areas of relevance to those providing care to neonates. While aspects of pregnancy, including higher expression of the cell receptor for the virus, ACE2, could put these women at higher risk, preliminary epidemiological information does not support this. Viral carriage prevalence based on universal screening show that rates vary from 13% in "hot spots" such as New York City, to 3% in areas with lower cases. Vertical transmission risks are unknown but 3.1% of 311 babies born to mothers with Covid-19 were positive within a week of birth. The clinical description of 26 neonates <30 days of age showed no deaths and only one requiring intensive care. Risks for breast-feeding and for milk banks are discussed. (Author)

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## 2022-06255

**Prevalence of SARS-CoV-2 positivity in infants with bronchiolitis: a multicentre international study.** Cozzi G, Wiel LC, Amaddeo A, et al (2022), Archives of Disease in Childhood vol 107, no 9, September 2022, pp 840-844

**Full URL:** <http://dx.doi.org/10.1136/archdischild-2021-323559>

Background Bronchiolitis is the leading acute respiratory tract infection in infants during the winter season. Since the beginning of the SARS-CoV-2 pandemic, a reduction in the number of bronchiolitis diagnoses has been registered.

**Objective** The present study aimed to describe the incidence and clinical features of bronchiolitis during the 2020–2021 winter season in a large cohort of children in Europe and Israel, and to clarify the role of SARS-CoV-2.

**Setting, patients, interventions** We conducted a multicentre observational cross-sectional study in 23 paediatric emergency departments in Europe and Israel. Clinical and demographic data about all the cases of infants diagnosed with bronchiolitis from 1 October 2020 to 30 April 2021 were collected. For each enrolled patient, diagnostic tests, treatments and outcomes were reported.

**Main outcome measures** The main outcome was the prevalence of SARS-CoV-2-positive bronchiolitis.

**Results** Three hundred and fourteen infants received a diagnosis of bronchiolitis during the study period. Among 535 infants who tested positive for SARS-CoV-2, 16 (3%) had bronchiolitis. Median age, male sex predominance, weight, history of prematurity and presence of comorbidities did not differ between the SARS-CoV-2-positive and SARS-CoV-2-negative groups. Rhinovirus was the most common involved pathogen, while respiratory syncytial virus (RSV) was detected in one case. SARS-CoV-2 bronchiolitis had a mild clinical course, with one patient receiving oxygen supplementation and none requiring paediatric or neonatal intensive care unit admission.

**Conclusions** During the SARS-CoV-2 pandemic, a marked decrease in the number of bronchiolitis diagnoses and the disappearance of the RSV winter epidemic were observed. SARS-CoV-2-related bronchiolitis was rare and mostly displayed a mild clinical course. (Author)

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## 2022-06210

**Scoping review of interventions to maintain essential services for maternal, newborn, child and adolescent health and older people during disruptive events.** World Health Organization (2021), November 2021. 44 pages

**Full URL:** <https://www.who.int/publications/i/item/9789240038318>

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To support countries in adapting their response to different COVID-19 scenarios, the World Health Organization (WHO) Department of Maternal, Newborn, Child and Adolescent Health and Ageing commissioned this scoping review of published and grey literature. The objective was to identify interventions implemented to maintain the provision and use of essential services for MNCAAH during disruptive events and to summarize lessons learned during these interventions. The review included outbreaks of Ebola virus disease (EVD), severe acute respiratory syndrome (SARS), Zika virus disease (ZVD), the ongoing COVID-19 pandemic, and natural disasters and humanitarian emergencies that caused disruption to services, transport and other activities. (Author)

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## 2022-06175

**Maintaining the provision and use of services for maternal, newborn, child and adolescent health and older people during the COVID-19 pandemic.** World Health Organization (2021), December 2021. 112 pages

**Full URL:** <https://www.who.int/publications/i/item/9789240040595>

Since May 2020, the World Health Organization (WHO), through its headquarters, regional and country office teams, has supported 19 countries in five WHO Regions to raise the profile of and commitment to maternal, newborn, child and adolescent health and ageing (MNCAAH) through an Initiative on mitigating the indirect impacts of COVID-19 on MNCAAH services. The goal was to ensure that during the response to COVID-19, actions would be taken to mitigate indirect effects on MNCAAH due to disruptions to service provision and use.

This report covers Phase I of the Initiative, from May 2020 to February 2021. Section A of the report presents a synthesis of information across the 19 countries, including lessons learned. Section B includes more detailed individual country information, drawn directly from country Thematic Working Group (TWG) and national consultant reports, country health information management system (HMIS) data, research publications and surveys that describe the impact of COVID-19 on MNCAAH services. (Author)

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## 2022-06087

**The Effects of COVID-19 Hospital Practices on Breastfeeding Initiation and Duration Postdischarge.** Rostomian L, Angelidou A, Sullivan K, et al (2022), Breastfeeding Medicine 22 June 2022, online

**Full URL:** <https://doi.org/10.1089/bfm.2022.0039>

**Background:** Early in the COVID-19 pandemic, many birth hospitals separated SARS-CoV-2-positive mothers from their newborn infants and advised against breastfeeding to decrease postnatal SARS-CoV-2 transmission. Information on how these practices impacted breastfeeding postdischarge is limited.

**Objectives:** In a statewide sample of SARS-CoV-2-positive mothers, we aimed to determine the extent to which (1) mother–infant separation and (2) a lack of breastfeeding initiation in-hospital were associated with breast milk feeding postdischarge.

**Design/Methods:** From 11 birthing hospitals in Massachusetts, we identified 187 women who tested positive for SARS-CoV-2 from 14 days before to 72 hours after delivery (March 1–July 31, 2020) and their newborn infants. We abstracted chart data from the delivery hospitalization on main exposure variables (mother–infant separation, in-hospital breast milk feeding [expressed milk feeding and/or direct breastfeeding]) and from outpatient visits until 30 days postdischarge. We evaluated associations of in-hospital practices with outcomes up to 30 days postdischarge, adjusting for confounders using multivariable logistic and linear regression.

**Results:** Mother–infant separation in-hospital was associated with a shorter duration of any breast milk feeding (regression coefficient estimate –5.29 days, 95% confidence intervals [CI] [–8.89 to –1.69]). Direct breastfeeding in-hospital was associated with higher odds of any breast milk feeding (adjusted odds ratios [AOR] 5.68, 95% CI [1.65–23.63]) and direct breastfeeding (AOR 8.19, 95% CI [2.99–24.91]) postdischarge; results were similar for any breast milk feeding in-hospital.

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Conclusions: Perinatal hospital care practices implemented early in the COVID-19 pandemic, specifically mother–infant separation and prevention of breast milk feeding initiation, were associated with adverse effects on breast milk feeding outcomes assessed up to 1 month postdischarge. (Author)

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## 2022-05832

**Impact of COVID-19 on breastfeeding intention and behaviour among postpartum women in five countries.** Chien L-Y, Lee EY, Coca KP, et al (2022), *Women and Birth: Journal of the Australian College of Midwives* vol 35, no 6, November 2022, e523-e529

**Full URL:** <https://doi.org/10.1016/j.wombi.2022.06.006>

### Background

Studies regarding the impact of COVID-19 on breastfeeding have mostly used single- country samples or a qualitative design.

**Aim**  
The objective of this study was to examine breastfeeding intention during pregnancy and breastfeeding behaviour among postpartum women in five countries during the COVID-19 pandemic and the associated factors.

### Methods

An online questionnaire survey was conducted in Thailand, the United Kingdom, South Korea, Taiwan, and Brazil from July through November 2021. The study participants included 3,253 mothers within six months of birth.

### Findings

About 90% of participants intended to breastfeed during pregnancy and 85.7% reported breastfeeding in the past 24 hours. More than half reported their breastfeeding duration being as planned or longer despite COVID-19. Multivariate logistic regression models showed that being multiparous, ever tested COVID-19 positive, and having positive breastfeeding beliefs were associated with increased odds for intention to breastfeed during pregnancy. Lower maternal educational level, being primiparous, ever tested COVID-19 positive, and experiencing food insecurity were associated with decreased odds for breastfeeding duration being as planned or longer. Vaginal birth, currently working or on maternity leave, breastfeeding beliefs, breastfeeding support from spouse/partner/friend/relative, online support groups, and in-person or telephone contact with healthcare professionals were associated with increased odds for breastfeeding duration being as planned or longer.

### Conclusion

Breastfeeding intention and behaviour remained high during the COVID-19 pandemic. Online support groups and telephone contact with health professionals were effective during the pandemic. (Author)

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## 2022-05828

**Neurodevelopmental Outcomes at 1 Year in Infants of Mothers Who Tested Positive for SARS-CoV-2 During Pregnancy.**

Edlow AG, Castro VM, Shook LL, et al (2022), *JAMA Network Open* vol 5, no 6, June 2022, e2215787

**Full URL:** <https://doi.org/10.1001/jamanetworkopen.2022.15787>

**Importance** Epidemiologic studies suggest maternal immune activation during pregnancy may be associated with neurodevelopmental effects in offspring.

**Objective** To evaluate whether in utero exposure to SARS-CoV-2 is associated with risk for neurodevelopmental disorders in the first 12 months after birth.

**Design, Setting, and Participants** This retrospective cohort study examined live offspring of all mothers who delivered between March and September 2020 at any of 6 Massachusetts hospitals across 2 health systems. Statistical analysis was performed from October to December 2021.

**Exposures** Maternal SARS-CoV-2 infection confirmed by a polymerase chain reaction test during pregnancy.

**Main Outcomes and Measures** Neurodevelopmental disorders determined from International Statistical Classification

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of Diseases and Related Health Problems, Tenth Revision (ICD-10) diagnostic codes over the first 12 months of life; sociodemographic and clinical features of mothers and offspring; all drawn from the electronic health record.

**Results** The cohort included 7772 live births (7466 pregnancies, 96% singleton, 222 births to SARS-CoV-2 positive mothers), with mean (SD) maternal age of 32.9 (5.0) years; offspring were 9.9% Asian (772), 8.4% Black (656), and 69.0% White (5363); 15.1% (1134) were of Hispanic ethnicity. Preterm delivery was more likely among exposed mothers: 14.4% (32) vs 8.7% (654) ( $P = .003$ ). Maternal SARS-CoV-2 positivity during pregnancy was associated with greater rate of neurodevelopmental diagnoses in unadjusted models (odds ratio [OR], 2.17 [95% CI, 1.24-3.79];  $P = .006$ ) as well as those adjusted for race, ethnicity, insurance status, offspring sex, maternal age, and preterm status (adjusted OR, 1.86 [95% CI, 1.03-3.36];  $P = .04$ ). Third-trimester infection was associated with effects of larger magnitude (adjusted OR, 2.34 [95% CI, 1.23-4.44];  $P = .01$ ).

**Conclusions and Relevance** This cohort study of SARS-CoV-2 exposure in utero found preliminary evidence that maternal SARS-CoV-2 may be associated with neurodevelopmental sequelae in some offspring. Prospective studies with longer follow-up duration will be required to exclude confounding and confirm these associations. (Author)

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## 2022-05792

**Cohort profile: maternal and child health and parenting practices during the COVID-19 pandemic in Ceará, Brazil: birth cohort study (Iracema-COVID).** Castro MC, Farías-Antúnez S, Sá Araújo DAB, et al (2022), *BMJ Open* vol 12, no 6, June 2022, e060824

**Full URL:** <http://dx.doi.org/10.1136/bmjopen-2022-060824>

**Purpose** Maternal and child health and parenting practices during the COVID-19 pandemic in Ceará (Iracema-COVID) is a longitudinal, prospective population-based birth cohort designed to understand the effects of the pandemic and social withdrawal in maternal mental health, child development and parenting practices of mothers and families.

**Participants** A sample of mothers who gave birth in July and August 2020 ( $n=351$ ) was enrolled in the study in January 2021. Interviews were conducted by telephone. Data were collected through standardised questionnaires that, in addition to sociodemographic and economic data, collected information on breast feeding, mental health status and COVID-19.

**Findings to date** Results from the first wave show that the majority of participants have 9–11 years of schooling (54.4%; 95% CI 61.0 to 70.9) and are of mixed race (71.5%; 95% CI 66.5 to 76.0). At the time of the survey, 27.9% of the participants were out of the labor force (95% CI 23.5 to 32.9) and 78.6% reported a decrease in family income after restrictions imposed due to the pandemic (95% CI 74.0 to 82.6). The prevalence of maternal common mental disorder symptoms was 32.5% (95% CI 27.8 to 37.6).

**Future plans** Follow-up visits are planned to occur every 6 months for the next five years (2021–2025). Additional topics will be included in future waves (eg, food insecurity and parenting practices). Communication strategies for bonding, such as picture cards, pictures of mothers with their children and phone calls to the participants, will be used to minimise attrition. Results of this prospective cohort will generate novel knowledge on the impact of the COVID-19 pandemic on maternal and child health and parenting practices in a population of women and children living in fifth largest city of Brazil. (Author)

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## 2022-05685

**Effectiveness of a neonatal COVID-19 response project: A mixed-methods evaluation using the Donabedian model.**

Carruthers KF, Hannis D, Robinson J, et al (2023), *Journal of Neonatal Nursing* vol 29, no 1, February 2023, pp 203-207

**Full URL:** <https://doi.org/10.1016/j.jnn.2022.06.003>

**Objective**

This article outlines notable findings of a service evaluation of a COVID-19 response project, the Nurture Project (July

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## Method

The Donabedian structure-process-outcome model was used. Mixed-methods online surveys and organisational data were analysed using reflexive thematic analysis and statistical analysis methods.

## Results

Most staff and service users were satisfied with the project, reporting positive benefits to mental health, child development, and wellbeing. However, project outcome measures (Generalised Anxiety Disorder Scale GAD-7 and the Patient Health Questionnaire PHQ-9) were statistically non-significant.

## Conclusion

Although the project was considered successful, recommendations for future service evaluation methods, outcome measurement, and future research are provided. (Author)

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## 2022-05658

**Breastfeeding Practices Before and During the COVID-19 Pandemic in Fortaleza, Northeastern Brazil.** Farías-Antúnez S, Correia LL, Batista DA, et al (2022), Journal of Human Lactation vol 38, no 3, August 2022, pp 407-421

**Full URL:** <https://doi.org/10.1177/08903344221101874>

## Background:

Physical distancing associated with the COVID-19 pandemic may lead to suboptimal maternal mental health, social support after birth, and infant feeding practices.

## Research Aims:

To compare breastfeeding prevalence in participants who were pregnant at a time when strict physical distancing measures were imposed in Fortaleza, the capital of Ceará state, Brazil, with the pre-pandemic breastfeeding levels, and to assess the association of breastfeeding prevalence with maternal common mental disorders, and sociodemographic and health predictors.

## Method:

A cross-sectional prospective two-group comparison design using two population-based surveys was carried out in Fortaleza before and after the pandemic. Participants ( $n = 351$ ) who had a live birth in Fortaleza in July or August 2020, and participants ( $n = 222$ ) who had a child younger than 12 months in 2017 were surveyed. Crude and adjusted multinomial logistic regressions with robust variance were used to estimate risk ratios and 95% confidence intervals (CI).

## Results:

Similar prevalence of exclusive breastfeeding were observed in 2021 (8.1%) and 2017 (8.5%;  $p = .790$ ). An increase in predominant (2.2% vs. 13.4%;  $p < .001$ ) and a decrease in complementary breastfeeding (64.0% vs. 48.4%;  $p = .037$ ) was observed in 2021, compared to 2017. The prevalence of maternal common mental disorders also increased in 2021 (17.6% vs. 32.5%,  $p < .001$ ). No statistically significant associations were found between breastfeeding patterns, maternal common mental disorders, and other predictors in 2017 or 2021.

## Conclusions:

Participants who delivered during the COVID-19 pandemic delayed solid foods introduction and breastfed predominantly longer than participants during the pre-pandemic period. While common mental disorders significantly increased, they were not associated with differences in breastfeeding. (Author)

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## 2022-05590

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## Background

In December 2019, novel coronavirus pneumonia was detected in Wuhan, Hubei Province, China, and as the epidemic spread, such cases emerged worldwide. Recently, the World Health Organization (WHO) named a new mutant Omicron (B.1.1.529), which disrupts the binding of most antibodies to the S protein and has a greater ability to break through the vaccine, posing a serious risk to population safety. Positive pregnant women give birth to positive newborns despite appropriate isolation measures taken by medical staff, suggesting that we may have vertical transmission of the novel coronavirus. This article analyzes and studies the possible vertical transmission path of the new coronavirus in the perinatal period of pregnant women and the antibody-dependent enhancement (ADE), and puts forward effective preventive measures for positive pregnant women to provide further reference for clinical work.

## Methods

We searched multiple databases, including PubMed, CNKI, Google Scholar, WHO COVID-19 database, and CDC database. Search terms included COVID-19, SARS-CoV-2, vertical transmission, Omicron, Vaginal, Breast Feeding, Vaccine, Neonatal, Severe acute respiratory syndrome coronavirus, Pregnancy, and Semen.

## Selection criteria

The following criteria were also met: (1) positive maternal novel coronavirus nucleic acid test; (2) reporting of neonatal outcome; (3) language in Chinese or English; (4) study date or location indicated; (5) no suspected or confirmed duplicated reports.

## Results

There is evidence of vertical transmission, and the risk of possible vertical transmission is 5.7% (75/1314). The article listed four possible vertical transmission routes, namely placental transmission, vaginal upstream transmission, breastfeeding transmission and monocyte, and macrophage transmission route, with placental transmission being the most probable. Meanwhile, SARS-CoV-2 may also enter the placenta to infect the fetus through antibody-dependent enhanced substitution mechanism. We recommend three methods for early surveillance of vertical transmission, namely nucleic acid testing, antibody screening, and antigen testing, and analyze their advantages and disadvantages. Finally, the article provides recommendations in four areas: labor management, neonatal management, nosocomial infection prevention and control, and vaccination. As well as suggesting effective preventive measures for positive pregnant women and analyzing the advantages and disadvantages of vaccination, it is recommended that pregnant women should be vaccinated promptly, but considering that the vaccine may cause fever, it is recommended to consider vaccination cautiously in the first trimester of pregnancy.

## Conclusion

The article concludes that vertical transmission is possible, with placental transmission being the most likely, and that the risk of possible vertical transmission is 5.7% (75/1314). Good personal protection, patient isolation, ward disinfection, and vaccination are the best means of interrupting SARS-CoV-2. (Author)

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## 2022-05310

**Effect of the COVID-19 Pandemic on Well-Baby Nursery.** Kocherlakota P, Lin L, Gill H, et al (2022), American Journal of Perinatology vol 39, no 6, April 2022, pp 683-690

**Background** The coronavirus disease 2019 (COVID-19) pandemic is associated with fewer deliveries and premature births; however, the impact of this pandemic on the well-baby nursery (WBN) is unknown.

**Objective** The aim of the study is to evaluate the impact of the COVID-19 pandemic on infants admitted to the WBN by comparing pandemic and pre-pandemic cohorts.

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**Study Design** We performed a retrospective study of infants admitted to a WBN during the pandemic period (March 18, 2020 to March 17, 2021) and compared them to those during the pre-pandemic period (March 18, 2019 to March 17, 2020). Maternal (age, parity, gestation, method of delivery, and COVID-19 status) and neonatal (sex, weight, Apgar score, feeding pattern, urine toxicology, and neonatal intensive care unit [NICU] admission) data were collected and compared between the two periods. The results were statistically analyzed, and significance was set at  $p < 0.05$ .

**Results** There were 824 and 859 WBN admissions during the pandemic and pre-pandemic periods, respectively, a 4% decrease in WBN admissions during the pandemic period. During the pandemic period, the number of deliveries among nulliparous women increased (From 40.3% to 45.1%  $p = 0.01$ ), and deliveries among multiparous women decreased (From 59.2% to 53.1%  $p = 0.01$ ). The number of infants exposed to marijuana in utero increased (From 8.2% to 16.1%  $p = 0.035$ ), and transfers from WBN to NICU decreased (From 9% to 6.3%  $p = 0.044$ ) during the pandemic period.

**Conclusion** Compared with the pre-pandemic period, the number of WBN admissions, multiparous deliveries, and NICU admissions decreased, while the number of nulliparous deliveries and infants exposed to marijuana in-utero increased during the pandemic period. (Author)

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## 2022-04972

**Relationship Between Maternal COVID-19 Infection and In-hospital Exclusive Breastfeeding for Term Newborns.** Gomez J, Wardell D, Cron S, et al (2022), JOGNN: Journal of Obstetric, Gynecologic and Neonatal Nursing vol 51, no 5, September 2022, pp 517-525

**Full URL:** <https://doi.org/10.1016/j.jogn.2022.05.002>

### Objective

To evaluate the relationship between maternal COVID-19 infection and the odds of in-hospital exclusive breastfeeding for term newborns.

### Design

Retrospective descriptive quantitative.

### Setting

A large, urban hospital with more than 6,000 births annually.

### Sample

Term newborns born between March 1, 2020, and March 31, 2021 (N = 6151).

### Methods

We retrospectively extracted data from electronic health records to evaluate the relationship of maternal COVID-19 infection with the odds of in-hospital exclusive breastfeeding using univariate analysis and logistic regression models. The covariates included insurance type, race/ethnicity, glucose gel administration, length of stay, newborn gestational age, newborn birth weight, and maternal COVID-19 infection.

### Results

Maternal COVID-19 infection was not significantly related to the odds of in-hospital exclusive breastfeeding ( $p = .138$ ) after adjusting for covariates in the logistic regression model. However, when newborns who received pasteurized donor human milk supplementation were excluded from the logistic regression model, maternal COVID-19 infection significantly decreased the odds of in-hospital exclusive breastfeeding ( $p = .043$ ).

### Conclusion

Maternal COVID-19 infection was not significantly related to the odds of in-hospital exclusive breastfeeding when newborns received donor human milk supplementation. Access to donor human milk for supplementation for term newborns may protect the odds of in-hospital exclusive breastfeeding. (Author)

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## 2022-04967

**Parental perspectives on technology use to enhance communication and closeness during the COVID-19 parental presence restrictions.** Campbell-Yeo M, McCulloch H, Hughes B, et al (2023), Journal of Neonatal Nursing vol 29, no 1, February 2023, pp 169-173

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**Full URL:** <https://doi.org/10.1016/j.jnn.2022.05.002>

#### Objective

To explore parental perspectives on the use of technology in neonatal intensive care units (NICU), and its impact during COVID-19 parental presence restrictions.

#### Methods

Co-designed online survey targeting parents of infants admitted to a Canadian NICU from March 1st, 2020 until March 5th, 2021.

#### Results

Parents (n = 117) completed the survey from 38 NICUs. Large variation in policies regarding parental permission to use technology across sites was reported. Restrictive use of technology was reported as a source of parental stress. While families felt that technology helped them feel close to their infant when they could not be in the NICU, it did not replace being in-person.

#### Conclusion

Large variation in policies were reported. Despite concerns about devices in NICUs, evidence on how to mitigate these concerns exists. Benefits of using technology to enhance parental experiences appear substantial. Future study is needed to inform recommendations on technology use in the NICU. (Author)

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#### 2022-04634

**A mixed-methods study on the association of six-month predominant breastfeeding with socioecological factors and COVID-19 among experienced breastfeeding women in Hong Kong.** Kwan J, Jia J, Yip K, et al (2022), International Breastfeeding Journal vol 17, no 40, 21 May 2022

**Full URL:** <https://doi.org/10.1186/s13006-022-00484-7>

#### Background

In the past decade, various breastfeeding policies were implemented in Hong Kong, including changes in perinatal guidelines in public hospitals, adoption of the Baby-Friendly Hospital Initiative (BFHI), provision of guidelines for the marketing of formula milk, penalisation of discrimination towards breastfeeding, and extension of the statutory maternity leave. Meanwhile, the COVID-19 pandemic brought new challenges and opportunities to breastfeeding practices. Infection control measures in public hospitals included the cancellation of antenatal classes, hospital tours, and postnatal classes; suspension of perinatal visiting periods; and compulsory separation of COVID-19 positive mothers from newborns. In addition, work-from-home policies were widely implemented. This study aimed to identify the associated factors of six-month predominant breastfeeding (PBF), and to evaluate the impact of COVID-19 on breastfeeding practice.

#### Methods

This study was conducted from 1 March 2021 to 7 April 2021 using a mixed-methods approach. An electronic questionnaire was distributed to members of breastfeeding or parenting groups who have had breastfeeding experience in the past 10 yrs. Logistic and linear regression analyses were conducted to identify factors associated with six-month PBF both in general and during the pandemic period. A qualitative content analysis was conducted using an inductive approach.

#### Results

The study included 793 participants. Giving birth in a public hospital (OR 2.21; 95% CI 1.46, 3.34) and breastfeeding support from family and friends (OR 1.28; 95% CI 1.05, 1.57) were significantly associated with six-month PBF, even during COVID-19. Factors associated with the self-rated impact of COVID-19 on breastfeeding include working from home, the perceived immunological benefits of breastfeeding, and the wish to avoid breastfeeding or expressing breast milk in public premises. Furthermore, breastfeeding practice in public hospitals was more likely to be affected by the busyness of staff, while private hospitals had worse rooming-in practices and staff who had inadequate

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breastfeeding knowledge.

## Conclusions

Giving birth in a public hospital and having breastfeeding support from family and friends were associated with six-month PBF. Furthermore, COVID-19 in Hong Kong had an overall positive impact on six-month PBF. Further studies should investigate the impact of hospital practices and the COVID-19 pandemic on breastfeeding behaviours. (Author)

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## 2022-04584

**Factors associated with SARS-CoV-2 transplacental transmission.** Vivanti AJ, Vauloup-Fellous C, Escourrou G, et al (2022), American Journal of Obstetrics & Gynecology (AJOG) vol 227, no 3, September 2022, pp 541-543.e11

**Full URL:** <https://doi.org/10.1016/j.ajog.2022.05.015>

Research letter exploring the impact of factors such as placental expression of viral receptors, viral load and degree of inflammation on transplacental transmission of SARS-CoV-2. Results suggest that expression of viral receptors and viral load are not linked to transmission, but placental inflammation with a peculiar signature is evident in cases of transmission. (LDO)

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## 2022-04479

**Breastmilk can contain COVID antibodies: good news for babies.** Thornton C, Rees A (2021), Essence [Magazine of the Australian Breastfeeding Association] vol 57, no 4, December 2021, pp 18-19

Looks at the possibility of the therapeutic use of breastmilk containing COVID-19 antibodies, and stresses that breastfeeding with COVID-19 is safe. (JSM)

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## 2022-04322

**A review of the disruption of breastfeeding supports in response to the COVID-19 pandemic in five Western countries and applications for clinical practice.** Turner S, McGann B, Brockway MM (2022), International Breastfeeding Journal vol 17, no 38, 15 May 2022

**Full URL:** <https://doi.org/10.1186/s13006-022-00478-5>

### Background

The COVID-19 pandemic has significantly altered how breastfeeding support is provided, resulting in mixed breastfeeding outcomes and experiences for mothers. The World Health Organization has consistently supported breastfeeding from the beginning of the pandemic. However, recommendations from obstetrical and gynaecological societies within individual countries have varied in their alignment with this guidance, resulting in inconsistent recommendations. It is unknown how breastfeeding guidelines, maternal breastfeeding experiences, and breastfeeding initiation and duration compared across five Western countries. The current study is comprised of two parts, each with a different objective. Part One objective: to review pandemic-related changes in professional society guidelines on breastfeeding support in Australia, New Zealand, Canada, the United Kingdom, and the United States; and Part Two objective: to conduct a narrative review to summarize the evidence of how the pandemic has changed breastfeeding initiation, duration, and mothers' breastfeeding experiences during the pandemic in these five countries and provide recommendations for clinical lactation support.

### Methods

We searched for indicators that are impactful on breastfeeding outcomes: skin-to-skin contact, rooming in, direct breastfeeding and breast washing, in the five countries mentioned above and compared these to the recommendations from the World Health Organization. Next, we conducted a narrative review of the literature from these five countries to explore how the pandemic altered breastfeeding outcomes and used this information to provide suggestions for clinical practice moving forward.

### Results

Recommendations on the four practices above differed by country and were not always in alignment with the World

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Health Organization recommendations. Mother-infant separation after birth in the United States was associated with a lower prevalence of breastfeeding initiation and duration. While some mothers reported positive breastfeeding experiences during the pandemic, many mothers indicated negative experiences related to decreased social and professional support.

## Conclusions

The pandemic can inform practice recommendations and can be viewed as an opportunity to permanently modify existing methods to support breastfeeding families. The use of virtual care increased during the pandemic and should continue with specific considerations for prioritizing in-person care. This will help to provide more timely and accessible support for breastfeeding mothers. (Author)

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## 2022-04279

**Preliminary results on transmission of SARS-CoV-2 antibodies to the fetus and serum neutralizing activity.** Houhou-Fidouh N, Bucau M, Bertine M, et al (2022), International Journal of Gynecology & Obstetrics vol 158, no 2, August 2022, pp 476-478

**Full URL:** <https://doi.org/10.1002/ijgo.14185>

During pregnancy early third trimester immunization against SARS-CoV-2 confers optimal immunity to the neonate. (Author)

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## 2022-04233

**Care of newborns born to mothers with COVID-19 infection; a review of existing evidence.** Sigaladeh SS, Kalan ME (2022), Journal of Maternal-Fetal and Neonatal Medicine vol 35, no 11, 2022, pp 2203-2215

**Full URL:** <https://doi.org/10.1080/14767058.2020.1777969>

### Background

The novel Coronavirus disease 2019 (COVID-19) pandemic is already wreaking havoc on families and communities' welfare. It is critical to discuss newborn care of infected mothers with COVID-19 based on the latest international guidelines and national guidelines of countries with the highest incidence of COVID-19 cases.

### Objective

We discuss how to care for a newborn of a suspected or infected mother with COVID-19 using existing evidence.

### Method

As of 16 April 2020, we reviewed articles and guidelines related to COVID-19 in the reproductive health field, mother, and newborn health. Our review yielded in 10 categories (i) the risk of diagnostic procedures in suspected mothers on fetus/infant health, (ii) the risk of intrauterine or postpartum transmission to the fetus/infant, (iii) appropriate method and delivery time in women with confirmed COVID-19, (iv) umbilical cord clamping and skin to skin contact, (v) clinical manifestations of infected infants, (vi) confirmation of infection in a suspected neonate/infant, (vii) instructions for infant's care and how to feed her/him, (viii) bathing the baby, (ix) the criteria of discharging baby from the hospital, (x) the impact of isolation on the maternal mental health.

### Results

Our findings showed that the possibility of intrauterine or perinatal transmission of COVID-19 is still questionable and ambiguous. However, what has been agreed upon in the existing texts and guidelines is that the close contact of mother and infant after birth can transmit the virus to the baby through droplets or micro-droplets.

### Conclusions

Based on our findings, it is recommended to separate the baby from the mother with confirmed (or suspected) COVID-19 infection for at least 2 weeks. Since the motivation and stable situation of mothers allow breastfeeding during the isolation, infected mothers should be taught about breast expression skills, common breast problems, the symptoms of their baby's infection, and the principles of personal hygiene to protect the infant against COVID-19

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## 2022-04066

**Acute Necrotizing Encephalopathy Associated with Coronavirus Disease 2019 in an Infant.** Khan M, Bhattarai S, Boyce TG, et al (2022), The Journal of Pediatrics vol 247, August 2022, pp 160-162

**Full URL:** <https://doi.org/10.1016/j.jpeds.2022.04.031>

A 5-week-old infant born at term was diagnosed with acute necrotizing encephalopathy associated with SARS-CoV-2 as evidenced by clinical presentation, neuroimaging, and cerebrospinal fluid studies. Our patient was treated with high dose intravenous methylprednisolone, tocilizumab and intravenous immunoglobulin with significant short-term clinical improvement but long-term sequelae. (Author)

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## 2022-03777

**Experiences of At-Risk Women in Accessing Breastfeeding Social Support During the Covid-19 Pandemic.** Siwik E, Larose S, Peres D, et al (2022), Journal of Human Lactation vol 38, no 3, August 2022, pp 422-432

**Full URL:** <https://doi.org/10.1177/08903344221091808>

### Background:

With strict public health measures implemented in March 2020 due to the COVID-19 pandemic, many breastfeeding parents, who are within an at-risk population, have experienced limited formal and/or informal breastfeeding social support. In the Canadian context, the experiences of these women is unknown.

### Research Aim:

To explore the experiences of at-risk postpartum breastfeeding women in accessing formal and informal breastfeeding social support during the COVID-19 pandemic.

### Methods:

This was a prospective, longitudinal interpretive description study using mixed methods. Data were gathered using an online survey and one 52–112-min semi-structured interview at 12-weeks postpartum. At-risk breastfeeding participants were those who lack social support and had at least one of the following: age < 25 years; experiencing or had experienced intimate partner violence; or of low income. We sought participants' experiences of accessing breastfeeding social support during the first few months of the COVID-19 pandemic/lockdown. Seven participants completed the survey and the interview.

### Results:

Participants identified that the COVID-19 pandemic created barriers to accessing formal and informal breastfeeding social support, which stemmed from public health restrictions and difficulties communicating online with families and healthcare providers. Additionally, participants identified that the COVID-19 pandemic/lockdowns facilitated feelings of connectedness, protection, and resiliency.

### Conclusion:

We provide preliminary insight into the experiences of trying to access breastfeeding social support during the COVID-19 pandemic. Future researchers should seek to prioritize improved communication and resources in supporting breastfeeding during COVID-19 and future pandemics/lockdowns. (Author)

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## 2022-03729

**COVID-19 Pandemic and Its Effects on the Development of Immunity in Infancy.** Rupp J, Härtel C (2021), Neonatology: Fetal and Neonatal Research vol 118, no 6, December 2021, pp 734-735

Discusses the effect of increased hygiene measures and social distancing during the COVID-19 pandemic on the immunological maturation of newborns and young infants. (MB)

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2022-03721

**Perinatal Transmission and Outcome of Neonates Born to SARS-CoV-2-Positive Mothers: The Experience of 2 Highly Endemic Italian Regions.** Capozza M, Salvatore S, Baldassarre ME, et al (2021), Neonatology: Fetal and Neonatal Research vol 118, no 6, December 2021, pp 665-671

Full URL: <https://doi.org/10.1159/000518060>

Introduction: COVID-19 is the disease caused by the novel coronavirus SARS-CoV-2, responsible of the pandemic declared in March 2020 and still ongoing. COVID-19 affects all ages but presents less complications and fatalities in children. Neonatal infections have rarely been reported worldwide, and vertical transmission is uncertain. Methods: We conducted a prospective cohort study of all infants born to SARS-CoV-2-positive mothers admitted to 2 hospitals in South (Bari) and North (Varese) of Italy from April to December 2020. A molecular nasopharyngeal swab for SARS-CoV-2 using a reverse transcriptase polymerase chain reaction was made at birth for all enrolled newborns to evaluate vertical transmission of infection. We also evaluated postnatal transmission with a second nasopharyngeal swab made at 1 month of life and described maternal and neonatal clinical findings and short-term outcomes. Results: 176/179 (97%) newborns were SARS-CoV-2 negative at birth and 151/156 (97%) infants were still negative at 1 month of life. All newborns were asymptomatic. Seventy percent of newborns were breastfed during hospitalization. At 1 month of life, 76% of infants were breastfed. Conclusion: According to our results, vertical and perinatal infection is very rare. Breastfeeding does not increase the risk of COVID-19 and should be encouraged. © 2021 S. Karger AG, Basel. (Author)

2022-03564

**Early-Onset Neonatal Sepsis in a COVID-19 Infected Neonate.** Sati SK, Sakr MI, Taborda-Alvarez MM, et al (2022), Clinical Pediatrics vol 61, no 8, September 2022, pp 523-525

Case report of an infant born to a COVID-19 positive mother who required resuscitation and admission to the neonatal intensive care unit (NICU). The infant subsequently tested positive for SARS-CoV-2 and developed early-onset neonatal sepsis. (LDO)

2022-03551

**COVID-19 Drugs and Breastfeeding Update.** Anderson PO (2022), Breastfeeding Medicine vol 17, no 5, May 2022, pp 377-379

Full URL: <https://doi.org/10.1089/bfm.2022.0066>

Many products are being investigated for prevention and treatment of COVID-19, and a few have been formally approved. This column updates a 2020 column on this topic and reviews the use in breastfeeding of the most prominent therapies used against the SARS-CoV-2 virus. Additional breastfeeding references on specific drugs can be found in the corresponding LactMed records. (Author) [Erratum: Breastfeeding Medicine, vol 17, no 7, July 2022, p 630. <https://doi.org/10.1089/bfm.2022.0066.correx>]

2022-03545

**COVID-19 Vaccination During Breastfeeding and Its Possible Negative Effect on Milk Production and Supply: A Preliminary Observation.** Lamers M, van der Mijle A, van Hunsel F, et al (2022), Breastfeeding Medicine vol 17, no 7, July 2022, pp 627-628

Full URL: <https://doi.org/10.1089/bfm.2022.0057>

Correspondence piece aiming to provide systematically collected information on the incidence of decreased milk supply after COVID-19 vaccination. Results show that 10.3% of women reported reduced milk production and this mainly occurred after the Pfizer/BioNTech vaccine. (LDO)

2022-03384

**SARS-CoV-2 infections among neonates born to pregnant people with SARS-CoV-2 infection: Maternal, pregnancy and birth characteristics.** Olsen EO'M, Roth NM, Aveni K, et al (2022), Paediatric and Perinatal Epidemiology vol 36, no 4, July 2022, pp 476-484

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**Full URL:** <https://doi.org/10.1111/ppe.12883>

## Background

Multiple reports have described neonatal SARS-CoV-2 infection, including likely in utero transmission and early postnatal infection, but published estimates of neonatal infection range by geography and design type.

## Objectives

To describe maternal, pregnancy and neonatal characteristics among neonates born to people with SARS-CoV-2 infection during pregnancy by neonatal SARS-CoV-2 testing results.

## Methods

Using aggregated data from the Surveillance for Emerging Threats to Mothers and Babies Network (SET-NET) describing infections from 20 January 2020 to 31 December 2020, we identified neonates who were (1) born to people who were SARS-CoV-2 positive by RT-PCR at any time during their pregnancy, and (2) tested for SARS-CoV-2 by RT-PCR during the birth hospitalisation.

## Results

Among 28,771 neonates born to people with SARS-CoV-2 infection during pregnancy, 3816 (13%) underwent PCR testing and 138 neonates (3.6%) were PCR positive. Ninety-four per cent of neonates testing positive were born to people with infection identified  $\leq 14$  days of delivery. Neonatal SARS-CoV-2 infection was more frequent among neonates born preterm (5.7%) compared to term (3.4%). Neonates testing positive were born to both symptomatic and asymptomatic pregnant people.

## Conclusions

Jurisdictions reported SARS-CoV-2 RT-PCR results for only 13% of neonates known to be born to people with SARS-CoV-2 infection during pregnancy. These results provide evidence of neonatal infection identified through multi-state systematic surveillance data collection and describe characteristics of neonates with SARS-CoV-2 infection. While perinatal SARS-CoV-2 infection was uncommon among tested neonates born to people with SARS-CoV-2 infection during pregnancy, nearly all cases of tested neonatal infection occurred in pregnant people infected around the time of delivery and was more frequent among neonates born preterm. These findings support the recommendation for neonatal SARS-CoV-2 RT-PCR testing, especially for people with acute infection around the time of delivery. (Author)

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## 2022-03334

**Preparation for attending delivery of a positive/suspected COVID-19 mother - practical tips for neonatal teams.** Buchiboyina A, Trawber R, Mehta S (2022), Journal of Maternal-Fetal and Neonatal Medicine vol 35, no 12, 2022, pp 2422-2423

**Full URL:** <https://doi.org/10.1080/14767058.2020.1775810>

Correspondence piece presenting concise practical tips for neonatal teams attending the deliveries of positive or suspected positive COVID-19 mothers. (LDO)

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## 2022-03257

**Short term impact of the COVID-19 pandemic on incidence of vaccine preventable diseases and participation in routine infant vaccinations in the Netherlands in the period March-September 2020.** Middeldorp M, van Lier A, van der Maas N, et al (2021), Vaccine vol 39, no 7, 12 February 2021, pp 1039-1043

**Full URL:** <https://doi.org/10.1016/j.vaccine.2020.12.080>

We aimed to assess the impact of the COVID-19 pandemic on the incidence of vaccine-preventable diseases (VPDs) and participation in the routine infant vaccination programme in the Netherlands. The incidence of various VPDs initially decreased by 75–97% after the implementation of the Dutch COVID-19 response measures. The participation in the first measles-mumps-rubella vaccination among children scheduled for vaccination in March-September 2020 initially dropped by 6–14% compared with the previous year. After catch-up vaccination, a difference in MMR1

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participation of –1% to –2% still remained. Thus, the pandemic has reduced the incidence of several VPDs and has had a limited impact on the routine infant vaccination programme.. (Author)

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## 2022-03194

**Neonatal acute ethanol intoxication during the epidemic of COVID-19: a case report.** Sun C, Nie Y, Cui X, et al (2022), BMC Pediatrics vol 22, no 53, 20 January 2022

**Full URL:** <https://doi.org/10.1186/s12887-022-03128-1>

### Background

After the outbreak of COVID-19, many families equip with 75% ethanol to inactivate the SARS-CoV-2, which increases the risk of exposure to ethanol.

### Case presentation

We reported a 25-day-old newborn who was diagnosed with neonatal acute ethanol intoxication with a presenting complaint of accidental consumption about 15 ml formula milk containing 75% ethanol. His main clinical manifestations were irritability, flushed skin, tachycardia, tachypnea, and toxicology analysis detected ethanol. After timely gastric lavage and intravenous fluid replacement, he was cured and discharged.

### Conclusions

During the COVID-19 epidemic, high concentration ethanol used for inactivating SARS-COV-2 should be placed reasonably and neonatal feeding safety should be emphasized. Timely diagnosis and symptomatic treatment are essential for the prevention and management of acute ethanol intoxication in newborns. (Author)

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## 2022-03193

**Variation in United States COVID-19 newborn care practices: results of an online physician survey.** Parker MG, Gupta A, Healy H, et al (2022), BMC Pediatrics vol 22, no 55, 21 January 2022

**Full URL:** <https://doi.org/10.1186/s12887-022-03129-0>

### Background

Newborn care practices that best promote the health and well-being of mother-infant dyads after birth while minimizing transmission of COVID-19 were uncertain at the onset of the COVID-19 pandemic.

### Objective

Examine variation in COVID-19 newborn care practices among U.S. birth hospitals and by hospital characteristics (U.S. census region, highest level of neonatal level of care, and Baby-Friendly hospital status).

### Study Design

We surveyed physicians via American Academy of Pediatrics email listservs and social media between 5/26/2020-6/8/2020. Physicians identified the birth hospital in which they provided newborn care and their hospital's approach to obstetrical and newborn care related to COVID-19. Chi-square tests were used to examine variation in hospital practices by U.S. census region, highest level of neonatal care, and Baby-Friendly hospital status.

### Results

Four hundred thirty three physicians responded from 318 hospitals across 46 states. Variation in care of SARS-CoV-2 positive mother-infant dyads was greatest for approaches to location of newborn care (31% separation, 17% rooming-in, and 51% based on shared-decision making), early skin-to-skin care (48% prohibited/discouraged, 11% encouraged, and 40% based on shared-decision making) and direct breastfeeding (37% prohibited/discouraged, 15% encouraged, and 48% based on shared-decision making). Among presumed uninfected dyads, 59% of hospitals discharged at least some mother-infant dyads early. We found variation in practices by U.S. census region.

### Conclusion

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Approaches to newborn care and breastfeeding support for mother-infant dyads with positive SARS-CoV-2 testing differed across U.S. birth hospitals during the COVID-19 pandemic. Early discharge of presumed uninfected mother-infant dyads was common. (Author)

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## 2022-03175

**The impact of the Covid-19 pandemic on maternal delivery experiences and breastfeeding practices in China: data from a cross-sectional study.** Yu J, Gao M, Wei Z, et al (2022), BMC Pediatrics vol 22, no 104, 24 February 2022

**Full URL:** <https://doi.org/10.1186/s12887-022-03155-y>

### Background

The COVID-2019 pandemic has placed extensive pressure on health systems and posed a severe public health challenge worldwide. Lockdown measures implemented in many countries have delayed virus spread. However, a considerable number of people have faced unprecedented pressure, especially pregnant and breast-feeding women, because face-to-face professional support has been reduced during the lockdown in many countries.

### Objectives

To compare the delivery and infant feeding experiences of women who delivered before (BL) versus during (DL) the Covid-19 pandemic in Beijing, China and to investigate predictors of breastfeeding at 6-months.

### Methods

Women aged  $\geq 18$  years with an infant  $\leq 18$  months of age completed an anonymous survey. Information/links were shared online and via local clinics in Beijing. Logistic regression was performed to assess predictors of breastfeeding during the first 6-months.

### Results

One thousand eight hundred seven women provided data; BL 1231 (68.1%), DL 576 (31.9%). Significantly more mothers in DL group reported the lockdown had moderate to high impact to their household income ( $p = 0.013$ ) and the convenience of purchasing daily necessities ( $p = 0.014$ ). Compared to BL mothers, significantly more mothers in the DL groups thought their birth location and breastfeeding intention had been effected by the COVID-19 ( $p < 0.001$ ,  $p = 0.036$  respectively). Mostly breastfeeding (MBF, mainly breastfeeding with few non-formula fluids added) at 6 months was predicted by delivery during the lockdown period (OR 1.43, 95% confidence interval (CI) 1.08, 1.90), younger maternal age (OR 0.96, 95%CI 0.93, 0.99), getting support from friends or relatives (OR 1.95, 95%CI 1.06, 3.59), and discussing health issues in online groups > four times a week (OR 1.66, 95%CI 1.09, 2.53).

### Conclusion

The COVID-19 pandemic and lockdown measures influenced mothers' planned birth location and breastfeeding intention. However, breastfeeding practice was maintained during the pandemic. Our results highlight the importance of feeding support as well as potential beneficial effects of increased mother-infant contact during the lockdown period which is relevant even under normal circumstances. (Author)

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## 2022-03099

**Effects of prenatal exposure to maternal COVID-19 and perinatal care on neonatal outcome: results from the INTERCOVID Multinational Cohort Study.** Giuliani F, Oros D, Gunier RB, et al (2022), American Journal of Obstetrics & Gynecology (AJOG) vol 227, no 3, September 2022, pp 486.e1-486.e10

**Full URL:** <https://doi.org/10.1016/j.ajog.2022.04.010>

### Background

The effect of COVID-19 in pregnancy on maternal outcomes and its association with preeclampsia and gestational diabetes has been reported; however, a detailed understanding of the effect of maternal positivity, delivery mode and perinatal practices on fetal and neonatal outcomes is urgently needed.

### Objective

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To evaluate the impact of COVID-19 on fetal and neonatal outcomes and the role of the mode of delivery, breastfeeding and early neonatal care practices on the risk of mother-to-child transmission.

#### Study Design

In this cohort study that took place from March 2020 to March 2021, involving 43 institutions in 18 countries, 2 unmatched, consecutive, not-exposed women were concomitantly enrolled immediately after each infected woman was identified, at any stage of pregnancy or delivery, and at the same level of care to minimize bias. Women and neonates were followed up until hospital discharge. COVID-19 in pregnancy was determined by laboratory confirmation of COVID-19 and/or radiological pulmonary findings or 2 or more predefined COVID-19 symptoms. The outcome measures were indices of neonatal and perinatal morbidity and mortality, neonatal positivity and its correlation with mode of delivery, breastfeeding and hospital neonatal care practices.

#### Results

A total of 586 neonates born to women with COVID-19 diagnosis and 1535 neonates born to women without COVID-19 diagnosis were enrolled. Women with COVID-19 diagnosis had a higher rate of cesarean section (52.8% compared to 38.5% for those without COVID-19 diagnosis,  $p < 0.01$ ) and pregnancy related complications such as hypertensive disorders of pregnancy and fetal distress, all with  $p$ -value  $< 0.001$ , compared to women without COVID-19 diagnosis. Maternal diagnosis of COVID-19 carried an increased rate of preterm birth ( $p \leq 0.001$ ) and lower neonatal weight ( $p \leq 0.001$ ), length, and head circumference at birth. In mothers with COVID-19 diagnosis, the length of in-utero exposure was significantly correlated to the risk of the neonate testing positive (OR, 4.5; 95% CI 2.2-9.4 for length of in-utero exposure  $> 14$  days). Among neonates born to mothers with COVID-19 diagnosis, birth via cesarean section was a risk factor for them testing positive for COVID-19 (OR 2.4, 95% CI 1.2-4.7), even when severity of maternal conditions was considered and after multivariable logistic analysis. In the subgroup of neonates born to women with COVID-19 diagnosis, the outcomes worsened when the neonate also tested positive, with higher rates of Intensive Care Unit admission, fever, gastrointestinal and respiratory symptoms and death, even after adjusting for prematurity.

Breastfeeding by mothers with COVID-19 diagnosis, as well as hospital neonatal care practices including immediate skin-to-skin contact and rooming-in, were not associated with an increased risk of newborn positivity.

#### Conclusions

In this multinational cohort study, COVID-19 in pregnancy was associated with increased maternal and neonatal complications. Cesarean section was significantly associated with newborn COVID-19 diagnosis. Vaginal delivery should be considered the safest mode of delivery if obstetrical and health conditions allow it. Mother to child skin-to-skin contact, rooming-in and direct breastfeeding did not represent risk factors for newborn COVID-19 diagnosis, thus well-established best practices can be continued among women with COVID-19 diagnosis. (Author)

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## 2022-03081

**Recommendations for breastfeeding during Coronavirus Disease 2019 (COVID-19) pandemic.** Liu X, Chen H, An M, et al (2022), International Breastfeeding Journal vol 17, no 28, 11 April 2022

**Full URL:** <https://doi.org/10.1186/s13006-022-00465-w>

#### Background

Coronavirus Disease 2019 (COVID-19) has spread worldwide. The safety of breastfeeding of SARS-CoV-2-positive women has not yet reached a consensus among the scientific community, healthcare providers, experts in lactation care, health organizations and governments. This study was conducted to summarize the latest evidence about the safety of breastfeeding among suspected/confirmed infected mothers and to summarize the recommendations on breastfeeding during COVID-19 from different organizations.

#### Methods

A comprehensive literature review of publications about the safety of breastfeeding among SARS-CoV-2-infected mothers was conducted. Scientific databases were searched up to 26 May 2021. The evidence was summarized into five perspectives according to a framework proposed by van de Perre et al. with certain modifications. Moreover, websites of different health organizations were visited to gather the recommendations for breastfeeding.

#### Results

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The current evidence demonstrated that the majority of infants breastfed by infected mothers were negative for SARS-CoV-2. Breast milk samples from suspected/infected mothers mainly demonstrated negative results in SARS-CoV-2 viral tests. There was insufficient evidence proving the infectivity of breast milk from infected mothers. Recent studies found other transmission modalities (e.g., milk containers, skin) associated with breastfeeding. Specific antibodies in the breast milk of infected mothers were also found, implying protective effects for their breastfed children. According to van de Perre's criteria, the breast milk of infected mothers was unlikely to transmit SARS-CoV-2. Owing to the low quality of the current evidence, studies with a more robust design are needed to strengthen the conclusion regarding the safety of breastfeeding. Further studies to follow up the health status of infants who were directly breastfed by their suspected/infected mothers, to collect breast milk samples at multiple time points for viral tests and to examine specific antibodies in breast milk samples are warranted. Current recommendations on breastfeeding during COVID-19 from different organizations are controversial, while direct breastfeeding with contact precautions is generally suggested as the first choice for infected mothers.

## Conclusions

This review determined the safety of breastfeeding and identified the focus for further research during the COVID-19 pandemic. Recommendations on breastfeeding are suggested to be updated in a timely manner according to the latest evidence. (Author)

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## 2022-02909

**COVID 19 in neonates.** Kallem VR, Sharma D (2022), Journal of Maternal-Fetal and Neonatal Medicine vol 35, no 8, 2022, pp 1610-1618

**Full URL:** <https://doi.org/10.1080/14767058.2020.1759542>

Corona virus disease 2019 started in December 2019 as an outbreak of unexplained pneumonias in Wuhan, a city in Hubei province of China. This illness emerged as an epidemic in China and later spread to almost all countries over the globe except Antarctica. This is caused by a beta Corona virus, which is genetically similar to SARS virus. The predominant mode of transmission is via droplet spread, when the infected person coughs, sneezes or talks the virus is released in the respiratory secretions. As there are only a few cases of COVID 19 in neonates, there is no convincing evidence to support the possibility of vertical transmission. Clinical presentation in neonates is nonspecific, commonly observed are temperature instability, respiratory distress, poor feeding, lethargy, vomiting and diarrhea. Laboratory examinations may be nonspecific. Definitive test for 2019-nCoV is the detection of viral nucleic acid by real-time fluorescence polymerase chain reaction (RT-PCR). Suspected and confirmed COVID positive mothers should be delivered in separate delivery rooms and operation theaters. Since there is no approved treatment or drug for this disease, prevention of infection and breaking the chain of transmission plays a crucial role. (Author)

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## 2022-02894

**Remdesivir and Human Milk: A Case Study.** Wada YS, Saito J, Hashii Y, et al (2022), Journal of Human Lactation vol 38, no 2, May 2022, pp 248-251

### Introduction:

Remdesivir was originally developed to treat Ebola hemorrhagic fever, and its efficacy in treating coronavirus disease 2019 was detected during a preliminary analysis of a randomized controlled trial. It is known that Severe Acute Respiratory Syndrome Coronavirus 2 is not transmitted through human milk, but data about the presence of remdesivir in human milk have been lacking.

### Main issue:

In this case study, we determined the human milk-to-serum drug concentration ratio and the relative dose of Remdesivir in one participant.

### Management:

The participant, a 28-year-old primipara, was found to have Coronavirus 2 infection in 2019, 2 days after delivery. She

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was given Remdesivir. The Remdesivir concentration in maternal serum and human milk was measured, and the milk-to-serum drug concentration ratio was found to be low (0.089), as was the relative infant dose (0.0070). The participant could not breastfeed her infant during her Coronavirus 2 infection treatment because in Japan anyone with COVID-19 was completely quarantined. However, she was able to resume breastfeeding after discharge and breastfed her infant for 6 months with supplements.

#### Conclusion:

Given the low amount of Remdesivir in the participant's milk, the inclusion of antibodies to Severe Acute Respiratory Syndrome Coronavirus 2, which can be expected to protect the infant from infection, and various other benefits of human milk, suggests that breastfeeding is safe during treatment with Remdesivir. (Author)

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#### 2022-02884

**Rooming-In Practice During the Pandemic: Results From a Retrospective Cohort Study.** Costa S, Priolo F, Fattore S, et al (2022), Journal of Human Lactation vol 38, no 3, August 2022, pp 443-451

#### Background:

The Coronavirus disease 2019 (COVID-19) pandemic emerged in December 2019 and spread rapidly worldwide. So far, evidence regarding the breastfeeding and rooming-in management of mothers with COVID-19 and their newborn infants is scarce.

#### Research Aims:

1) To assess the rate of exclusive breastfeeding at discharge among mothers with COVID-19 and their newborn infants managed either using a rooming-in or a separation regimen; and 2) to evaluate different neonatal outcomes, including the need for re-hospitalization related to COVID-19 among newborn infants in the two groups.

#### Method:

We conducted a retrospective two-group comparative observational study. The sample was participants with COVID-19 and their newborn infants (N = 155 dyads) between March 1, 2020, and April 30, 2021. Two time periods were outlined resulting from the two different clinical practices of mother–infant separation and rooming-in.

#### Results:

Within the sample, 145 (93.5%) were asymptomatic. All neonates had documented Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) test results, and six tested positive by reverse transcriptase polymerase chain reaction within 48 hr of life. The rate of exclusive breastfeeding was significantly higher ( $p < .0001$ ) within the rooming-in group. Length of hospital stay was significantly lower ( $p = .001$ ) within the rooming-in group.

#### Conclusions:

Protected rooming-in practice has proven to be safe and effective in supporting breastfeeding: None of the infants enrolled were hospitalized due to COVID-19 infection and the rate of exclusive breastfeeding at discharge was increased compared to those infants separated from their mothers. (Author)

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#### 2022-02882

**Virtual Lactation Education in a Pandemic.** Chamberlain K, Miller CW (2022), Journal of Human Lactation vol 38, no 4, November 2022, pp 603–608

**Full URL:** <https://doi.org/10.1177/08903344221082029>

This article describes how one West Coast university developed a low-cost virtual simulation program to continue the clinical lactation education of its interns. (Author, edited)

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#### 2022-02879

**Changes in Breastfeeding Exclusivity and Satisfaction During the COVID-19 Pandemic.** Oggero MK, Wardell DW (2022),

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Background:

Because of its many benefits, exclusive breastfeeding for 6 months is a common public health goal. However, only 44% of infants aged 0–6 months are exclusively breastfed worldwide and, in the United States, only 26% of infants are exclusively breastfed for 6 months. The restrictions imposed during the COVID-19 pandemic may have reduced these rates even further.

Research Aim:

To examine the differences in breastfeeding exclusivity and satisfaction before and during the COVID-19 pandemic.

Methods:

A cross-sectional, two-group survey design was used. Parents (N = 110) of infants born April 1 to December 31, 2019 (pre-pandemic; n = 69), or April 1 to December 31, 2020 (during the pandemic; n = 41), who received lactation support services from an urban academic breastfeeding clinic were surveyed.

Results:

Respondents who gave birth in 2020 (pandemic year) were no less likely to exclusively breastfeed for the first 6 months of their infant's life compared to respondents who gave birth in 2019 (pre-pandemic year). After multivariable logistic regression, the odds of high breastfeeding satisfaction were 73% lower in respondents with infants born in 2020 than in respondents with infants born in 2019 (OR = 0.27, 95% CI [0.08, 0.89]). The strongest contributor to high breastfeeding satisfaction was a prenatal breastfeeding visit with an International Board Certified Lactation Consultant.

Conclusions:

Future research is needed to identify the specific pandemic-related factors that led to the difference in breastfeeding satisfaction between the two groups and to confirm the impact of prenatal International Board Certified Lactation Consultant visits on breastfeeding satisfaction. (Author)

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2022-02870

**Why are there still visitation restrictions in the NICUs after almost two years in the pandemic?** Plagg B (2022), Journal of Neonatal Nursing vol 28, no 5, October 2022, pp 373-374

No abstract available.

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2022-02781

**The United Kingdom and the Netherlands maternity care responses to COVID-19: A comparative study.** van den Berg LMM, Balaam M-C, Nowland R, et al (2023), Women and Birth: Journal of the Australian College of Midwives vol 36, no 1, February 2023, pp 127-135

Full URL: <https://doi.org/10.1016/j.wombi.2022.03.010>

Background

The national health care response to coronavirus (COVID-19) has varied between countries. The United Kingdom (UK) and the Netherlands (NL) have comparable maternity and neonatal care systems, and experienced similar numbers of COVID-19 infections, but had different organisational responses to the pandemic. Understanding why and how similarities and differences occurred in these two contexts could inform optimal care in normal circumstances, and during future crises.

Aim

To compare the UK and Dutch COVID-19 maternity and neonatal care responses in three key domains: choice of birthplace, companionship, and families in vulnerable situations.

Method

A multi-method study, including documentary analysis of national organisation policy and guidance on COVID-19, and interviews with national and regional stakeholders.

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## Findings

Both countries had an infection control focus, with less emphasis on the impact of restrictions, especially for families in vulnerable situations. Differences included care providers' fear of contracting COVID-19; the extent to which community- and personalised care was embedded in the care system before the pandemic; and how far multidisciplinary collaboration and service-user involvement were prioritised.

## Conclusion

We recommend that countries should 1) make a systematic plan for crisis decision-making before a serious event occurs, and that this must include authentic service-user involvement, multidisciplinary collaboration, and protection of staff wellbeing 2) integrate women's and families' values into the maternity and neonatal care system, ensuring equitable inclusion of the most vulnerable and 3) strengthen community provision to ensure system wide resilience to future shocks from pandemics, or other unexpected large-scale events. (Author)

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## 2022-02706

**COVID-19 pandemic-related change in racial and ethnic disparities in exclusive breastmilk feeding during the delivery hospitalization: a differences-in-differences analysis.** Glazer KB, Vieira L, Weber E, et al (2022), BMC Pregnancy and Childbirth vol 22, no 225, 19 March 2022

**Full URL:** <https://doi.org/10.1186/s12884-022-04570-w>

## Objective

Exclusive breastmilk feeding during the delivery hospitalization, a Joint Commission indicator of perinatal care quality, is associated with longer-term breastfeeding success. Marked racial and ethnic disparities in breastfeeding exclusivity and duration existed prior to COVID-19. The pandemic, accompanied by uncertainty regarding intrapartum and postpartum safety practices, may have influenced disparities in infant feeding practices. Our objective was to examine whether the first wave of the COVID-19 pandemic in New York City was associated with a change in racial and ethnic disparities in exclusive breastmilk feeding during the delivery stay.

## Methods

We conducted a cross-sectional study of electronic medical records from 14,964 births in two New York City hospitals. We conducted a difference-in-differences (DID) analysis to compare Black-white, Latina-white, and Asian-white disparities in exclusive breastmilk feeding in a pandemic cohort (April 1-July 31, 2020, n=3122 deliveries) to disparities in a pre-pandemic cohort (January 1, 2019-February 28, 2020, n=11,842). We defined exclusive breastmilk feeding as receipt of only breastmilk during delivery hospitalization, regardless of route of administration. We ascertained severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection status from reverse transcription-polymerase chain reaction tests from nasopharyngeal swab at admission. For each DID model (e.g. Black-white disparity), we used covariate-adjusted log binomial regression models to estimate racial and ethnic risk differences, pandemic versus pre-pandemic cohort risk differences, and an interaction term representing the DID estimator.

## Results

Exclusive breastmilk feeding increased from pre-pandemic to pandemic among white (40.8% to 46.6%,  $p<0.001$ ) and Asian (27.9% to 35.8%,  $p=0.004$ ) women, but not Black (22.6% to 25.3%,  $p=0.275$ ) or Latina (20.1% to 21.4%,  $p=0.515$ ) women overall. There was an increase in the Latina-white exclusive breastmilk feeding disparity associated with the pandemic (DID estimator=6.3 fewer cases per 100 births (95% CI=-10.8, -1.9)). We found decreased breastmilk feeding specifically among SARS-CoV-2 positive Latina women (20.1% pre-pandemic vs. 9.1% pandemic  $p=0.013$ ), and no change in Black-white or Asian-white disparities.

## Conclusions

We observed a pandemic-related increase in the Latina-white disparity in exclusive breastmilk feeding, urging hospital policies and programs to increase equity in breastmilk feeding and perinatal care quality during and beyond this health emergency. (Author)

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## 2022-02682

**Parents' experiences regarding neonatal care during the COVID-19 pandemic: country-specific findings of a multinational survey.** Kostenzer J, von Rostensiel-Pulver C, Hoffman J, et al on behalf of the COVID-19 Zero Separation Collaborative Group (2022), BMJ Open vol 12, no 4, April 2022, e056856

**Full URL:** <http://doi.org/10.1136/bmjopen-2021-056856>

**Objectives** The COVID-19 pandemic has disrupted healthcare systems, challenging neonatal care provision globally. Curtailed visitation policies are known to negatively affect the medical and emotional care of sick, preterm and low birth weight infants, compromising the achievement of the 2030 Development Agenda. Focusing on infant and family-centred developmental care (IFCDC), we explored parents' experiences of the disruptions affecting newborns in need of special or intensive care during the first year of the pandemic.

**Design** Cross-sectional study using an electronic, web-based questionnaire.

**Setting** Multicountry online-survey.

**Methods** Data were collected between August and November 2020 using a pretested online, multilingual questionnaire. The target group consisted of parents of preterm, sick or low birth weight infants born during the first year of the COVID-19 pandemic and who received special/intensive care. The analysis followed a descriptive quantitative approach.

**Results** In total, 1148 participants from 12 countries (Australia, Brazil, Canada, China, France, Italy, Mexico, New Zealand, Poland, Sweden, Turkey and Ukraine) were eligible for analysis. We identified significant country-specific differences, showing that the application of IFCDC is less prone to disruptions in some countries than in others. For example, parental presence was affected: 27% of the total respondents indicated that no one was allowed to be present with the infant receiving special/intensive care. In Australia, Canada, France, New Zealand and Sweden, both the mother and the father (in more than 90% of cases) were allowed access to the newborn, whereas participants indicated that no one was allowed to be present in China (52%), Poland (39%), Turkey (49%) and Ukraine (32%).

**Conclusions** The application of IFCDC during the COVID-19 pandemic differs between countries. There is an urgent need to reconsider separation policies and to strengthen the IFCDC approach worldwide to ensure that the 2030 Development Agenda is achieved. (Author)

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## 2022-02642

**Covid 2 years on: What is the evidence?.** Boddy B (2022), Journal of Health Visiting vol 10, no 3, March 2022, pp 128-130

March 2022 marks 2 years since the start of the Covid-19 pandemic. What is the evidence around the impact on maternal, infant and child health? (Author)

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## 2022-02507

**A welcome result of an unwelcome virus? Evaluation of video consultations within a neonatal service.** Deeming J, Armstrong C, Edi-Osagie N (2022), Infant vol 18, no 2, March 2022, pp 76-79

The recent pandemic has necessitated the use of video consultations in order that babies can receive timely follow-up after discharge from the neonatal unit, while avoiding the risks associated with travel and social mixing during an in-person attendance at clinic. We analysed parental and clinician perceptions of the service delivered using the newly implemented 'Attend Anywhere' video consultation service. Video consultations are satisfactory to parents and can safely meet the needs of appropriately selected patients. The video consultation system can be utilised for a variety of interactions between neonatal staff and parents and in addition has benefits at a strategic and environmental level. (Author)

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## 2022-02474

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**Vaccine Update.** Public Health England (2021), London: PHE no 316, January 2021

**Full URL:** <https://www.gov.uk/government/publications/vaccine-update-issue-316-january-2021-covid-19-special-edition/vaccine-update-iss-ue-316-january-2021-covid-19-special-edition>

This special edition of Vaccine Update includes information on the safety of COVID-19 vaccination for pregnant and breastfeeding women. Also includes guidance on COVID-19 vaccination for health and social care workers. (LDO)

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## 2022-02465

**Vaccine Update.** Public Health England (2020), London: PHE no 315, December 2020

**Full URL:** <https://www.gov.uk/government/publications/vaccine-update-issue-315-december-2020-covid-19-special-edition/vaccine-update-iss-ue-315-december-2020-covid-19-special-edition>

This special edition of Vaccine Update includes resources and leaflets on COVID-19 vaccination for pregnant or breastfeeding women. (LDO)

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## 2022-02422

**Providing breastfeeding support during the COVID-19 pandemic: concerns of mothers who contacted the Australian Breastfeeding Association.** Hull N, Karn RL, Gribble KD (2020), Breastfeeding Review vol 28, no 3, November 2020, pp 25-35

Concerns of mothers seeking breastfeeding support during the COVID-19 pandemic and the experiences of Australian Breastfeeding Association (ABA) volunteers who assisted them were explored via an online survey. Surveys were completed 16 March to 18 May 2020 and described the COVID-19 related concerns of 339 individuals. One hundred and thirty-six mothers (64%) sought support to protect their infants by continuing breastfeeding, increasing milk supply, or restarting breastfeeding. Mothers were commonly stressed, isolated and needing reassurance. Thirty-four (10%) raised concerns about COVID-19 and breastfeeding safety. One hundred and twenty-nine (61%) informed survey respondents (ABA volunteers) they were unable to access face-to-face health services because of fear or unavailability. Most common breastfeeding concerns were related to insufficient milk or weight gain, painful breasts, relactation and reducing supplemental milk. Respondents reported mothers were worried that stress had reduced milk supply, that milk supply concerns were exacerbated by the inability to weigh infants and that seeking medical treatment was delayed. Respondents stated they felt supported and confident assisting mothers while also expressing distress at mothers' situations. ABA's role in emergency response should be recognised and national planning for infant and young child feeding in emergencies must be urgently developed, funded and implemented. (Author)

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## 2022-02356

**A Survey of Parental Experience Within the Neonatal Unit During the Coronavirus Pandemic.** Loftus E, Smith A, Hayes B (2021), Irish Medical Journal vol 114, no 1, January 2021, P253

**Full URL:** <http://imj.ie/a-survey-of-parental-experience-within-the-neonatal-unit-during-the-coronavirus-pandemic/>

Letter to the editor presenting the results of a survey to identify parental experiences during the coronavirus pandemic. Findings indicate that 58% felt restrictions affected their ability to bond with their baby and 71% felt restrictions impacted on their partner's ability to bond. (LDO)

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## 2022-02258

**Lactation in quarantine: The (in)visibility of human milk feeding during the COVID-19 pandemic in the United States.** Cohen M, Botz C (2022), International Breastfeeding Journal vol 17, no 22, 21 March 2022

**Full URL:** <https://doi.org/10.1186/s13006-022-00451-2>

Background

In response to the COVID-19 pandemic, billions of people were asked by their state and local governments not to go to work and not leave the house unless they had to. The goal of this qualitative study was to collect the lived experiences of a small group of parents and lactation professionals in the United States about what it was like to feed babies human milk under these conditions of quarantine.

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## Methods

This project is a social constructionist analysis of lactation narratives of 24 parents feeding their children human milk and 13 lactation professionals. They were interviewed remotely in 2020–21 via videoconferencing about their experiences and perspectives on the pandemic's effect on lactation. Additionally, photographs of 16 of the parents are provided to visualize their practices and how they chose to represent them.

## Results

Four interrelated themes were identified in participants' narratives about how they experienced and made sense of human milk feeding during the pandemic: the loneliness of lactation during the pandemic, the construction of human milk as a resource to cope with the crisis, the (in)visibility of lactation amidst heightened multitasking, and the sense of connection created by human milk feeding at a time of unprecedented solitude.

## Conclusions

While the pandemic may have had both positive and negative effects on lactation, it exposed continuing inequities in infant feeding, generating new forms of (in)visibility for lactating labor. Going forward, one lesson for policy and lawmakers may be that to adequately support lactation, they should take cues from the families who had positive experiences during the crisis. This would call for systemically overhauling of US laws and policies by guaranteeing: universal basic income, paid parental leave for at least six months, paid lactation leaves and breaks, affordable housing, universal health care, subsidized childcare programs, and equal access to high-quality, non-discriminatory, and culturally appropriate medical care—including lactation counseling—, among other initiatives. (Author)

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### 2022-02243

**Impact of COVID-19 on childhood vaccination counts to week 51, and vaccine coverage to November 2020 in England: interim analyses.** Public Health England (2021), Health Protection Report vol 15, no 1, 5 January 2021; pp 1-23

**Full URL:** [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/949448/hpr0121-chldhd-vc\\_wk51b.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/949448/hpr0121-chldhd-vc_wk51b.pdf)

This is the ninth in a series of reports which present an assessment of the extent of COVID-19-related impact on childhood vaccinations, based on both (a) aggregated vaccine counts of dose 1 Hexavalent and dose 1 MMR vaccinations delivered to infants/children and (b) vaccine coverage data for dose 1, 2 and 3 Hexavalent and dose 1 MMR vaccines extracted from ImmForm. This report includes vaccination counts data up to week 51, and vaccine coverage data up to November 2020. (Author, edited)

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### 2022-02230

**Moderna begins testing Covid-19 vaccine on babies and young children.** Anon (2021), BBC News 16 March 2021

**Full URL:** <https://www.bbc.co.uk/news/world-us-canada-56422415>

The US drug company Moderna has begun studying its Covid-19 vaccine in children aged six months to 11 years old. (Author)

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### 2022-02226

**Maternal and Infant Outcomes Associated with Maternity Practices Related to COVID-19: The COVID Mothers Study.** Bartick MC, Valdés V, Giusti A, et al (2021), Breastfeeding Medicine vol 16, no 3, March 2021, pp 189-199

Background: Maternity care practices such as skin-to-skin care, rooming-in, and direct breastfeeding are recommended, but it is unclear if these practices increase the risk of clinically significant COVID-19 in newborns, and if disruption of these practices adversely affects breastfeeding.

Methods: We performed a retrospective cohort study of 357 mothers and their infants <12 months who had confirmed or suspected COVID-19. Subjects came from an anonymous worldwide online survey between May 4 and September 30, 2020, who were recruited through social media, support groups, and health care providers. Using multivariable

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logistic regression, Fisher's exact test, and summary statistics, we assessed the association of skin-to-skin care, feeding, and rooming-in with SARS-CoV-2 outcomes, breastfeeding outcomes, and maternal distress.

**Results:** Responses came from 31 countries. Among SARS-CoV-2+ mothers whose infection was  $\leq 3$  days of birth, 7.4% of their infants tested positive. We found a nonsignificant decrease in risk of hospitalization among neonates who roomed-in, directly breastfed, or experienced uninterrupted skin-to-skin care ( $p > 0.2$  for each). Infants who did not directly breastfeed, experience skin-to-skin care, or who did not room-in within arms' reach, were significantly less likely to be exclusively breastfed in the first 3 months, adjusting for maternal symptoms ( $p \leq 0.02$  for each). Nearly 60% of mothers who experienced separation reported feeling "very distressed," and 29% who tried to breastfeed were unable. Presence of maternal symptoms predicted infant transmission or symptoms (adjusted odds ratio = 4.50, 95% confidence interval = 1.52–13.26,  $p = 0.006$ ).

**Conclusion:** Disruption of evidence-based quality standards of maternity care is associated with harm and may be unnecessary. (Author)

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## 2022-02082

**The transfer of vaccine-generated SARS-CoV-2 antibodies into infantile circulation via breastmilk.** Lebbe B, Reynders M, Van Praet JT (2022), International Journal of Gynecology & Obstetrics vol 158, no 1, July 2022, pp 219-220

Vaccine-generated maternal anti-SARS-CoV-2 IgG antibodies are not transferred into infantile circulation via breastmilk. (Author)

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## 2022-02033

**Importance of establishing antibody specificity in multisystem inflammatory syndrome in newborn during the COVID-19 pandemic.** Leslie AT, Saleh M, Soni N, et al (2023), Acta Paediatrica vol 112, no 2, February 2023, pp 303-304

**Full URL:** <https://doi.org/10.1111/apa.16345>

Brief report presenting the case of an infant with multi-organ dysfunction due to placental abruption, confounded by SARS-CoV-2 antibodies consistent with multisystem inflammatory syndrome. The infant received immunomodulatory therapy from day two of life. Multisystem inflammatory syndrome was subsequently ruled out and the infant died due to continued liver failure. (LDO)

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## 2022-01977

**Possible vertical transmission of corona virus disease 19 (COVID-19) from infected pregnant mothers to neonates: a multicenter study.** Almaghrabi R, Shaiba LA, Babic I, et al (2022), Journal of Maternal-Fetal and Neonatal Medicine vol 35, no 25, 2022, pp 9558-9567

### Introduction

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is highly contagious with various possible routes of transmission, resulting in high mortality globally. Controversy exists regarding the vertical transmission of the SARS-CoV-2 infection to fetuses of COVID-19-infected women. The aim of this study was to investigate the possibility of the vertical transmission of SARS-CoV-2 from COVID-19-infected mothers to their neonates.

### Materials and methods

We prospectively collected demographical and clinical characteristics of 31 COVID-19 positive pregnant women and their neonates. All mothers and neonates were tested for SARS-CoV-2 infection using the real-time polymerase chain reaction on nasopharyngeal swabs and breast milk samples. Antenatal and placental abnormalities were ultrasonically and histopathologically examined. In cord blood samples, the immunoglobins (Ig) M and IgG were estimated qualitatively.

### Results

The women's mean age and gestational age were 31 years and 38 weeks, respectively, with 58% undergoing an

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elective cesarean section. Gestational diabetes was reported in 29% of cases, 64.5% of women were medically free and only 16.12% were symptomatic. A normal antenatal ultrasound was observed in 77.42% of cases. Nine cord blood samples were positive for IgG. Villous infarction (24%), villous agglutination, and chorangiosis (51%), accelerated villous maturation (21%) and reduced and hypercoiling were reported for 6.97% of the umbilical cords. Three newborns had possible vertical transmission of SARS-CoV-2 infection, of which, two were preterm and IUFD. The third neonate was born full-term, admitted to NICU and later discharged in good health.

## Conclusion

Our findings support the possibility of the direct vertical transmission of the SARS-CoV-2 infection to neonates from infected mothers. Further studies with a larger sample size are required to validate the current findings. (Author)

## 2022-01907

### **SARS-CoV-2 positivity in offspring and timing of mother-to-child transmission: living systematic review and meta-analysis.**

Allotey J, Chatterjee S, Kew T, et al (2022), BMJ vol 376, no 8330, 16 March 2022, e067696

**Full URL:** <https://doi.org/10.1136/bmj-2021-067696>

**Objectives** To assess the rates of SARS-CoV-2 positivity in babies born to mothers with SARS-CoV-2 infection, the timing of mother-to-child transmission and perinatal outcomes, and factors associated with SARS-CoV-2 status in offspring.

**Design** Living systematic review and meta-analysis.

**Data sources** Major databases between 1 December 2019 and 3 August 2021.

**Study selection** Cohort studies of pregnant and recently pregnant women (including after abortion or miscarriage) who sought hospital care for any reason and had a diagnosis of SARS-CoV-2 infection, and also provided data on offspring SARS-CoV-2 status and risk factors for positivity. Case series and case reports were also included to assess the timing and likelihood of mother-to-child transmission in SARS-CoV-2 positive babies.

**Data extraction** Two reviewers independently extracted data and assessed study quality. A random effects model was used to synthesise data for rates, with associations reported using odds ratios and 95% confidence intervals. Narrative syntheses were performed when meta-analysis was inappropriate. The World Health Organization classification was used to categorise the timing of mother-to-child transmission (in utero, intrapartum, early postnatal).

**Results** 472 studies (206 cohort studies, 266 case series and case reports; 28 952 mothers, 18 237 babies) were included. Overall, 1.8% (95% confidence interval 1.2% to 2.5%; 140 studies) of the 14 271 babies born to mothers with SARS-CoV-2 infection tested positive for the virus with reverse transcriptase polymerase chain reaction (RT-PCR). Of the 592 SARS-CoV-2 positive babies with data on the timing of exposure and type and timing of tests, 14 had confirmed mother-to-child transmission: seven in utero (448 assessed), two intrapartum (18 assessed), and five during the early postnatal period (70 assessed). Of the 800 SARS-CoV-2 positive babies with outcome data, 20 were stillbirths, 23 were neonatal deaths, and eight were early pregnancy losses; 749 babies were alive at the end of follow-up. Severe maternal covid-19 (odds ratio 2.4, 95% confidence interval 1.3 to 4.4), maternal death (14.1, 4.1 to 48.0), maternal admission to an intensive care unit (3.5, 1.7 to 6.9), and maternal postnatal infection (5.0, 1.2 to 20.1) were associated with SARS-CoV-2 positivity in offspring. Positivity rates using RT-PCR varied between regions, ranging from 0.1% (95% confidence interval 0.0% to 0.3%) in studies from North America to 5.7% (3.2% to 8.7%) in studies from Latin America and the Caribbean.

**Conclusion** SARS-CoV-2 positivity rates were found to be low in babies born to mothers with SARS-CoV-2 infection. Evidence suggests confirmed vertical transmission of SARS-CoV-2, although this is likely to be rare. Severity of maternal covid-19 appears to be associated with SARS-CoV-2 positivity in offspring.

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## 2022-01825

**Disruptions in maternal and child health service utilization during COVID-19: analysis from eight sub-Saharan African countries.** Shapira G, Ahmed T, Drouard SHP, et al (2021), Health Policy and Planning vol 36, no 7, August 2021, pp 1140-1151

**Full URL:** <https://doi.org/10.1093/heapol/czab064>

The coronavirus-19 pandemic and its secondary effects threaten the continuity of essential health services delivery, which may lead to worsened population health and a protracted public health crisis. We quantify such disruptions, focusing on maternal and child health, in eight sub-Saharan countries. Service volumes are extracted from administrative systems for 63 954 facilities in eight countries: Cameroon, Democratic Republic of Congo, Liberia, Malawi, Mali, Nigeria, Sierra Leone and Somalia. Using an interrupted time series design and an ordinary least squares regression model with facility-level fixed effects, we analyze data from January 2018 to February 2020 to predict what service utilization levels would have been in March–July 2020 in the absence of the pandemic, accounting for both secular trends and seasonality. Estimates of disruption are derived by comparing the predicted and observed service utilization levels during the pandemic period. All countries experienced service disruptions for at least 1 month, but the magnitude and duration of the disruptions vary. Outpatient consultations and child vaccinations were the most commonly affected services and fell by the largest margins. We estimate a cumulative shortfall of 5 149 491 outpatient consultations and 328 961 third-dose pentavalent vaccinations during the 5 months in these eight countries. Decreases in maternal health service utilization are less generalized, although significant declines in institutional deliveries, antenatal care and postnatal care were detected in some countries. There is a need to better understand the factors determining the magnitude and duration of such disruptions in order to design interventions that would respond to the shortfall in care. Service delivery modifications need to be both highly contextualized and integrated as a core component of future epidemic response and planning. (Author)

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## 2022-01563

**Conducting Neonatal Intensive Care Unit Research During a Pandemic: Challenges and Lessons Learned.** Nist MD, Casavant SG, Dail RB, et al (2022), Nursing Research vol 71, no 2, February 2022, pp 147-152

### Background

The coronavirus pandemic disrupted normal clinical operations and research. Nurse scientists conducting research studies in the neonatal intensive care unit experienced significant challenges to continuing their research studies amid national lockdowns and hospital visitation restrictions.

### Objectives

The purpose of this article is to describe the challenges encountered by nurse scientists conducting research studies in the neonatal intensive care unit during the pandemic, the creative solutions devised to overcome these barriers, and the lessons learned during this unprecedented time.

### Methods

Using our pandemic area studies as exemplars, we highlight the barriers encountered in continuing our research in the intense environment of the neonatal intensive care unit.

### Results

Visitor restrictions limited the presence of parents and researchers in the neonatal intensive care unit during the pandemic, causing disruptions to participant recruitment and data collection. Laboratory closures further limited research activities during the pandemic. Strategies to overcome these barriers include building formal collaborations among researchers and clinicians, creating the infrastructure to support virtual recruitment and electronic consent, and developing contingency plans for studies involving the analysis of biological samples.

### Discussion

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The neonatal intensive care unit is a unique environment because of vulnerable patient population and need for researchers to interact with parents to recruit study participants. Implementing the strategies developed during the coronavirus pandemic may allow for the continuation of research activities during future public health crises. (Author)

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#### 2022-00974

**Evidence of vertical transmission of SARS-CoV-2 and interstitial pneumonia in second-trimester twin stillbirth in asymptomatic woman. Case report and review of the literature.** Patanè L, Cadamuro M, Massazza G, et al (2022), American Journal of Obstetrics & Gynecology MFM vol 4, no 3, May 2022, 100589

**Full URL:** <https://doi.org/10.1016/j.ajogmf.2022.100589>

Data on the vertical transmission rate of COVID-19 in pregnancy are limited, while data reporting mother-fetal transmission in the second trimester of pregnancy are controversial.

We described a case of second trimester twin stillbirth in a woman positive for SARS-CoV-2 in which, despite the absence of respiratory syndrome, placental and fetal markers of infection were detected. The patient developed a clinical chorioamnionitis and spontaneously delivered two stillborn infants. Placental histology and immunohistochemistry demonstrated SARS-CoV-2 infection mostly within the syncytiotrophoblast and the fetal autopsy showed development of interstitial pneumonia.

Our findings demonstrate that, in utero vertical transmission is possible, also in asymptomatic SARS-CoV-2 pregnant women and that infection can lead to severe morbidity in the second trimester of pregnancy. (Author)

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#### 2022-00856

**Investigation for SARS-CoV-2 vertical transmission in a COVID-19 pregnant woman: a case report.** Kim TE, Kim H, Ahn KH, et al (2022), Journal of Obstetrics and Gynaecology vol 42, no 5, 2022, pp 1561-1563

The authors present the case of a pregnant woman with confirmed COVID-19 and present the laboratory study profiles of various samples, including amniotic fluid and vaginal discharge, to determine the possibility of vertical transmission to the fetus or neonate. (LDO)

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#### 2022-00714

**Inflammation and Cytopenias in a Well-Appearing Infant With SARS-CoV-2.** Karim SA, Weiss CN, Marrinan JE, et al (2022), Clinical Pediatrics vol 61, no 2, February 2022, pp 116-119

**Full URL:** <https://doi.org/10.1177/00099228211048599>

Case report of a 5-week-old baby presenting with a fever and subsequent diagnosis of COVID-19. The authors discuss whether laboratory markers should be obtained in well-appearing infants who test positive for SARS-CoV-2. (LDO)

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#### 2022-00570

**Parents' pandemic NICU experience in the United States: a qualitative study.** Vance AJ, Malin KJ, Miller J, et al (2021), BMC Pediatrics vol 21, no 558, 9 December 2021

**Full URL:** <https://doi.org/10.1186/s12887-021-03036-w>

##### Background

Prior to the COVID-19 pandemic, parents of infants in the Neonatal Intensive Care Unit (NICU) frequently reported high levels of stress, uncertainty, and decreased parenting confidence. Early research has demonstrated that parents have had less access to their infants in the hospital due to restrictions on parental presence secondary to the pandemic. It is unknown how parents have perceived their experiences in the NICU since the beginning of the COVID-19 pandemic. The purpose of this study was to describe the lived experience of parents who had an infant in the NICU in the context of the COVID-19 pandemic to inform healthcare providers and policy makers for future development of policies and care planning.

##### Methods

The study design was a qualitative description of the impact of the COVID-19 pandemic on parents' experiences of

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having an infant in the NICU. Free-text responses to open-ended questions were collected as part of a multi-method study of parents' experiences of the NICU during the first six months of the pandemic. Participants from the United States were recruited using social media platforms between the months of May and July of 2020. Data were analyzed using a reflexive thematic approach.

## Findings

Free-text responses came from 169 parents from 38 different states in the United States. Three broad themes emerged from the analysis: (1) parents' NICU experiences during the COVID-19 pandemic were emotionally isolating and overwhelming, (2) policy changes restricting parental presence created disruptions to the family unit and limited family-centered care, and (3) interactions with NICU providers intensified or alleviated emotional distress felt by parents. A unifying theme of experiences of emotional distress attributed to COVID-19 circumstances ran through all three themes.

## Conclusions

Parents of infants in the NICU during the first six months of the COVID-19 pandemic experienced emotional struggles, feelings of isolation, lack of family-centered care, and deep disappointment with system-level decisions. Moving forward, parents need to be considered essential partners in the development of policies concerning care of and access to their infants. (Author)

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## 2022-00488

### **Impact of COVID-19 on maternity and neonatal services– Three year-on-year review data from the North East of England.**

Athiraman NK, Patience A, Onwuneme C, et al (2022), Acta Paediatrica vol 111, no 5, May 2022, pp 1039-1041

**Full URL:** <https://doi.org/10.1111/apa.16264>

The objective of this study was to assess whether the COVID-19 pandemic impacted on pregnancy outcomes including rates of caesarean sections, induction of labour (IOL), intra-uterine death (IUD), term and preterm admissions to the neonatal unit. (Author, edited)

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## 2022-00340

### **Impact of Coronavirus Disease-2019 on Hospital Care for Neonatal Opioid Withdrawal Syndrome.** MacMillan KDL, Morrison

TM, Melvin P, et al (2022), The Journal of Pediatrics vol 245, June 2022, pp 47-55

## Objectives

To compare prenatal exposures, hospital care processes, and hospitalization outcomes for opioid-exposed newborns (OENs) before and during the COVID-19 pandemic.

## Study design

In this multi-center retrospective analysis, data were collected from 19 Massachusetts hospitals including 5 academic and 14 community hospitals. The pre-COVID cohort was defined as births occurring during 3/1/2019-2/28/2020 and the COVID cohort as births during 3/1/2020-12/31/2020. OEN born  $\geq$  to 35 weeks gestation were included. Differences in prenatal substance exposures, hospital care processes, and NOWS outcomes including pharmacologic treatment (PharmTx), length of stay (LOS), and as needed (PRN) treatment failure rates were evaluated.

## Results

There were 663 OEN in the pre-COVID and 476 in the COVID group. No differences between groups were seen in prenatal substance exposures or need for PharmTx. Compared with the pre-COVID group, in the COVID group there were decreases in rooming-in after maternal discharge (63.0% to 53.8%,  $P=0.001$ ) and care in the pediatric unit setting (25.3% to 23.5%,  $P=0.001$ ), and increases in LOS (aRR 1.04, 95% CI 1.01-1.08) and breastmilk receipt at discharge (aOR 2.03, 95% CI 1.22-3.39). Within the subset of academic centers, more infants failed PRN treatment in the COVID group [53.8% vs 26.5%,  $p=0.02$ ; aOR 3.77 (95% CI 0.98-14.5)].

## Conclusions

Among hospitals in our collaborative, hospital processes for NOWS including care setting, rooming-in and LOS were negatively impacted in the COVID group, particularly in academic medical centers.(Author)

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2022-00208

**Women's postpartum experiences in Canada during the COVID-19 pandemic: a qualitative study.** Rice K, Williams S (2021), CMAJ Open vol 9, no 2, May 2021, pp E556-E562  
Full URL: <https://doi.org/10.9778/cmaio.20210008>

Background: The mental health of postpartum women has worsened during the COVID-19 pandemic; however, the experiences that underlie this remain unexplored. The purpose of this study was to examine how people in Canada who gave birth during the pandemic were affected by policies aimed at limiting interpersonal contact to reduce SARS-CoV-2 transmission in hospital and during the early weeks postpartum.

Methods: We took a social constructionist approach and used a qualitative descriptive methodology. Sampling methods were purposive and involved a mix of convenience and snowball sampling via social media and email. Study inclusion was extended to anyone aged 18 years or more who was located in Canada and was pregnant or had given birth during the COVID-19 pandemic. Data were obtained via semistructured qualitative telephone interviews conducted between June 2020 and January 2021, and were analyzed through thematic analysis.

Results: Sixty-five interviews were conducted; data from 57 women who had already delivered were included in our analysis. We identified the following 4 themes: negative postpartum experience in hospital owing to the absence of a support person(s); poor postpartum mental health, especially in women with preexisting mental health conditions and those who had had medically complicated deliveries; asking for help despite public health regulations that prohibited doing so; and problems with breastfeeding owing to limited in-person follow-up care and lack of in-person breastfeeding support.

Interpretation: Policies that restrict the presence of support persons in hospital and at home during the postpartum period appear to be causing harm. Measures to mitigate the consequences of these policies could include encouraging pregnant people to plan for additional postpartum support, allowing a support person to remain for the entire hospital stay and offering additional breastfeeding support. (Author)

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2022-00205

**Wellbeing of Breastfeeding Women in Australia and New Zealand during the COVID-19 Pandemic: A Cross-Sectional Study.** Sakalidis VS, Rea A, Perrella SL, et al (2021), Nutrients vol 13, no 6, May 2021, p 1831

During the COVID-19 pandemic, breastfeeding women have experienced restricted access to support, placing them at increased risk of mental health concerns and limited breastfeeding assistance. This study investigated the effect of the pandemic on feeding choices and maternal wellbeing amongst breastfeeding mothers living in Australian and New Zealand. We conducted a cross-sectional online survey that examined feeding methods, maternal mental wellbeing, worries, challenges, and positive experiences during the pandemic. Most women were exclusively breastfeeding (82%). Partial breastfeeding was associated with perceived low milk supply and longer pregnancy duration during the pandemic. Reduced mental health and wellbeing was associated with lower levels of family functioning, increased perceived stress, and perinatal anxiety. Longer pregnancy duration during the pandemic was associated with lower mental health wellbeing scores, while higher perceived stress scores were reported for regions with higher COVID-19 infection rates and women with perceived low milk supply. Women reported that the pandemic resulted in less pressure and more time for family bonding, while worries about the pandemic, family health, and parenting challenges were also cited. Mental health concerns of breastfeeding women appear to be exacerbated by COVID-19, highlighting a critical need for access to mental health and broader family support during the pandemic. (Author)

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2022-00202

**"Mourning the Experience of What Should Have Been": Experiences of Peripartum Women During the COVID-19**

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### Objectives

The ongoing COVID-19 pandemic may significantly affect the peripartum experience; however, little is known about the perceptions of women who gave birth during the COVID-19 pandemic. Thus, the purpose of our study was to describe the peripartum experiences of women who gave birth during the COVID-19 pandemic in the United States.

### Methods

Using a cross-sectional design, we collected survey data from a convenience sample of postpartum women recruited through social media. Participants were 18 years of age or older, lived in the United States, gave birth after February 1, 2020, and could read English. This study was part of the COVID-19 Maternal Attachment, Mood, Ability, and Support study, which was a larger study that collected survey data describing maternal mental health and breastfeeding during the COVID-19 pandemic. This paper presents findings from the two free-text items describing peripartum experiences. Using the constant comparative method, responses were thematically analyzed to identify and collate major and minor themes.

### Results

371 participants responded to at least one free-text item. Five major themes emerged: (1) Heightened emotional distress; (2) Adverse breastfeeding experiences; (3) Unanticipated hospital policy changes shifted birthing plans; (4) Expectation vs. reality: “mourning what the experience should have been;” and (5) Surprising benefits of the COVID-19 pandemic to the delivery and postpartum experience.

### Conclusions for Practice

Peripartum women are vulnerable to heightened stress induced by COVID-19 pandemic sequelae. During public health crises, peripartum women may need additional resources and support to improve their mental health, wellbeing, and breastfeeding experiences. (Author)

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## 2022-00199

**The breastfeeding experiences of COVID-19-positive women: A qualitative study in Turkey.** Aşçı Ö, Bal MD, Ergin A (2022), Japan Journal of Nursing Science vol 19, no 1, January 2022, e12453

**Full URL:** <https://doi.org/10.1111/jjns.12453>

### Aim

The aim of the study was to determine the breastfeeding experiences of COVID-19-positive women.

### Methods

This was a qualitative study of 14 women diagnosed with COVID-19. One-to-one telephone interviews were conducted and recorded. The data were analyzed thematically.

### Results

Three main themes were identified. Theme 1 was “increased emotional load,” outlining the emotional effects of the disease in the women, such as feeling sad and inadequate, in addition to anxiety and fear. Theme 2 was “breastfeeding during the disease,” which illustrated the effects of the treatment process on the women, the disease-related symptoms, their influence on breastfeeding attitudes and behavior, and the effects of social media and television. Theme 3 was “perceived social support and need,” defining the social support perceived and expected by the women during isolation with needs.

### Conclusion

Women who could not get the professional support they expected had to face the difficult choice between taking medical treatment and breastfeeding. Many women refused drug treatment for COVID-19 and continued to

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breastfeed with all the resultant emotional and physical difficulties, as they believed in the benefits of mother's milk. The experiences of the women were discussed with an approach that enabled developing health care services further. It was concluded that Turkish health care professionals need to develop an evidence-based and female-centered approach for COVID-19 management in breastfeeding women. (Author)

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## 2022-00196

**Experiences of breastfeeding during COVID-19: Lessons for future practical and emotional support.** Brown A, Shenker N (2021), Maternal & Child Nutrition vol 17, no 1, January 2021, e13088

**Full URL:** <https://doi.org/10.1111/mcn.13088>

The COVID-19 pandemic and subsequent lockdown and social distancing led to changes to breastfeeding support available to women in the United Kingdom. Face-to-face professional support was reduced, and face-to-face peer support was cancelled. Anecdotal media accounts highlighted practices separating some mothers and babies in hospitals, alongside inaccurate stories of the safety of breastfeeding circulating. Meanwhile, new families were confined to their homes, separated from families and support networks. Given that we know breastfeeding is best supported by practices that keep mother and baby together, high-quality professional and peer-to-peer support, and positive maternal well-being, it is important to understand the impact of the pandemic upon the ability to breastfeed. To explore this, we conducted an online survey with 1219 breastfeeding mothers in the United Kingdom with a baby 0-12 months old to understand the impact of the pandemic upon breastfeeding duration, experiences and support. The results highlighted two very different experiences: 41.8% of mothers felt that breastfeeding was protected due to lockdown, but 27.0% of mothers struggled to get support and had numerous barriers stemming from lockdown with some stopped breastfeeding before they were ready. Mothers with a lower education, with more challenging living circumstances and from Black and minority ethnic backgrounds were more likely to find the impact of lockdown challenging and stop breastfeeding. The findings are vital in understanding how we now support those women who may be grieving their loss of breastfeeding and are affected by their negative experiences and how we can learn from those with a positive experience to make sure all breastfeeding women are better supported if similar future events arise. (Author)

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## 2022-00193

**Impact of the COVID-19 pandemic on Swiss pregnant and breastfeeding women - a cross-sectional study covering the first pandemic wave.** Lambelet V, Ceulemans M, Nordeng H, et al (2021), Swiss Medical Weekly vol 151, 17 September 2021, w30009

**Full URL:** <https://doi.org/10.4414/smw.2021.w30009>

Information on the impact of the COVID-19 pandemic on pregnancy and breastfeeding experiences, as well as on perinatal mental health in Switzerland is limited. In Switzerland, there are few national studies and little information. Using an anonymous online survey accessible after the first wave of the outbreak in Switzerland, we have investigated how this pandemic affected pregnant and breastfeeding women. Among women who completed the survey, 69.0% (1050/1518) indicated the first wave of the pandemic affected their personal habits, 61.0% (689/1131) were affected in their work and 40.0% (632/1573) reported impaired relations with healthcare services (different denominators correspond to the number of participants who answered the question). 36.8% (110/299) of women reported an impact of the pandemic on their current pregnancy experience or breastfeeding experience (8.2%, 46/555). Overall, 11.6% (170/1467) of participants who completed the validated screening tests for mental health symptoms (Edinburgh Postnatal Depression Scale, Generalized Anxiety Disorder 7, Perceived Stress Scale) presented a score compatible with symptoms of major depression, severe anxiety or high perceived stress, which is higher than in the pre-pandemic period according to literature. Risk factors independently associated with impaired mental health were being hospitalized, having symptoms of COVID-19, living with a person with COVID-19 symptoms, having comorbidities, having experienced reduced healthcare services, having restricted usual activities and being a housewife. Protective factors independently associated were a high level of education and living with a partner. Our findings suggest that the COVID-19 pandemic might have significantly affected the well-being and mental health of pregnant and breastfeeding women, directly in the case of exposure, and indirectly as a result of the potential

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## 2022-00108

**Baby Friendly Hospital Initiative Breastfeeding Outcomes in Mothers with COVID-19 Infection During the First Weeks of the Pandemic in Spain.** Neo-COVID-19 Research Group, Marín Gabriel MA, Domingo Goneche L, et al (2021), Journal of Human Lactation vol 37, no 4, November 2021, pp 639-648

### Background:

Adherence to the Ten Steps of the Baby-Friendly Hospital Initiative has been shown to have a protective role for the initiation and maintenance of breastfeeding.

### Research Aims:

(1) To determine the breastfeeding rate during the first 6 months of life in children of mothers diagnosed with COVID-19 infection at the time of birth; and (2) to assess the possible influence of being born in a center with Baby-Friendly Hospital Initiative accreditation.

### Methods:

This was a two-group comparative longitudinal observational study of infants born to mothers with COVID-19 at the time of birth, between March 13–May 31, 2020 (the first wave of the pandemic) in Spain. Fourteen Spanish hospitals participated, five (35.7%) were Baby-Friendly Hospital Initiative accredited. Type of feeding was assessed prospectively at discharge, 1, 3, and 6 months of age. A total of 248 newborns were included in the study.

### Results:

A total of 117 (47.3%) newborns were born in Baby-Friendly Hospital Initiative (BFHI) accredited centers. These centers applied skin-to-skin contact with greater probability (OR = 1.9; 95% CI [1.18, 3.29]) and separated the newborns from their mothers less frequently (OR = 0.46; 95% CI [0.26, 0.81]) than non-accredited centers. No differences were observed in relation to the presence of a companion at the time of birth. At discharge, 49.1% (n = 57) of newborns born in BFHI-accredited centers received exclusive breastfeeding versus 35.3% (n = 46) in non-accredited centers (p = .03). No differences were observed in breastfeeding rates throughout follow-up.

### Conclusions:

The exclusive breastfeeding rate at discharge in children of mothers with COVID-19 infection at birth was higher in Baby-Friendly Hospital Initiative accredited centers, which most frequently applied skin-to-skin contact at birth as well as rooming-in. (Author) [Erratum: Journal of Human Lactation, vol 38, no 2, May 2022, p 374.

<https://doi.org/10.1177/08903344221075066>

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## 2022-00082

**Breastfeeding experiences during the COVID-19 pandemic in Spain: a qualitative study.** Rodríguez-Gallego I, Strivens-Vilchez H, Agea-Cano I, et al (2022), International Breastfeeding Journal vol 17, no 11, 22 February 2022

**Full URL:** <https://doi.org/10.1186/s13006-022-00453-0>

### Background

The pandemic caused by COVID-19 has affected reproductive and perinatal health both through the infection itself and, indirectly, as a consequence of changes in medical care, social policy or social and economic circumstances.

The objective of this study is to explore the impact of the pandemic and of the measures adopted on breastfeeding initiation and maintenance.

### Methods

A qualitative descriptive study was conducted by means in-depth semi-structured interviews, until reaching data saturation. The study was conducted between the months of January to May 2021. Participants were recruited by

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midwives from the Primary Care Centres of the Andalusian provinces of Seville, Cádiz, Huelva, Granada, and Jaén. The interviews were conducted via phone call and were subsequently transcribed and analysed by means of reflexive inductive thematic analysis, using Braun and Clarke's thematic analysis.

## Results

A total of 30 interviews were conducted. Five main themes and ten subthemes were developed, namely: Information received (access to the information, figure who provided the information), unequal support from the professionals during the pandemic (support to postpartum hospitalization, support received from Primary Health Care during the postpartum period), social and family support about breastfeeding (support groups, family support), impact of confinement and of social restriction measures (positive influence on breastfeeding, influence on bonding with the newborn), emotional effect of the pandemic (insecurity and fear related to contagion by coronavirus, feelings of loneliness).

## Conclusion

The use of online breastfeeding support groups through applications such as WhatsApp®, Facebook® or Instagram® has provided important breastfeeding information and support sources. The main figure identified that has provided formal breastfeeding support during this period was that of the midwife. In addition, the social restrictions inherent to the pandemic have exerted a positive effect for women in bonding and breastfeeding, as a consequence of the increase in the time spent at their homes and in the family nucleus co-living. (Author)

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## 2022-00033

**A review of COVID-19 therapeutics in pregnancy and lactation.** Jorgensen SCJ, Tabbara N, Burry L (2022), *Obstetric Medicine* vol 15, no 4, December 2022, pp 225–232

Pregnant people have an elevated risk of severe COVID-19-related complications compared to their non-pregnant counterparts, underscoring the need for safe and effective therapies. In this review, we summarize published data on COVID-19 therapeutics in pregnancy and lactation to help inform clinical decision-making about their use in this population. Although no serious safety signals have been raised for many agents, data clearly have serious limitations and there are many important knowledge gaps about the safety and efficacy of key therapeutics used for COVID-19. Moving forward, diligent follow-up and documentation of outcomes in pregnant people treated with these agents will be essential to advance our understanding. Greater regulatory push and incentives are needed to ensure studies to obtain pregnancy data are expedited. (Author)

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## 2021-14558

**Adapting obstetric and neonatal services during the COVID-19 pandemic: a scoping review.** Gold S, Clarfield L, Johnstone J, et al (2022), *BMC Pregnancy and Childbirth* vol 22, no 119, 11 February 2022

**Full URL:** <https://doi.org/10.1186/s12884-022-04409-4>

## Background

The provision of care to pregnant persons and neonates must continue through pandemics. To maintain quality of care, while minimizing physical contact during the Severe Acute Respiratory Syndrome-related Coronavirus-2 (SARS-CoV2) pandemic, hospitals and international organizations issued recommendations on maternity and neonatal care delivery and restructuring of clinical and academic services. Early in the pandemic, recommendations relied on expert opinion, and offered a one-size-fits-all set of guidelines. Our aim was to examine these recommendations and provide the rationale and context to guide clinicians, administrators, educators, and researchers, on how to adapt maternity and neonatal services during the pandemic, regardless of jurisdiction.

## Method

Our initial database search used Medical subject headings and free-text search terms related to coronavirus infections, pregnancy and neonatology, and summarized relevant recommendations from international society guidelines. Subsequent targeted searches to December 30, 2020, included relevant publications in general medical

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and obstetric journals, and updated society recommendations.

## Results

We identified 846 titles and abstracts, of which 105 English-language publications fulfilled eligibility criteria and were included in our study. A multidisciplinary team representing clinicians from various disciplines, academics, administrators and training program directors critically appraised the literature to collate recommendations by multiple jurisdictions, including a quaternary care Canadian hospital, to provide context and rationale for viable options.

## Interpretation

There are different schools of thought regarding effective practices in obstetric and neonatal services. Our critical review presents the rationale to effectively modify services, based on the phase of the pandemic, the prevalence of infection in the population, and resource availability. (Author)

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## 2021-14511

**Pregnancy and neonatal outcomes of COVID-19: coreporting of common outcomes from PAN-COVID and AAP-SONPM registries.** Mullins E, Hudak ML, Banerjee J, et al (2021), *Ultrasound in Obstetrics and Gynecology* vol 57, no 4, April 2021, pp 573-581

**Full URL:** <https://doi.org/10.1002/uog.23619>

## Objective

Few large cohort studies have reported data on maternal, fetal, perinatal and neonatal outcomes associated with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection in pregnancy. We report the outcome of infected pregnancies from a collaboration formed early during the pandemic between the investigators of two registries, the UK and Global Pregnancy and Neonatal outcomes in COVID-19 (PAN-COVID) study and the American Academy of Pediatrics (AAP) Section on Neonatal-Perinatal Medicine (SONPM) National Perinatal COVID-19 Registry.

## Methods

This was an analysis of data from the PAN-COVID registry (1 January to 25 July 2020), which includes pregnancies with suspected or confirmed maternal SARS-CoV-2 infection at any stage in pregnancy, and the AAP-SONPM National Perinatal COVID-19 registry (4 April to 8 August 2020), which includes pregnancies with positive maternal testing for SARS-CoV-2 from 14 days before delivery to 3 days after delivery. The registries collected data on maternal, fetal, perinatal and neonatal outcomes. The PAN-COVID results are presented overall for pregnancies with suspected or confirmed SARS-CoV-2 infection and separately in those with confirmed infection.

## Results

We report on 4005 pregnant women with suspected or confirmed SARS-CoV-2 infection (1606 from PAN-COVID and 2399 from AAP-SONPM). For obstetric outcomes, in PAN-COVID overall and in those with confirmed infection in PAN-COVID and AAP-SONPM, respectively, maternal death occurred in 0.5%, 0.5% and 0.2% of cases, early neonatal death in 0.2%, 0.3% and 0.3% of cases and stillbirth in 0.5%, 0.6% and 0.4% of cases. Delivery was preterm (< 37 weeks' gestation) in 12.0% of all women in PAN-COVID, in 16.1% of those women with confirmed infection in PAN-COVID and in 15.7% of women in AAP-SONPM. Extreme preterm delivery (< 27 weeks' gestation) occurred in 0.5% of cases in PAN-COVID and 0.3% in AAP-SONPM. Neonatal SARS-CoV-2 infection was reported in 0.9% of all deliveries in PAN-COVID overall, in 2.0% in those with confirmed infection in PAN-COVID and in 1.8% in AAP-SONPM; the proportions of neonates tested were 9.5%, 20.7% and 87.2%, respectively. The rates of a small-for-gestational-age (SGA) neonate were 8.2% in PAN-COVID overall, 9.7% in those with confirmed infection and 9.6% in AAP-SONPM. Mean gestational-age-adjusted birth-weight Z-scores were -0.03 in PAN-COVID and -0.18 in AAP-SONPM.

## Conclusions

The findings from the UK and USA registries of pregnancies with SARS-CoV-2 infection were remarkably concordant. Preterm delivery affected a higher proportion of women than expected based on historical and contemporaneous

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national data. The proportions of pregnancies affected by stillbirth, a SGA infant or early neonatal death were comparable to those in historical and contemporaneous UK and USA data. Although maternal death was uncommon, the rate was higher than expected based on UK and USA population data, which is likely explained by underascertainment of women affected by milder or asymptomatic infection in pregnancy in the PAN-COVID study, although not in the AAP-SONPM study. The data presented support strong guidance for enhanced precautions to prevent SARS-CoV-2 infection in pregnancy, particularly in the context of increased risks of preterm delivery and maternal mortality, and for priority vaccination of pregnant women and women planning pregnancy. Copyright © 2021 ISUOG. Published by John Wiley & Sons Ltd. (Author)

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#### 2021-14507

##### **Examining the impact of the COVID-19 pandemic on maternal mental health during pregnancy and the postnatal period.**

McIntosh GC (2022), MIDIRS Midwifery Digest vol 32, no 1, March 2022, pp 67-73

By exploring physiological aspects of COVID-19 and its adaptations to pregnancy, this paper will examine its prevalence and physical effects, discussing the ramifications for mental health during pregnancy and the postpartum period. (Author, edited)

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#### 2021-14493

##### **Breastfeeding Practices During the SARS-CoV-2 Pandemic Were Influenced by Women's Life Event.**

Wanduru P, Başaran F, Örsal Ö (2022), The Journal of Perinatal and Neonatal Nursing vol 36, no 1, January/March 2022, pp 68-76

The severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) pandemic, which affects the whole world, negatively affects breastfeeding mothers and newborns. This study aimed to evaluate the breastfeeding practices influenced by women's life events and the breastfeeding women compliance with the rules established against the risk of SARS-CoV-2. This prospective cross-sectional online survey design study was carried out on 339 breastfeeding mothers between April 21 and May 10, 2020, in Turkey. Data were collected by an information form and the Impact of Events Scale-Revised (IES-R); 39.2% of breastfeeding mothers were traumatically affected by events experienced as a result of the pandemic. Study results reveal that breastfeeding mothers concerned about the risk of SARS-CoV-2 transmission to their infants through human milk or breastfeeding. Noncompliance with SARS-CoV-2 measures among breastfeeding women was high. Policymakers and healthcare providers should not ignore this situation. It may be beneficial to conduct consciousness-raising and awareness studies to increase the compliance ratios of breastfeeding women with the recommended measures to prevent SARS-CoV-2 transmission. (Author)

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#### 2021-14276

##### **Impact of the fear of Covid-19 infection on intent to breastfeed; a cross sectional survey of a perinatal population in Qatar.**

Reagu SM, Abuyaqoub S, Babarinsa I, et al (2022), BMC Pregnancy and Childbirth vol 22, no 104, 5 February 2022

**Full URL:** <https://doi.org/10.1186/s12884-022-04446-z>

##### **Objectives**

Infection control measures during the Covid-19 pandemic have focused on limiting physical contact and decontamination by observing cleaning and hygiene rituals. Breastfeeding requires close physical contact and observance of hygienic measures like handwashing. Worries around contamination increase during the perinatal period and can be expressed as increase in obsessive compulsive symptoms. These symptoms have shown to impact breastfeeding rates. This study attempts to explore any relationship between the Covid-19 pandemic and perinatal obsessive-compulsive symptomatology and whether the Covid-19 pandemic has any impact on intent to breastfeed.

##### **Methods**

A cross sectional survey of perinatal women attending largest maternity centre in Qatar was carried out during the months of October to December 2020. Socio-demographic information, intent to breastfeed and information around obsessive compulsive thoughts around Covid-19 pandemic were collected using validated tools.

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**Results**  
15.7% respondents report intent to not breastfeed. 21.4% respondents reported obsessive–compulsive symptoms. 77.3% respondents believed the biggest source of infection was from others while as only 12% of the respondents believed that the source of infection was through breastfeeding and 15.7% believed the vertical transmission as the main source of risk of transmission.

**Conclusions**  
The rates of Obsessive–compulsive symptoms were increased and the rates of intent to breastfeed were decreased when compared with pre pandemic rates. The obsessive–compulsive symptoms and the intent to not breastfeed were significantly associated with fear of infection to the new-born.

Obsessive–compulsive symptoms were not significantly correlated with intent to breastfeed and can be seen as adaptive strategies utilized by women to continue breastfeeding in the context of fear of infection. (Author)

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## 2021-14266

**The Implications of COVID-19 on Family-Centered Care in the NICU.** Merritt L, Verklan MT (2022), Neonatal Network: the Journal of Neonatal Nursing vol 41, no 1, January/February 2022, pp 45-50

During the recent COVID-19 pandemic, neonatal intensive care units (NICUs) issued strict visiting policies that limited parent visitation and impacted how family-centered care was practiced. This article describes how these visiting policies impacted parents and neonates. Implications for clinical practice and future research will also be discussed. (Author)

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## 2021-14172

**Placental infection with SARS-CoV-2, analysis of 16 cases and literature review.** Dadgar S, Mahmoudinia M, Akbari A, et al (2022), Archives of Gynecology and Obstetrics vol 305, no 5, May 2022, pp 1359-1367

### Purpose

Since December 2019, the whole world has been affected by coronavirus [severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)]. However, the effects of COVID-19 infection on pregnancy and fetal transmission are still unclear. Therefore, this study was conducted to evaluate placenta samples regarding detection of SARS-CoV-2 RNA in women affected with COVID-19.

### Method

This study was a part of a cohort study carried out on pregnant women with a diagnosis of COVID-19 infection who had been admitted to the Imam Reza Hospital in Mashhad, Iran, from March 20 to August 5, 2020. Clinical and laboratory information of all the patients was collected and chest computed tomography (CT) scans were reviewed. Totally, 16 placental tissue were prepared for real time polymerase chain reaction (RT-PCR) testing. All samples were tested by PowerChek PCR real-time kit (South Korea) with 2 target genes (E gene and Rd Rp gene), and Pishtaz Teb kit, (Iran) with 2 target genes (N gene and RdRp gene).

### Result

In the first RT-PCR kit by PowerChek kit, 6 samples were positive for a single gene (E gene) and 2 samples were positive for both genes (E gene and Rd Rp gene). In the second RT-PCR kit by Pishtaz Teb kit, 3 samples were positive for two genes (N gene and RdRp gene).

### Conclusion

This present study showed that infection of placenta with SARS-CoV-2 may occur in pregnancy. However, whether this infection leads to neonatal infection and serious complication in pregnancy remains unclear. (Author)

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## 2021-14053

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**Impact of COVID-19 on term admissions to neonatal care.** Hardy JM, Iqbal S, Geethanath RM (2022), Infant vol 18, no 1, January 2022, pp 35-38

This article analyses a retrospective study of the impact that the COVID-19 pandemic has had on term admissions to the neonatal intensive care unit (NICU) at Sunderland Royal Hospital. Using data gathered between 1 January 2020 and 31 December 2020, the results from this repeat audit are compared with admission data from previous years and with figures from NHS England. This audit considers the impact of the pandemic on term admissions to the NICU, with a focus on social causes and other potentially avoidable reasons for admission. (Author)

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## 2021-13878

**Neonatal outcome among pregnant women with COVID-19: a systematic review and meta-analysis.** Amirian A, Pakzad R, Hasanpour V, et al (2022), Journal of Maternal-Fetal and Neonatal Medicine vol 35, no 25, 2022, pp 9234-9248

### Background

COVID-19 has raised many concerns about the possible side effects of pregnancy. There is currently no conclusive evidence of the vertical transmission of COVID-19. Accordingly, this paper is a Systematic Review and Meta-Analysis investigated neonatal outcomes among pregnant women with COVID-19.

### Methods

PubMed, Web of Science (WoS), EMBASE, ProQuest, Scopus, and Google Scholar were searched up to November 2020. The Cochran's Q-test and I<sup>2</sup> statistic were applied to assess heterogeneity, a random-effects model was used to estimate the pooled estimate of the mean, and a meta-regression method was utilized to investigate the factors affecting heterogeneity between studies.

### Results

Of 1132 studies, 23 were included in the analysis (sample size: 749 for neonates and 820 for mothers). Most of these studies (n = 13) were conducted in China. The pooled estimate for the mean of birth weight, APGAR score in min 1 and 5 was 3084.97 g (95% CI: 2993.66–3176.29), 8.76 (95% CI: 8.27–9.25), and 9.44 (95% CI: 9.18–9.70), respectively. Also, the pooled prevalence of premature birth, shortness of breath, and neonatal death was 17.80% (95% CI: 12.47–23.13), 8.43% (95% CI: 4.50–12.37), and 7.73% (95% CI: 2.00–13.47), respectively. The meta-regression results indicated that the mother's age, disease duration, and sample size had no significant effect on heterogeneity between studies (p-value all of them was >.05). Finally, 15 studies (65.22%) reported that vertical transmission did not occur.

### Conclusion

The COVID-19 infection can have adverse outcomes for the newborn. Despite the positive test of neonates, the vertical transmission of COVID-19 from the infected mother to the fetus has not yet been conclusively proven; thus, further research is needed.(Author)

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## 2021-13837

**COVID-19-Associated Multisystem Inflammatory Syndrome in a Neonate with Atypical Coronary Artery Involvement.** Costa S, Delogu AB, Bottoni A, et al (2022), American Journal of Perinatology vol 29, no 14, October 2022, pp 1514-1518

**Objective** The study aimed to report a novel coronavirus disease 2019 (COVID-19)-associated multisystem inflammatory syndrome in children (MIS-C) in a neonate found to have an atypical diffuse thickening in coronary artery walls whose diagnosis required a multi-imaging approach.

**Study Design** A neonate presented at birth with multiple organ involvement and coronary artery anomalies. A diagnosis of MIS-C associated with COVID-19 was supported by maternal severe acute respiratory syndrome-coronavirus-2 (SARS-CoV-2) infection during pregnancy, and by the presence of both immunoglobulin (Ig)-G against SARS-CoV-2 and spike-specific memory B-cells response in the neonatal blood. Other plausible causes of the multiple organ involvement were excluded.

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**Result** At admission, a severe coronary artery dilatation was identified on echocardiography, supporting the diagnosis of the MIS-C Kawasaki-like disease; however, coronary artery internal diameters were found to be normal using cardiac computed tomography angiography. At discharge, comparing the two imaging techniques each other, the correct diagnosis resulted to be an abnormal thickening in coronary arterial walls. These findings suggest that the inflammatory process affecting the coronary arterial wall in MIS-C could result not only in typical coronary artery lesions such as dilatation of the lumen or aneurysms development but also in abnormal thickening of the coronary artery wall.

**Conclusion** Our case provides an alert for pediatric cardiologists about the complexity to assess coronary artery involvement in MIS-C and raises the question that whether an abnormal vascular remodeling, with normal inner diameters, is to be considered like coronary artery dilatation for risk stratification. (Author)

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## 2021-13818

**COVID-19 and vertical transmission: assessing the expression of ACE2/TMPRSS2 in the human fetus and placenta to assess the risk of SARS-CoV-2 infection.** Beesley MA, Davidson JR, Panariello F, et al (2022), BJOG: An International Journal of Obstetrics and Gynaecology vol 129, no 2, January 2022, pp 256-266

**Full URL:** <https://doi.org/10.1111/1471-0528.16974>

### Background

Pregnant women have been identified as a potentially at-risk group concerning COVID-19 infection, but little is known regarding the susceptibility of the fetus to infection. Co-expression of ACE2 and TMPRSS2 has been identified as a prerequisite for infection, and expression across different tissues is known to vary between children and adults. However, the expression of these proteins in the fetus is unknown.

### Methods

We performed a retrospective analysis of a single cell data repository. The data were then validated at both gene and protein level by performing RT-qPCR and two-colour immunohistochemistry on a library of second-trimester human fetal tissues.

### Findings

TMPRSS2 is present at both gene and protein level in the predominantly epithelial fetal tissues analysed. ACE2 is present at significant levels only in the fetal intestine and kidney, and is not expressed in the fetal lung. The placenta also does not co-express the two proteins across the second trimester or at term.

### Interpretation

This dataset indicates that the lungs are unlikely to be a viable route of SARS-CoV2 fetal infection. The fetal kidney, despite presenting both the proteins required for the infection, is anatomically protected from the exposure to the virus. However, the gastrointestinal tract is likely to be susceptible to infection due to its high co-expression of both proteins, as well as its exposure to potentially infected amniotic fluid.

### Tweetable abstract

This work provides detailed mechanistic insight into the relative protection & vulnerabilities of the fetus & placenta to SARS-CoV-2 infection by scRNAseq & protein expression analysis for ACE2 & TMPRSS2. The findings help to explain the low rate of vertical transmission. (Author)

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## 2021-13809

**Maternal-Newborn Health System Changes and Outcomes in Ontario, Canada, During Wave 1 of the COVID-19 Pandemic—A Retrospective Study.** Roberts NF, Sprague AE, Taljaard M, et al (2022), JOGC [Journal of Obstetrics and Gynaecology Canada] vol 44, no 6, June 2022, pp 664-674

**Full URL:** <https://doi.org/10.1016/j.jogc.2021.12.006>

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## Objective

To determine the population-level impact of COVID-19 pandemic-related obstetric practice changes on maternal and newborn outcomes.

## Methods

Segmented regression analysis examined changes that occurred 240 weeks pre-pandemic through the first 32 weeks of the pandemic using data from Ontario's Better Outcomes Registry & Network. Outcomes included birth location, length of stay, labour analgesia, mode of delivery, preterm birth, and stillbirth. Immediate and gradual effects were modelled with terms representing changes in intercepts and slopes, corresponding to the start of the pandemic.

## Results

There were 799 893 eligible pregnant individuals included in the analysis; 705 767 delivered in the pre-pandemic period and 94,126 during the pandemic wave 1 period. Significant immediate decreases were observed for hospital births (relative risk [RR] 0.99; 95% CI 0.98–0.99), length of stay (median change –3.29 h; 95% CI –3.81 to –2.77), use of nitrous oxide (RR 0.11; 95% CI 0.09–0.13) and general anesthesia (RR 0.69; 95% CI 0.58–0.81), and trial of labour after cesarean (RR 0.89; 95% CI 0.83–0.96). Conversely, there were significant immediate increases in home births (RR 1.35; 95% CI 1.21–1.51), and use of epidural (RR 1.02; 95% CI 1.01–1.04) and regional anesthesia (RR 1.01; 95% CI 1.01–1.02). There were no significant immediate changes for any other outcomes, including preterm birth (RR 0.99; 95% CI 0.93–1.05) and stillbirth (RR 1.11; 95% CI 0.87–1.42).

## Conclusion

Provincial health system changes implemented at the start of the pandemic resulted in immediate clinical practice changes but no significant increases in adverse outcomes. (Author)

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## 2021-13753

**Large gaps in the quality of healthcare experienced by Swedish mothers during the COVID-19 pandemic: a cross-sectional study based on WHO standards.** Zaigham M, Linden K, Sengpiel V, et al (2022), Women and Birth: Journal of the Australian College of Midwives vol 35, no 6, November 2022, pp 619-627

**Full URL:** <https://doi.org/10.1016/j.wombi.2022.01.007>

## Background and Problem

Existing healthcare systems have been put under immense pressure during the COVID-19 pandemic. Disruptions in essential maternal and newborn services have come from even high-income countries within the World Health Organization (WHO) European Region.

## Aim

To describe the quality of care during pregnancy and childbirth, as reported by the women themselves, during the COVID-19 pandemic in Sweden, using the WHO 'Standards for improving quality of maternal and newborn care in health facilities'.

## Methods

Using an anonymous, online questionnaire, women  $\geq 18$  years were invited to participate if they had given birth in Sweden from March 1, 2020 to June 30, 2021. The quality of maternal and newborn care was measured using 40 questions across four domains: provision of care, experience of care, availability of human/physical resources, and organisational changes due to COVID-19.

## Findings

Of the 5003 women included,  $n = 4528$  experienced labour. Of these, 46.7% perceived a poorer quality of maternal and newborn care due to the COVID-19. Fundal pressure was applied in 22.2% of instrumental vaginal births, 36.8% received inadequate breastfeeding support and 6.9% reported some form of abuse. Findings were worse in women undergoing prelabour Caesarean section (CS) ( $n = 475$ ). Multivariate analysis showed significant associations of the quality of maternal and newborn care to year of birth ( $P < 0.001$ ), parity ( $P < 0.001$ ), no pharmacological pain relief ( $P < 0.001$ ), prelabour CS ( $P < 0.001$ ), emergency CS ( $P < 0.001$ ) and overall satisfaction ( $P < 0.001$ ).

## Conclusion

Considerable gaps over many key quality measures and deviations from women-centred care were noted. Findings were worse in women with prelabour CS. Actions to promote high-quality, evidence-based and respectful care during childbirth for all mothers are urgently needed. (Author)

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2021-13697

**Protection challenges of pregnant women against vertical transmission during COVID-19 epidemic: A narrative review.**

Hasnain M, Pasha MF, Ghani I, et al (2021), American Journal of Infection Control vol 48, no 12, December 2021, pp 1516-1519

**Full URL:** <https://doi.org/10.1016/j.ajic.2020.06.206>

This paper presents a narrative review study of 5 popular data repositories focusing on challenges of pregnant women protection during the COVID-19 pandemic. The study concludes that the likelihood of a vertical transmission of COVID-19 infection from pregnant women to neonates was not observed. Nevertheless, it remains a serious risk for them during their earlier stage of pregnancy, thus, special attention from health professionals has been recommended. (Author)

2021-13517

**Association of Birth During the COVID-19 Pandemic With Neurodevelopmental Status at 6 Months in Infants With and Without In Utero Exposure to Maternal SARS-CoV-2 Infection.** Shuffrey LC, Firestein MR, Kyle MH, et al (2022), JAMA Pediatrics 4 January 2022, online

**Full URL:** <https://doi.org/10.1001/jamapediatrics.2021.5563>

**Importance** Associations between in utero exposure to maternal SARS-CoV-2 infection and neurodevelopment are speculated, but currently unknown.

**Objective** To examine the associations between maternal SARS-CoV-2 infection during pregnancy, being born during the COVID-19 pandemic regardless of maternal SARS-CoV-2 status, and neurodevelopment at age 6 months.

**Design, Setting, and Participants** A cohort of infants exposed to maternal SARS-CoV-2 infection during pregnancy and unexposed controls was enrolled in the COVID-19 Mother Baby Outcomes Initiative at Columbia University Irving Medical Center in New York City. All women who delivered at Columbia University Irving Medical Center with a SARS-CoV-2 infection during pregnancy were approached. Women with unexposed infants were approached based on similar gestational age at birth, date of birth, sex, and mode of delivery. Neurodevelopment was assessed using the Ages & Stages Questionnaire, 3rd Edition (ASQ-3) at age 6 months. A historical cohort of infants born before the pandemic who had completed the 6-month ASQ-3 were included in secondary analyses.

**Exposures** Maternal SARS-CoV-2 infection during pregnancy and birth during the COVID-19 pandemic.

**Main Outcomes and Measures** Outcomes were scores on the 5 ASQ-3 subdomains, with the hypothesis that maternal SARS-CoV-2 infection during pregnancy would be associated with decrements in social and motor development at age 6 months.

**Results** Of 1706 women approached, 596 enrolled; 385 women were invited to a 6-month assessment, of whom 272 (70.6%) completed the ASQ-3. Data were available for 255 infants enrolled in the COVID-19 Mother Baby Outcomes Initiative (114 in utero exposed, 141 unexposed to SARS-CoV-2; median maternal age at delivery, 32.0 [IQR, 19.0-45.0] years). Data were also available from a historical cohort of 62 infants born before the pandemic. In utero exposure to maternal SARS-CoV-2 infection was not associated with significant differences on any ASQ-3 subdomain, regardless of infection timing or severity. However, compared with the historical cohort, infants born during the pandemic had significantly lower scores on gross motor (mean difference, -5.63; 95% CI, -8.75 to -2.51;  $F_{1,267} = 12.63$ ;  $P < .005$ ), fine motor (mean difference, -6.61; 95% CI, -10.00 to -3.21;  $F_{1,267} = 14.71$ ;  $P < .005$ ), and personal-social (mean difference, -3.71; 95% CI, -6.61 to -0.82;  $F_{1,267} = 6.37$ ;  $P < .05$ ) subdomains in fully adjusted models.

**Conclusions and Relevance** In this study, birth during the pandemic, but not in utero exposure to maternal SARS-CoV-2 infection, was associated with differences in neurodevelopment at age 6 months. These early findings

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## 2021-13516

**Covid-19: Babies born during the pandemic show slight development delays.** Wise J (2022), BMJ vol 376, no 8321, 7 January 2022, o29

Full URL: <https://doi.org/10.1136/bmj.o29>

Babies born during the pandemic's first year scored slightly lower on a developmental screening test at six months compared with babies born just before the pandemic, a small study has found (1).

1. Shuffrey LC et al. JAMA Pediatrics, 4 January 2022, online. <https://doi.org/10.1001/jamapediatrics.2021.5563>.  
(Author, edited)

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## 2021-13454

**Babies in England hospitals with Omicron as a precaution.** Roberts M (2022), BBC News 14 January 2022

Full URL: <https://www.bbc.co.uk/news/health-59978516>

More babies are going to hospital with Covid during this latest Omicron wave but they are not very sick with the virus, say UK experts - based on the available data since December. (Author)

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## 2021-13346

**Belgian twins born with the Gamma variant of SARS-CoV-2: Transplacental versus intrapartum transmission?** Massa H, Seyler L, Cras L, et al (2021), European Journal of Obstetrics & Gynecology and Reproductive Biology vol 264, September 2021, pp 383-384

Full URL: <https://doi.org/10.1016/j.ejogrb.2021.07.017>

Correspondence piece presenting the case of Belgian twins born with the Gamma variant of SARS-CoV-2. The mother tested positive for COVID-19 in the week prior to her admission and delivered the twins vaginally with epidural analgesia. The twins tested positive four hours after the birth as a result of intrapartum transmission, suggesting that vaginal secretions should be screened in future to prevent the risk of infection. (LDO)

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## 2021-13339

**Pandemic visitor policies: Parent reactions and policy implications.** Vance AJ, Malin KJ, Benjamin A, et al (2022), Acta Paediatrica vol 111, no 3, March 2022, pp 604-606

Full URL: <https://doi.org/10.1111/apa.16208>

Brief report aiming to report parental concerns and reactions to visitor policies in the neonatal intensive care unit (NICU) during the COVID-19 pandemic. Findings revealed that there were unintended consequences of visitor policies that did not acknowledge the family as a whole, such as parents being unable to visit together. (LDO)

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## 2021-13338

**Preterm birth during the COVID-19 pandemic: Parental experience.** Marino LV, Collaço N, Johnson MJ, et al (2022), Acta Paediatrica vol 111, no 4, April 2022, pp 772-773

Full URL: <https://doi.org/10.1111/apa.16229>

Brief report aiming to explore the experiences, support needs and decision making of parents with preterm or unwell infants in the neonatal intensive care unit (NICU) during the COVID-19 pandemic. Findings revealed that parents were significantly emotionally and psychologically impacted by the pandemic, and they reported feeling lonely and missing out on valuable bonding time with their infants. (LDO)

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## 2021-13268

**Waning infant pertussis during COVID-19 pandemic.** Falkenstein-Hagander K, Appelqvist E, Cavefors A-SF, et al (2022), Archives of Disease in Childhood vol 107, no 3, March 2022, p e19

Full URL: <http://dx.doi.org/10.1136/archdischild-2021-323055>

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Measures to reduce the spread of COVID-19 have been associated with reduction in other respiratory infections. Results of a national Swedish cohort study of infant pertussis during April 2020–September 2021 were compared with those during January 2014–March 2020. The number of pertussis cases decreased significantly during the COVID-19 pandemic, from an average of 21 infant cases per quarter of a year before the pandemic to an average of 1 case per quarter during the pandemic. Swedish strategies to mitigate the spread of COVID-19 seem to have had an impact on pertussis incidence in infants. (Author)

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## 2021-13211

**Impact of Prenatal SARS-CoV-2 Infection on Infant Emergency Department Visits and Hospitalization.** Ungar SP, Solomon S, Stachel A, et al (2022), *Clinical Pediatrics* vol 61, no 2, February 2022, pp 206-211

To better understand the impact of prenatal severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection on infants, this study sought to compare the risk of hospital visits and of postnatal SARS-CoV-2 infection between infants born to mothers with and without prenatal SARS-CoV-2 infection. In this retrospective observational cohort study of 6871 mothers and their infants, overall rates of emergency department (ED) visits and hospital admissions in the first 90 days of life were similar for infants born to mothers with and without prenatal SARS-CoV-2 infection. Infants born to negative mothers were more likely than infants of positive mothers to be hospitalized after ED visit (relative risk: 3.76; 95% confidence interval: 1.27-11.13,  $P = .003$ ). Five infants tested positive; all were born to negative mothers, suggesting that maternal prenatal SARS-CoV-2 infection may protect infants from postnatal infection. The lower acuity ED visits for infants born to mothers with prenatal SARS-CoV-2 infection may reflect a heightened level of concern among these mothers. (Author)

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## 2021-13195

**The Impact of COVID-19 on Breastfeeding Rates in a Low-Income Population.** Koleilat M, Whaley SE, Clapp C (2022), *Breastfeeding Medicine* vol 17, no 1, January 2022, pp 33-37

Full URL: <https://doi.org/10.1089/bfm.2021.0238>

Objective: To examine the impact of the coronavirus disease 2019 (COVID-19) pandemic on breastfeeding outcomes among participants of the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) in Southern California.

Materials and Methods: Data from the 2020 Los Angeles County triennial WIC Survey were used to examine the impact of COVID-19 on breastfeeding outcomes among WIC participants. Chi-square tests were used to explore the association between the COVID-19 pandemic and breastfeeding outcomes along with hospital-friendly practices.

Results: Compared with infants born before March 2020, the percentage of infants who received any breastfeeding at 1 month decreased from 79.66% to 76.96% ( $p = 0.139$ ). The percentage of infants who received any breastfeeding at 3 and 6 months significantly decreased from 64.57% to 56.79% ( $p = 0.001$ ) and from 48.69% to 38.62% ( $p = 0.0035$ ), respectively. The percentage of infants fully breastfed at 1, 3, and 6 months significantly decreased at all time points. Examining hospital practices, there were no differences between the before and during COVID-19 groups.

Conclusions: The prevalence of any breastfeeding at 3 and 6 months and fully breastfeeding at 1, 3, and 6 months was significantly lower among mothers who gave birth during the pandemic compared with mothers who gave birth before the pandemic. The shift to remote services delivery and the corresponding reduction in live support of WIC services owing to the pandemic may explain the decline in the breastfeeding rate. As the nation and the WIC program prepare for the postpandemic life, it is critical to ensure that breastfeeding support is met in a hybrid of remote and face-to-face settings. (Author)

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## 2021-13127

**Impact of the COVID-19 pandemic on perinatal care and outcomes in the United States: An interrupted time series analysis.**

Riley T, Nethery E, Chung EK, et al (2022), *Birth* vol 49, no 2, June 2022, pp 298-309

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Full URL: <https://doi.org/10.1111/birt.12606>

## Background

Hospitals quickly adapted perinatal care to mitigate SARS-CoV-2 transmission at the onset of the COVID-19 pandemic. The objective of this study was to estimate the impact of pandemic-related hospital policy changes on perinatal care and outcomes in one region of the United States.

## Methods

This interrupted time series analysis used retrospective data from consecutive singleton births at 15 hospitals in the Pacific Northwest from 2017 to 2020. The primary outcomes were those hypothesized to be affected by pandemic-related hospital policies and included labor induction, epidural use, oxytocin augmentation, mode of delivery, and early discharge (<48 hours after cesarean and <24 hours after vaginal births). Secondary outcomes included preterm birth, severe maternal morbidity, low 5-minute Apgar score, neonatal intensive care unit (NICU) admission, and 30-day readmission. Segmented Poisson regression models estimated the outcome level shift changes after the pandemic onset, controlling for underlying trends, seasonality, and stratifying by parity.

## Results

No statistically significant changes were detected in intrapartum interventions or mode of delivery after onset of the pandemic. Early discharge increased for all births following cesarean and vaginal birth. Newborn readmission rates increased but only among nulliparas (aRR: 1.49, 95%CI: 1.17, 1.91). Among multiparas, decreases were observed in preterm birth (aRR: 0.90, 95%CI: 0.84, 0.96), low 5-minute Apgar score (aRR: 0.75, 95%CI: 0.68, 0.81), and term NICU admission rates (aRR: 0.85, 95%CI: 0.80, 0.91).

## Conclusions

Increases in early discharge and newborn readmission rates among nulliparas suggest a need for more postpartum support during the pandemic. Decreases in preterm birth and term NICU admission among multiparas may have implications beyond the pandemic and deserve further study. (Author)

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## 2021-13101

**Transplacental transfer of SARS-CoV-2 antibodies in recovered and BNT162b2-vaccinated patients.** Treger S, Shiloh SR, Ben-Valid T, et al (2022), American Journal of Obstetrics & Gynecology (AJOG) vol 226, no 4, April 2022, pp 587-589.e2

Full URL: <https://doi.org/10.1016/j.ajog.2021.11.1365>

Research letter aiming to assess the transplacental transfer of anti-SARS-CoV-2 antibodies in women vaccinated with the BNT162b2 vaccine during the second and third trimester. The study found a high neonatal and maternal antibody ratio, and neonatal antibody levels were higher than maternal levels in both vaccinated and recovered patients. (LDO)

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## 2021-12891

**Neutralizing Antibodies and Cytokines in Breast Milk After Coronavirus Disease 2019 (COVID-19) mRNA Vaccination.**

Narayanaswamy V, Pentecost BT, Schoen CN, et al (2022), Obstetrics & Gynecology vol 139, no 2, February 2022, pp 181-191

Full URL: <https://doi.org/10.1097/AOG.0000000000004661>

### OBJECTIVE:

To evaluate immune responses to coronavirus disease 2019 (COVID-19) mRNA-based vaccines present in breast milk and transfer of the immune responses to breastfeeding infants.

### METHODS:

We enrolled 30 lactating women who received mRNA-based COVID-19 vaccines from January through April 2021 in this cohort study. Women provided serial milk samples, including milk expressed before vaccination, across 2–3 weeks after the first dose, and across 3 weeks after the second dose. Women provided their blood, spotted on cards (dried blood spots), 19 days after the first dose and 21 days after the second dose. Stool samples from the breastfed infants were collected 21 days after mothers' second vaccination. Prepandemic samples of milk, dried blood spots, and infant

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stool were used as controls. Milk, dried blood spots, and infant stool were tested by enzyme-linked immunosorbent assay for receptor-binding domain (RBD)-specific immunoglobulin (Ig)A and IgG. Milk samples were tested for the presence of neutralizing antibodies against the spike and four variants of concern: D614G, Alpha (B.1.1.7), Beta (B.1.351), and Gamma (P.1). Levels of 10 cytokines were measured in milk samples.

#### RESULTS:

Milk from COVID-19-immunized women neutralized the spike and four variants of concern, primarily driven by anti-RBD IgG. The immune response in milk also included significant elevation of interferon- $\gamma$ . The immune response to maternal vaccination was reflected in breastfed infants: anti-RBD IgG and anti-RBD IgA were detected in 33% and 30% of infant stool samples, respectively. Levels of anti-RBD antibodies in infant stool correlated with maternal vaccine side effects. Median antibody levels against RBD were below the positive cutoffs in prepandemic milk and infant stool samples.

#### CONCLUSION:

Humoral and cellular immune responses to mRNA-based COVID-19 vaccination are present in most women's breast milk. The milk anti-RBD antibodies can neutralize severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) spike and variants of concern. Anti-RBD antibodies are transferred to breastfed infants, with the potential to confer passive immunity against SARS-CoV-2. (Author)

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#### 2021-12865

**Extremely Preterm Infant Admissions Within the SafeBoosC-III Consortium During the COVID-19 Lockdown.** Rasmussen MI, Hansen ML, Pichler G, et al (2021), *Frontiers in Pediatrics* 12 July 2021, online

Full URL: <https://doi.org/10.3389/fped.2021.647880>

Objective: To evaluate if the number of admitted extremely preterm (EP) infants (born before 28 weeks of gestational age) differed in the neonatal intensive care units (NICUs) of the SafeBoosC-III consortium during the global lockdown when compared to the corresponding time period in 2019.

Design: This is a retrospective, observational study. Forty-six out of 79 NICUs (58%) from 17 countries participated. Principal investigators were asked to report the following information: (1) Total number of EP infant admissions to their NICU in the 3 months where the lockdown restrictions were most rigorous during the first phase of the COVID-19 pandemic, (2) Similar EP infant admissions in the corresponding 3 months of 2019, (3) the level of local restrictions during the lockdown period, and (4) the local impact of the COVID-19 lockdown on the everyday life of a pregnant woman.

Results: The number of EP infant admissions during the first wave of the COVID-19 pandemic was 428 compared to 457 in the corresponding 3 months in 2019 (-6.6%, 95% CI -18.2 to +7.1%,  $p = 0.33$ ). There were no statistically significant differences within individual geographic regions and no significant association between the level of lockdown restrictions and difference in the number of EP infant admissions. A post-hoc analysis based on data from the 46 NICUs found a decrease of 10.3% in the total number of NICU admissions ( $n = 7,499$  in 2020 vs.  $n = 8,362$  in 2019).

Conclusion: This ad hoc study did not confirm previous reports of a major reduction in the number of extremely preterm births during the first phase of the COVID-19 pandemic.

Clinical Trial Registration: [ClinicalTrial.gov](https://clinicaltrials.gov), identifier: NCT04527601 (registered August 26, 2020), <https://clinicaltrials.gov/ct2/show/NCT04527601>. (Author)

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#### 2021-12864

**The impact of the COVID pandemic on prematurity rates: Conflicting results, publication ethics and academic frustration.**

Greisen G, Chalak L, Hansen ML, et al (2022), *Acta Paediatrica* vol 111, no 2, February 2022, pp 269-271

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Full URL: <https://doi.org/10.1111/apa.16164>

The authors discuss their paper on COVID-19 and prematurity rates which was rejected by three medical journals and subsequently published in June 2021 (1). Highlights the issue of publication bias and the role of editors in publishing both positive and negative findings.

1. Rasmussen MI. *Frontiers in Pediatrics*, 12 July 2021, online. <https://doi.org/10.3389/fped.2021.647880>. (LDO)

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## 2021-12600

**You and your baby: a national survey of health and care during the 2020 Covid-19 pandemic.** Harrison S, Alderdice F, Mcleish J, et al (2021), Oxford: National Perinatal Epidemiology Unit, University of Oxford December 2021, 97 pages

Full URL: [https://www.npeu.ox.ac.uk/assets/downloads/maternity-surveys/reports/You\\_and\\_Your\\_Baby\\_2020\\_Survey\\_Report.pdf](https://www.npeu.ox.ac.uk/assets/downloads/maternity-surveys/reports/You_and_Your_Baby_2020_Survey_Report.pdf)

You and Your Baby 2020 explored the health and experiences of maternity care for women who gave birth during the first wave of the Covid-19 pandemic. The study included a survey of 4,611 women recruited through the register of all births in England (the 2020 National Maternity Survey (NMS)). The women in the 2020 NMS gave birth in England during May 2020.

The study also included a parallel survey of 1,622 women recruited through social media. The women in the social media survey gave birth in the UK between March and August 2020.

The findings indicate that some aspects of women's health and maternity care remained consistent or even improved during Covid-19, compared with findings from before the pandemic. Overall levels of satisfaction with care during pregnancy and birth remained high. The findings also indicate, however, that other aspects of women's health and care were negatively impacted by Covid-19, particularly after giving birth. Overall levels of satisfaction with care during the postnatal period fell considerably compared with findings from before the pandemic.

Taken together the survey findings suggest that giving birth during the Covid-19 pandemic may have brought additional stresses for women and families at what can already be a challenging time. Covid-19 may have introduced new challenges to maternity services and also amplified some of the existing problems in parts of the system. (Author)

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## 2021-12473

**Neonatal Outcomes of Premature Infants Born to Women with the Novel Coronavirus (SARS-CoV-2) Infection: A Case Control Study.** Yasa B, Memur S, Ozturk DY, et al (2023), *American Journal of Perinatology* vol 40, no 15, November 2023, pp 1715-1724

**Objective** Novel coronavirus disease 2019 (COVID-19) is a disease associated with atypical pneumonia caused by the severe acute respiratory syndrome-coronavirus-2 (SARS-CoV-2). The first cases of COVID-19 were reported in Wuhan at the end of 2019. Transmission usually occurs via infected droplets and close personal contact; the possibility of vertical transmission is still under debate. This retrospective study aimed to analyze clinical characteristics of premature infants born to mothers with symptomatic COVID-19 disease.

**Study Design** This case control study compared the clinical and laboratory data of 20 premature infants born to mothers infected with SARS-CoV-2 with sex and gestational age-matched historical controls.

**Results** The median gestational age and birth weight in both groups were similar. Respiratory distress developed in 11 (55.5%) infants in study group and 19 (47.5%) infants in control group. Mechanical ventilation and endotracheal surfactant administration rates were similar. Median duration of hospitalization was 8.5 (2–76) days in study group and 12 days in historical controls. Real-time reverse-transcription polymerase chain reaction tests (RT-PCR) of nasopharyngeal swab samples for SARS-CoV-2 were found to be negative twice, in the first 24 hours and later at 24 to 48 hours of life. No neutropenia or thrombocytopenia was detected in the study group. Patent ductus arteriosus,

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bronchopulmonary dysplasia, and necrotizing enterocolitis rates were similar between groups. No mortality was observed in both groups.

**Conclusion** To the best of our knowledge, this is one of the few studies evaluating the clinical outcomes of premature infants born to SARS-CoV-2 infected mothers. There was no evidence of vertical transmission of SARS-CoV-2 from symptomatic SARS-CoV-2-infected women to the neonate in our cohort. The neonatal outcomes also seem to be favorable with no mortality in preterm infants. (Author)

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## 2021-12421

**Pregnant women and infants against the infection risk of COVID-19: a review of prenatal and postnatal symptoms, clinical diagnosis, adverse maternal and neonatal outcomes, and available treatments.** Khedmat L, Mohaghegh P, Veysizadeh M, et al (2022), Archives of Gynecology and Obstetrics vol 306, no 2, August 2022, pp 323-335

**Full URL:** <https://doi.org/10.1007/s00404-021-06325-y>

### Background

The establishment of a risk-appropriate care approach for pregnant women and newborn infants under the COVID-19 pneumonia is vital to prevent the main pregnancy complications.

### Objectives and design

This study reviewed the vertical transmission (VT) potential of COVID-19 pneumonia in pregnant women. Key-related symptoms and adverse clinical outcomes for mothers and infants before and after childbirth were summarized. Some practical therapies and preventive health solutions were also proposed.

### Results

There was a high susceptibility in pregnant women to COVID-19 infection, especially in the third trimester of pregnancy. The most common symptoms in 22–40-year-old patients infected with COVID-19 were fever (87.6%), cough (52.3%), dyspnea (27.6%), fatigue (22.4%), sore throat (13.5%), malaise (9.4%), and diarrhea (3.4%), respectively. The viral infection led to an increase in preterm labor and cesarean delivery without any intrauterine infection and severe neonatal asphyxia. No infection in the newborn infants was reported despite a high risk of the VT phenomenon. The most important therapies were the reception of antiviral and antibiotic drugs, oxygenation therapy, psychological interventions, and food supplements with health-promoting effects. The best proposed medical strategies to control the COVID-19 infection were bi-monthly screening and following-up the mothers' and fetuses' health, not using the potent broad-spectrum antibiotics and corticosteroids, providing the delivery room with negative pressure for emergency cesarean section, and the immediate isolation of newborns after childbirth without direct breastfeeding.

### Conclusion

Babies with respiratory problems may be born to some mothers with COVID-19, who have weak immune systems. Thus, the virus transmission cycle should be disrupted to prevent adverse maternal and fetal outcomes by integrating individual health guidelines, efficient medical care therapies, and hospital preventive practices. (Author)

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## 2021-12379

**Neonatal Outcomes of Pregnant Women With Confirmed Coronavirus Disease 2019: One-Year Experience of a Tertiary Care Center.** Melekoglu NA, Ozdemir H, Yasar S (2022), Clinical Pediatrics vol 61, no 2, February 2022, pp 177-183

The coronavirus disease 2019 (COVID-19) pandemic became an important public health problem affecting all age groups. The aim of this study was to evaluate clinical and laboratory findings of newborns born to mothers with COVID-19. Thirty pregnant women with COVID-19 were admitted to Turgut Ozal University Hospital for delivery. Fourteen pregnant women had at least one symptom associated with COVID-19. Positive polymerase chain reaction (PCR) results were seen in only 3 (9.7%) of 31 newborns. A statistically significant difference was observed between PCR-positive and PCR-negative newborns in terms of any adverse pregnancy outcomes. Neonatal lymphocyte count and partial arterial oxygen pressure were significantly lower in the PCR-positive group. Results were also compared

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according to the interval from the maternal diagnosis time to delivery. Hemoglobin and hematocrit levels in newborns born to mothers diagnosed more than 7 days before delivery were significantly lower. Neonates born to mothers with COVID-19 had mild clinical symptoms and favorable outcomes. (Author)

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## 2021-12366

**Functional Antibodies Against SARS-CoV-2 Receptor Binding Domain Variants with Mutations N501Y or E484K in Human Milk from COVID-19-Vaccinated, -Recovered, and -Unvaccinated Women.** Demers-Mathieu V, Hakansson AP, Hall S, et al (2022), Breastfeeding Medicine vol 17, no 2, February 2022, pp 163-172

**Full URL:** <https://doi.org/10.1089/bfm.2021.0232>

**Background:** New variants are evolving in severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), and receptor binding domain (RBD) mutations have been associated with a higher capacity to evade neutralizing antibodies (NABs). We aimed at determining the impact of COVID-19 vaccine and infection on human milk antibody titers and activity against the RBD mutations from SARS-CoV-2 variants of concern.

**Materials and Methods:** Milk samples were collected from 19 COVID-19 vaccinated women, 10 women who had a positive COVID-19 PCR test, and 13 unvaccinated women. The titers and NABs of secretory IgA (SIgA)/IgA, secretory IgM (IgM)/IgM, and IgG against SARS-CoV-2 RBD with mutations N501Y or E484K were measured by using ELISA and a surrogate virus neutralization assay.

**Results:** The titers of human milk IgG against N501Y were higher in the COVID-19 vaccine group than in the no-vaccine group but comparable with the COVID-19 PCR group. Other antibody titers did not differ between the three groups. The titers of SIgA/IgA were higher than those of SIgM/IgM and IgG in all three groups. The titers of SIgM/IgM and the inhibition of NABs were higher against the mutation E484K than N501Y. Milk NAB did not differ between the three groups, but the inhibition of NAB against binding of the two mutant RBD proteins to their receptor was higher in the COVID-19 vaccine and PCR groups than in milk from prepandemic women.

**Conclusions:** COVID-19 vaccination and exposure of mothers to SARS-CoV-2 influenced the titers and NABs in breast milk against the variants of concern. (Author)

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## 2021-12233

**Prolonged rectal shedding of SARS-CoV-2 in a 22-day-old-neonate: a case report.** Holm-Jacobsen JN, Vonasek JH, Hagstrøm S, et al (2021), BMC Pediatrics vol 21, no 506, 12 November 2021

**Full URL:** <https://doi.org/10.1186/s12887-021-02976-7>

### Background

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) causes the novel coronavirus disease 2019 (COVID-19), which is characterized by a diverse clinical picture. Children are often asymptomatic or experience mild symptoms and have a milder disease course compared to adults. Rectal shedding of SARS-CoV-2 has been observed in both adults and children, suggesting the fecal-oral route as a potential route of transmission. However, only a few studies have investigated this in neonates. We present a neonate with a mild disease course and prolonged rectal SARS-CoV-2 shedding.

### Case presentation

A 22-day old neonate was admitted to the hospital with tachycardia and a family history of COVID-19. The boy later tested positive for COVID-19. His heart rate normalized overnight without intervention, but a grade 1/6 heart murmur on the left side of the sternum was found. After excluding signs of heart failure, the boy was discharged in a habitual state after three days of admission. During his admission, he was enrolled in a clinical study examining the rectal shedding of SARS-CoV-2. He was positive for SARS-CoV-2 in his pharyngeal swabs for 11 days after initial diagnosis and remained positive in his rectal swabs for 45 days. Thereby, the boy remained positive in his rectal swabs for 29 days after his first negative pharyngeal swab.

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## Conclusions

The presented case shows that neonates with a mild disease course can shed SARS-CoV-2 in the intestines for 45 days. In the current case, it was not possible to determine if fecal-oral transfer to the family occurred, and more research is needed to establish the potential risk of the fecal-oral transmission route. (Author)

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## 2021-12207

**Management and short-term outcomes of neonates born to mothers with active perinatal SARS-CoV-2 infection.** Lamba V, Lien J, Desai J, et al (2021), BMC Pediatrics vol 21, no 400, 13 September 2021

**Full URL:** <https://doi.org/10.1186/s12887-021-02872-0>

### Objective

We report here on the management and outcomes of neonates born to mothers with active perinatal SARS-CoV-2 infection.

### Study design

In this prospective study, eligible neonates were enrolled in a database to track in-hospital outcomes and followed up outpatient periodically till 2 months of age to assess for late onset symptoms of infection.

### Results

From April 2020 to February 2021, 67 mothers with perinatal SARS-CoV-2 infection and 70 at-risk neonates were included. Two neonates (3%) tested positive for SARS-CoV-2 within 48 h of life but remained asymptomatic during hospitalization and at all follow-up periods. Three infants were reported to have a febrile illness in 2 months follow up period, none of which was attributable to SARS-CoV-2.

### Conclusion

Our data supports the emerging evidence which describes a probable low risk of vertical transmission of SARS-CoV-2. We also demonstrate a low risk of post-natal transmission or late-onset symptomatic infection with SARS-CoV-2. (Author)

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## 2021-12174

**Clinical symptoms associated with laboratory findings and placental histopathology in full-term, non-infected neonates born to severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) positive mothers.** Briana DD, Papaevangelou V, Syridou G, et al (2022), Journal of Maternal-Fetal and Neonatal Medicine vol 35, no 25, 2022, pp 8706-8709

This study comprehensively examines clinical symptoms, laboratory findings, and placental pathology in 40 cases of singleton full-term SARS-CoV-2 negative neonates. Their mothers, previously healthy, with uncomplicated pregnancies, were infected peripartum and presented COVID-19 symptoms of various severity. Neonates had predominately diarrhea, the yet unreported absent sucking reflex, elevated COVID-19 inflammatory and ischemia/asphyxia markers as serum ferritin, interleukin-6 and cardiac troponin-T, while placentas demonstrated mild vascular and/or inflammatory lesions. We hypothesize that the above placental lesions may be associated with transient perinatal hypoxia resulting in absent sucking reflex, as well as with inflammatory cytokines transfer causing diarrhea. (Author)

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## 2021-11785

**Experiences in Performing Online Developmental Evaluations of Children From the Neonatal Intensive Care Unit During the COVID-19 Pandemic.** Ross GS, Perlman JM (2022), Clinical Pediatrics vol 61, no 2, February 2022, pp 120-123

**Full URL:** <https://doi.org/10.1177/00099228211058022>

Brief report describing the authors' experiences of developing online neurodevelopmental assessments of children from neonatal intensive care units during COVID-19. High-risk infants were evaluated at 18 months post-conceptual age, 3 years of age and 6 years of age. (LDO)

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## 2021-11748

**Illness severity indicators in newborns by COVID-19 status in the United States, March–December 2020.** Wallace B, Chang D, Woodworth K, et al (2022), Journal of Perinatology vol 42, no 4, April 2022, pp 446-453

**Full URL:** <https://doi.org/10.1038/s41372-021-01243-y>

### Objective

To better understand COVID-19 in newborns, we compared in-hospital illness severity indicators by COVID-19 status during birth hospitalization.

### Study design

In a retrospective cohort of newborns born March–December 2020 in the Premier Healthcare Database Special COVID-19 Release, we classified COVID-19 status and severe illness indicators using ICD-CM-10 codes, laboratory data, and billing records. Illness severity indicators were compared by COVID-19 status, stratified by gestational age and race/ethnicity.

### Result

Among 701,777 newborns, 209 had a COVID-19 diagnosis during the birth hospitalization. COVID-19 status differed significantly by race/ethnicity, gestational age, payor, and region. Late preterm/term newborns with COVID-19 had increased intensive care unit admission and sepsis risk; early preterm newborns with COVID-19 had increased risk for invasive ventilation. Risk for illness severity varied among racial/ethnic strata.

### Conclusion

From March to December 2020, COVID-19 diagnosis in newborns was rare. More clinical data are needed to describe the risk profiles of newborns with COVID-19. (Author)

## 2021-11662

**Covid-19 pandemic impact on maternal and child health services access in Nampula, Mozambique: a mixed methods research.** das Neves Martins Pires PH, Macaringue C, Abdirazak A, et al (2021), BMC Health Services Research vol 21, no 860, 23 August 2021

**Full URL:** <https://doi.org/10.1186/s12913-021-06878-3>

### Background

The Covid-19 pandemic has so far infected more than 30 million people in the world, having major impact on global health with collateral damage. In Mozambique, a public state of emergency was declared at the end of March 2020. This has limited people's movements and reduced public services, leading to a decrease in the number of people accessing health care facilities. An implementation research project, The Alert Community for a Prepared Hospital, has been promoting access to maternal and child health care, in Natikiri, Nampula, for the last four years. Nampula has the second highest incidence of Covid-19. The purpose of this study is to assess the impact of Covid-19 pandemic Government restrictions on access to maternal and child healthcare services. We compared health centres in Nampula city with healthcare centres in our research catchment area. We wanted to see if our previous research interventions have led to a more resilient response from the community.

### Methods

Mixed-methods research, descriptive, cross-sectional, retrospective, using a review of patient visit documentation. We compared maternal and child health care unit statistical indicators from March–May 2019 to the same time-period in 2020. We tested for significant changes in access to maternal and child health services, using Kruskal Wallis, One-way Anova and mean and standard deviation tests.

We compared interviews with health professionals, traditional birth attendants and patients in the two areas. We gathered data from a comparable city health centre and the main city referral hospital. The Marrere health centre and

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Marrere General Hospital were the two Alert Community for a Prepared Hospital intervention sites.

## Results

Comparing 2019 quantitative maternal health services access indicators with those from 2020, showed decreases in most important indicators: family planning visits and elective C-sections dropped 28%; first antenatal visit occurring in the first trimester dropped 26%; hospital deliveries dropped a statistically significant 4% ( $p = 0.046$ ), while home deliveries rose 74%; children vaccinated down 20%.

## Conclusion

Our results demonstrated the negative collateral effects of Covid-19 pandemic Government restrictions, on access to maternal and child healthcare services, and highlighted the need to improve the health information system in Mozambique. (Author)

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### 2021-11561

**A Neonate With Vertical Transmission of COVID-19 and Acute Respiratory Failure: A Case Report.** Farmer ML (2021), *Advances in Neonatal Care* vol 21, no 6, December 2021, pp 482-492

#### Background:

This case describes a case of vertical transmission of COVID-19 from a mother to her neonate. The neonate subsequently developed acute respiratory failure consistent with adult symptoms of COVID-19.

#### Clinical Findings:

This preterm neonate was born at 33 4/7 weeks' gestational age to a COVID-19-positive mother and admitted to the neonatal intensive care unit (NICU) for prematurity and respiratory distress. The neonate developed acute respiratory failure with severe persistent pulmonary hypertension of newborn (PPHN) and required intubation and maximum respiratory and cardiovascular support. The neonate subsequently tested positive for COVID-19 at 24 hours of life.

#### Primary Diagnosis:

Acute respiratory failure related to COVID-19 infection.

#### Interventions:

The neonate was admitted to the NICU on CPAP. At 11 hours of life, the neonate began to exhibit signs of worsening respiratory distress requiring intubation, mechanical, and high frequency ventilation. An echocardiogram revealed severe PPHN. The neonate required dopamine to manage hypotension and was treated with steroids to decrease inflammation associated with airway edema noted during intubation. Pharmaceutically induced paralysis, analgesia, and sedation was used to manage persistent hypoxia.

#### Outcomes:

The neonate fully recovered from acute respiratory failure and was discharged home with the mother.

#### Practice Recommendations:

Newborns born to mothers who are positive for COVID-19 are at risk for vertical transmission of COVID-19 and should be monitored closely for acute respiratory failure. Respiratory medical management should include supportive care. Staff should also encourage parents to consider receiving the COVID-19 vaccine to protect their newborn from the possibility of developing acute respiratory failure. (Author)

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### 2021-11550

**Nursing Care of 26 Infants Born to Mothers With COVID-19.** Ding L, Xiong X, Yu G, et al (2022), *Advances in Neonatal Care* vol 22, no 1, February 2022, pp 15-21

#### Background:

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Novel coronavirus disease (COVID-19) has spread throughout the world; yet, there are few reports of neonatal cases. Thus, information about related clinical care experience is scarce.

#### Clinical Findings:

This case report includes 26 infants admitted to the neonatal intensive care unit (NICU) of Tongji Hospital in Wuhan City who were born to mothers with suspected/confirmed COVID-19. The nursing and medical staff implemented care of these infants in strict accordance with infection control measures.

#### Intervention:

Emergency measures for the prevention and control of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection in the NICU were developed, and neonatal isolation, observation, and treatment were performed.

#### Outcomes:

Vital signs of the 26 infants remained stable during isolation and treatment, and no complications occurred. During the study period, neither the infants nor the nursing and medical staff were infected with SARS-CoV-2.

#### Practice Recommendations:

Based on our strict practices, infants born to mothers with suspected/confirmed COVID-19 should receive care in a single-patient room to support infection control and provide enhanced observation. During initial contact and nursing care, increased attention should be given to the protection of infants born to mothers with suspected/confirmed COVID-19. (Author)

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#### 2021-11474

**Coronavirus births: 'My baby's first word was mask'.** Roxby P (2021), BBC News 10 November 2021

**Full URL:** <https://www.bbc.co.uk/news/health-59211183>

Leanne Howlett knew what post-natal depression felt like. She'd been affected after the birth of her son a few years before - but this time was different. (Author)

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#### 2021-11395

**Breastfeeding supportive practices in European hospitals during the COVID-19 pandemic.** Merewood A, Davanzo R, Haas-Kogan M, et al (2022), Journal of Maternal-Fetal and Neonatal Medicine vol 35, no 25, 2022, pp 8514-8520

**Full URL:** <https://doi.org/10.1080/14767058.2021.1986482>

#### Introduction

During the first year of the COVID-19 pandemic, international recommendations and guidelines regarding breastfeeding-supportive hospital practices changed frequently. For example, some recommended separation of mothers and infants; others, feeding pumped milk instead of milk fed directly from the breast. Many recommendations were inconsistent or in direct conflict with each other. Guidance from UENPS (the Union of European Neonatal and Perinatal Societies) published in April 2020 recommended rooming in and direct breastfeeding where feasible, under strict measures of infection control, for women who were COVID-19 positive or under investigation for COVID-19.

#### Key findings

Our study assessed data from respondents from 124 hospitals in 22 nations, with over 1000 births per year, who completed a survey on practices during the COVID-19 epidemic, as they related to the World Health Organization (WHO) Ten Steps to Successful Breastfeeding, considered to be the gold standard for breastfeeding support. The survey was conducted in the fall of 2020/winter of 2021. Overall 88% of responding hospitals had managed COVID positive mothers, and 7% had treated over 50 birthing women with confirmed COVID-19. The biggest change to hospital policy related to visitation policies, with 38% of hospitals disallowing all visitors for birthing women, and 19% shortening the postpartum stay. Eight hospitals (6%) recommended formula feeding instead of breastfeeding for

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women who tested positive for COVID-19 or were under investigation, whereas 73% continued to recommend direct, exclusive breastfeeding, but with some form of protection such as a mask or hand sanitizer for the mother or cleaning the breast before the feed. While 6% of hospitals discontinued rooming in, 31% strengthened their rooming in policy (keeping mothers and their babies together in the same room) to protect infants against possible exposure to the virus elsewhere in the hospital. Overall, 72% of hospitals used their country's national guidelines when making policy, 31% used WHO guidelines and 22% UENPS/SIN guidelines. Many European hospitals relied on more than one accredited source.

#### Discussion

Our most concerning finding was that 6% of hospitals recommended formula feeding for COVID positive mothers, a measure that was later shown to be potentially harmful, as protection against the virus is transmitted through human milk. It is encouraging to note that a third of hospitals strengthened rooming in measures. Especially given the emergence of the highly transmissible Delta variant, the situation around postnatal care in maternity hospitals requires ongoing monitoring and may require proactive investment to regain pre-COVID era practices. (Author)

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#### 2021-11374

**COVID-19 and clinical outcomes of pregnancy: a comparative study.** Smith V, Panda S, O'Malley D, et al (2021), British Journal of Midwifery vol 29, no 11, November 2021, pp 642-647

#### Background

A series of changes in maternity care provision were implemented internationally in response to the COVID-19 pandemic. This study aimed to assess the impact of COVID-19 on maternal clinical outcomes, resulting from these changes to care provision.

#### Methods

A before and during comparative study of maternal pregnancy, childbirth, and postpartum clinical outcomes was conducted at a maternity hospital in Ireland. Inferential statistics were used to compare datasets with significance set at  $P < 0.05$ .

#### Results

Overall, no difference in caesarean section rates between the two study periods was observed, although more caesarean sections were observed in multiparous women during the pandemic (30% vs 35%,  $P = 0.01$ ). The rate of elective compared to emergency caesarean section was also higher during the pandemic, from a proportionate difference of 3.6% pre-pandemic to 13.6% during the pandemic. Rates of induction of labour for post-dates (post-maturity induction) were also increased during the pandemic.

#### Conclusions

The changes to maternity care because of the COVID-19 pandemic appear to have affected some maternal clinical outcomes, and thus, potentially, women's overall intrapartum and postnatal health and wellbeing. (Author)

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#### 2021-11112

**The COVID-19 Pandemic and Breastfeeding: Concerns & Positive Opportunities.** Spatz DL (2021), MCN - American Journal of Maternal/Child Nursing vol 46, no 4, July/August 2021, p 238

As nurses, we must continue to promote and protect the use of human milk and breastfeeding during and after the COVID-19 pandemic. We should continue access to online and virtual breastfeeding help but expand opportunities for in-person technical breastfeeding assistance in pediatric offices and in the community. Our breastfeeding expert, Dr. Spatz, offers suggestions for promoting breastfeeding during the pandemic and beyond. (Author)

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#### 2021-11059

##### **Comparison of early postnatal clinical outcomes of newborns born to pregnant women with COVID-19: a case-control**

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**study.** Akyıldız D, Çamur Z (2022), Journal of Maternal-Fetal and Neonatal Medicine vol 35, no 25, 2022, pp 8673-8680

## Background

The ongoing COVID-19 pandemic has infected millions of people, including pregnant women and newborns and caused many deaths. Studies examining the effects of COVID-19 infection in pregnancy have mostly focused on maternal outcomes and there are limited data on neonatal outcomes.

## Objectives

This study aims to compare the early postnatal period clinical outcomes of newborns born to pregnant women with and without COVID-19.

## Methods

A retrospective case–control study was used to compare the clinical characteristics of newborns born to pregnant women with and without COVID-19. This study was conducted between 11 March 2020 and 11 March 2021 at Denizli State Hospital, Turkey. This study included 202 newborns selected with a nonprobability method. The clinical records and laboratory results of 202 newborns were reviewed by applying a retrospective questionnaire. Neonatal outcomes were compared between the groups.

## Results

There were 101 newborns born to pregnant women with COVID-19 in the case group and 101 without COVID-19 in the control group in the study. A considerably higher rate of newborns born to pregnant women with COVID-19 had cesarean delivery (79.2 versus 35.6%,  $p < .001$ ), premature birth (28.7 versus 10.9%,  $p = .001$ ), low birth weight (15.8 versus 6.9%,  $p = .046$ ), neonatal respiratory distress syndrome (RDS) (37.6 versus 19.8%,  $p = .005$ ), oxygen need (19.8 versus 37.6%,  $p = .005$ ), and neonatal intensive care unit admission (10.9 versus 37.6%,  $p = .001$ ). Breastfeeding (1.0 versus 67.3%,  $p < .001$ ) and nutrition with breast milk rates (33.7 versus 80.2%,  $p < .001$ ) of newborns born to pregnant women with COVID-19 were significantly lower. The results of 101 newborns who received nasopharyngeal swab samples for COVID-19 were negative.

## Conclusion

Newborns born to pregnant women with COVID-19 were more likely to experience preterm birth, cesarean delivery, low birth weight, neonatal RDS, oxygen demand, need for intensive care, and breastfeeding problems. There was no vertical contamination according to the nasopharyngeal swab samples of the newborns. (Author)

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## 2021-11058

**Does breastfeeding protect children from COVID-19? An observational study from pediatric services in Majorca, Spain.** Verd S, Ramakers J, Vinuela I, et al (2021), International Breastfeeding Journal vol 16, no 83, 18 October 2021

**Full URL:** <https://doi.org/10.1186/s13006-021-00430-z>

## Background

It has been demonstrated that children who had been breastfed remain better protected against various infections, and notably respiratory tract infections, well beyond infancy. Since the role of breastfeeding to explain why children are less affected by COVID-19 has not been studied until now, the aim of this study was to determine whether any history of breastfeeding reduces the incidence rate of COVID-19 in children.

## Methods

This was a secondary analysis of an observational study on clinical and epidemiological characteristics of pediatric COVID-19 in Majorca. A total of 691 children were recruited during the 5 months of August–December 2020. Eligible participants were children under 14 who were tested for SARS-CoV-2 in pediatric emergency services. The independent explanatory variable was any breastfeeding. Bivariate analyses were conducted through the Chi-square test, the Fisher's Exact test or the Student's T test.

All children had the same demographic, epidemiological and clinical data collected through a study team member

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interview and via the participants medical records.

## Results

Within the sample of children who visited emergency services with symptoms of potential COVID-19, we found higher prevalence of positive SARS-CoV-2 RT-PCR test results among those who were exclusively formula fed compared with those who were ever breastfed (OR 2.48; 95% CI 1.45, 3.51; P = 0.036).

## Conclusions

The present study suggests that ever breastfeeding reduces the risk of COVID-19 among children, as documented for other infections. (Author)

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## 2021-11050

**Breastfeeding Mother and Child Clinical Outcomes After COVID-19 Vaccination.** Low JM, Lee LY, Ng YPM, et al (2022), Journal of Human Lactation vol 38, no 1, February 2022, pp 37-42

### Background:

Pre-approval clinical trials of the Pfizer/BioNTech messenger RNA COVID-19 vaccine, BNT162b2 did not include participants who were breastfeeding. Therefore, there is limited evidence about outcomes of breastfeeding mother–child dyads and effects on breastfeeding after vaccination.

### Research Aims:

To determine: (1) solicited adverse effects (e.g., axillary lymphadenopathy, mastitis, and breast engorgement), which are unique to lactating individuals; and (2) systemic and local adverse effects of COVID-19 mRNA vaccine on mothers and potential effects on their breastfed infants.

### Method:

This was a prospective cohort study of lactating healthcare workers (N = 88) in Singapore who received two doses of BNT162b2 vaccination (Pfizer/BioNTech). The outcomes of mother–child dyads within 28 days after the second vaccine dose were determined through a participant-completed questionnaire.

### Results:

Minimal effects related to breastfeeding were reported by this cohort; three of 88 (3.4%) participants had mastitis, one (1.1%) participant experienced breast engorgement, five of 88 (5.7%) participants reported cervical or axillary lymphadenopathy. There was no change in human milk supply after vaccination. The most common side effect was pain/redness/swelling at the injection site, which was experienced by 57 (64.8%) participants. There were no serious adverse events of anaphylaxis or hospital admissions. There were no short-term adverse effects reported in the infants of 67 lactating participants who breastfed within 72 hr after BNT162b2 vaccination.

### Conclusions:

BNT162b2 vaccination was well tolerated in lactating participants and was not associated with short-term adverse effects in their breastfed infants.

### Study Protocol Registration:

The study protocol was registered at [clinicaltrials.gov](https://clinicaltrials.gov) (NCT04802278). (Author)

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## 2021-11035

**Immune Response of Neonates Born to Mothers Infected With SARS-CoV-2.** Conti MG, Terreri S, Mortari EP, et al (2021), JAMA Network Open vol 4, no 11, November 2021, e2132563

Full URL: <https://doi.org/10.1001/jamanetworkopen.2021.32563>

**Importance** Although several studies have provided information on short-term clinical outcomes in children with

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perinatal exposure to SARS-CoV-2, data on the immune response in the first months of life among newborns exposed to the virus in utero are lacking.

**Objective** To characterize systemic and mucosal antibody production during the first 2 months of life among infants who were born to mothers infected with SARS-CoV-2.

**Design, Setting, and Participants** This prospective cohort study enrolled 28 pregnant women who tested positive for SARS-CoV-2 infection and who gave birth at Policlinico Umberto I in Rome, Italy, from November 2020 to May 2021, and their newborns. Maternal and neonatal systemic immune responses were investigated by detecting spike-specific antibodies in serum, and the mucosal immune response was assessed by measuring specific antibodies in maternal breastmilk and infant saliva 48 hours after delivery and 2 months later.

**Exposures** Maternal infection with SARS-CoV-2 in late pregnancy.

**Main Outcomes and Measures** The systemic immune response was evaluated by the detection of SARS-CoV-2 IgG and IgA antibodies and receptor binding domain-specific IgM antibodies in maternal and neonatal serum. The mucosal immune response was assessed by measuring spike-specific antibodies in breastmilk and in infant saliva, and the presence of antigen-antibody spike IgA immune complexes was investigated in breastmilk samples. All antibodies were detected using an enzyme-linked immunosorbent assay.

**Results** In total, 28 mother-infant dyads (mean [SD] maternal age, 31.8 [6.4] years; mean [SD] gestational age, 38.1 [2.3] weeks; 18 [60%] male infants) were enrolled at delivery, and 21 dyads completed the study at 2 months' follow-up. Because maternal infection was recent in all cases, transplacental transfer of virus spike-specific IgG antibodies occurred in only 1 infant. One case of potential vertical transmission and 1 case of horizontal infection were observed. Virus spike protein-specific salivary IgA antibodies were significantly increased ( $P = .01$ ) in infants fed breastmilk (0.99 arbitrary units [AU]; IQR, 0.39-1.68 AU) vs infants fed an exclusive formula diet (0.16 AU; IQR, 0.02-0.83 AU). Maternal milk contained IgA spike immune complexes at 48 hours (0.53 AU; IQR, 0.25-0.39 AU) and at 2 months (0.09 AU; IQR, 0.03-0.17 AU) and may have functioned as specific stimuli for the infant mucosal immune response.

**Conclusions and Relevance** In this cohort study, SARS-CoV-2 spike-specific IgA antibodies were detected in infant saliva, which may partly explain why newborns are resistant to SARS-CoV-2 infection. Mothers infected in the peripartum period appear to not only passively protect the newborn via breastmilk secretory IgA but also actively stimulate and train the neonatal immune system via breastmilk immune complexes. (Author)

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## 2021-10796

### **Association between COVID-19 mandatory lockdown and decreased incidence of preterm births and neonatal mortality.**

Cuestas E, Gómez-Flores ME, Charras MD, et al (2021), Journal of Perinatology vol 41, no 10, October 2021, pp 2566-2569

**Full URL:** <https://doi.org/10.1038/s41372-021-01116-4>

Correspondence piece presenting the results of a study on premature birth and neonatal mortality during COVID-19 lockdown in Argentina. Findings show a reduction in premature birth and a significant decrease in neonatal mortality. (LDO)

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## 2021-10586

### **Newborns' passive humoral SARS-CoV-2 immunity following heterologous vaccination of the mother during pregnancy.**

Gloeckner S, Hornung F, Heimann Y, et al (2022), American Journal of Obstetrics & Gynecology (AJOG) vol 226, no 2, February 2022, pp 261-262

**Full URL:** <https://doi.org/10.1016/j.ajog.2021.10.006>

Research letter aiming to evaluate cord blood and antibody kinetics following a heterologous vaccination regimen in

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pregnant women. Results show vaccine-induced SARS-CoV-2 Spike Immunoglobulin (IgG) antibodies in all participants. (LDO)

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## 2021-10416

**Bronchiolitis and SARS-CoV-2.** Milani GP, Bollati V, Ruggiero L, et al (2021), Archives of Disease in Childhood vol 106, no 10, October 2021, pp 999-1001

**Full URL:** <http://dx.doi.org/10.1136/archdischild-2020-321108>

**Background** It has been speculated that the SARS-CoV-2 was already widespread in western countries before February 2020.

**Methods** We gauged this hypothesis by analysing the nasal swab of infants with either bronchiolitis or a non-infectious disease admitted to the Ospedale Maggiore, Milan (one of the first epicentres of SARS-CoV-2 outbreak in Europe) from November 2019.

**Results** The SARS-CoV-2 RNA was never detected in 218 infants with bronchiolitis (95 females, median age 4.9 months) and 49 infants (22 females, median age 5.6 months) with a non-infectious disease between November 2019 and February 2020. On the contrary, two infants hospitalised for bronchiolitis between March and April 2020 tested positive for SARS-CoV-2.

**Conclusions** This study does not support the hypothesis that SARS-CoV-2 was already circulating among infants before the official outbreak of SARS-CoV-2 infection. However, it shows for the first time that SARS-CoV-2 might cause bronchiolitis requiring hospitalisation. (Author)

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## 2021-10289

**A Case Series of SARS-CoV-2 RT-PCR-Positive Hospitalized Infants 60 Days of Age or Younger From 2 New York City Pediatric Emergency Departments.** Hassoun A, Daham N, Kelly C (2021), Clinical Pediatrics vol 60, no 4-5, May 2021, pp 247-251

The emergence of novel coronavirus disease-2019 poses an unprecedented challenge to pediatricians. While the majority of children experience mild disease, initial case reports on young infants are conflicting. We present a case series of 8 hospitalized infants 60 days of age or younger with coronavirus disease-2019. A quarter of these patients had coinfections (viral or bacterial). None of these infants had severe disease. Continued vigilance in testing this vulnerable group of infants is warranted. (Author)

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## 2021-10128

**Titers of SARS CoV-2 antibodies in cord blood of neonates whose mothers contracted SARS CoV-2 (COVID-19) during pregnancy and in those whose mothers were vaccinated with mRNA to SARS CoV-2 during pregnancy.** Kashani-Ligumsky L, Lopian M, Cohen R, et al (2021), Journal of Perinatology vol 41, no 11, November 2021, pp 2621-2624

**Full URL:** <https://doi.org/10.1038/s41372-021-01216-1>

**Objective**

We compared neonatal immunity after vaccination against SARS-CoV-2 during pregnancy to that achieved after maternal infection.

**Study design**

We tested cord blood from women infected with SARS-CoV-2 during pregnancy (group 1, n = 29), women who were vaccinated during pregnancy (group 2, n = 29) and from women not infected and not vaccinated (Group 3, n = 21) for titers of antibodies to both SARS-CoV-2 spike and 'N' proteins.

**Results**

Seventy-nine women were included: Antibodies against SARS-CoV-2 spike protein were detected in all samples from

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Group 1 and 2. Antibodies to the 'N' protein were detected in 25/29 samples in Group 1. None of the samples from Group 3 had antibodies to either protein. Mean titers of SARS-CoV-2 antibodies were significantly higher in Group 2 than in Group 1 ( $p < 0.05$ ).

## Conclusions

Neonates born to mothers vaccinated during pregnancy have higher antibody titers and may therefore have more prolonged protection than those born to women infected during pregnancy. (Author) [Erratum: Journal of Perinatology, vol 41, no 11, November 2021, p 2696. <https://doi.org/10.1038/s41372-021-01272-7>]

## 2021-09911

**Changes in neonatal admissions, care processes and outcomes in England and Wales during the COVID-19 pandemic: a whole population cohort study.** Greenbury SF, Longford N, Ougham K, et al (2021), BMJ Open vol 11, no 10, October 2021, e054410

**Full URL:** <http://dx.doi.org/10.1136/bmjopen-2021-054410>

**Objectives** The COVID-19 pandemic instigated multiple societal and healthcare interventions with potential to affect perinatal practice. We evaluated population-level changes in preterm and full-term admissions to neonatal units, care processes and outcomes.

**Design** Observational cohort study using the UK National Neonatal Research Database.

**Setting** England and Wales.

**Participants** Admissions to National Health Service neonatal units from 2012 to 2020.

**Main outcome measures** Admissions by gestational age, ethnicity and Index of Multiple Deprivation, and key care processes and outcomes.

**Methods** We calculated differences in numbers and rates between April and June 2020 (spring), the first 3 months of national lockdown (COVID-19 period), and December 2019–February 2020 (winter), prior to introduction of mitigation measures, and compared them with the corresponding differences in the previous 7 years. We considered the COVID-19 period highly unusual if the spring–winter difference was smaller or larger than all previous corresponding differences, and calculated the level of confidence in this conclusion.

**Results** Marked fluctuations occurred in all measures over the 8 years with several highly unusual changes during the COVID-19 period. Total admissions fell, having risen over all previous years (COVID-19 difference: –1492; previous 7-year difference range: +100, +1617;  $p < 0.001$ ); full-term black admissions rose (+66; –64, +35;  $p < 0.001$ ) whereas Asian (–137; –14, +101;  $p < 0.001$ ) and white (–319; –235, +643;  $p < 0.001$ ) admissions fell. Transfers to higher and lower designation neonatal units increased (+129; –4, +88;  $p < 0.001$ ) and decreased (–47; –25, +12;  $p < 0.001$ ), respectively. Total preterm admissions decreased (–350; –26, +479;  $p < 0.001$ ). The fall in extremely preterm admissions was most marked in the two lowest socioeconomic quintiles.

**Conclusions** Our findings indicate substantial changes occurred in care pathways and clinical thresholds, with disproportionate effects on black ethnic groups, during the immediate COVID-19 period, and raise the intriguing possibility that non-healthcare interventions may reduce extremely preterm births. (Author)

## 2021-09857

**Providing Breastfeeding Support During COVID-19: A Survey of Staff Experiences.** Hoying R, Badreldin N, Shah MD, et al (2022), Journal of Human Lactation vol 38, no 1, February 2022, pp 43-52

**Full URL:** <https://doi.org/10.1177/08903344211047843>

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#### Background:

The COVID-19 pandemic presents unique challenges to maternity settings. Its effect on providing in-hospital lactation support has not been well described.

#### Research Aim:

To describe the experiences of healthcare workers as they provided in-hospital lactation support during the pandemic.

#### Methods:

A prospective, cross-sectional, online survey evaluated healthcare providers working with postpartum women and newborns affected by COVID-19 at an academic center during March–June 2020. Providers were queried regarding the influence of COVID-19 and COVID-19-specific policies on providing lactation support. Questions assessed guidance received, perceived stress, difficulty providing care, and solicited qualitative responses. The constant comparative method was used to analyze qualitative data.

#### Results:

Of 108 providers, 70 (65%) completed the survey. Of 57 providing direct lactation support to women affected by COVID-19, most (n = 39, 67%) reported increased stress. Participants reported lower stress scores when receiving guidance through shift meetings or email compared to those not receiving this guidance [stress score with shift meeting guidance (M [SD]): 3.10 (0.88); score without guidance: 3.83 (0.66); n = 39, p = .009; score with email guidance: 3.79 (0.58); score without guidance: 4.50 (0.58); n = 18, p = .045]. Qualitative responses (n = 67; 96%) identified three themes: visitor restrictions allowed less distraction during lactation support; physical separation disrupted maternal/infant bonding; workflow challenges resulted from policy changes and supply access.

#### Conclusions:

Most participating staff providing lactation support to women affected by COVID-19 reported increased stress. Ensuring written or verbal guidance may reduce staff's experiences of stress. Efforts to optimize lactation support during COVID-19 should consider reducing distractions, physical separation, and logistic challenges. (Author)

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#### 2021-09838

**COVID-19: effects on breastfeeding rates at discharge from the NNU.** Collins L, Rao S, Adedokun P, et al (2021), *Infant* vol 17, no 5, September 2021, pp 222-223

The World Health Organization recommends exclusive breastfeeding for six months following the birth of an infant and exclusive breastfeeding on discharge from neonatal units (NNUs) in the UK is highly recommended. Despite this, mothers may face many barriers that make breastfeeding difficult including prenatal, medical, societal, hospital and sociocultural issues. (Author)

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#### 2021-09785

**COVID-19 changes to the pregnancy and birth assistance: Catalan midwives' experience.** Coll PR, Martínez EG, Falip DR, et al (2021), *European Journal of Midwifery* vol 5, July 2021, p 27

**Full URL:** <https://doi.org/10.18332/ejm/138705>

Letter to the editor providing an overview of changes to maternal health services during the COVID-19 pandemic in Catalonia, Spain. Highlights the increase in workload in maternity hospitals, restrictions on partner support in labour, the reduction of face-to-face consultations and an increase in hospital breastfeeding rates. (LDO)

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#### 2021-09701

**Belgian twins born with the Gamma variant of SARS-CoV-2: Transplacental versus intrapartum transmission?.** Massa H, Seyler L, Cras L, et al (2021), *European Journal of Obstetrics & Gynecology and Reproductive Biology* vol 264, September 2021, pp 383-384

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**Full URL:** <https://doi.org/10.1016/j.ejogrb.2021.07.017>

Correspondence piece presenting the case of twins born with the Gamma variant of SARS-CoV-2 in Belgium. The authors discuss peripartum transmission of SARS-CoV-2 and consider whether vaginal delivery should be contraindicated in COVID-19 positive mothers. (LDO)

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**2021-09584**

**Maternal and Child Outcomes Reported by Breastfeeding Women Following Messenger RNA COVID-19 Vaccination.**

Bertrand K, Honerkamp-Smith G, Chambers CD (2021), Breastfeeding Medicine vol 16, no 9, September 2021, pp 697-701

**Full URL:** <https://doi.org/10.1089/bfm.2021.0169>

**Background:** In December 2020, two novel messenger RNA (mRNA) vaccines for severe acute respiratory syndrome coronavirus-2 received emergency use authorization from the U.S. Food and Drug Administration; however, the early trials excluded lactating women.

**Methods:** Breastfeeding women residing in the United States who received either of the two mRNA vaccines were enrolled into the Mommy's Milk Human Milk Research Biorepository at the University of California, San Diego. From December 14, 2020 to February 1, 2021, 180 women who received two doses of either mRNA vaccine were recruited into the study.

**Results:** Similar proportions of women reported any one or more symptoms following vaccination with either mRNA vaccine. In addition, the frequency by specific type of symptom did not differ by brand. However, following the second dose of vaccine, women who received the Moderna brand were significantly more likely to report symptoms. A small proportion of women following the first dose of either vaccine brand reported a reduction in milk supply, and significantly, more women reported a reduction in milk supply following the second dose of Moderna. Few infant events were reported for either vaccine brand following either dose, and no serious adverse events were reported.

**Conclusions:** These data are reassuring regarding the safety of vaccination in breastfeeding women and their breastfed children with either of the mRNA COVID-19 vaccines. (Author)

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**2021-09568**

**Parental and staff experiences of restricted parental presence on a Neonatal Intensive Care Unit during COVID-19.** Garfield

H, Westgate B, Chaudhary R, et al (2021), Acta Paediatrica vol 110, no 12, December 2021, pp 3308-3314

**Full URL:** <https://doi.org/10.1111/apa.16085>

**Aim**

The COVID-19 pandemic had a significant impact on parental presence in the Neonatal Intensive Care Unit (NICU) during the first wave. The NICU team at the Rosie Hospital, Cambridge, endeavoured to explore the impact on parent and staff experiences of supporting parents throughout the period when visiting was restricted, between 13th August and 11th September 2020.

**Methods**

Bespoke surveys were designed following the first lockdown to gather information on the impact on staff and parents. The questions were developed in the context of initial observations and conversations with staff and parents.

**Results**

The findings of this study have illustrated the extent of the restrictions on parental wellbeing and mood, with the restrictions having had an adverse effect on these. In addition, the findings illustrate the adverse effect that the parents reported due to the restricted presence in terms of their babies' wellbeing, parent-infant bonding, partners' wellbeing, parental confidence, the ability to breastfeed confidently and parents' access to the medical teams.

**Conclusion**

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The findings of this study have a number of clinical implications for parents and staff. Namely, the data supported the decision not to close NICU again during the second and third waves. (Author)

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#### 2021-09557

**Social distancing during the COVID-19 pandemic resulted in a marked decrease in hospitalisations for bronchiolitis.** Risso FM, Cozzi G, Volonnino M, et al (2022), Acta Paediatrica vol 111, no 1, January 2022, pp 163-164

Brief report aiming to explore the impact of social distancing measures on hospitalisations for bronchiolitis in two paediatric children's hospitals in Italy. Results show that the number of hospitalisations fell significantly by 95%. (LDO)

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#### 2021-09446

**Promoting safety in the home during the pandemic and beyond.** Boddy B (2021), Journal of Health Visiting vol 9, no 3, March 2021, pp 106-107

With families home schooling their children, caring for young babies and managing housework during lockdown, it is important for health visitors to promote home safety advice to help prevent unintentional accidents and injuries. (Author)

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#### 2021-09407

**COVID-19 mRNA vaccine and antibody response in lactating women: a prospective cohort study.** Charepe N, Gonçalves JL, Juliano AM, et al (2021), BMC Pregnancy and Childbirth vol 21, no 632, 17 September 2021

Full URL: <https://doi.org/10.1186/s12884-021-04051-6>

##### Background

Immunological protection via breastfeeding is well known. The immunological profile of human milk changes during lactation. No clinical trials have been conducted in lactating women with the newest mRNA vaccines against SARS-CoV-2. A Few studies have shown the presence of antibodies in breastmilk after vaccination. The aim of this work is to study possible antibodies transfer via breastmilk and also the immunological characteristics of lactating women compared to non-lactating women, after using the BNT162b2 Pfizer vaccine.

##### Methods

This is a prospective cohort study with a convenience homogenous sample of 24 healthcare workers (14 lactating and 10 non-lactating women) enrolled at the time of COVID-19 vaccination. Clinical data was registered in a questionnaire. Titers of SARS-CoV-2 spike IgG, IgA and IgM were quantified in post vaccination blood and human milk. Antibody quantification was performed by an in-house ELISA to SARS-CoV-2 trimeric spike protein.

##### Results

All women showed immunity after vaccination with positive antibodies for IgM, IgA and IgG antibodies. The dominant serum antibody response was IgG. Modest levels of antibodies in breastmilk of lactating mothers were observed in this study, especially IgG in 42.9%. There was a moderate association between higher titers of IgG and a longer duration of breastfeeding ( $R=0.55$ ,  $p=0.041$ ).

##### Conclusions

Evidence of antibody transfer in human milk after COVID-19 vaccination is scarce. The presence of antibodies in human milk is reported, but immunization through breastfeeding is still to be established. (Author)

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#### 2021-09212

**Neonatal healthcare workers' perceptions of the impact of the COVID-19 pandemic.** MacSween K, Fraser C, Clinton T, et al (2021), Acta Paediatrica vol 110, no 10, October 2021, pp 2814-2816

Full URL: <https://doi.org/10.1111/apa.15994>

Brief report presenting a prospective survey of health care workers in two tertiary neonatal intensive care units in July

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2020. Results indicate that personal protective equipment and social distancing had a negative impact on communication and practical delivery of care, and restrictions on parental presence resulted in fewer collaborative partnerships with the clinical team. However, fewer visitors resulted in quieter and calmer units with improved infection control. (LDO)

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## 2021-09113

**Breastfeeding in Mothers with COVID-19: Insights from Laboratory Tests and Follow-Up from Early Outbreak of the Pandemic in China.** Luo Q-Q, Xia L, Yao D-J, et al (2021), Journal of Women's Health vol 30, no 11, November 2021, pp 1546-1555

**Full URL:** <https://doi.org/10.1089/jwh.2020.8978>

**Objective:** The outbreak of Coronavirus Disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) threatens a surging number of community groups within society, including women actively breastfeeding. Breastfeeding involves intimate behaviors, a major transmission route of SARS-CoV-2, and is integral to the close mother-baby relationship highly correlated with maternal psychological status.

**Materials and Methods:** Twenty-three pregnant women and puerperae with either confirmed or suspected diagnoses of COVID-19 were enrolled in the study. The clinical characteristics and outcomes of the mothers and neonates were recorded. The presence of SARS-CoV-2, IgG, and IgM in breast milk, maternal blood, and infant blood, together with feeding patterns, was assessed within 1 month after delivery. Feeding patterns and maternal psychological status were also recorded in the second follow-up.

**Results:** No positive detection of SARS-CoV-2 was found in neonates. All breast milk samples were negative for the detection of SARS-CoV-2. The presence of IgM for SARS-CoV-2 in breast milk was correlated with IgM presence in the maternal blood. The results of IgG detection for SARS-CoV-2 were negative in all breast milk samples. All infants were in a healthy condition in two follow-ups, and antibody tests for SARS-CoV-2 were negative. The rate of breast milk feeding increased during two follow-ups. All mothers receiving a second follow-up experienced negative psychological factors and status.

**Conclusions:** Our findings support the feasibility of breastfeeding in women infected with SARS-CoV-2. The additional negative psychological status of mothers due to COVID-19 should also be considered during the puerperium period. (Author)

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## 2021-09105

**Breastfeeding in the era of COVID-19. A narrative review.** Sokou R, Konstantinidi A, Boutsikou T, et al (2022), Journal of Obstetrics and Gynaecology vol 42, no 4, 2022, pp 539-545

Human milk is the best possible nutrition for infants, as it supplies them with nutrients, bioactive molecules as well as antibodies, which contribute to immune maturation, organ development, and healthy microbial colonisation. Few situations are considered definitive contraindications for breastfeeding. The disastrous Coronavirus Disease-2019 (COVID-19) pandemic raised many health issues, including the safety of breastfeeding for infants born to affected mothers. To date relevant data are limited. This review will make an account of the published data so far, regarding the transmission risk of SARS-CoV-2 via human milk; it will also present the current feeding recommendations, issued by several international boards, though not always in agreement, for infants born to mothers suspected or positive for SARS-CoV-2. In most studies existing so far on women with COVID-19, the virus was not detected in breastmilk. Based on currently available data, it seems that breastfeeding and human milk are not contraindicated for infants born to mothers suspected or confirmed with COVID-19. (Author)

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## 2021-09008

**Short-term outcomes of infants born to mothers with SARS-CoV-2 infection.** Moffat MAQ, Dessie AS, O'Leary K, et al (2022), Journal of Maternal-Fetal and Neonatal Medicine vol 35, no 25, 2022, pp 8192-8198

**Full URL:** <https://doi.org/10.1080/14767058.2021.1966412>

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## Objective

The rate of transmission of SARS-CoV-2 from mothers to infants in the peri- and post-natal period remains an area of ongoing investigation. This study aims to determine rates of development of clinically significant COVID-19 disease within 1 month among infants born to symptomatic and asymptomatic SARS-CoV-2 positive mothers.

## Materials and methods

This was a single-center, retrospective cohort study of all infants born to SARS-CoV-2 positive mothers who were admitted to the Well Baby Nursery (WBN) at New York University Langone Hospital-Brooklyn from 23 March–23 September 2020. Infants born to asymptomatic mothers were allowed to room-in, while infants born to mothers with symptoms of SARS-CoV-2 were isolated and discharged home to an alternate primary caregiver. A phone follow-up program contacted mothers at 2 weeks and 1 month post discharge to inquire about newborn symptoms, maternal symptoms, personal protective equipment (PPE) usage, and any presentations to care. Medical records were also reviewed for clinic and hospital visits to determine if exposed infants developed any symptoms following discharge.

## Results

Of 1903 deliveries during the study period, 131 mothers (21 symptomatic, 110 asymptomatic) tested positive for SARS-CoV-2 and had infants admitted to the WBN. 57 infants (21 born to symptomatic mothers, 36 born to asymptomatic mothers) were tested prior to discharge, and none were positive. 121 of 133 infants had at least 1 follow up call in the study period. Of these, 31 had symptoms potentially concerning for SARS-CoV-2 infection or Multisystem Inflammatory Syndrome in Children, and 19 presented to medical care for these symptoms. 4 infants had SARS-CoV-2 testing after discharge, and none were positive. 2 infants were admitted to the hospital for fever but neither had a positive SARS-CoV-2 result. 65% of mothers reported always adhering to PPE recommendations.

## Conclusion

Our results suggest that infants born both to symptomatic and asymptomatic mothers are unlikely to develop clinically significant COVID-19 disease in the peri- and post-natal periods. (Author)

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### 2021-08969

**Quantification of Specific Antibodies Against SARS-CoV-2 in Breast Milk of Lactating Women Vaccinated With an mRNA Vaccine.** Esteve-Palau E, Gonzalez-Cuevas A, Guerrero ME, et al (2021), JAMA Network Open vol 4, no 8, August 2021, e2120575

**Full URL:** <https://doi.org/10.1001/jamanetworkopen.2021.20575>

This cohort study assesses the concentration of SARS-CoV-2 antibodies in the breast milk of women who received vaccines for COVID-19 and their correlation with serum antibody levels. (Author) (Author)

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### 2021-08891

**Balancing restrictions and access to maternity care for women and birthing partners during the COVID-19 pandemic: the psychosocial impact of suboptimal care.** Lalor J, Ayers S, Celleja Agius J, et al (2021), BJOG: An International Journal of Obstetrics and Gynaecology vol 128, no 11, October 2021, pp 1720-1725

**Full URL:** <https://doi.org/10.1111/1471-0528.16844>

Commentary on access to maternity care for women and birthing partners across Europe during the COVID-19 pandemic. Highlights the inconsistency of restrictions, the inability to meet a human rights-based approach to care, and long-term iatrogenic effects on women and their babies. (LDO)

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### 2021-08865

**Breastfeeding Experiences During the COVID-19 Lockdown in the United Kingdom: An Exploratory Study Into Maternal Opinions and Emotional States.** Costantini C, Joyce A, Britez Y (2021), Journal of Human Lactation vol 37, no 4, November 2021, pp 649-662

**Full URL:** <https://doi.org/10.1177/08903344211026565>

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## Background

The COVID-19 pandemic has hugely impacted upon people's psychological and physical wellbeing; however, the effects of the COVID-19 lockdown on mothers of young children, with particular regard to breastfeeding, are unknown.

## Research Aims

To explore: (1) Sources of advice and support available to breastfeeding mothers during and prior to the COVID-19 lockdown; (2) Mothers' opinions on statements and recommendations made by the World Health Organization on the importance of breastfeeding and breastfeeding during the COVID-19 pandemic; (3) Maternal emotional states (i.e., anxiety and depression symptoms) experienced by breastfeeding mothers during the COVID-19 lockdown; and (4) influence of breastfeeding duration and number of children on breastfeeding opinions and emotional states.

## Methods

Mothers of children aged 0–36 months (N = 4018) took part in an online survey. The survey included demographic questions, as well as the Generalised Anxiety Disorder Questionnaire and the Patient Health Questionnaire. Mothers were further probed on opinions regarding breastfeeding practices during the COVID-19 pandemic.

## Results

Participants strongly agreed with the importance of breastfeeding, even if a mother showed symptoms of COVID-19. Differences in opinions on breastfeeding practices (e.g., the use of donor human milk and relactation), were found between participants in relation to breastfeeding duration and number of children. Participants with more than one child showed higher negative emotional states, namely anxiety symptoms. Except for Internet usage, participants indicated a decline in all sources of advice and support for breastfeeding during the COVID-19 lockdown.

## Conclusions

Health bodies and professionals should consider maternal viewpoints and opinions regarding breastfeeding during the COVID-19 pandemic. Interventions are urgently needed in order to support breastfeeding mothers and prevent the development of mental health issues. (Author)

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### 2021-08701

#### **Presence of SARS-CoV-2 antibodies in lactating women and their infants following BNT162b2 messenger RNA vaccine.**

Schwartz A, Nir O, Toussia-Cohen S, et al (2021), American Journal of Obstetrics & Gynecology (AJOG) vol 225, no 5, November 2021, pp 577-579

**Full URL:** <https://doi.org/10.1016/j.ajog.2021.07.016>

Research letter aiming to assess whether SARS-CoV-2 immunoglobulins can be detected in breast milk samples of lactating women and in the serum and oral mucosal secretions of breastfed infants following maternal vaccination. Results show that SARS-CoV-2 immunoglobulins were found in breast milk samples, and antibodies were found in the oral mucosa in 60% of the infant samples, but were not found in their circulation. (LDO)

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### 2021-08625

#### **Supporting Breastfeeding: Next steps.** Kinoshita M, Doolan A (2021), Irish Medical Journal vol 114, no 7, July/August 2021, P399

**Full URL:** <http://imj.ie/supporting-breastfeeding-next-steps/>

Editorial on rates of breastfeeding and breastfeeding support in Ireland. Discusses the Health Service Executive's (HSE) Five Year Breastfeeding Action Plan, the Baby Friendly Hospital Initiative and the International Code of Marketing of Breastmilk Substitutes. Highlights barriers to breastfeeding including socioeconomic factors and the COVID-19 pandemic, and concludes that there is a slow but positive trend in national breastfeeding rates. (LDO)

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### 2021-08613

#### **Placental Swab in Supporting Diagnosis of Vertical Transmission in SARS-CoV-2 Positive Mothers.** Sweeney I, Al Assaf N,

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#### Aims

To review the evidence regarding the possibility of fetal vertical transmission in COVID-19 positive pregnant mothers by diagnosing through placental swabs.

#### Methods

The search terms 'pregnant COVID-19 positive mothers', 'fetal vertical transmission' and 'placental swabs' were used. 20 papers were selected.

#### Results

183 COVID-19 positive pregnant women were identified whose 184 placentas and 185 neonates were also analysed by RT-PCR or immunohistochemistry and/or in situ hybridization for the presence of SARS-CoV-2 (one case of monochorionic diamniotic twins and one case of dichorionic diamniotic twins). 183 liveborn neonates were successfully delivered primarily via caesarean section (99%). 2 mothers did not deliver liveborn infants due to severe preeclampsia resulting in a termination of pregnancy and a miscarriage, both occurring in the second trimester. 9 neonates tested positive for SARS-CoV-2 (5%). We report no neonatal mortality after live birth and no maternal mortality. 17 placentas tested positive for SARS-CoV-2 out of a total of 184 tested (9%). Of these 17, 7 cases of SARS-CoV-2 were identified in the maternal, neonatal and placental tissue.

#### Conclusion

There is no concrete evidence of vertical transmission occurring between mother and infant. We propose further research investigating the effects of COVID-19 on pregnant women by using RTPCR to test the mother, placenta, vaginal fluid, breast milk and infant for SARS-CoV-2 at various stages of transmission. (Author)

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## 2021-08501

**Good practices in perinatal care and breastfeeding protection during the first wave of the COVID-19 pandemic: a national situation analysis among BFHI maternity hospitals in Spain.** Muñoz-Amat B, Pallás-Alonso CR, Hernández-Aguilar M-T, et al (2021), International Breastfeeding Journal vol 16, no 66, 28 August 2021

**Full URL:** <https://doi.org/10.1186/s13006-021-00407-y>

#### Background

Although the positive effects of good clinical quality standards in perinatal care and breastfeeding support for women, newborns and families have been already demonstrated, many of these practices were disrupted during the COVID-19 pandemic. The objective of this study was to analyse the impact of the COVID-19 pandemic on perinatal care and breastfeeding support practices offered by the Spanish maternity hospitals committed to the UNICEF Baby-friendly Hospital Initiative (BFHI), to women with and without COVID-19.

#### Methods

Implementation of perinatal practices was assessed by a cross-sectional survey conducted in May 2020 using an online questionnaire. Comparison with pre-pandemic situation and level of commitment to BFHI practices was performed.

#### Results

Response rate was 50% (58/116). Mothers with COVID-19 suffered greater restrictions in the practices compared to women without COVID-19, with lower rates of companion of choice during labour (84% vs 100%;  $p = 0.003$ ), skin-to-skin contact (32% vs 52%;  $p = 0.04$ ), rooming-in (74% vs 98%;  $p < 0.001$ ), companion of choice during hospital stay (68% vs 90%;  $p = 0.006$ ), and breastfeeding support (78% vs 94%;  $p = 0.02$ ). Practices were significantly less prevalent in COVID-19 mothers compared to pre-pandemic situation. A lower accompaniment rate was observed in non-COVID-19 group during delivery (24% vs 47.9%;  $p < 0.01$ ). Hospitals with higher commitment to BFHI practices reported higher rates of skin-to-skin contact (45.2% vs 10.5%;  $p = 0.01$ ) and rooming-in (83.9% vs 57.9%;  $p < 0.05$ ) in COVID mothers. Fewer restrictions were observed in hospitals located in the regions where the pandemic hit harder. In these regions there was a significantly higher level of BFHI commitment of the hospitals, but no significant differences were observed in the average size of the hospital. All the practices suffered even more restrictions during the first weeks of the pandemic.

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## Conclusion

All mothers suffered restrictions in perinatal care during the COVID-19 pandemic. Women with COVID-19 infection suffered more restrictions in perinatal practices than women without infection. The degree of commitment to WHO-UNICEF perinatal quality standards, integrated into the BFHI, was associated with maintenance of good clinical practices. (Author)

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## 2021-08444

**SARS-CoV-2 Exposure from Health Care Workers to Infants: Effects and Outcomes.** Shaiba LA, Hadid A, Abdulghani SH, et al (2023), American Journal of Perinatology vol 40, no 7, May 2023, pp 799-806

**Objective** This study aimed to evaluate the risk and outcomes of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) transmission from positive health care workers (HCW) to infants in the neonatal intensive care unit (NICU) and the postnatal ward.

**Study Design** We conducted a retrospective analysis of infants in NICU and the postnatal ward postexposure to a COVID-19 positive HCW between May 1 and July 31, 2020. HCW had the detection of SARS-CoV-2 after being symptomatic. Infants exposed to these HCW were tested for SARS-CoV-2 and were classified as confirmed positive when test was positive 24 hours after exposure; confirmed negative when test was negative with no escalation of respiratory support provided; and probable if test was negative. However, infant required escalation of respiratory support. Infants were followed at 14 days postexposure then at the end of the study period for admitted infants.

**Results** A total of 31 infants were exposed to SARS-CoV-2 positive HCWs (42 exposure incidences). The median age at exposure was 21 days. None of the infants was confirmed positive. Nine infants were classified as probable cases of whom five infants with underlying chronic illnesses died, two were discharged home, and two were still admitted. Of the 22 confirmed negative cases, 15 were discharged and were well on follow-up, and 7 were still admitted.

**Conclusion** No active transmission of infection from infected HCW to admitted infants was identified. Although some infants had respiratory escalation postexposure none were confirmed positive. Adhering to personal protective equipment by HCW or low susceptibility of infants to SARS-CoV-2 infection may explain the lack of transmission. (Author)

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## 2021-08440

**Video-based reflection on neonatal interventions during COVID-19 using eye-tracking glasses: an observational study.** Bäuerl C, Randazzo W, Sánchez G, et al (2022), Archives of Disease in Childhood: Fetal and Neonatal Edition vol 107, no 2, March 2022, pp 156-160

**Full URL:** <http://dx.doi.org/10.1136/archdischild-2021-321806>

**Objective** The aim of this study was to determine the experience with, and the feasibility of, point-of-view video recordings using eye-tracking glasses for training and reviewing neonatal interventions during the COVID-19 pandemic.

**Design** Observational prospective single-centre study.

**Setting** Neonatal intensive care unit at the Leiden University Medical Center.

**Participants** All local neonatal healthcare providers.

**Intervention** There were two groups of participants: proceduralists, who wore eye-tracking glasses during procedures, and observers who later watched the procedures as part of a video-based reflection.

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**Main outcome measures** The primary outcome was the feasibility of, and the proceduralists and observers' experience with, the point-of-view eye-tracking videos as an additional tool for bedside teaching and video-based reflection.

**Results** We conducted 12 point-of-view recordings on 10 different patients (median gestational age of 30.9±3.5 weeks and weight of 1764 g) undergoing neonatal intubation (n=5), minimally invasive surfactant therapy (n=5) and umbilical line insertion (n=2). We conducted nine video-based observations with a total of 88 observers. The use of point-of-view recordings was perceived as feasible. Observers further reported the point-of-view recordings to be an educational benefit for them and a potentially instructional tool during COVID-19.

**Conclusion** We proved the practicability of eye-tracking glasses for point-of-view recordings of neonatal procedures and videos for observation, educational sessions and logistics considerations, especially with the COVID-19 pandemic distancing measures reducing bedside teaching opportunities. (Author)

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## 2021-08439

**SARS-CoV-2 RNA and antibody detection in breast milk from a prospective multicentre study in Spain.** Bäuerl C, Randazzo W, Sánchez G, et al (2022), Archives of Disease in Childhood: Fetal and Neonatal Edition vol 107, no 2, March 2022, pp 216-221

**Full URL:** <http://dx.doi.org/10.1136/archdischild-2021-322463>

**Objectives** To develop and validate a specific protocol for SARS-CoV-2 detection in breast milk matrix and to determine the impact of maternal SARS-CoV-2 infection on the presence, concentration and persistence of specific SARS-CoV-2 antibodies.

**Design and patients** This is a prospective, multicentre longitudinal study (April–December 2020) in 60 mothers with SARS-CoV-2 infection and/or who have recovered from COVID-19. A control group of 13 women before the pandemic were also included.

**Setting** Seven health centres from different provinces in Spain.

**Main outcome measures** Presence of SARS-CoV-2 RNA in breast milk, targeting the N1 region of the nucleocapsid gene and the envelope (E) gene; presence and levels of SARS-CoV-2-specific immunoglobulins (Igs)—IgA, IgG and IgM—in breast milk samples from patients with COVID-19.

**Results** All breast milk samples showed negative results for presence of SARS-CoV-2 RNA. We observed high intraindividual and interindividual variability in the antibody response to the receptor-binding domain of the SARS-CoV-2 spike protein for each of the three isotypes IgA, IgM and IgG. Main Protease (MPro) domain antibodies were also detected in milk. 82.9% (58 of 70) of milk samples were positive for at least one of the three antibody isotypes, with 52.9% of these positive for all three Igs. Positivity rate for IgA was relatively stable over time (65.2%–87.5%), whereas it raised continuously for IgG (from 47.8% for the first 10 days to 87.5% from day 41 up to day 206 post-PCR confirmation).

**Conclusions** Our study confirms the safety of breast feeding and highlights the relevance of virus-specific SARS-CoV-2 antibody transfer. This study provides crucial data to support official breastfeeding recommendations based on scientific evidence.

**Trial registration number** NCT04768244. (Author)

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## 2021-08336

**Influence of Vitamin D3 Levels and T Cell-Related Cytokines in Human Milk on Coronavirus Disease 2019 Infection in**

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**Lactating Women.** Demers-Mathieu V, Lavangnananda S, Medo E, et al (2021), Breastfeeding Medicine vol 16, no 12, December 2021, pp 995-1003

**Full URL:** <https://doi.org/10.1089/bfm.2021.0170>

**Background:** Vitamin D deficiency was associated with an increased risk of coronavirus disease 2019 (COVID-19) infection. Vitamin D deficient mothers are more likely to have infants with vitamin D deficiency, affecting their immunity and protection against infection. This study aimed at comparing the concentrations of vitamin D3 and T cell-related cytokines in milk between mothers with confirmed COVID-19 polymerase chain reaction (PCR) test, mothers with viral infections suggestive of COVID-19, and mothers without infection.

**Materials and Methods:** Concentrations of vitamin D3 and T cell-related cytokines in milk samples were determined by ELISA from 10 mothers who had a positive COVID-19 PCR test, 10 mothers with viral symptoms suggestive of COVID-19, and 20 mothers without infection.

**Results:** Vitamin D3 concentration in human milk was higher in women without infection than in women with viral symptoms or COVID-19 PCR. Interleukin-2 level in milk was higher in the no-infection group than the COVID-19 PCR group but it did not differ with the viral symptoms group. Vitamin D3 did not correlate with any cytokines in human milk. Prenatal vitamin intake did not affect the vitamin D3 in human milk. The percentage of milk from mothers with <20 ng/mL of vitamin D3 was 50% in the COVID-19 PCR group, 60% in the viral symptoms group, and 5% in the no-infection group.

**Conclusions:** Vitamin D3 level in breast milk may influence maternal immunity against COVID-19 infection. A larger study is needed to evaluate the relationship between vitamin D3 concentration in breast milk, maternal immune response, and the incidence of COVID-19 infection in lactating mothers. (Author)

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## 2021-08335

### **Humoral and Cell-Mediated Immune Response in Colostrum from Women Diagnosed Positive for SARS-CoV-2.**

Narayanaswamy V, Pentecost B, Alfandari D, et al (2021), Breastfeeding Medicine vol 16, no 12, December 2021, pp 987-994

**Full URL:** <https://doi.org/10.1089/bfm.2021.0082>

**Objective:** To evaluate the immune response to severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) in colostrum from women who tested positive for the virus.

**Methods:** Between March and September 2020 we obtained bilateral colostrum samples collected on spot cards within 48 hours of delivery from 15 new mothers who had previously tested positive for SARS-CoV-2. Four of 15 women provided liquid colostrum, which was used for validating results obtained from spot cards. Archived bilateral colostrum samples collected from 8 women during 2011–2013 were used as pre-coronavirus disease 2019 (COVID-19) controls. All samples were tested for reactivity to the receptor binding domain (RBD) of the SARS-CoV-2 spike protein using an enzyme-linked immunosorbent assay that measures SARS-CoV-2 RBD-specific IgA, IgG, and IgM and for levels of 10 inflammatory cytokines (interferon-gamma [IFN- $\gamma$ ], tumor necrosis factor-alpha, interleukin [IL]-1 $\beta$ , IL-2, IL-4, IL-6, IL-8, IL-10, IL-12, IL-13) using a multiplex electrochemiluminescent sandwich assay.

**Results:** Our validation studies indicate that the levels of SARS-CoV-2-specific antibodies and the associated cytokines measured in liquid colostrum are comparable to levels eluted from spot cards. Bilateral colostrum samples from 73%, 73%, and 33% of the 15 COVID-19 mothers exhibited IgA, IgG, and IgM reactivity to RBD, respectively. In addition, symptomatic COVID-19 mothers had statistically significant elevated levels of 4 of the 10 inflammatory markers (IFN- $\gamma$ , IL-4, IL-6, and IL-12) compared to asymptomatic COVID-19 mothers.

**Conclusions:** A strong humoral immune response is present in the colostrum of women who were infected with SARS-CoV-2 before delivering. The evolution and duration of the antibody response, as well as dynamics of the cytokine response, remain to be determined. Our results also indicate that future large-scale studies can be conducted with milk easily collected on paper spot cards. (Author)

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## 2021-08331

**SARS-CoV-2 Infection Among Maternal-Infant Dyads in Ontario, Canada.** Fitzpatrick T, Wilton AS, Chung H, et al (2021), JAMA Network Open vol 4, no 8, August 2021, e2120150

Full URL: <https://doi.org/10.1001/jamanetworkopen.2021.20150>

This cohort study uses population-based health data to assess SARS-CoV-2 testing outcomes among infants born in Ontario, Canada, during 9 months of the 2020 COVID-19 pandemic to mothers with confirmed infection at delivery. (Author)

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## 2021-08330

**Prevalence of Serious Bacterial Infections Among Febrile Infants 90 Days or Younger in a Canadian Urban Pediatric Emergency Department During the COVID-19 Pandemic.** Burstein B, Anderson G, Yannopoulos A, et al (2021), JAMA Network Open vol 4, no 7, July 2021, e2116919

Full URL: <https://doi.org/10.1001/jamanetworkopen.2021.16919>

This cross-sectional study compares the prevalence of severe bacterial infections in febrile neonates and infants before vs during the COVID-19 pandemic in Montreal, Quebec, Canada. (Author)

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## 2021-08298

**Locked out: the impact of COVID-19 on neonatal care.** McCleverty B, Anderson J (2021), London: Bliss August 2021. 28 pages

Full URL: <https://s3.eu-west-2.amazonaws.com/files.bliss.org.uk/images/Locked-out-the-impact-of-COVID-19-on-neonatal-care-final.pdf?mti=20210519184749&focal=none>

This report is based on a survey of parents whose baby, or babies, had spent time in neonatal care in the UK between March 2020 and February 2021. 510 parents responded to the survey, 460 respondents identified themselves as the mother of a baby, or babies, who spent time in neonatal care, 48 identified themselves as the father of a baby, or babies, who spent time in neonatal care and 2 identified themselves as the legal guardian, but not the birth parent, of a baby who received neonatal care. 58 responses were from a parent of twins or multiples. Respondents lived in England (432), Scotland (44), Wales (30) and Northern Ireland (4). The majority of our respondents' babies had gone home from the unit (434), 75 were still receiving neonatal care when their parents filled in the survey and sadly, 11 had died while receiving neonatal care. To understand how NHS England guidance Supporting pregnant women using maternity services during the coronavirus pandemic: Actions for NHS Providers has been implemented, and the barriers that Trusts have faced in facilitating parental presence on neonatal units, we conducted a survey of 161 NHS Trusts in England. The survey was conducted between 26 February 2021 and 26 March 2021. We received 70

responses (a response rate of 43 per cent) to the survey from 15 Neonatal Intensive Care Units (NICU), 35 Local Neonatal Units (LNU), 16 Special Care Baby Units (SCBU) and 4 Surgical NICUs.

Throughout this report, we use the term 'parent' to mean all parents, carers and legal guardians of a baby born premature or sick who is receiving neonatal care and their partners or support persons. (Author)

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## 2021-08203

**A reflection on supporting breastfeeding during COVID-19.** Salt P (2021), MIDIRS Midwifery Digest vol 31, no 3, September 2021, pp 354-356

This reflection looks at the effect that continuity of midwifery carer and COVID-19 can have on women's experiences of breastfeeding. This topic is particularly relevant due to the current COVID-19 pandemic in the UK. This area of research is yet to be fully explored. (Author)

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## 2021-08201

**High quality breastfeeding support is as effective by video as it is in person.** Crowdy S, Noble M, Robertson F (2021), MIDIRS Midwifery Digest vol 31, no 3, September 2021, pp 347-353

Objectives: At the beginning of the first COVID-19 lockdown, a group of professional breastfeeding counsellors (BFCs)

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in Hampshire rapidly responded by setting up appointment-based support via one-to-one video calls for local mothers. Prior to lockdown, support had been provided at in-person drop-ins. This report aims to compare the effectiveness of breastfeeding support via video calls with the in-person support previously provided at drop-ins (Crowdy et al 2016).

**Methods:** All mothers who registered for an appointment during 2020 were sent an evaluation survey.

**Results:** The demographics of the mothers broadly reflected the local population (78 per cent identified as White British).

Women sought support for similar issues in person and via video call and found BFC support to be more in-depth and more consistent than other sources. In line with results from 2016, of respondents to the 2020 survey (n=323):

- 98 per cent would recommend video call support.
- 86 per cent said their confidence increased.
- 84 per cent said they breastfed for longer than without support.
- The proportion of babies receiving any breast milk at six months was 88 per cent; considerably higher than the UK average (34 per cent).

There were some differences:

- Women first attended video appointments earlier than in-person drop-ins:
  - 22 per cent attended when their baby was under a week old (10 per cent at drop-ins).
  - 42 per cent attended with a baby under two weeks old (20 per cent at drop-ins).
- Data were not captured for the presence of partners, but BFCs reported that they noticed more partners present for the video calls than at drop-ins.

**Conclusions:**

- It is the quality of support which enables excellent results, regardless of the mode of delivery. Professional breastfeeding counsellors can work just as effectively via video.
- There are practical advantages to video appointments, including greater accessibility for parents of very young babies and access for partners, so the authors will continue to use video calls alongside in-person support in the future.
- COVID-19 was a catalyst for change and has led to permanent improvements in service. (Author)

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## 2021-08190

**A standardized definition of placental infection by SARS-CoV-2, a consensus statement from the National Institutes of Health/Eunice Kennedy Shriver National Institute of Child Health and Human Development SARS-CoV-2 Placental Infection Workshop.** Roberts DJ, Edlow AG, Romero RJ, et al (2021), American Journal of Obstetrics & Gynecology (AJOG) vol 225, no 6, December 2021, pp 593.e1-593.e9

**Full URL:** <https://doi.org/10.1016/j.ajog.2021.07.029>

Pregnant individuals infected with SARS-CoV-2 have higher rates of ICU admission, oxygen requirement, need for mechanical ventilation and death than non-pregnant individuals. Increased COVID-19 disease severity may be associated with increased risk for viremia and placental infection. Maternal SARS-CoV-2 infection is also associated with pregnancy complications such as preeclampsia and preterm birth, that can be either placentally-mediated or reflected in the placenta. Maternal viremia followed by placental infection may lead to maternal-fetal transmission (vertical), which affects 1-3% of exposed newborns. However, there is no agreed-upon or standard definition of placental infection. NIH/NICHD convened a group of experts to propose a working definition of placental infection to inform ongoing studies of SARS-CoV-2 during pregnancy. Experts recommended that placental infection be defined using techniques that allow virus detection and localization in placental tissue by one or more of the following methods: in-situ hybridization with anti-sense probe (detects replication) and/or a sense probe (detects viral genome or immunohistochemistry to detect viral nucleocapsid (N) or spike (S) proteins. If the above methods are not possible, RT-PCR detection and/or quantification of viral RNA in placental homogenates, or electron microscopy are alternative approaches. A graded classification for the likelihood of placental infection as definitive, probable, possible, and unlikely was proposed. Manuscripts reporting placental infection should describe the sampling method (location and number of samples collected), method of preservation of tissue, and detection technique. Recommendations were made for the handling of the placenta, examination, and sampling, as well as the use of validated reagents and

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## 2021-08125

**Detection of SARS-CoV-2-Specific IgA in the Human Milk of COVID-19 Vaccinated Lactating Health Care Workers.** Valcarce V, Stewart Stafford L, Neu J, et al (2021), *Breastfeeding Medicine* vol 16, no 12, December 2021, pp 1004-1009

**Full URL:** <https://doi.org/10.1089/bfm.2021.0122>

**Background:** In 2019, a deadly virus known as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), responsible for coronavirus disease 2019 (COVID-19), emerged. In December 2020, two mRNA-based COVID-19 vaccines were approved for use in the United States, which provide immunity to those receiving the vaccine. Maternally derived antibodies are a key element of infants' immunity. Certain vaccines given to pregnant and lactating mothers provide immunity to infants through transmission across the placenta, umbilical cord (IgG), and human milk (IgA). Human milk produced by mothers with a history of COVID-19 infection contains SARS-CoV-2 IgA and IgG. The purpose of this study is to determine whether SARS-CoV-2-specific immunoglobulins are found in human milk after the COVID-19 vaccination, and to characterize the types of immunoglobulins present.

**Methods:** This is a prospective observational study conducted at Shands Hospital, University of Florida, from December 2020 to March 2021. Twenty-two lactating health care workers who received the SARS-CoV-2 mRNA vaccine (Pfizer/BioNTech or Moderna) made up the sample group. Plasma and human milk were collected at three time points (prevaccination, post-first vaccine dose, and post-second vaccine dose). SARS-CoV-2-specific IgA and IgG in human milk and in plasma were measured by enzyme-linked immunosorbent assay (ELISA). Maternal demographics were compiled.

**Results:** We found significant secretion of SARS-CoV-2-specific IgA and IgG in human milk and plasma after SARS-CoV-2 vaccination.

**Conclusions:** Our results show that the mRNA-based COVID-19 vaccines induce SARS-CoV-2-specific IgA and IgG secretion in human milk. Further studies are needed to determine the duration of this immune response, its capacity to neutralize the COVID-19 virus, the transfer of passive immunity to breastfeeding infants, and the potential therapeutic use of human milk IgA to combat SARS-CoV-2 infections and COVID-19. (Author)

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## 2021-07956

**Impacts of Neonatal Hospitalization on Families during the 2019 Coronavirus Pandemic.** Vance AJ, Malin KJ, Chen B, et al (2021), *American Journal of Perinatology* vol 38, no 11, September 2021, pp 1201-1208

**Objective** Limited data are available regarding family and financial well-being among parents whose infants were hospitalized during the 2019 coronavirus (COVID-19) pandemic. The study objective was to evaluate the family and financial well-being of parents whose infants were hospitalized in the neonatal intensive care unit (NICU) during COVID-19.

**Study Design** Parents were recruited for this online, cross-sectional survey via support groups on social media. Data collection was completed between May 18, 2020 and July 31, 2020. The final sample consisted of 178 parents, who had an infant hospitalized in an NICU between February 1, 2020 and July 31, 2020. The primary outcomes were impact on family life and financial stability, as measured by the Impact on Family scale, an instrument that evaluates changes to family life as a result of infant or childhood illness.

**Results** Of the 178 parent respondents, 173 (97%) were mothers, 107 (59.4%) were non-Hispanic White, and 127 (69.5%) of the infants were born prematurely. Parents reported significant family impact and greater financial difficulty. Extremely premature infants, lower household income, parent mental health, and lower parental confidence were predictive of greater impacts on family life.

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**Conclusion** Parents reported significant family and financial impacts during their infant's hospitalization amid COVID-19. Further studies are needed to guide clinical practice and inform family-supportive resources that can mitigate consequences to family well-being. (Author)

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## 2021-07931

**Severity of Maternal SARS-CoV-2 Infection in Pregnancy Predicts Neonatal Outcomes.** Yasa B, Memur S, Ozturk DY, et al (2023), American Journal of Perinatology vol 40, no 6, April 2023, pp 688-696

**Objective** The severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) outbreak had an enormous global impact. Pregnant women with SARS-CoV-2 appear to have higher morbidity and mortality. This study aimed to evaluate the effect of the severity of maternal SARS-CoV-2 infection on neonatal outcomes.

**Study Design** The clinical and laboratory data of 40 women and neonates evaluated retrospectively.

**Results** This retrospective study showed that SARS-CoV-2 infection had an adverse impact on neonatal outcomes proportionally with the maternal disease severity including increased prematurity rates, postnatal resuscitation need, prolonged hospital stay and longer ventilatory support requirement in infants born to mothers with moderate or severe disease.

**Conclusion** Maternal disease severity had adverse effects on neonatal outcomes. The severity of maternal disease was found to be associated with increased rates of prematurity, requirement of postnatal resuscitation, prolonged hospital stay, and longer ventilatory support. (Author)

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## 2021-07831

**Passive and active immunity in infants born to mothers with SARS-CoV-2 infection during pregnancy: prospective cohort study.** Song D, Prah M, Gaw SL, et al (2021), BMJ Open Vol 11, no 7, July 2021, e053036

**Full URL:** <http://dx.doi.org/10.1136/bmjopen-2021-053036>

**Objective** To investigate maternal immunoglobulins' (IgM, IgG) response to SARS-CoV-2 infection during pregnancy and IgG transplacental transfer, to characterise neonatal antibody response to SARS-CoV-2 infection, and to longitudinally follow actively and passively acquired antibodies in infants.

**Design** A prospective observational study.

**Setting** Public healthcare system in Santa Clara County (California, USA).

**Participants** Women with symptomatic or asymptomatic SARS-CoV-2 infection during pregnancy and their infants were enrolled between 15 April 2020 and 31 March 2021.

**Outcomes** SARS-CoV-2 serology analyses in the cord and maternal blood at delivery and longitudinally in infant blood between birth and 28 weeks of life.

**Results** Of 145 mothers who tested positive for SARS-CoV-2 during pregnancy, 86 had symptomatic infections: 78 with mild-moderate symptoms, and 8 with severe-critical symptoms. The seropositivity rates of the mothers at delivery was 65% (95% CI 0.56% to 0.73%) and the cord blood was 58% (95% CI 0.49% to 0.66%). IgG levels significantly correlated between the maternal and cord blood ( $R_s=0.93$ ,  $p<0.0001$ ). IgG transplacental transfer ratio was significantly higher when the first maternal positive PCR was 60–180 days before delivery compared with <60 days (1.2 vs 0.6,  $p<0.0001$ ). Infant IgG seroreversion rates over follow-up periods of 1–4, 5–12, and 13–28 weeks were 8% (4 of 48), 12% (3 of 25), and 38% (5 of 13), respectively. The IgG seropositivity in the infants was positively related to IgG levels in the cord blood and persisted up to 6 months of age. Two newborns showed seroconversion at 2 weeks of age with high

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levels of IgM and IgG, including one premature infant with confirmed intrapartum infection.

Conclusions Maternal SARS-CoV-2 IgG is efficiently transferred across the placenta when infections occur more than 2 months before delivery. Maternally derived passive immunity may persist in infants up to 6 months of life. Neonates are capable of mounting a strong antibody response to perinatal SARS-CoV-2 infection. (Author)

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## 2021-07752

**Breastfeeding in the context of the COVID-19 pandemic: A discussion paper.** Walker K, Green J, Petty J, et al (2022), Journal of Neonatal Nursing vol 28, no 1, February 2022, pp 9-15

Full URL: <https://doi.org/10.1016/j.jnn.2021.08.003>

Breastfeeding offers one of the most fundamental global health benefits for babies. Breastmilk is lifesaving, providing not only nutrition but immunologic benefits and as such is strongly supported by the World Health Organization and leading healthcare associations worldwide. When the COVID-19 pandemic started in 2020, the impact of the restrictions to prevent the spread of the disease created challenges and questions about provision of safe, quality care, including breastfeeding practices, in a new 'normal' environment. Mothers were temporarily separated from their babies where infection was present or suspected, parents were prevented from being present on neonatal units and vital breastfeeding support was prevented. This discussion paper provides an overview of essential areas of knowledge related to practice for neonatal nurses and midwives who care for breastfeeding mothers and babies, in the context of the COVID-19 pandemic and the latest global guidance. Three areas will be discussed; the protective benefits of breastfeeding, keeping breastfeeding mothers and babies together and supporting mothers to breastfeed their babies. Finally, care recommendations are presented to serve as a summary of key points for application to practice for neonatal nurses and midwives. (Author)

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## 2021-07748

**Predictors of breastfeeding self-efficacy during the covid-19 pandemic.** Beheshti MAZ, Alimoradi Z, Bahrami N, et al (2022), Journal of Neonatal Nursing vol 28, no 5, October 2022, pp 349-355

Full URL: <https://doi.org/10.1016/j.jnn.2021.08.012>

### Background

Breastfeeding self-efficacy (BSE) is a strong predictor of the duration of breastfeeding. The aim of this study is to determine the predictors of BSE in breastfeeding mothers during the Covid-19 pandemic.

### Methods

A cross-sectional study was conducted with 300 breastfeeding mothers who breastfed during the Covid-19 pandemic. Convenience sampling was used to recruit participants. A battery of online questionnaires measured sociodemographic and obstetric characteristics, breastfeeding self-efficacy, spouse postpartum social support, perceived social support, anxiety and depression, and fear of Covid-19. Data were analyzed using Pearson correlation coefficients, one-way ANOVA, and multivariable linear regression via stepwise method. The significance level in this study was  $\alpha = 0.05$ .

### Results

The mean BSE score among participants was  $58.19 \pm 10.48$  (out of 70). Spouse postpartum social support ( $\beta = 0.732$ ,  $p = 0.04$ ), intention to breastfeed ( $\beta = 0.17$ ,  $p = 0.001$ ), use of formula while breastfeeding ( $\beta = -0.09$ ,  $p < 0.001$ ), and depression ( $\beta = -0.11$ ,  $p < 0.001$ ) were significant predictors of BSE. However, fear of Covid-19 was not significantly correlated with BSE ( $p = 0.514$ ).

### Conclusion

The results of the present study showed that fear of Covid-19 was not a significant predictor of BSE, while spouse postpartum social support and having the intention of breastfeeding were positively associated with BSE. Depression and simultaneous use of formula in feeding the infant was negatively associated with BSE during Covid-19. Overall,

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breastfeeding can be encouraged through counseling to improve receiving spousal support, increasing breastfeeding intent, and reducing depression. (Author)

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## 2021-07734

**Human Milk Antibodies Against SARS-CoV-2: A Longitudinal Follow-Up Study.** Juncker HG, Romijn M, Loth VN, et al (2021), Journal of Human Lactation vol 37, no 3, August 2021, pp 485-491

**Full URL:** <https://doi.org/10.1177/08903344211030171>

### Background:

Human milk contains antibodies against Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) following Coronavirus Disease 2019 (COVID-19). These antibodies may serve as protection against COVID-19 in infants. However, the evolution of these human milk antibodies over time is unclear.

### Research Aim:

To elucidate the evolution of immunoglobulin A (IgA) against SARS-CoV-2 in human milk after a SARS-CoV-2 infection.

### Methods:

This longitudinal follow-up study included lactating mothers (N = 24) who had participated in the COVID MILK study. To assess the evolution of SARS-CoV-2 antibodies, serum and human milk samples were collected 14–143 days after the onset of clinical symptoms related to COVID-19. Enzyme-Linked ImmunoSorbent Assay was used to detect antibodies against the ectodomain of the SARS-CoV-2 spike protein.

### Results:

SARS-CoV-2 antibodies remain present up to 5 months (143 days) in human milk after onset of COVID-19 symptoms. Overall, SARS-CoV-2 IgA in human milk seems to gradually decrease over time.

### Conclusion:

Human milk from SARS-CoV-2 convalescent lactating mothers contains specific IgA antibodies against SARS-CoV-2 spike protein up to at least 5 months post-infection. Passive viral immunity can be transferred via human milk and may serve as protection for infants against COVID-19. Dutch Trial Register on May 1st, 2020, number: NL 8575, URL: <https://www.trialregister.nl/trial/8575>. (Author)

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## 2021-07733

**SARS-CoV-2 Antibodies Detected in Mother's Milk Post-Vaccination.** Baird JK, Jensen SM, Urba WJ, et al (2021), Journal of Human Lactation vol 37, no 3, August 2021, pp 492-498

### Background

The Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) pandemic has infected over 127 million people worldwide, with almost 2.8 million deaths at the time of writing. Since no lactating individuals were included in initial trials of vaccine safety and efficacy, research on SARS-CoV-2 vaccination in lactating women and the potential transmission of passive immunity to the infant through mother's milk is needed to guide patients, clinicians, and policy makers on whether to recommend immunization during the worldwide effort to curb the spread of this virus.

### Research Aims

(1) To determine whether SARS-CoV-2 specific immunoglobins are found in human milk after vaccination, and (2) to characterize the time course and types of immunoglobulins present.

### Methods

A longitudinal cohort study of lactating women (N = 7) who planned to receive both doses of the Pfizer-BioNTech or Moderna SARS-CoV-2 vaccine between December 2020 and January 2021 provided milk samples. These were collected pre-vaccination and at 11 additional timepoints, with the last sample at 14 days after the second dose of vaccine.

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Samples were analyzed for levels of SARS-CoV-2 specific immunoglobulins A and G (IgA and IgG).

#### Results

We observed significantly elevated levels of SARS-CoV-2 specific IgG and IgA antibodies in human milk beginning approximately 7 days after the initial vaccine dose, with an IgG-dominant response.

#### Conclusions

Maternal vaccination results in SARS-CoV-2 specific immunoglobulins in human milk that may be protective for infants. (Author)

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#### 2021-07652

**Nurture in nature.** Hogg S (2021), International Journal of Birth and Parent Education vol 8, no 4, July 2021, pp 34-35

Column discussing the impact of nature and green spaces on the wellbeing of pregnant women and their infants, particularly during the COVID-19 pandemic. (LDO)

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#### 2021-07619

**Benign course and clinical features of COVID-19 in hospitalised febrile infants up to 60 days old.** Bilavski HY, Balanson S, Shalabi

RD, et al (2021), Acta Paediatrica vol 110, no 10, October 2021, pp 2790-2795

**Full URL:** <https://doi.org/10.1111/apa.15993>

#### Aim

Minimal data exist regarding the severity of COVID-19 in febrile infants under 60 days old. This multicentre prospective study explored the clinical course and outcomes of this hospitalised patient population, as, to date, the best approach has not been specifically addressed.

#### Methods

This study focused on the clinical features, laboratory parameters and outcomes of febrile infants up to 60 days old who tested positive for the virus and were hospitalised in Israel from March 2020 to January 2021. The data were extracted from a real-time prospective surveillance network for COVID-19 that includes 20 of the country's 26 hospitals.

#### Results

We identified 75 febrile young infants (60% female) with COVID-19 at a median age of 28 days (range 8–56 days). Of these, 84% had an unremarkable medical history, 29% had respiratory symptoms, and 96% had a mild illness. The Rochester criteria showed that 44% were considered at high-risk for serious bacterial infections, and we found that eight infants actually had concomitant bacterial infections. Outcomes were excellent, and no complications or fatalities were reported.

#### Conclusion

The excellent outcomes of young febrile infants with COVID-19 closely resembled other respiratory viral aetiologies of fever in this age group, and there were no fatalities. (Author)

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#### 2021-07526

**Titres and neutralising capacity of SARS-CoV-2-specific antibodies in human milk: a systematic review.** Gelow JM, Low YW,

Zhong Y, et al (2022), Archives of Disease in Childhood: Fetal and Neonatal Edition vol 107, no 2, March 2022, pp 174-180

**Full URL:** <http://dx.doi.org/10.1136/archdischild-2021-322156>

Objective Synthesise evidence on production of SARS-CoV-2 antibodies in human milk of individuals who had COVID-19, and antibodies' ability to neutralise SARS-CoV-2 infectivity.

Design A systematic review of studies published from 1 December 2019 to 16 February 2021 without study design

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restrictions.

Setting Data were sourced from PubMed, MEDLINE, Embase, CNKI, CINAHL and WHO COVID-19 database. Search was also performed through reviewing references of selected articles, Google Scholar and preprint servers. Studies that tested human milk for antibodies to SARS-CoV-2 were included.

Patients Individuals with COVID-19 infection and human milk tested for anti-SARS-CoV-2 neutralising antibodies.

Main outcome measures The presence of neutralising antibodies in milk samples provided by individuals with COVID-19 infection.

Results Individual participant data from 161 persons (14 studies) were extracted and re-pooled. Milk from 133 (82.6%) individuals demonstrated the presence of anti-SARS-CoV-2 immunoglobulin A (IgA), IgM and/or IgG. Illness severity data were available in 146 individuals; 5 (3.4%) had severe disease, 128 (87.7%) had mild disease, while 13 (8.9%) were asymptomatic. Presence of neutralising antibodies in milk from 20 (41.7%) of 48 individuals neutralised SARS-CoV-2 infectivity in vitro. Neutralising capacity of antibodies was lost after Holder pasteurisation but preserved after high-pressure pasteurisation.

Conclusion Human milk of lactating individuals after COVID-19 infection contains anti-SARS-CoV-2-specific IgG, IgM and/or IgA, even after mild or asymptomatic infection. Current evidence demonstrates that these antibodies can neutralise SARS-CoV-2 virus in vitro. Holder pasteurisation deactivates SARS-CoV-2-specific IgA, while high-pressure pasteurisation preserves the SARS-CoV-2-specific IgA function. (Author)

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#### 2021-07410

**Neonatal outcome following maternal infection with SARS-CoV-2 in Germany: COVID-19-Related Obstetric and Neonatal Outcome Study (CRONOS).** Mand N, Iannaccone A, Longardt A-C, et al (2022), Archives of Disease in Childhood: Fetal and Neonatal Edition vol 107, no 4, July 2022, pp 454-456

**Full URL:** <http://dx.doi.org/10.1136/archdischild-2021-322100>

Research letter discussing the COVID-19-Related Obstetric and Neonatal Outcome Study (CRONOS) in Germany. Results demonstrate no significant difference in neonatal outcome in relation to time of maternal infection. There was no difference in the rate of caesarean section, the rate of prematurity or the rate of neonatal intensive care admission. (LDO)

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#### 2021-07384

**Underestimation of SARS-CoV-2 infection in placental samples.** Hanna N, Lin X, Thomas K, et al (2021), American Journal of Obstetrics & Gynecology (AJOG) vol 225, no 5, November 2021, pp 572-575.e1

**Full URL:** <https://doi.org/10.1016/j.ajog.2021.07.010>

Research letter reporting two cases of pregnant women infected with SARS-CoV-2 where there were varying results in the detection of the virus in placental tissues using real-time reverse transcription polymerase chain reaction (RT-PCR) tests. The cases suggest that SARS-CoV-2 can infect placental tissues but the infection is not uniform in the same placenta. (LDO)

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#### 2021-07220

**Follow-through care for high-risk infants during the COVID-19 pandemic: lessons learned from the Vermont Oxford Network.** Litt JS, Mercier CE, Edwards EM, et al (2021), Journal of Perinatology vol 41, no 11, November 2021, pp 2625-2630

**Full URL:** <https://doi.org/10.1038/s41372-021-01158-8>

Objective

The COVID-19 pandemic has altered the delivery of follow-up care for high-risk infants. We performed an audit to characterize programmatic responses in a quality improvement network.

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## Study design

We audited 43 North American-based follow-up programs of the Vermont Oxford Network Extremely Low Birth Weight Follow-up Study Group in October, 2020. Our electronic survey included yes/no, agree/disagree, and free text response items.

## Result

The response rate was 67.4%. Most programs altered capacity and the timing, frequency, or content of clinical assessments. Most perceived practice changes compromised their ability to ascertain infants' medical and developmental needs. There was a rapid uptake of telemedicine services. Despite challenges with implementation, many endorsed improved connectedness with families.

## Conclusion

Programs adapted rapidly to meet the needs of high-risk infants during the pandemic. Clinical operations, assessment procedures, and quality metrics will also need to evolve. Quality improvement study group collaboratives are well-positioned to coordinate such work. (Author)

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## 2021-07062

**Point-of-care lung ultrasound in three neonates with COVID-19.** Gregorio-Hernández R, Escobar-Izquierdo AB, Cobas-Pazos J, et al (2020), European Journal of Pediatrics vol 179, no 8, 2020, pp 1279-1285

Full URL: <https://doi.org/10.1007/s00431-020-03706-4>

Since March 2020, the world is involved in the COVID-19 pandemic, a disease caused by a novel virus called SARS-CoV-2. Some authors have described the ultrasonographic findings of COVID-19 pneumonia in adults and children, but data on neonates are lacking. Our objective was to describe the ultrasonographic lung pattern on newborns with SARS-CoV-2 infection during the COVID-19 pandemic. Newborns who tested positive for SARS-CoV-2 PCR in respiratory samples and were evaluated with point-of-care lung ultrasound (LU) from March to April 2020 were included. LU was performed bedside by a single investigator at the time of diagnosis and every 48 h during the first week following diagnosis. Six areas were studied. Three neonates were included. Infants' comorbidities included meconium aspiration syndrome, bronchopulmonary dysplasia, and Hirschsprung's disease. One required mechanical ventilation. No deaths occurred. LU showed B-lines, consolidation, and spared areas. No pneumothorax or pleural effusion was observed

Conclusions: LU could be of value when managing COVID-19 neonates. We describe the findings of lung ultrasound monitoring during the first week following diagnosis in three neonates with SARS-CoV-2 infection. (Author)

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## 2021-07049

**SARS-COV-2 infection in children and newborns: a systematic review.** Liguoro I, Pilotto C, Bonanni M, et al (2020), European Journal of Pediatrics vol 179, no 7, 2020, pp 1029-1046

A recent outbreak of a novel Coronavirus responsible for a Severe Acute Respiratory Syndrome (SARS-CoV-2) is spreading globally. The aim of this study was to systematically review main clinical characteristics and outcomes of SARS-CoV-2 infections in pediatric age. An electronic search was conducted in PubMed database. Papers published between 1 January and 1 May 2020 including children aged 0–18 years were selected. Sixty-two studies and three reviews were included, with a total sample size of 7480 children (2428/4660 males, 52.1%; weighted mean age 7.6 years). Patients showed mainly mild (608/1432, 42.5%) and moderate (567/1432, 39.6%) signs of the infection. About 2% of children were admitted to the pediatric intensive care unit. The most commonly described symptoms were fever (51.6%) and cough (47.3%). Laboratory findings were often unremarkable. Children underwent a chest CT scan in 73.9% of all cases, and 32.7% resulted normal. Overall, the estimated mortality was 0.08%. A higher proportion of newborns was severely ill (12%) and dyspnea was the most common reported sign (40%).

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Conclusion: SARS-CoV-2 affects children less severely than adults. Laboratory and radiology findings are mainly nonspecific. Larger epidemiological and clinical cohort studies are needed to better understand possible implications of COVID-19 infection in children. (Author)

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## 2021-06866

**Leveraging the Massachusetts perinatal quality collaborative to address the COVID-19 pandemic among diverse populations.** Sullivan K, Belfort MB, Melvin P, et al (2021), Journal of Perinatology vol 41, no 11, November 2021, pp 2674-2683  
**Full URL:** <https://doi.org/10.1038/s41372-021-01136-0>

### Objective

We leveraged the Massachusetts perinatal quality collaborative (PQC) to address the COVID-19 pandemic. Our goals were to: (1) implement perinatal practices thought to reduce mother-to-infant SARS-CoV-2 transmission while limiting disruption of health-promoting practices and (2) do so without inequities attributable to race/ethnicity, language status, and social vulnerability.

### Methods

Main outcomes were cesarean and preterm delivery, rooming-in, and breastfeeding. We examined changes over time overall and according to race/ethnicity, language status, and social vulnerability from 03/20-07/20 at 11 hospitals.

### Results

Of 255 mothers with SARS-CoV-2, 67% were black or Hispanic and 47% were non-English speaking. Cesarean decreased (49% to 35%), while rooming-in (55% to 86%) and breastfeeding (53% to 72%) increased. These changes did not differ by race/ethnicity, language, or social vulnerability.

### Conclusions

Leveraging the Massachusetts PQC led to rapid changes in perinatal care during the COVID-19 crisis in a short time, representing a novel use of statewide PQC structures. (Author)

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## 2021-06823

**Impact of COVID-19 on routine childhood immunisations: early vaccine coverage data to May 2021 in England.** Public Health England (2021), Health Protection Report vol 15, no 13, 20 July 2021, pp 1-16

**Full URL:** [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1003605/HPR1321\\_Cvd-COVID\\_R\\_final.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1003605/HPR1321_Cvd-COVID_R_final.pdf)

This series of reports presents an early assessment of the extent of COVID-19-related impact on childhood vaccinations based on vaccine coverage data for dose 1, 2 and 3 Hexavalent and dose 1 MMR vaccines extracted from ImmForm.

This is the 19th report and includes vaccine coverage data up to the end of May 2021. (Author)

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## 2021-06780

**A co-design of clinical virtual care pathways to engage and support families requiring neonatal intensive care in response to the COVID-19 pandemic (COVES study).** Campbell-Yeo M, Dol J, Richardson B, et al (2021), Journal of Neonatal Nursing vol 27, no 6, December 2021, pp 463-470

**Full URL:** <https://doi.org/10.1016/j.jnn.2021.06.010>

### Background

In response to the COVID-19 pandemic, family presence restrictions in neonatal intensive care units (NICU) were enacted to limit disease transmission. This has resulted in communication challenges, negatively impacting family integrated care.

### Aim

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To develop clinical care pathways to ensure optimal neonatal care to support families in response to parental presence restrictions imposed during the COVID-19 pandemic.

## Methods

An agile, co-design process utilizing expert consensus of a large interdisciplinary team and focus groups and semi-structured interviews with families and HCPs were used to co-design clinical virtual care pathways.

## Results

Three clinical virtual care pathways were co-designed: (1) building and maintaining relationships between family and healthcare providers; (2) awareness of resources; and (3) standardized COVID-19 messaging. Modifications were made to optimize uptake and utilization in the clinical areas.

## Conclusion

Clinical care virtual pathways were successfully co-designed to meet these needs to ensure more equitable family centered care. (Author)

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### 2021-06527

**DR Congo: Measles vaccines missed because of Covid focus.** Lungumbo S (2021), BBC News 10 July 2021

Full URL: <https://www.bbc.co.uk/news/world-africa-57657546>

Reports that the disruption in medical services caused by the COVID-19 pandemic, has led to many children in the Democratic Republic of Congo missing out on vaccination against measles. This has sparked fears that there will be an outbreak of the disease in the country. The World Health Organization (WHO) estimates that 140 million measles vaccinations around the world have not been administered owing to Covid-19 disruption. (JSM)

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### 2021-06210

**The impact of the Covid-19 pandemic on breastfeeding mothers.** Menzies J (2021), Journal of Health Visiting vol 9, no 6, June 2021, pp 236-238

Since the Covid-19 pandemic began, there has been a lack of guidance to support breastfeeding mothers. Jen Menzies examines how the crisis has affected women's experiences of breastfeeding in the UK. (Author)

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### 2021-06101

**Autism: Coronavirus [written answer].** House of Commons (2021), Hansard Written question 23075, 28 June 2021

Full URL: <https://questions-statements.parliament.uk/written-questions/detail/2021-06-28/23075>

Helen Whately responds to a written question from Sir Mark Hendrick to the Secretary of State for Health and Social Care, regarding what assessment he has made of the potential effect of covid-19 lockdowns on diagnosing autism in (a) toddlers and (b) school age children. (JSM)

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### 2021-05864

**Breast Milk and Breastfeeding of Infants Born to SARS-CoV-2 Positive Mothers: A Prospective Observational Cohort Study.**

Kunjumon B, Wachtel EV, Lumba R, et al (2021), American Journal of Perinatology vol 38, no 11, September 2021, pp 1209-1216

**Objective** There are limited published data on the transmission of the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) virus from mothers to newborns through breastfeeding or from breast milk. The World Health Organization released guidelines encouraging mothers with suspected or confirmed COVID-19 to breastfeed as the benefits of breastfeeding outweighs the possible risk of transmission. The objective of this study was to determine if SARS-CoV-2 was present in the breast milk of lactating mothers who had a positive SARS-CoV-2 nasopharyngeal swab test prior to delivery, and the clinical outcomes for their newborns.

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**Study Design** This was a single-center, observational, prospective cohort study. Maternal–newborn dyads that delivered at New York University Langone Hospital Brooklyn with confirmed maternal SARS-CoV-2 positive screen test at the time of admission were recruited for the study. Breast milk samples were collected during postpartum hospitalization and tested for the presence of SARS-CoV-2 genes N1 and N2 by two-step reverse transcription polymerase chain reaction. Additionally, the clinical characteristics of the maternal newborn dyad, results of nasopharyngeal SARS-CoV-2 testing, and neonatal follow-up data were collected.

**Results** A total of 19 mothers were included in the study and their infants who were all fed breast milk. Breast milk samples from 18 mothers tested negative for SARS-CoV-2, and 1 was positive for SARS-CoV-2 RNA. The infant who ingested the breast milk that tested positive had a negative nasopharyngeal test for SARS-CoV-2, and had a benign clinical course. There was no evidence of significant clinical infection during the hospital stay or from outpatient neonatal follow-up data for all the infants included in this study.

**Conclusion** In a small cohort of SARS-CoV-2 positive lactating mothers giving birth at our institution, most of their breast milk samples (95%) contained no detectable virus, and there was no evidence of COVID-19 infection in their breast milk-fed neonates. (Author)

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## 2021-05804

**Maternal and Child Symptoms Following COVID-19 Vaccination Among Breastfeeding Mothers.** McLaurin-Jiang S, Garner CD, Krusch K, et al (2021), Breastfeeding Medicine vol 16, no 9, September 2021, pp 702-709

**Full URL:** <https://doi.org/10.1089/bfm.2021.0079>

**Background:** The impact of COVID-19 vaccination on breastfeeding is unknown. The primary aim of this study was to determine whether vaccine-related side effects following COVID-19 vaccination were associated with an adverse impact on breastfeeding. Secondly, we sought to determine perceived symptoms in breastfed children and maternal opinion about COVID-19 vaccination.

**Materials and Methods:** We conducted a cross-sectional survey of breastfeeding mothers who underwent COVID-19 vaccination >2 days before the survey. Subjects were recruited through social media and websites. Data included sociodemographic information, vaccine history, maternal and child symptoms, and impact on lactation/breastfeeding. Bivariate statistics (chi-square, Wilcoxon rank sum, and t tests) and multivariable logistic regression models examined the association of vaccine side effects with lactation, symptoms in breastfed children, and maternal opinion on vaccination.

**Results:** Analysis included 4,455 breastfeeding mothers. Maternal postvaccination symptoms were more common after the second dose ( $p < 0.001$ ). Overall, 77 (1.7%) respondents reported a negative impact on breastfeeding postvaccination, and these mothers were more likely to have experienced fatigue, headache, muscle pain, injection site pain, chills, fever, or allergic reactions. After adjusting for confounding variables, higher odds of an adverse impact on lactation were associated with lower breastfeeding intensity, dose of vaccine, and child symptoms. Even among mothers who reported an adverse impact on breastfeeding, maternal opinion about vaccination and confidence in their decision to receive the COVID-19 vaccine were high.

**Conclusions:** COVID-19 vaccination among breastfeeding mothers resulted in minimal disruption of lactation or adverse impact on the breastfed child. These findings may be considered in vaccination decision-making. (Author)

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## 2021-05748

**Vaccine Update.** Public Health England (2021), London: PHE no 323, June 2021

**Full URL:** <https://www.gov.uk/government/publications/vaccine-update-issue-323-june-2021/vaccine-update-issue-323-june-2021>

This edition of Vaccine Update focuses on childhood vaccination coverage in England and includes information on the impact of COVID-19 on Hexavalent and measles, mumps and rubella (MMR) vaccination uptake. (LDO)

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**2021-05746**

**Vaccine Update.** Public Health England (2021), London: PHE no 321, May 2021

**Full URL:** <https://www.gov.uk/government/publications/vaccine-update-issue-321-may-2021/vaccine-update-issue-321-may-2021>

This edition of Vaccine Update focuses on parents' and guardians' experiences of accessing routine childhood vaccinations during the COVID-19 pandemic. This issue also includes information on supply of COVID-19 vaccinations and non-routine vaccinations. (LDO)

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**2021-05670**

**Pharyngeal sampling for PCR-testing in the investigation of SARS-COV-2 vertical transmission in pregnancy.** Konstantinidou A-E, Skaltsounis P, Eleftheriades M, et al (2021), European Journal of Obstetrics & Gynecology and Reproductive Biology vol 260, May 2021, pp 18-21

The novel COVID-19 global pandemic has raised, among many others, major concerns regarding the impact of infection during pregnancy. Current evidence suggests that vertical transmission from mother to baby, antenatally or intrapartum, does occur, but is uncommon. According to the published reports of infants born to COVID-19-affected mothers, as well as the anecdotal experience of current practices worldwide, it appears that investigations regarding the potential of SARS-COV-2 vertical transmission in pregnancy have so far been based, to a large extent, on PCR testing of neonatal pharyngeal swab samples. Given that the transplacental route of intrauterine transmission for SARS-COV-2 is less likely to immediately involve the upper respiratory tract of the newborn, contrary to what happens after birth, it would be advisable to include appropriate biological samples, such as cord blood, placenta, amniotic fluid and neonatal blood, along with the pharyngeal samples, in order to contribute significantly to such investigations. It is important to point out that negative PCR tests of neonatal pharyngeal samples do not exclude the possibility of intrauterine viral transmission, while positive pharyngeal swabs are more likely to reflect intrapartum or postpartum contaminants, rather than antenatal intrauterine transmission, in the absence of other criteria.

Revision and enhancement of the so far prevailing practices appear important, in order to facilitate the development of good clinical practice for managing neonates and ensuring safety of families and healthcare providers. (Author)

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**2021-05661**

**EBCOG position statement on COVID-19 vaccination for pregnant and breastfeeding women.** Martins I, Louwen F, Ayres-de-Campos D, et al (2021), European Journal of Obstetrics & Gynecology and Reproductive Biology vol 262, July 2021, pp 256-258

**Full URL:** <https://doi.org/10.1016/j.ejogrb.2021.05.021>

Covid 19 pandemic has led to significant mortality and long term morbidity globally. Pregnant women are at increased risk of severe illness from COVID 19 infection. There is an urgent need for all health authorities and Governments to offer vaccination to all pregnant women especially those with high risk pregnancy. (Author)

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**2021-05639**

**Baby Care Units: Coronavirus [written answer].** House of Commons (2021), Hansard Written question 20488, 22 June 2021

**Full URL:** <https://questions-statements.parliament.uk/written-questions/detail/2021-06-22/20488>

Ms Nadine Dorries responds to a written question from David Linden to the Secretary of State for Health and Social Care, with reference to the data collected through maternity situation reports, what progress his Department has made in ensuring parents have unrestricted access to their babies on neonatal units. (Author, edited)

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**2021-05616**

**Breastfeeding and Coronavirus Disease 2019: A Study in Evolving Public Health Recommendations.** Eidelman AI (2021), Breastfeeding Medicine vol 16, no 5, May 2021, pp 351-352

**Full URL:** <https://doi.org/10.1089/bfm.2021.29182.aie>

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## 2021-05518

**Complicated Monochorionic–Diamniotic Twins in a Pregnant Woman with COVID-19 in the Second Trimester.** Mok T, Soria-Contreras DC, Chmait RH, et al (2021), American Journal of Perinatology vol 38, no 7, June 2021, pp 747-752

**Objective** A majority of studies evaluating the risk of vertical transmission and adverse outcomes in pregnancies with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) are mostly based on third-trimester infections. There is limited data available on pregnancy sequelae of maternal infection in the first or second trimester.

**Study Design** We present a patient with monochorionic–diamniotic twins that develops coronavirus disease 2019 infection at 15 weeks of gestation. The pregnancy is further complicated by stage II twin–twin transfusion syndrome. She undergoes laser ablation, which is complicated by development of a subchorionic hematoma. The patient then develops Escherichia coli bacteremia, resulting in septic shock and preterm labor followed by previable delivery at 21 weeks of gestation. Amniotic fluid and placenta were negative for SARS-CoV-2 by real-time polymerase chain reaction.

**Conclusion** This case of SARS-CoV-2 argues against transplacental transmission after a second-trimester infection but brings attention to the possible downstream complications that may arise following early infection. (Author)

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## 2021-05517

**Mother–Infant Dyads with COVID-19 at an Urban, Safety-Net Hospital: Clinical Manifestations and Birth Outcomes.**

Sabharwal V, Bartolome R, Al Hassan S, et al (2021), American Journal of Perinatology vol 38, no 7, June 2021, pp 741-746

**Objective** This study aimed to describe maternal characteristics and clinical outcomes of infants born to mothers with positive severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) tests during pregnancy at an urban, safety-net hospital in Boston.

**Study Design** We abstracted electronic chart data from 75 pregnant women with positive SARS-CoV-2 tests at any stage of gestation until 72 hours after birth who delivered consecutively between March 31 and August 6, 2020 at our center. We collected clinical data on maternal and infant characteristics, including testing, signs, and symptoms of coronavirus disease 2019 (COVID-19), delivery outcomes, newborn care practices (skin-to-skin care, location of care, and breastfeeding) and 30-day postdischarge infant emergency room visits and readmissions. We described categorical characteristics as percentages for this case series.

**Results** Among 75 pregnant women, 47 (63%) were Hispanic, 10 (13%) had hypertension, 23 (30%) had prepregnancy obesity, and 57 (76%) had symptomatic SARS-CoV-2 infection. Regarding birth outcomes, 32 (41%) had cesarean delivery and 14 (19%) had preterm birth. Among 75 infants, 5 (7%) had positive SARS-CoV-2 polymerase chain reaction tests in the first week of life, all of whom were born to Hispanic mothers with symptomatic SARS-CoV-2 infection and had clinical courses consistent with gestational age. Six (8%) infants visited the emergency department within 30 days of discharge; one was admitted with a non-COVID-19 diagnosis.

**Conclusion** At our urban, safety-net hospital among pregnant women with positive SARS-CoV-2 tests, 41% had a cesarean delivery and 19% had a preterm birth. Seven percent of infants had one or more positive SARS-CoV-2 tests and all infants had clinical courses expected for gestational age. (Author)

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## 2021-05495

**Neonates Born to COVID-19 Mother and Risk in Management within 4 Weeks of Life: A Single-Center Experience, Systematic Review, and Meta-Analysis.** Falsaperla R, Giacchi V, Lombardo G, et al (2021), American Journal of Perinatology vol 38, no 10, August 2021, pp 1010-1022

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**Objective** The new coronavirus infection from severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has been recognized as a global public health emergency, and neonates may be more vulnerable due to their immature immune system. The first aim of this study was to report our experience on the management of neonates from mothers with SARS-CoV-2 infection focusing on a 28-day follow-up since birth. The second aim is to assess how many data on neonatal outcomes of the first month of life are reported in literature, performing a systematic review and meta-analysis.

**Study design** We report our experience based on routine management of neonates born to mothers with SARS-CoV-2 infection and follow-up until 28 days of life.

**Results** In our experience at discharge, 1/48 (2.08%) of entrusted (mother refusing personal protective equipment) and none of separated presented positive nasopharyngeal swab ( $p = \text{NS}$ ). All babies show good outcome at 28 days of life. The literature data show that the percentage of positive separated infants is significantly higher than the percentage of infants entrusted to positive mothers with appropriate control measures (13.63 vs. 2.4%;  $p = 0.0017$ ). Meta-analysis of studies focused on follow-up showed a 2.94% higher risk of incidence of SARS-CoV-2 infection in entrusted newborns than in separated newborns (95% confidence interval: 0.39–22.25), but this was not significant ( $p = 0.30$ ).

**Conclusion** A vertical transmission in utero cannot be totally excluded. Since in newborns, the disease is often ambiguous with mild or absent symptoms, it is important to define the most efficient joint management for infants born to COVID-19 positive mothers, being aware that the risk of horizontal transmission from a positive mother, when protective measures are applied, does not seem to increase the risk of infection or to affect the development of newborns from birth to first four weeks of life, and encourages the benefits of breastfeeding and skin-to-skin practice. (Author)

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## 2021-05348

**COVID-19 vaccine acceptance among pregnant, breastfeeding, and nonpregnant reproductive-aged women.** Sutton D, D'Alton M, Zhang Y, et al (2021), American Journal of Obstetrics & Gynecology MFM vol 3, no 5, September 2021, 100403

### Background

Although mass vaccination against COVID-19 may prove to be the most efficacious end to this deadly pandemic, there remains concern and indecision among the public towards vaccination. As pregnant and reproductive-aged women account for a large proportion of the population with particular concerns regarding vaccination against COVID-19, this survey aims at investigating their current attitudes and beliefs within our own institution.

### Objective

To understand vaccine acceptability among pregnant, non-pregnant and breastfeeding respondents and elucidate factors associated with COVID-19 vaccine acceptance.

### Methods

We administered an anonymous online survey to all women (including patients, providers and staff) at our institution assessing rates of acceptance of COVID-19 vaccination. Respondents were contacted in one of three ways: by email, advertisement flyers and distribution of QR codes at virtual townhalls regarding the COVID-19 vaccine. Based on their responses, respondents were divided into three mutually exclusive groups: (1) non-pregnant respondents (2) pregnant respondents and (3) breastfeeding respondents. The primary outcome was acceptance of vaccination. Prevalence ratios were calculated to ascertain the independent effects of multiple patient-level factors on vaccine acceptability.

### Results

The survey was administered from January 7, 2021 to January 29, 2021 with 1,012 respondents of whom 466 (46.9%) identified as Non-Hispanic White, 108 (10.9%) as Non-Hispanic Black, 286 (28.8%) as Hispanic, and 82 (8.2%) as

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Non-Hispanic Asian. The median age was 36 (IQR 25-47) years. Of all the respondents, 656 respondents (64.8%) were non-pregnant, 216 (21.3%) were pregnant and 122 (12.1%) were breastfeeding. There was no difference in chronic comorbidities when evaluated as a composite variable (Table 1). 390 respondents (39.2%) reported working in healthcare. Non-pregnant respondents were most likely to accept vaccination (457 respondents, 76.2%,  $p < 0.001$ ) with breastfeeding respondents the second most likely (55.2%). Pregnant respondents had the lowest rate of vaccine acceptance (44.3%,  $p < 0.001$ ). Prevalence ratios revealed all non-White races except for non-Hispanic Asian respondents and Spanish speaking respondents were less likely to accept vaccination (Table 3). Working in healthcare was not found to be associated with vaccine acceptance among our cohort.

#### Conclusions and Relevance

In this survey study of only women at a single institution, pregnant respondents of non-White or non-asian races were more likely to decline vaccination compared to non-pregnant and breast-feeding respondents. Working in healthcare was not associated with vaccine acceptance. (Author)

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#### 2021-05330

**Infant delivery and maternal stress during the COVID-19 pandemic: a comparison of the well-baby versus neonatal intensive care environments.** Bin-Nun A, Palmor-Haspal S, Mimouni FB, et al (2021), Journal of Perinatology vol 41, no 11, November 2021, pp 2614-2620

**Full URL:** <https://doi.org/10.1038/s41372-021-01016-7>

#### Objective

To describe impact of COVID-19 pandemic on stress and mood of new mothers, in particular in neonatal intensive care unit (NICU); a secondary objective was to assess whether customary social gender distancing practiced by ultra-religious Jews and Muslims offers built-in anti-stress protection.

#### Methods

Cross-sectional, observational survey of mothers of 52 normal newborn nursery (NNB) and 52 NICU infants. In all, 86 filled all the 6 questionnaires (Demographics, COVID-19 virus experience, Mental Health Inventory, Neonatal Satisfaction Survey, Parental Stressor Scale, and Questionnaire of Coping Strategies).

#### Results

Most mothers stated that COVID-19 pandemic had hurt social and family relationships, maternal role, and expressed stress and loneliness. Mothers of NICU infants had higher degree of helplessness. Religious social distancing was not protective. Background tendency to coping poorly with stress and depression most highly predicted stress.

#### Conclusion

COVID-19 pandemic harms psychosocial well-being of most mothers. Detection of high-risk individuals is necessary to provide appropriate support. (Author)

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#### 2021-05317

**COVID-19 Vaccine Considerations during Pregnancy and Lactation.** Blumberg D, Sridhar A, Lakshminrusimha S, et al (2021), American Journal of Perinatology vol 38, no 6, June 2021, pp 523-528

**Full URL:** <https://doi.org/10.1055/s-0041-1726390>

Editorial reviewing the published data and theoretical considerations of COVID-19 vaccination in pregnant and lactating women. Discusses the safety of mRNA and adenovirus DNA vaccines manufactured by Pfizer-BioNTech, Moderna and Janssen. (LDO)

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#### 2021-05276

**Coronavirus disease 2019 vaccine response in pregnant and lactating women: a cohort study.** Gray KJ, Bordt EA, Atyeo C, et al (2021), American Journal of Obstetrics & Gynecology (AJOG) vol 225, no 3, September 2021, pp 303.e1-303.e17

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## Background

Pregnant and lactating women were excluded from initial coronavirus disease 2019 vaccine trials; thus, data to guide vaccine decision making are lacking.

## Objective

This study aimed to evaluate the immunogenicity and reactogenicity of coronavirus disease 2019 messenger RNA vaccination in pregnant and lactating women compared with: (1) nonpregnant controls and (2) natural coronavirus disease 2019 infection in pregnancy.

## Study Design

A total of 131 reproductive-age vaccine recipients (84 pregnant, 31 lactating, and 16 nonpregnant women) were enrolled in a prospective cohort study at 2 academic medical centers. Titers of severe acute respiratory syndrome coronavirus 2 spike and receptor-binding domain immunoglobulin G, immunoglobulin A, and immunoglobulin M were quantified in participant sera (n=131) and breastmilk (n=31) at baseline, at the second vaccine dose, at 2 to 6 weeks after the second vaccine, and at delivery by Luminex. Umbilical cord sera (n=10) titers were assessed at delivery. Titers were compared with those of pregnant women 4 to 12 weeks from the natural infection (n=37) by enzyme-linked immunosorbent assay. A pseudovirus neutralization assay was used to quantify neutralizing antibody titers for the subset of women who delivered during the study period. Postvaccination symptoms were assessed via questionnaire. Kruskal-Wallis tests and a mixed-effects model, with correction for multiple comparisons, were used to assess differences among groups.

## Results

Vaccine-induced antibody titers were equivalent in pregnant and lactating compared with nonpregnant women (pregnant, median, 5.59; interquartile range, 4.68–5.89; lactating, median, 5.74; interquartile range, 5.06–6.22; nonpregnant, median, 5.62; interquartile range, 4.77–5.98,  $P=.24$ ). All titers were significantly higher than those induced by severe acute respiratory syndrome coronavirus 2 infection during pregnancy ( $P<.0001$ ). Vaccine-generated antibodies were present in all umbilical cord blood and breastmilk samples. Neutralizing antibody titers were lower in umbilical cord than maternal sera, although this finding did not achieve statistical significance (maternal sera, median, 104.7; interquartile range, 61.2–188.2; cord sera, median, 52.3; interquartile range, 11.7–69.6;  $P=.05$ ). The second vaccine dose (boost dose) increased severe acute respiratory syndrome coronavirus 2–specific immunoglobulin G, but not immunoglobulin A, in maternal blood and breastmilk. No differences were noted in reactogenicity across the groups.

## Conclusion

Coronavirus disease 2019 messenger RNA vaccines generated robust humoral immunity in pregnant and lactating women, with immunogenicity and reactogenicity similar to that observed in nonpregnant women. Vaccine-induced immune responses were statistically significantly greater than the response to natural infection. Immune transfer to neonates occurred via placenta and breastmilk. (Author)

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## 2021-05252

**Care strategies before entering pregnant mothers to the operating room and after birth during COVID-19.** Moghadam MY, Beigi-khoosani A, Merajikhah A (2021), British Journal of Midwifery vol 29, no 6, June 2021, pp 348-351

Provides an overview of care strategies for pregnant women in the perinatal period during the COVID-19 pandemic. Discusses vaccination and testing during pregnancy, isolation of the newborn baby and hygiene while breastfeeding. (LDO)

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## 2021-05205

**COVID-19 and the NICU: #ZeroSeparation.** Disenza D (2021), Neonatal Network: the Journal of Neonatal Nursing vol 40, no 3,

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COVID-19's first wave created chaos for new NICU families as they struggled to cope with the challenge of a fragile infant along with a pandemic. Safety was paramount due to a lack of understanding around how the virus transmits, but much has been learned since then. The next wave of the virus needs to have a rethink around family separation. World leader organization European Foundation for the Care of Newborn Infants (EFCNI) provides insight into the challenges with the first wave and suggests ideas around rethinking how families interact with their baby in the subsequent waves. (Author)

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#### 2021-05183

**Skin-to-Skin Contact (Kangaroo Care) During the COVID-19 Pandemic.** Ludington-Hoe SM, Lotas M, D'Apolito K (2021), Neonatal Network: the Journal of Neonatal Nursing vol 40, no 3, May/June 2021, pp 161-174

Early recommendations to separate mothers from their newborns during the coronavirus disease 2019 (COVID-19) pandemic have created a detrimental separation practice. This article presents a review of the latest information regarding the (1) 3 modes of transmission of the virus to the neonate; (2) incidence, clinical signs, and severity of COVID-19 in the neonate; (3) factors to be considered to balance risk and benefits of separation and skin-to-skin contact (SSC) when conducting shared decision making; and (4) compendium of published SSC guidelines; and concludes with recommendations for safe practice of SSC to prevent and/or restrict COVID-19 infection in neonates. (Author)

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#### 2021-05174

**A Case of Vertical Transmission of COVID-19.** Vincent K (2021), Neonatal Network: the Journal of Neonatal Nursing vol 40, no 3, May/June 2021, pp 146-154

Coronavirus disease 2019 (COVID-19), which is caused by SARS-CoV-2, has overwhelmed health care systems in 2020, affecting millions of lives worldwide. There have, however, been few reports of the effect this virus has on the newborn population. This case study presents an infant with a vertical transmission of COVID-19, including symptoms, diagnosis, and management, to help inform care for the COVID-19-positive infant. (Author)

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#### 2021-05172

**Maintaining Safe Breastfeeding Practices During the COVID-19 Pandemic: An Overview of the Evidence to Inform Clinical Guidelines.** Gwartney T, Duffy A (2021), Neonatal Network: the Journal of Neonatal Nursing vol 40, no 3, May/June 2021, pp 140-145

The impact of the COVID-19 pandemic upon the health care landscape has prompted many organizations to revise policies in response to ever-changing guidelines and recommendations regarding safe breastfeeding practices. The application of these professional guidelines into clinical practice is fraught with barriers, inconsistencies, and often-minimal evidential support. Key concerns for health care providers and patients include antenatal versus postnatal transmission, milk transmission, and separation care versus rooming-in, including the subsequent impacts upon breastfeeding and bonding. While SARS-CoV-2 is a novel virus, the volume of literature to support best practice for couplet care continues to be developed at a rapid pace. The benefits of breastfeeding are steeped in evidence and outweigh the potential risk of transmission of COVID-19 from mother to newborn. Health care organizations must continue to seek guidance for policy revision within the ever-growing body of evidence for best practice and evaluate current practices for feasibility during and after hospitalization. (Author)

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#### 2021-05170

**Effects of COVID-19 on Health Care Workers.** Whalen M, Smith PC (2021), Neonatal Network: the Journal of Neonatal Nursing vol 40, no 3, May/June 2021, pp 134-139

COVID-19 continues to spread across the United States with a continued increase in reported infections and deaths. How this virus affects pregnancy, particularly mothers and their infants around and after delivery, is of particular concern for health care workers. Moreover, concerns for compassion fatigue in the health care worker, as they

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attempt to provide comprehensive care to this population, is a documented concern that could have long-term effects on workers' ability to provide care. This article will describe the current concerns for the transmission of COVID-19 from the mother to the infant and how that has affected recommendations from several national and international organizations around maternal/infant testing, isolation, breastfeeding, and the infant requiring neonatal intensive care. Effects that changing recommendations may have on health care workers and care delivery, and how these may contribute to compassion fatigue, will also be discussed. (Author)

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## 2021-05166

**COVID-19 Precautions Hamper Breastfeeding Support.** Kuehn BM (2021), JAMA (Journal of the American Medical Association) vol 325, no 2, 12 January 2021, p 122

**Full URL:** <https://doi.org/10.1001/jama.2020.25241>

News item discussing a recent report (1) from the Centers for Disease Control and Prevention (CDC) which found that nearly one in five hospitals reduced in-person lactation support during the COVID-19 pandemic.

1. Perrine CG et al (2020). Implementation of Hospital Practices Supportive of Breastfeeding in the Context of COVID-19 — United States, July 15–August 20, 2020. Morbidity and Mortality Weekly Report (MMWR), vol 69, no 47, pp 1767-1770.

<http://dx.doi.org/10.15585/mmwr.mm6947a3>. (LDO)

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## 2021-05147

**Covid-19: Baby's mother issues mottled skin warning.** Jones C (2021), BBC News 7 January 2021

**Full URL:** <https://www.bbc.co.uk/news/uk-england-essex-55548719>

Reports that a young mother whose four-month-old baby son has tested positive for COVID-19 has warned other parents of young children to be aware that mottled skin and sickness are symptoms of the disease in the infant population. States that, although the officially recognised symptoms of the disease are fever, a cough, and/or a loss of sense of taste or smell, many researchers have identified diarrhoea, vomiting and abdominal cramps as signs of coronavirus in children. (JSM)

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## 2021-05098

**Supporting parents as essential care partners in neonatal units during the SARS-CoV-2 pandemic.** van Veenendaal NR, Deierl A, Bacchini F, et al (2021), Acta Paediatrica vol 110, no 7, July 2021, pp 2008-2022

**Full URL:** <https://doi.org/10.1111/apa.15857>

**Aim**

To review the evidence on safety of maintaining family integrated care practices and the effects of restricting parental participation in neonatal care during the SARS-CoV-2 pandemic.

**Methods**

MEDLINE, EMBASE, PsycINFO and CINAHL databases were searched from inception to the 14th of October 2020. Records were included if they reported scientific, empirical research (qualitative, quantitative or mixed methods) on the effects of restricting or promoting family integrated care practices for parents of hospitalised neonates during the SARS-CoV-2 pandemic. Two authors independently screened abstracts, appraised study quality and extracted study and outcome data.

**Results**

We retrieved 803 publications and assessed 75 full-text articles. Seven studies were included, reporting data on 854 healthcare professionals, 442 parents, 364 neonates and 26 other family members, within 286 neonatal units globally. The pandemic response resulted in significant changes in neonatal unit policies and restricting parents' access and participation in neonatal care. Breastfeeding, parental bonding, participation in caregiving, parental mental health and staff stress were negatively impacted.

**Conclusion**

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This review highlights that SARS-CoV-2 pandemic-related hospital restrictions had adverse effects on care delivery and outcomes for neonates, families and staff. Recommendations for restoring essential family integrated care practices are discussed. (Author)

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## 2021-05097

**Impact that the COVID-19 pandemic on routine childhood vaccinations and challenges ahead: A narrative review.** Chiappini E, Parigi S, Galli L, et al (2021), Acta Paediatrica vol 110, no 9, September 2021, pp 2529-2535

**Full URL:** <https://doi.org/10.1111/apa.15949>

### Aim

To document the decline in vaccination coverage in the first months of 2020 as an indirect effect of the COVID-19 pandemic.

### Methods

We performed a literature review in medical databases. Overall, 143 articles were initially retrieved, out of which 48 were selected and included in the review.

### Results

Our review retrieved similar data in many countries worldwide, and, globally, preliminary data from the first 4 months of 2020 indicate a decline in diphtheria-tetanus-pertussis coverage, generally considered the marker of vaccination coverage across countries. World Health Organization recommends maintaining vaccination services, prioritising primary series vaccinations especially for measles-rubella or poliomyelitis, but it also lets each country decide whether to maintain the immunisation services evaluating the current epidemiology of vaccine-preventable diseases and the COVID-19 local transmission scenario. Successively, recovering of vaccinations should be planned. Moreover, during the pandemic, influenza vaccination should be promoted as a central public health measure.

### Conclusion

Future challenges will be to maintain the vaccination programmes, especially in children younger than 2 years old and adolescents, to plan the recovery of vaccinations for subjects who postponed them during the lockdown, and to early identify any vaccine-preventable disease outbreak. (Author)

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## 2021-05023

**Expecto Patronum! Leveraging the Positive Force of COVID-19 Vaccines for Pregnant and Lactating Individuals.** Malinowski AK, Whittle W, Murphy K, et al (2021), JOGC [Journal of Obstetrics and Gynaecology Canada] vol 43, no 10, October 2021, pp 1184-1187

**Full URL:** <https://doi.org/10.1016/j.jogc.2021.04.015>

For over a year, the world has been gripped by the coronavirus disease 2019 (COVID-19) pandemic, which has had far-reaching effects on society. The integrity of national health care systems has also been challenged, owing to shifts in guidance and misinformation. Although initial reports suggested that pregnant people were not at increased risk of severe COVID-19, current data arising from the “third wave” paint a much more concerning picture. In addition, pregnant and lactating people were excluded from vaccine trials, which has hindered the ability of health care professionals to provide evidence-based counselling regarding the safety and efficacy of the available vaccines in these populations. This commentary reviews the current data on the safety of COVID-19 vaccines in pregnancy. The evidence is clear that the risks of hospitalization and severe maternal and potentially fetal morbidity from COVID-19 in pregnancy far outweigh the very minimal risks of COVID-19 vaccination in pregnancy. (Author)

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## 2021-04966

**Association of Maternal Perinatal SARS-CoV-2 Infection With Neonatal Outcomes During the COVID-19 Pandemic in Massachusetts.** Angelidou A, Sullivan K, Melvin PR, et al (2021), JAMA Network Open vol 4, no 4, April 2021, e217523

**Full URL:** <https://doi.org/10.1001/jamanetworkopen.2021.7523>

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**Importance** The incidence of mother-to-newborn SARS-CoV-2 transmission appears low and may be associated with biological and social factors. However, data are limited on the factors associated with neonatal clinical or viral testing outcomes.

**Objective** To ascertain the percentage of neonates who were born to mothers with positive SARS-CoV-2 test results during the birth hospitalization, the clinical and sociodemographic factors associated with neonatal test result positivity, and the clinical and virological outcomes for newborns during hospitalization and 30 days after discharge.

**Design, Setting, and Participants** This multicenter cohort study included 11 academic or community hospitals in Massachusetts and mother-neonate dyads whose delivery and discharge occurred between March 1, 2020, and July 31, 2020. Eligible dyads were identified at each participating hospital through local COVID-19 surveillance and infection control systems. Neonates were born to mothers with positive SARS-CoV-2 test results within 14 days before to 72 hours after delivery, and neonates were followed up for 30 days after birth hospital discharge.

**Exposures** Hypothesized maternal risk factors in neonatal test result positivity included maternal COVID-19 symptoms, vaginal delivery, rooming-in practice, Black race or Hispanic ethnicity, and zip code–derived social vulnerability index. Delivery indicated by worsening maternal COVID-19 symptoms was hypothesized to increase the risk of adverse neonatal health outcomes.

**Main Outcomes and Measures** Primary outcomes for neonates were (1) positive SARS-CoV-2 test results, (2) indicators of adverse health, and (3) clinical signs and viral testing. Test result positivity was defined as at least 1 positive result on a specimen obtained by nasopharyngeal swab using a polymerase chain reaction–based method. Clinical and testing data were obtained from electronic medical records of nonroutine health care visits within 30 days after hospital discharge.

**Results** The cohort included 255 neonates (mean [SD] gestational age at birth, 37.9 [2.6] weeks; 62 [24.3%] with low birth weight or preterm delivery) with 250 mothers (mean [SD] age, 30.4 [6.3] years; 121 [48.4%] were of Hispanic ethnicity). Of the 255 neonates who were born to mothers with SARS-CoV-2 infection, 225 (88.2%) were tested for SARS-CoV-2 and 5 (2.2%) had positive results during the birth hospitalization. High maternal social vulnerability was associated with higher likelihood of neonatal test result positivity (adjusted odds ratio, 4.95; 95% CI, 1.53-16.01;  $P = .008$ ), adjusted for maternal COVID-19 symptoms, delivery mode, and rooming-in practice. Adverse outcomes during hospitalization were associated with preterm delivery indicated by worsening maternal COVID-19 symptoms. Of the 151 newborns with follow-up data, 28 had nonroutine clinical visits, 7 underwent SARS-CoV-2 testing, and 1 had a positive result.

**Conclusions and Relevance** The findings emphasize the importance of both biological and social factors in perinatal SARS-CoV-2 infection outcomes. Newborns exposed to SARS-CoV-2 were at risk for both direct and indirect adverse health outcomes, supporting efforts of ongoing surveillance of the virus and long-term follow-up. (Author)

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## 2021-04924

**Assessment of Pediatric Admissions for Kawasaki Disease or Infectious Disease During the COVID-19 State of Emergency in Japan.** Hara T, Furuno K, Yamamura K, et al (2021), JAMA Network Open vol 4, no 4, April 2021, e214475

**Full URL:** <https://doi.org/10.1001/jamanetworkopen.2021.4475>

**Importance** The development of Kawasaki disease (KD) has been suggested to be associated with droplet- or contact-transmitted infection; however, its triggers and transmission modes remain to be determined. Under an epidemic of SARS-CoV-2, the COVID-19 state of emergency in Japan served as a nationwide social experiment to investigate the impact of quarantine or isolation on the incidence of KD.

**Objective** To assess the role of droplet or contact transmission in the etiopathogenesis of KD.

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**Design, Setting, and Participants** This multicenter, longitudinal, cross-sectional study was conducted from 2015 to 2020 at Fukuoka Children's Hospital and 5 adjacent general hospitals. The number of admissions for KD and infectious diseases were analyzed. Participants were pediatric patients admitted to the participating hospitals for KD or infectious diseases.

**Exposures** Quarantine and isolation owing to the COVID-19 state of emergency.

**Main Outcomes and Measures** The primary end points were the ratios of patients with KD to patients with respiratory tract or gastrointestinal infections admitted from April to May in 2015 to 2019 and 2020. A Poisson regression model was used to analyze them.

**Results** The study participants included 1649 patients with KD (median [interquartile range] age, 25 [13-43] months; 901 boys [54.6%]) and 15 586 patients with infectious disease (data on age and sex were not available for these patients). The number of admissions for KD showed no significant change between April and May in 2015 to 2019 vs the same months in 2020 (mean [SD], 24.8 [5.6] vs 18.0 [4.0] admissions per month; 27.4% decrease; adjusted incidence rate ratio [aIRR], 0.73; 95% CI, 0.48-1.10;  $P = .12$ ). However, the number of admissions for droplet-transmitted or contact-transmitted respiratory tract infections (mean [SD], 157.6 [14.4] vs 39.0 [15.0] admissions per month; 75.3% decrease; aIRR, 0.25; 95% CI, 0.17-0.35;  $P < .001$ ) and gastrointestinal infections (mean [SD], 43.8 [12.9] vs 6.0 [2.0] admissions per month; 86.3% decrease; aIRR, 0.14; 95% CI, 0.04-0.43;  $P < .001$ ) showed significant decreases between April and May in 2015 to 2019 vs the same months in 2020 (total, 12 254 infections). Thus, the ratio of KD to droplet- or contact-transmitted respiratory tract and gastrointestinal infections incidence in April and May 2020 was significantly increased (ratio, 0.40 vs 0.12;  $\chi^2_{21} = 22.76$ ;  $P < .001$ ).

**Conclusions and Relevance** In this study, the significantly increased incidence of KD compared with respiratory tract and gastrointestinal infections during the COVID-19 state of emergency suggests that contact or droplet transmission is not a major route for KD development and that KD may be associated with airborne infections in most cases. (Author)

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## 2021-04818

**Association of Maternal SARS-CoV-2 Infection in Pregnancy With Neonatal Outcomes.** Norman M, Navér L, Söderling J, et al (2021), JAMA (Journal of the American Medical Association) vol 325, no 20, 25 May 2021, pp 2076-2086

**Full URL:** <https://doi.org/10.1001/jama.2021.5775>

**Importance** The outcomes of newborn infants of women testing positive for SARS-CoV-2 in pregnancy is unclear.

**Objective** To evaluate neonatal outcomes in relation to maternal SARS-CoV-2 test positivity in pregnancy.

**Design, Setting, and Participants** Nationwide, prospective cohort study based on linkage of the Swedish Pregnancy Register, the Neonatal Quality Register, and the Register for Communicable Diseases. Ninety-two percent of all live births in Sweden between March 11, 2020, and January 31, 2021, were investigated for neonatal outcomes by March 8, 2021. Infants with malformations were excluded. Infants of women who tested positive for SARS-CoV-2 were matched, directly and using propensity scores, on maternal characteristics with up to 4 comparator infants.

**Exposures** Maternal test positivity for SARS-CoV-2 in pregnancy.

**Main Outcomes and Measures** In-hospital mortality; neonatal resuscitation; admission for neonatal care; respiratory, circulatory, neurologic, infectious, gastrointestinal, metabolic, and hematologic disorders and their treatments; length of hospital stay; breastfeeding; and infant test positivity for SARS-CoV-2.

**Results** Of 88 159 infants (49.0% girls), 2323 (1.6%) were delivered by mothers who tested positive for SARS-CoV-2. The mean gestational age of infants of SARS-CoV-2-positive mothers was 39.2 (SD, 2.2) weeks vs 39.6 (SD, 1.8) weeks

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for comparator infants, and the proportions of preterm infants (gestational age <37 weeks) were 205/2323 (8.8%) among infants of SARS-CoV-2–positive mothers and 4719/85 836 (5.5%) among comparator infants. After matching on maternal characteristics, maternal SARS-CoV-2 test positivity was significantly associated with admission for neonatal care (11.7% vs 8.4%; odds ratio [OR], 1.47; 95% CI, 1.26-1.70) and with neonatal morbidities such as respiratory distress syndrome (1.2% vs 0.5%; OR, 2.40; 95% CI, 1.50-3.84), any neonatal respiratory disorder (2.8% vs 2.0%; OR, 1.42; 95% CI, 1.07-1.90), and hyperbilirubinemia (3.6% vs 2.5%; OR, 1.47; 95% CI, 1.13-1.90). Mortality (0.30% vs 0.12%; OR, 2.55; 95% CI, 0.99-6.57), breastfeeding rates at discharge (94.4% vs 95.1%; OR, 0.84; 95% CI, 0.67-1.05), and length of stay in neonatal care (median, 6 days in both groups; difference, 0 days; 95% CI, –2 to 7 days) did not differ significantly between the groups. Twenty-one infants (0.90%) of SARS-CoV-2–positive mothers tested positive for SARS-CoV-2 in the neonatal period; 12 did not have neonatal morbidity, 9 had diagnoses with unclear relation to SARS-CoV-2, and none had congenital pneumonia.

**Conclusions and Relevance** In a nationwide cohort of infants in Sweden, maternal SARS-CoV-2 infection in pregnancy was significantly associated with small increases in some neonatal morbidities. Given the small numbers of events for many of the outcomes and the large number of statistical comparisons, the findings should be interpreted as exploratory. (Author)  
[Erratum: JAMA, vol 326, no 10, 14 September 2021, p 978. <https://doi.org/10.1001/jama.2021.13853>]

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## 2021-04599

**Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) Antibodies in Neonatal Cord Blood After Vaccination in Pregnancy.** Gill L, Jones CW (2021), *Obstetrics & Gynecology* vol 137, no 6, June 2021, pp 894-896

**Full URL:** <https://doi.org/10.1097/AOG.0000000000004367>

### BACKGROUND:

Studies evaluating the safety and efficacy of currently available vaccines for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) do not include pregnant participants. No data are available to counsel on vaccine safety and potential for neonatal passive immunity.

### CASE:

A 34-year-old multigravid patient working in health care received the Pfizer-BioNTech (BNT162b2) mRNA vaccine for SARS-CoV-2 in the third trimester of pregnancy. Uncomplicated spontaneous vaginal delivery of a female neonate with Apgar scores of 9 and 9 occurred at term. The patient's blood as well as neonatal cord blood were evaluated for SARS-CoV-2–specific antibodies. Both the patient and the neonate were positive for antibodies at a titer of 1:25,600.

### CONCLUSION:

In this case, passage of transplacental antibodies for SARS-CoV-2 was shown after vaccination in the third trimester of pregnancy. (Author)

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## 2021-04543

**Baby Care Units [written answer].** House of Commons (2021), Hansard Written question 7881, 26 May 2021

**Full URL:** <https://questions-statements.parliament.uk/written-questions/detail/2021-05-26/7881>

Ms Nadine Dorries responds to a written question asked by Vicky Foxcroft to the Secretary of State for Health and Social Care, regarding if he will publish a National Neonatal Roadmap to help neonatal units to return to full parent access. This question is asked in reference to the report by the charity Bliss entitled Locked Out: the impact of COVID-19 on neonatal care. (LDO)

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## 2021-04455

**Nasal expression of SARS-CoV-2 entry receptors in newborns.** Heinonen S, Helve O, Andersson S, et al (2022), *Archives of Disease in Childhood: Fetal and Neonatal Edition* vol 107, no 1, January 2022, pp 95-97

**Full URL:** <http://dx.doi.org/10.1136/archdischild-2020-321334>

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Background SARS-CoV-2 infection is typically mild in children. Lower expression of SARS-CoV-2 entry receptors in the nasal epithelia have been described in children compared with adults. However, data from newborns are lacking. We compared nasal expression of four SARS-CoV-2 entry receptors between term and preterm newborns and adults.

Methods Nasal scrape samples were obtained from 28 newborns (17 term and 11 preterm) and 10 adults. Reverse-transcription quantitative PCR was used to measure mRNA expression of ACE2, transmembrane serine protease 2 (TMPRSS2), neuropilin 1 (NRP1) and neuropilin 2 (NRP2) and insulin-like growth factor 1 receptor (IGF1R).

Results Expression levels of ACE2, TMPRSS2, NRP1 and NRP2 were lower in term and preterm newborns and IGF1R lower in term newborns compared with adults ( $p < 0.05$ ).

Conclusions Both term and preterm newborns, compared with adults, have lower expression of SARS-CoV-2 entry receptors in nasal epithelium. (Author)

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## 2021-04394

**Baby Care Units [written answer].** House of Commons (2021), Hansard Written question 7882, 26 May 2021

Full URL: <https://questions-statements.parliament.uk/written-questions/detail/2021-05-26/7882>

Nadine Dorries responds to a written question asked by Vicky Foxcroft to the Secretary of State for Health and Social Care, with reference to the findings of the report entitled Locked Out: the impact of COVID-19 on neonatal care, published by Bliss in May 2021 on the increased likelihood of mental health difficulties for parents with restricted access to neonatal units, regarding what support his Department is providing to NHS Trusts to help ensure that they can facilitate full parental presence on neonatal units. (MB)

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## 2021-04205

**Children: Coronavirus [written answer].** House of Commons (2021), Hansard Written question 6397, 24 May 2021

Full URL: <https://questions-statements.parliament.uk/written-questions/detail/2021-05-24/6397>

Jo Churchill responds to a written question from Sarah Olney to the Secretary of State for Health and Social Care, pursuant the Answer of 17 May 2021 to Question 822 on Children: Coronavirus, if his Department will make an assessment of the effect of the covid-19 outbreak on the development of children aged two years and under. (Author, edited)

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## 2021-03846

**The Australian Breastfeeding Association's response to emergencies in 2019 and 2020: Bushfires and the COVID-19 pandemic.** Tawia S (2021), Breastfeeding Review vol 29, no 1, March 2021, pp 49-58

The Australian Breastfeeding Association (ABA) has always supported mothers and their families during emergencies. The response of ABA to the needs of pregnant women, breastfeeding mothers and their families during the bushfire emergencies 2019/20 and the COVID-19 pandemic is documented here.

It was vital during the bushfire emergencies, when infants and young children and their mothers and caregivers were being evacuated, that those supporting evacuees understood their needs and supported breastfeeding mothers to continue to breastfeed. ABA ensured that infant and young child feeding in emergencies (IYCF-E) information was available and shared widely. In response to the COVID-19 pandemic, ABA increased the provision of information and counselling services to pregnant women, mothers and their infants and young children, and partners and families. ABA also developed online alternatives to support and education services usually accessed face-to-face and developed additional online resources for mothers, ABA volunteers and health professionals. (Author)

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## 2021-03810

**Early Essential Newborn Care can still be used with mothers who have COVID-19 if effective infection control**

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**measures are applied.** Tran HT, Huynh LT, Le CHM, et al (2021), Acta Paediatrica vol 110, no 7, July 2021, pp 1991-1994

We describe the first infant born to a woman with COVID-19 in Vietnam, by Caesarean section at 36 weeks and 5 days of gestation. The mother and baby remained together during their hospital stay and prolonged skin-to-skin contact and early and exclusive breastfeeding were achieved. This was in line with the World Health Organization's Early Essential Newborn Care (EENC) recommendations, the national Vietnamese standard of care since 2014. The baby remained virus-free throughout the 34-day postpartum follow-up.

#### Conclusion

The EENC approach can still be used with mothers who have COVID-19 if effective infection control measures are applied.  
(Author)

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#### 2021-03807

**Bravo Breastfeeding Mother! A COVID Positive Mother and Midwifery Instinct.** Jan R (2020), Journal of Asian Midwives vol 7, no 1, June 2020, pp 4-6

**Full URL:** <https://paperity.org/p/256492246/reflections-bravo-breastfeeding-mother-a-covid-positive-mother-and-midwifery-instinct>

A midwife reflects on the advice she gave a COVID-positive mother who was concerned about the safety of breastfeeding her baby. (MB)

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#### 2021-03763

**Letter to the editor: COVID-19 Vaccines and Breastfeeding.** Saus-Ortega C (2021), Journal of Human Lactation vol 37, no 2, May 2021, pp 273-274

No abstract available.

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#### 2021-03752

**Antibodies Against SARS-CoV-2 in Human Milk: Milk Conversion Rates in the Netherlands.** Juncker HG, Romijn M, Loth VN, et al (2021), Journal of Human Lactation vol 37, no 3, August 2021, pp 469-476

**Full URL:** <https://doi.org/10.1177/08903344211018185>

#### Background

It has been demonstrated that human milk from mothers who have been infected with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) contains antibodies against the virus, which could play an important role in protecting the recipient infant against coronavirus disease 2019 (COVID-19). Seroconversion is measured frequently around the world, but the milk conversion rate is unknown.

#### Research Aims

To determine (1) the prevalence and (2) the dynamics of immunoglobulin A (IgA) antibodies against SARS-CoV-2 in human milk amongst lactating mothers in the Netherlands.

#### Methods

In this large prospective cohort study, lactating mothers (N = 2312) were included between October 12, 2020 and February 24, 2021. Enzyme-linked immunosorbent assay was used to determine levels of IgA antibodies in human milk and immunoglobulin G (IgG) antibodies in serum against the ectodomain of the SARS-CoV-2 spike protein.

#### Results

A total of 691 (30.6%) participants had SARS-CoV-2 specific antibodies in human milk and/or serum. Of these participants, 524 (23.1%) had IgA antibodies against SARS-CoV-2 in human milk, and 356 (15.7%) had IgG antibodies against SARS-CoV-2 in serum. A total of 199 (8.8%) participants had antibodies in both human milk and serum. SARS-CoV-2 specific IgA antibodies in human milk remain present at least 10 months after a polymerase chain reaction confirmed infection.

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## Conclusion

The prevalence of IgA antibodies against SARS-CoV-2 in human milk was 23.1% in our cohort. This high prevalence of antibodies in human milk might lead to passive immunity in many breastfed infants and may serve as protection against COVID-19.

(Author)

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## 2021-03733

**A call for zero separation – restrictive policies and their impact on neonatal care in light of COVID-19.** Fuegenschuh S, Kostenzer J (2021), Infant vol 17, no 3, May 2021

More than one year into the pandemic and we are well aware that COVID-19 is affecting neonatal care. In many places, possibly in more ways than we initially appreciated. Recent scientific research has revealed that neonatal care in low- and middle-income countries has been affected to an extent that threatens the implementation of life-saving interventions.<sup>1</sup> Reasons for this development are certainly plentiful, including the concerns of medical staff and parents about contracting the coronavirus – a worry that in many places had been accelerated by the immense pressure put on the health system. (Author)

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## 2021-03707

**Part 2: COVID-19 and knowledge for midwifery practice—impact and care of the baby.** Green J, Jones L, Petty J, et al (2021), British Journal of Midwifery vol 29, no 5, May 2021, pp 286-293

It is well-known that newborn infants are more susceptible to infection due to their immature host defence mechanisms. However, in relation to the COVID-19 virus, it appears that the naivete of the neonatal immune system has afforded some protection against the inflammatory response experienced by adolescents and adults. That said, COVID-19 and the associated changes in practice and policies implemented in response to the pandemic, has had an impact on the care of the baby during the perinatal and neonatal period. This article is the second in a two-part series focusing on important care issues relating to the newborn baby specifically, taken from an integrative review of current literature within the maternal and neonatal field. This paper analyses the emerging themes from selected literature to add to a developing body of knowledge; namely, physiological differences between the newborn baby and adult, neonatal management including, preterm labour and delivery, newborn resuscitation, investigations, care of the newborn, the importance of human milk and breastfeeding, and the implications of COVID-19 restrictions. Finally, an overview of the World Health Organization guidance will be outlined for a global view and summary. (Author)

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## 2021-03682

**Neonatal family-centered care in a pandemic.** Carter BS, Willis TA, Knackstedt A (2021), Journal of Perinatology vol 41, no 5, May 2021, pp 1177-1179

Full URL: <https://doi.org/10.1038/s41372-021-00976-0>

Family-centered care (FCC) has become the normative practice in Neonatal ICUs across North America. Over the past 25 years, it has grown to impact clinician-parent collaborations broadly within children's hospitals as well as in the NICU and shaped their very culture. In the current COVID-19 pandemic, the gains made over the past decades have been challenged by "visitor" policies that have been implemented, making it difficult in many instances for more than one parent to be present and truly incorporated as members of their baby's team. Difficult access, interrupted bonding, and confusing messaging and information about what to expect for their newborn can still cause them stress. Similarly, NICU staff have experienced moral distress. In this perspective piece, we review those characteristics of FCC that have been disrupted or lost, and the many facets of rebuilding that are presently required. (Author)

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## 2021-03670

**Previous viral symptoms and individual mothers influenced the leveled duration of human milk antibodies cross-reactive to S1 and S2 subunits from SARS-CoV-2, HCoV-229E, and HCoV-OC43.** Demers-Mathieu V, DaPra C, Mathijssen GB, et al (2021), Journal of Perinatology vol 41, no 5, May 2021, pp 952-960

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**Full URL:** <https://doi.org/10.1038/s41372-021-01001-0>

#### Objective

The influence of previous viral symptoms on the level and duration of human milk antibodies reactive to SARS-CoV-2, and common human coronaviruses (HCoV) was investigated.

#### Study design

Antibodies reactive to S1 and S2 subunits from SARS-CoV-2, HCoV-OC43, and HCoV-229E were measured via ELISA in human milk samples collected from March to June 2020 in mothers with and without viral symptoms.

#### Results

The presence of viral symptoms influenced the levels of SARS-CoV-2 S2-reactive SIgA/IgA and tended to influence SARS-CoV-2 S1 SIgA/IgA and S2-reactive SIgM/IgM in human milk but did not relate to IgG. HCoV-229E S1 + S2-reactive SIgA/IgA and SIgM/IgM, as well as HCoV-OC43 S1 + S2-reactive IgG were related to the symptoms. The duration of antibody levels in human milk in mothers with viral symptoms varied between 3 and 4 months post maternal report of viral symptoms.

#### Conclusion

Previous viral symptoms and individual mothers may change the antibody cross-reactive levels to SARS-CoV-2 and HCoVs in human milk. (Author)

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### 2021-03649

**Intrauterine vertical SARS-CoV-2 infection: a case confirming transplacental transmission followed by divergence of the viral genome.** Zaigham M, Holmberg A, Karlberg ML, et al (2021), BJOG: An International Journal of Obstetrics and Gynaecology vol 128, no 8, July 2021, pp 1388-1394

Case report of a 27-year-old woman with suspected SARS-CoV-2 who delivered via caesarean section at 34 weeks' gestation. The neonate required supplemental oxygen at birth and subsequently also tested positive after isolation. (LDO)

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### 2021-03622

**Impact of evolving practices on SARS-CoV-2 positive mothers and their newborns in the largest public healthcare system in America.** Malhotra Y, Knight C, Patil UP, et al (2021), Journal of Perinatology vol 41, no 5, May 2021, pp 970-980

#### Objective

The impact of evolving guidelines and clinical practices on SARS-CoV-2-positive dyads across New York City Health and Hospitals during the early peak of COVID-19.

#### Design

A retrospective cohort study of positive-positive (P/P), positive-negative (P/N), and positive-untested (P/U) dyads delivered from March 1 to May 9, 2020. Wilcoxon rank sum, Chi-squared, and Fisher exact tests were used to analyze demographics, clinical variables, and system-wide management practices.

#### Result

A total of 2598 mothers delivered. 23.8% (286/1198) of mothers tested for SARS-CoV-2 were positive. 89.7% (260/290) newborns of SARS-CoV-2-positive mothers were tested and 11 were positive. Positive-positive newborns were more likely to be breastfed (81%), be admitted to NICU, and have longer length of stay (7.5 days) than P/N and P/U newborns.

#### Conclusion

Our study shows that varied testing, feeding, and isolation practices resulted in favorable short-term outcomes for SARS-CoV-2-positive mothers and their newborns. High-risk populations can be safely and effectively treated in

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## 2021-03590

**COVID-19-related health worries compound the psychiatric distress experienced by families of high-risk infants.** Liu CH, Mittal L, Erdei C (2021), Journal of Perinatology vol 41, no 5, May 2021, pp 1191-1195

**Full URL:** <https://doi.org/10.1038/s41372-021-01000-1>

Correspondence piece presenting a study on increased depression and anxiety due to COVID-19 health worries among parents of infants in the neonatal intensive care unit. Parents reported symptoms of depression, generalised anxiety and feelings of loneliness, and this was heightened in those with infants who have been hospitalised for reasons other than prematurity. (LDO)

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## 2021-03588

**Vertical transmission of SARS-CoV-2: consider the denominator.** Shook LL, Collier AY, Goldfarb IT, et al (2021), American Journal of Obstetrics & Gynecology MFM vol 3, no 4, July 2021, 100386

Research letter presenting a study on vertical transmission from a cohort of pregnant women with SARS-CoV-2 infection in the United States. Results indicate that there were zero cases of SARS-CoV-2 infection in the 369 infants born to mothers who tested positive. (LDO)

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## 2021-03572

**The relationship of neurodevelopmental impairment to concurrent early childhood outcomes of extremely preterm infants.**

Rysavy MA, Colaizy TT, Bann CM, et al (2021), Journal of Perinatology vol 41, no 9, September 2021, pp 2270-2278

**Full URL:** <https://doi.org/10.1038/s41372-021-00999-7>

### Objective

Determine how neurodevelopmental impairment (NDI) relates to concurrent outcomes for children born extremely preterm.

### Study design

Retrospective cohort study children born 22 0/7–26 6/7 weeks' gestation at NICHD Neonatal Research Network hospitals.

Outcomes were ascertained at 18–22 months' corrected age.

### Result

Of 6562 children, 2618 (40%) died and 441 (7%) had no follow-up. Among the remaining 3483 children, 825 (24%), 1576 (45%), 657 (19%), and 425 (12%) had no, potential/mild, moderate, and severe NDI, respectively. Rehospitalization, respiratory medications, surgery, and medical support services were associated with greater NDI severity but affected >10% of children without NDI. Rehospitalization occurred in 40% of children with no NDI (mean (SD): 1.7 (1.3) episodes).

### Conclusion

Medical, functional, and social outcomes at 18–22 months' corrected age were associated with NDI; however, many children without NDI were affected. These data should contribute to counseling families and the design of studies for childhood outcomes beyond NDI. (Author)

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## 2021-03571

**Care of hospitalized infants and their families during the COVID-19 pandemic: an international survey.** Litmanovitz I, Silberstein D, Butler S, et al (2021), Journal of Perinatology vol 41, no 5, May 2021, pp 981-987

**Full URL:** <https://doi.org/10.1038/s41372-021-00960-8>

This research study explored changes in family-centered care practices for hospitalized infants and families due to the COVID-19 pandemic. This exploratory descriptive study used a 49-item online survey, distributed to health care

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professionals working with hospitalized infants and families. The sample consisted of 96 participants from 22 countries. Prior to the COVID-19 pandemic, 87% of units welcomed families and 92% encouraged skin-to-skin care. During the pandemic, family presence was restricted in 83% of units, while participation in infant care was restricted in 32%. Medium-sized (20–40 beds) units applied less restriction than small (<20 beds) units ( $p = 0.03$ ). Units with single-family rooms that did not restrict parental presence, implemented fewer restrictions regarding parents' active participation in care ( $p = 0.02$ ). Restrictions to families were not affected by geographic infection rates or developmental care education of health care professionals. Restrictions during the pandemic increased separation between the infant and family. (Author)

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## 2021-03378

**Presumptive Neonatal Multisystem Inflammatory Syndrome in Children Associated with Coronavirus Disease 2019.** Divekar AA, Patamasucon P, Benjamin JS (2021), American Journal of Perinatology vol 38, no 6, May 2021, pp 632-636

**Full URL:** <https://doi.org/10.1055/s-0041-1726318>

**Objective** The study aimed to alert the neonatal community to the possibility of multisystem inflammatory syndrome in children (MIS-C) like disease in critically ill neonates born to mothers with coronavirus disease 2019 (COVID-19).

**Study Design** Diagnosis of MIS-C like disease was pursued after echocardiography showed severely depressed ventricular function and pathological coronary artery dilation in the setting of medically refractory multisystem organ failure and maternal COVID-19 infection. The neonate did not respond to standard medical therapy, and there was no alternative disease that could explain the clinical course. High index of clinical suspicion coupled with low risk of intravenous immunoglobulin (IVIG) prompted us to pursue IVIG administration even though the neonate did not meet classic criteria for MIS-C.

**Result** Following treatment with IVIG, there was rapid clinical improvement. Ventricular function improved within 15 hours and coronary artery dilation resolved in 8 days. There was no recurrence of disease during follow-up.

**Conclusion** COVID-19 associated MIS-C like disease has not been well described in neonates. As typical features may be conspicuously absent, a high index of suspicion is warranted in critically ill neonates born to mothers with COVID-19. Echocardiography may provide critical diagnostic information and narrow the differential diagnosis. (Author)

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## 2021-03377

**Management and Early Outcomes of Neonates Born to Women with SARS-CoV-2 in 16 U.S. Hospitals.** Congdon JL, Kair LR, Flaherman VJ, et al (2021), American Journal of Perinatology vol 38, no 6, May 2021, pp 622-631

**Full URL:** <https://doi.org/10.1055/s-0041-1726036>

**Objective** There is a paucity of evidence to guide the clinical care of late preterm and term neonates born to women with perinatal severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection. The objective of this case series is to describe early neonatal outcomes and inpatient management in U.S. hospitals.

**Study Design** We solicited cases of mother–infant dyads affected by novel coronavirus disease 2019 (COVID-19) from the Better Outcomes through Research for Newborns (BORN) Network members. Using a structured case template, participating sites contributed deidentified, retrospective birth hospitalization data for neonates  $\geq 35$  weeks of gestation at birth with mothers who tested positive for SARS-CoV-2 before delivery. We describe demographic and clinical characteristics, clinical management, and neonatal outcomes.

**Results** Sixteen U.S. hospitals contributed 70 cases. Birth hospitalizations were uncomplicated for 66 (94%) neonates in which 4 (6%) required admission to a neonatal intensive care unit. None required evaluation or treatment for infection, and all who were tested for SARS-CoV-2 were negative ( $n = 57$ ). Half of the dyads were colocated ( $n = 34$ )

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and 40% directly breastfed (n = 28). Outpatient follow-up data were available for 13 neonates, all of whom remained asymptomatic.

**Conclusion** In this multisite case series of 70 neonates born to women with SARS-CoV-2 infection, clinical outcomes were overall good, and there were no documented neonatal SARS-CoV-2 infections. Clinical management was largely inconsistent with contemporaneous U.S. COVID-19 guidelines for nursery care, suggesting concerns about the acceptability and feasibility of those recommendations. Longitudinal studies are urgently needed to assess the benefits and harms of current practices to inform evidence-based clinical care and aid shared decision-making. (Author)

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## 2021-03234

**Covid-19 rarely transmits via breastfeeding.** Anon (2020), World of Irish Nursing & Midwifery vol 28, no 10, December 2020/January 2021, p 51

**Full URL:** <https://online.flippingbook.com/view/669323/50/>

Researchers in New York (1) have found that with basic infection-control measures, newborns can be breastfed skin to skin.

1. Dumitriu D. JAMA Pediatrics, vol 175, no 2, 12 October 2020, pp 157-167. (Author, edited)

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## 2021-03168

**SARS-COV-2 infection in pregnant women and newborns in a Spanish cohort (GESNEO-COVID) during the first wave.**

Carrasco I, Muñoz-Chapuli M, Vigil-Vázquez S, et al (2021), BMC Pregnancy and Childbirth vol 21, no 326, 26 April 2021

**Full URL:** <https://doi.org/10.1186/s12884-021-03784-8>

### Background

Knowledge about SARS-CoV-2 infection in pregnancy and newborns is scarce. The objective of this study is to analyse clinical and epidemiological characteristics of a cohort of women infected with SARS-CoV-2 during pregnancy and their newborns exposed to SARS-CoV-2 during gestation.

### Methods

Multicentric observational study of Spanish hospitals from the GESNEO-COVID cohort, participants in RECLIP (Spanish Network of Paediatric Clinical Assays). Women with confirmed SARS-CoV-2 infection by PCR and/or serology during pregnancy, diagnosed and delivering during the period 15/03/2020–31/07/2020 were included. Epidemiological, clinical, and analytical data was collected.

### Results

A total of 105 pregnant women with a median of 34.1 years old (IQR: 28.8–37.1) and 107 newborns were included. Globally, almost 65% of pregnant women had some COVID-19 symptoms and more than 43% were treated for SARS-CoV-2. Overall, 30.8% of pregnant women had pneumonia and 5 (4.8%) women were admitted to the intensive care unit needing invasive mechanical ventilation. There was a rate of 36.2% of caesarean sections, which was associated with pneumonia during pregnancy (OR: 4.203, CI 95%: 1.473–11.995) and lower gestational age at delivery (OR: 0.724, CI 95%: 0.578–0.906). The prevalence of preterm birth was 20.6% and prematurity was associated with pneumonia during gestation (OR: 6.970, CI95%: 2.340–22.750) and having a positive SARS-CoV-2 PCR at delivery (OR: 6.520, CI95%: 1.840–31.790). All nasopharyngeal PCR in newborns were negative at birth and one positivized at 15 days of life. Two newborns died, one due to causes related to prematurity and another of unexpected sudden death during early skin-to-skin contact after delivery.

### Conclusions

Although vertical transmission has not been reported in this cohort, the prognosis of newborns could be worsened by SARS-CoV-2 infection during pregnancy as COVID-19 pneumonia increased the risk of caesarean section deliveries and preterm births. (Author)

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2021-03146

**Maternal and neonatal morbidity and mortality among pregnant women with and without COVID-19 infection: The INTERCOVID Multinational Cohort Study.** Villar J, Ariff S, Gunier RB, et al (2021), JAMA Pediatrics 22 April 2021, online

Full URL: <https://doi.org/10.1001/jamapediatrics.2021.1050>

Importance: Detailed information about the association of COVID-19 with outcomes in pregnant individuals compared with not-infected pregnant individuals is much needed.

Objective: To evaluate the risks associated with COVID-19 in pregnancy on maternal and neonatal outcomes compared with not-infected, concomitant pregnant individuals.

Design, setting, and participants: In this cohort study that took place from March to October 2020, involving 43 institutions in 18 countries, 2 unmatched, consecutive, not-infected women were concomitantly enrolled immediately after each infected woman was identified, at any stage of pregnancy or delivery, and at the same level of care to minimize bias. Women and neonates were followed up until hospital discharge.

Exposures: COVID-19 in pregnancy determined by laboratory confirmation of COVID-19 and/or radiological pulmonary findings or 2 or more predefined COVID-19 symptoms.

Main outcomes and measures: The primary outcome measures were indices of (maternal and severe neonatal/perinatal) morbidity and mortality; the individual components of these indices were secondary outcomes. Models for these outcomes were adjusted for country, month entering study, maternal age, and history of morbidity.

Results: A total of 706 pregnant women with COVID-19 diagnosis and 1424 pregnant women without COVID-19 diagnosis were enrolled, all with broadly similar demographic characteristics (mean [SD] age, 30.2 [6.1] years). Overweight early in pregnancy occurred in 323 women (48.6%) with COVID-19 diagnosis and 554 women (40.2%) without. Women with COVID-19 diagnosis were at higher risk for preeclampsia/eclampsia (relative risk [RR], 1.76; 95% CI, 1.27-2.43), severe infections (RR, 3.38; 95% CI, 1.63-7.01), intensive care unit admission (RR, 5.04; 95% CI, 3.13-8.10), maternal mortality (RR, 22.3; 95% CI, 2.88-172), preterm birth (RR, 1.59; 95% CI, 1.30-1.94), medically indicated preterm birth (RR, 1.97; 95% CI, 1.56-2.51), severe neonatal morbidity index (RR, 2.66; 95% CI, 1.69-4.18), and severe perinatal morbidity and mortality index (RR, 2.14; 95% CI, 1.66-2.75). Fever and shortness of breath for any duration was associated with increased risk of severe maternal complications (RR, 2.56; 95% CI, 1.92-3.40) and neonatal complications (RR, 4.97; 95% CI, 2.11-11.69). Asymptomatic women with COVID-19 diagnosis remained at higher risk only for maternal morbidity (RR, 1.24; 95% CI, 1.00-1.54) and preeclampsia (RR, 1.63; 95% CI, 1.01-2.63). Among women who tested positive (98.1% by real-time polymerase chain reaction), 54 (13%) of their neonates tested positive. Cesarean delivery (RR, 2.15; 95% CI, 1.18-3.91) but not breastfeeding (RR, 1.10; 95% CI, 0.66-1.85) was associated with increased risk for neonatal test positivity.

Conclusions and relevance: In this multinational cohort study, COVID-19 in pregnancy was associated with consistent and substantial increases in severe maternal morbidity and mortality and neonatal complications when pregnant women with and without COVID-19 diagnosis were compared. The findings should alert pregnant individuals and clinicians to implement strictly all the recommended COVID-19 preventive measures. (Author)

2021-02856

**Telemedicine use in neonatal follow-up programs – What can we do and what we can't – Lessons learned from COVID-19.**

DeMauro SB, Duncan AF, Hurt H (2021), Seminars in Perinatology vol 45, no 5, August 2021, 151430

Little empirical data support the use of telemedicine to provide medical and developmental follow-up care to preterm and high-risk infants after hospital discharge. Nevertheless, the COVID-19 pandemic temporarily rendered telemedicine the only means by which to provide essential follow-up care to this population. In this article we discuss our institution's experience with rapid implementation of telemedicine in a multi-site neonatal follow-up program as

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well as benefits and limitations of the use of telemedicine in this context. Finally, we discuss the current problems that must be solved in order to optimize telemedicine as a tool for providing comprehensive, multidisciplinary medical and developmental care to high risk infants and their families. (Author)

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#### 2021-02814

**Severe acute respiratory syndrome coronavirus 2 detected in placentas of 2 coronavirus disease 2019–positive asymptomatic pregnant women—case report.** Sanchez J, Vigil-De Gracia P, Guerrero E, et al (2021), *AJOG Global Reports* vol 1, no 1, February 2021, 100001

**Full URL:** <https://doi.org/10.1016/j.xagr.2020.100001>

There is limited evidence regarding severe acute respiratory syndrome coronavirus 2 infection in the placenta of pregnant women who tested positive, and if this could be a route for vertical transmission of the virus in utero. We present the cases of 2 pregnant women in their third trimester who were admitted for delivery by cesarean delivery and who, through universal screening, tested positive for coronavirus disease 2019. The maternal and fetal sides of the placenta were sectioned from both patients for viral analysis. Real-time polymerase chain reaction analysis of the placental-extracted RNA revealed a severe acute respiratory syndrome coronavirus 2 infection on the fetal side of the placenta in both patients. The virus was isolated from the patient with the lowest cycle threshold value on the fetal side of the placenta. Whole genome sequencing showed that the virus detected in this placenta was from the B1 lineage. Immunohistochemical analysis of the placental tissue detected severe acute respiratory syndrome coronavirus 2 in the endothelial cells of chorionic villi vessels proximal to both the maternal and fetal sides, with a granular cytoplasmic pattern and perinuclear reinforcement. Histologic examination of the placenta also detected a dense infiltrate of lymphoid cells around decidual vessels and endothelial cells with cytopathic changes, especially on the maternal side. Nasopharyngeal swabs from the infants that were subjected to reverse transcription quantitative polymerase chain reaction testing were negative for severe acute respiratory syndrome coronavirus 2 at 24 hours after birth. A follow-up analysis of the infants for immunoglobulin G and immunoglobulin M expression, clinical manifestations, and long-term developmental abnormalities is recommended. (Author)

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#### 2021-02754

**Birdie's Tree: Supporting social emotional wellbeing of babies and young children in a changing world.** Baldwin A, De Young A (2021), *International Journal of Birth and Parent Education* vol 8, no 3, April 2021, pp 34-37

COVID-19 has highlighted the social and emotional needs of babies and young children during natural hazards and other disruptive societal events such as pandemics. Caregivers can help by providing warm and responsive caregiving, maintaining or re-establishing familiar routines, providing age-appropriate information and gently correcting misperceptions, regularly doing things outside the home when possible, and limiting children's exposure to media about the event. It's important that caregivers are supported in their own mental health and wellbeing, so they can care for children with calmness and optimism. Talking, playing and reading stories with children can help them understand what's happening and work through 'big feelings' like anger, sadness, worry, fear and loneliness. The Birdie's Tree storybooks and resources, produced by the Queensland Centre for Perinatal and Infant Mental Health, are specifically designed to help support the social emotional wellbeing of children aged 0-4 through disruptive events. These resources can be freely accessed through the Birdie's Tree website. (Author, edited)

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#### 2021-02703

**Baby Care Units: Nurses [written answer].** House of Commons (2020), Hansard Written question 133067, 30 December 2020

**Full URL:** <https://questions-statements.parliament.uk/written-questions/detail/2020-12-30/133067>

Nadhim Zahawi responds to a written question from Vicky Foxcroft to the Secretary of State for Health and Social Care, with reference to the findings of the National Neonatal Audit Programme, published November 2020, that 37 per cent of neonatal intensive care unit shifts met the qualified in speciality (QIS) specification for neonatal nurses in 2019, how many QIS trained neonatal nurses have been redeployed to the covid-19 vaccine programme; and what steps he plans to take to support units to backfill those specialist roles while vaccine rollout is ongoing. (Author, edited)

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2021-02668

**Intimate Partner Violence and the pandemic.** Cronin L (2021), International Journal of Birth and Parent Education vol 8, no 3, April 2021, pp 16-21

Explores the increase in intimate partner violence towards women and children during the COVID-19 pandemic. Discusses the physical, emotional and social impacts of violence towards infants and young children. (LDO)

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2021-02666

**Understanding the needs of young children and families during the pandemic: Insights from the early stages of COVID-19.** Anon (2021), International Journal of Birth and Parent Education vol 8, no 3, April 2021, pp 8-11

This article is adapted from 'A Better Start – Responding to COVID-19', published in the UK by The National Lottery Community Fund in September 2020 (1). The report refers to the five A Better Start areas in England (Blackpool, Bradford, Nottingham, Lambeth, Southend-on-Sea). These areas have increased needs, based on data on deprivation and child and maternal health outcomes. The report identified the profound impact of COVID-19 on very young children and families.

1. The National Lottery Community Fund. A Better Start - responding to COVID-19. September 2020.

<https://www.tnlcommunityfund.org.uk/media/insights/documents/ABS-reponding-to-covid19.pdf>. (Author, edited)

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2021-02662

**COVID-19: A lasting legacy.** Nolan M (2021), International Journal of Birth and Parent Education vol 8, no 3, April 2021, p 2

Mary Nolan, Editor, reflects on the impact of the pandemic on the education and life chances of our youngest children. (Author)

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2021-02573

**Multisystem inflammatory syndrome in a neonate, temporally associated with prenatal exposure to SARS-CoV-2: a case report.** Kappanayil M, Balan S, Alawani S, et al (2021), The Lancet Child & Adolescent Health vol 5, no 4, April 2021, pp 304-308

Full URL: [https://doi.org/10.1016/S2352-4642\(21\)00055-9](https://doi.org/10.1016/S2352-4642(21)00055-9)

Presents the case of a 24-day-old neonate admitted to the paediatric cardiac intensive care unit with severe hyperinflammatory syndrome. The baby's mother had tested positive for COVID-19 at 31 weeks' gestation. (MB)

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2021-02511

**SOGC Statement on the COVID-19 vaccines and rare adverse outcomes of thrombosis associated with low platelets.** Society of Obstetricians and Gynaecologists of Canada (2021), Ottawa, Canada: SOGC 20 April 2021

Full URL: [https://sogc.org/common/Uploaded%20files/Latest%20News/EN\\_Statement-COVID-19\\_vaccines\\_rare\\_adverse\\_thrombosis.pdf](https://sogc.org/common/Uploaded%20files/Latest%20News/EN_Statement-COVID-19_vaccines_rare_adverse_thrombosis.pdf)

Statement from the Society of Obstetricians and Gynaecologists of Canada (SOGC) on COVID-19 vaccination in pregnancy and rare adverse outcomes. SOGC supports the use of all available COVID-19 vaccines approved in Canada in any pregnancy trimester and during breastfeeding in accordance with regional eligibility. (LDO)

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2021-02488

**Maternal, neonatal and placental characteristics of SARS-CoV-2 positive mothers.** Zhang P, Heyman T, Greechan M, et al (2022), Journal of Maternal-Fetal and Neonatal Medicine vol 35, no 25, 2022, pp 5783-5791

Background

COVID19 is caused by a newly identified severe acute respiratory syndrome coronavirus 2 (SARS-CoV2) that affects pregnant women equally to the general population. How SARS-CoV2 affects the mothers, the neonates and the placental pathology remain controversial.

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## Objective

To explore the effects of maternal SARS-CoV2 infection on the neonates and placental pathology in comparison to those from the normal pregnancies.

## Study design

Maternal, neonatal and placental pathology data were collected from medical records between March and August 2020 from New York Presbyterian- Brooklyn Methodist Hospital. The data from a total 142 neonates and 101 placentas from SARS-CoV2 positive mothers were compared with those from SARS-CoV2 negative mothers.

## Results

There were 142 SARS-CoV2 positive mothers within the study group, and 43 (36%) of them showed various degrees of COVID19 related clinical symptoms including fever (13.8%), cough (5.7%), loss of taste/smell (anosmia)(5.6%), shortness of breath (2.4%), muscle ache (2.4%), headache (1.6%) and pneumonia (0.8%). A total 142 neonates were born to the SARS-CoV-2 positive mothers, and only 1 neonate tested positive for SARS-CoV2 in the first 24 h. Two additional neonates were initially tested negative in first 24 h, and later tested positive on day 7 and the 1 month visit, and all these neonates were asymptomatic and had no sequelae. There was no increase of pre-term labor and delivery or NICU admissions from SARS-CoV2 positive mothers. Examination of 101 placentas from SARS-CoV2 positive mothers and 121 placentas from SARS-CoV2 negative mothers revealed no increase of placental pathologic features. There were more vaginal deliveries and more meconium stain of fetal membranes from the SARS-CoV2 positive mothers. Previous reports of more maternal vascular malperfusion and fetal vascular malperfusion were not demonstrated in our current data.

## Conclusion

Although SARS-CoV2 is a significant risk to the pregnant women (mothers) and general population, there is no increased risk for neonates. Vertical transmission is rare, and perinatal transmission can also occur. There is no increased frequency of placental abnormalities in both maternal and fetal circulation. (Author)

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## 2021-02466

**Global investment is needed so that countries can reduce neonatal mortality to below 12 deaths per 1000 live births by 2030.** Persson LÅ (2021), Acta Paediatrica vol 110, no 1, January 2021, pp 14-16

Editorial discussing the Sustainable Development Goals and the strategy to reduce neonatal mortality to 12 per 1000 live births or lower by 2030. Highlights an article by Cavallin et al (1) which analyses the management of newborn babies in Ethiopia.

1. Cavallin F et al. Acta Paediatrica, vol 110, no 1, January 2021, pp 68-71. <https://doi.org/10.1111/apa.15463>. (LDO)

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## 2021-02465

**Aerosol generation by respiratory support of neonates may be low.** Poorisrisak P, Bivolarova MP, Bekö G, et al (2021), Acta Paediatrica vol 110, no 6, June 2021, pp 1810-1811

Brief report aiming to measure average aerosol particle mass concentration and size distribution near infants receiving respiratory support in the neonatal intensive care unit. This study may be used to assess risk of aerosol transmission from infants with COVID-19 to health care staff during respiratory support. (LDO)

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## 2021-02461

**Using the COVID-19 as an excuse for unjustified devaluation of preterm infants.** Haward MF, Janvier A, Lorenz JM (2021), Acta Paediatrica vol 110, no 4, April 2021, pp 1097-1099

Editorial discussing the ethics of providing care to premature infants during the COVID-19 pandemic. The authors disagree with Kaempf et al (1) and suggest that depriving care to extremely premature infants may be seen as coercive.

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## 2021-02416

**SARS-CoV-2 detection in human milk: a systematic review.** Kumar J, Meena J, Yadav A, et al (2022), Journal of Maternal-Fetal and Neonatal Medicine vol 35, no 25, 2022, pp 5456-5463

### Purpose

To synthesize the current evidence for the presence of SARS-CoV-2 RNA in the human milk of mothers with confirmed COVID-19 and its potential role in neonatal SARS-CoV-2 infection.

### Materials and methods

Using terms related to novel coronavirus 2019 and human milk, a systematic search was performed in three electronic databases (PubMed, EMBASE, and Web of Science) for studies published between December 2019 and 15 October 2020. Published peer-reviewed studies reporting the results of RT-PCR for SARS-CoV-2 RNA in human milk in mothers with confirmed COVID-19 were included. Proportion meta-analysis of case series and prospective cohort studies was performed using STATA version 14.2 (StataCorp, College Station, TX) and pooled estimate (with 95% confidence interval) of overall incidence of SARS-CoV-2 transmission was calculated.

### Results

We identified 936 records, of which 34 studies (24 case-reports, 10 cohort studies) were eligible for this systematic review. A total of 116 confirmed COVID-19 lactating women (88 in cohort and 28 in case-reports) underwent RT-PCR testing in human milk, and 10 (six in case reports) were detected to have SARS-CoV-2 RNA. The overall pooled proportion (from cohort studies) for SARS-CoV-2 RNA detection in human milk was 2.16% (95% CI: 0.0–8.81%, I<sup>2</sup>: 0%). Four studies (six patients) also reported the presence of SARS-CoV-2 specific antibodies (along with RT-PCR) in human milk.

### Conclusions

The limited low-quality evidence suggests that SARS-CoV-2 RNA is detected in human milk in an extremely low proportion, however, based on current evidence no conclusion can be drawn about its infectivity and impact on the infants. In concordance with World Health Organization recommendations, exclusive breastfeeding should be considered in all cases unless any other contraindication exists. (Author)

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## 2021-02363

**Breastfeeding During a Pandemic: The Influence of COVID-19 on Lactation Services in the Northeastern United States.**

Schindler-Ruwisch J, Phillips KE (2021), Journal of Human Lactation vol 37, no 2, May 2021, pp 260-268

**Full URL:** <https://doi.org/10.1177/08903344211003898>

### Background

Pandemic-related restrictions have limited traditional models of lactation support.

### Research Aims

The primary aim of this study was to determine changes to breastfeeding support services during the coronavirus-2019 pandemic according to trained lactation providers. The secondary aim was to assess strengths and limitations of telehealth services.

### Methods

A prospective survey was conducted entirely online using the Qualtrics platform during June 2020. Gatekeepers at Connecticut agencies and breastfeeding networks were forwarded an anonymous survey link to distribute to eligible lactation staff.

### Results

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A variety of participants (N = 39) completed the survey and the majority (69.2%; n = 27) were providing only telehealth services. More than half (58.1%; n = 18) of the participants who conducting telehealth in any form, found that virtual lactation support was moderately effective compared to in-person support. Weakness of virtual support included technical and logistical difficulties, challenges assisting with latching or reading body language over the phone or online, and accurately assessing infant growth. Strengths related to virtual support included the flexibility and convenience of home-based support, expanded communication strategies, and safety from virus exposure. Further, visits with a lactation professional decreased significantly during the pandemic. Limited in-hospital and pediatrician support were also noted, particularly among groups without access to telehealth resources.

## Conclusions

As a result of the pandemic and associated shifts in lactation services, breastfeeding disparities may be further exacerbated among those without equitable access to lactation support. Challenges and innovations in virtual support may influence adaptive options in the field moving forward. (Author)

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## 2021-02344

**A Case Study Supporting Lack of SARS-CoV-2 Spread to a 3-Month Old Infant Through Exclusive Breastfeeding.** Liu W, Liu Y, Liu Z, et al (2021), Journal of Human Lactation vol 37, no 2, May 2021, pp 269-272

## Introduction

During the Coronavirus Disease 2019 global pandemic, maternal and newborn wellbeing has received much attention. Detailed reports of infected women breastfeeding their infants are uncommon. Due to incomplete information available, full data about those infants' outcomes are lacking, and evidence of infectivity through breastfeeding has not been documented.

## Main Issue

Here, we report about a mother who breastfed her infant until she was confirmed with the SARS-Cov-2 infection. After follow-up, we have confirmed that the infant, who was breastfed by the infected mother, was not infected.

## Methods

A 33-year-old woman gave birth to a full-term male infant on November 8, 2019. Since birth, she had been exclusively breastfeeding the baby until she was confirmed with the SARS-Cov-2 infection on February 8, 2020. She was hospitalized, isolated from her baby, and stopped breastfeeding. Even though she remained asymptomatic, her milk was expressed using a breast pump and discarded. The mother's milk sample was collected on February 9, 2020, and the result of the nucleic acid test for COVID-19 was negative. Her infant was asymptomatic and remained virus negative. Her laboratory findings and chest Computed Tomography imaging was normal. She was treated according to the national protocol with aerosolized interferon  $\alpha 2\beta$ , lopinavir/ritonavir and ribavirin. Her serum SARS-CoV-2 specific antibodies(IgG and IgM) tested positive when discharged. She returned to breastfeeding after discharge.

## Conclusion

Our findings suggest that breastfeeding may be less of a risk than anticipated. Additional research is needed to explore this possibility. (Author)

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## 2021-02255

**Family-centered care management strategies for term and near-term neonates with brief hospitalization in a level III NICU in Shenzhen, China during the time of COVID-19 pandemic.** Yi Y-Z, Su T, Jia Y-Z, et al (2022), Journal of Maternal-Fetal and Neonatal Medicine vol 35, no 25, 2022, pp 5923-5926

## Background

Adopting the family-centered care (FCC) approach in the neonatal care has been shown to improve breastfeeding rate and parental satisfaction. To minimize the transmission of COVID-19, family visit in neonatal intensive care unit (NICU) was suspended in China. In order to maintain the benefits of FCC, the Hong Kong University-Shenzhen Hospital NICU

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modified FCC strategies. We evaluated the effects of new strategies and aimed to share our results and experience with other NICUs during the COVID-19 pandemic.

## Methods

Using prospectively collected hospital databases, we retrospectively compared the demographic and clinical data of neonates, rates of breastfeeding at discharge, nosocomial infection and parental satisfaction one month before (open group) and after (closed group) the implementation of alternative FCC management strategies when family visit was suspended during COVID-19 pandemic.

## Results

During the COVID-19 pandemic, we organized a multidisciplinary task force and adopted strategies of triage and screening, management of suspected infants, and breastfeeding promotion with effective communication. The nosocomial infection rate and parental satisfaction for open and closed groups (144 and 108 term and near-term neonates with brief hospitalization, respectively) were not different (1% vs. 0%,  $p = 1.00$ ; 98.6 vs. 98.8,  $p = .80$ ; respectively). Breastfeeding rate at discharge decreased but the difference was not significant (74% vs. 80%,  $p = .29$ ).

## Conclusions

In our experience, in term and near-term neonates with brief hospitalization, the alternative FCC strategies maintained high parental satisfaction without increased nosocomial infection rate, but strong support for breastfeeding was needed. Through multidisciplinary collaboration, the continuation of “modified” FCC in a level III NICU is feasible in the context of COVID-19 pandemic with reduced family visitation and participation in the care.

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## 2021-02251

### Assessment of Respiratory Function in Infants and Young Children Wearing Face Masks During the COVID-19 Pandemic.

Lubrano R, Bloise S, Testa A, et al (2021), JAMA Network Open vol 4, no 3, March 2021, e210414

**Full URL:** <https://doi.org/10.1001/jamanetworkopen.2021.0414>

**Importance** Face masks have been associated with effective prevention of diffusion of viruses via droplets. However, the use of face masks among children, especially those aged younger than 3 years, is debated, and the US Centers for Disease Control and American Academy of Physicians recommend the use of face mask only among individuals aged 3 years or older.

**Objective** To examine whether the use of surgical facial masks among children is associated with episodes of oxygen desaturation or respiratory distress.

**Design, Setting, and Participants** This cohort study was conducted from May through June 2020 in a secondary-level hospital pediatric unit in Italy. Included participants were 47 healthy children divided by age (ie, group A, aged  $\leq 24$  months, and group B, aged  $> 24$  months to  $\leq 144$  months). Data were analyzed from May through June 2020.

**Interventions** All participants were monitored every 15 minutes for changes in respiratory parameters for the first 30 minutes while not wearing a surgical face mask and for the next 30 minutes while wearing a face mask. Children aged 24 months and older then participated in a walking test for 12 minutes.

**Main Outcomes and Measures** Changes in respiratory parameters during the use of surgical masks were evaluated.

**Results** Among 47 children, 22 children (46.8%) were aged 24 months or younger (ie, group A), with 11 boys (50.0%) and median (interquartile range [IQR]) age 12.5 (10.0-17.5) months, and 25 children (53.2%) were aged older than 24 months to 144 months or younger, with 13 boys (52.0%) and median (IQR) age 100.0 (72.0-120.0) months. During the first 60 minutes of evaluation in the 2 groups, there was no significant change in group A in median (IQR) partial pressure of end-tidal carbon dioxide (Petco<sub>2</sub>; 33.0 [32.0-34.0] mm Hg;  $P$  for Kruskal Wallis = .59), oxygen saturation (Sao<sub>2</sub>; 98.0% [97.0%-99.0%];  $P$  for Kruskal Wallis = .61), pulse rate (PR; 130.0 [115.0-140.0] pulsations/min;  $P$  for Kruskal

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Wallis = .99), or respiratory rate (RR; 30.0 [28.0-33.0] breaths/min; P for Kruskal Wallis = .69) or for group B in median (IQR) Petco2 (36.0 [34.0-38.0] mm Hg; P for Kruskal Wallis = .97), Sao2 (98.0% [97.0%-98.0%]; P for Kruskal Wallis = .52), PR (96.0 [84.0-104.5] pulsations/min; P for Kruskal Wallis test = .48), or RR (22.0 [20.0-25.0] breaths/min; P for Kruskal Wallis = .55). After the group B walking test, compared with before the walking test, there was a significant increase in median (IQR) PR (96.0 [84.0-104.5] pulsations/min vs 105.0 [100.0-115.0] pulsations/min; P < .02) and RR (22.0 [20.0-25.0] breaths/min vs 26.0 [24.0-29.0] breaths/min; P < .05).

**Conclusions and Relevance** This cohort study among infants and young children in Italy found that the use of facial masks was not associated with significant changes in Sao2 or Petco2, including among children aged 24 months and younger.

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## 2021-02240

**Parental access to neonatal units: inconsistency during the COVID-19 pandemic.** Fonfe A, Clements D, McKechnie L (2021), Infant vol 17, no 2, March 2021

An electronic survey was conducted to determine policy changes to parental access on neonatal units during the COVID-19 pandemic in the UK. The survey found that all responding units changed their policies and in many, parents were not allowed to visit their baby together. The survey highlights potential negative effects these policy changes are having on babies, their families and neonatal staff. Allowing parents to spend time with their baby together in a safe way during this pandemic should be a priority in neonatal care and this article considers ways in which the neonatal team can support this. (Author)

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## 2021-02235

**Neonatal SARS-CoV-2 infection: is this a vertical transmission?** Adeniyi F, Rath S, Wey Y (2021), Infant vol 17, no 2, March 2021

Neonatal COVID-19, its manifestations and transmission, remains unclear. As the pandemic continues more evidence will emerge but so far, vertical transmission of COVID-19 is rare with just a few reports in the literature.<sup>1</sup> We share our experience of managing a preterm newborn with COVID-19 in our neonatal intensive care unit (NICU) where the vertical route seems the most likely mode of transmission. (Author)

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## 2021-02195

**Clinical Characteristics and Disease Severity Among Infants With SARS-CoV-2 Infection in Montreal, Quebec, Canada.**

Panetta L, Proulx C, Drouin O, et al (2020), JAMA Network Open vol 3, no 12, December 2020, e2030470

**Full URL:** <https://doi.org/10.1001/jamanetworkopen.2020.30470>

This case series describes clinical characteristics and disease severity in infants who had SARS-CoV-2 infection in Montreal, Quebec, Canada.

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## 2021-02187

**Assessment of Maternal and Neonatal SARS-CoV-2 Viral Load, Transplacental Antibody Transfer, and Placental Pathology in Pregnancies During the COVID-19 Pandemic.** Edlow AG, Li JZ, Collier A-RY, et al (2020), JAMA Network Open vol 3, no 12, December 2020, e2030455

**Full URL:** <https://doi.org/10.1001/jamanetworkopen.2020.30455>

**Importance** Biological data are lacking with respect to risk of vertical transmission and mechanisms of fetoplacental protection in maternal severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection.

**Objective** To quantify SARS-CoV-2 viral load in maternal and neonatal biofluids, transplacental passage of anti-SARS-CoV-2 antibody, and incidence of fetoplacental infection.

**Design, Setting, and Participants** This cohort study was conducted among pregnant women presenting for care at 3

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tertiary care centers in Boston, Massachusetts. Women with reverse transcription–polymerase chain reaction (RT-PCR) results positive for SARS-CoV-2 were recruited from April 2 to June 13, 2020, and follow-up occurred through July 10, 2020. Contemporaneous participants without SARS-CoV-2 infection were enrolled as a convenience sample from pregnant women with RT-PCR results negative for SARS-CoV-2.

**Exposures** SARS-CoV-2 infection in pregnancy, defined by nasopharyngeal swab RT-PCR.

**Main Outcomes and Measures** The main outcomes were SARS-CoV-2 viral load in maternal plasma or respiratory fluids and umbilical cord plasma, quantification of anti-SARS-CoV-2 antibodies in maternal and cord plasma, and presence of SARS-CoV-2 RNA in the placenta.

**Results** Among 127 pregnant women enrolled, 64 with RT-PCR results positive for SARS-CoV-2 (mean [SD] age, 31.6 [5.6] years) and 63 with RT-PCR results negative for SARS-CoV-2 (mean [SD] age, 33.9 [5.4] years) provided samples for analysis. Of women with SARS-CoV-2 infection, 23 (36%) were asymptomatic, 22 (34%) had mild disease, 7 (11%) had moderate disease, 10 (16%) had severe disease, and 2 (3%) had critical disease. In viral load analyses among 107 women, there was no detectable viremia in maternal or cord blood and no evidence of vertical transmission. Among 77 neonates tested in whom SARS-CoV-2 antibodies were quantified in cord blood, 1 had detectable immunoglobulin M to nucleocapsid. Among 88 placentas tested, SARS-CoV-2 RNA was not detected in any. In antibody analyses among 37 women with SARS-CoV-2 infection, anti-receptor binding domain immunoglobulin G was detected in 24 women (65%) and anti-nucleocapsid was detected in 26 women (70%). Mother-to-neonate transfer of anti-SARS-CoV-2 antibodies was significantly lower than transfer of anti-influenza hemagglutinin A antibodies (mean [SD] cord-to-maternal ratio: anti-receptor binding domain immunoglobulin G, 0.72 [0.57]; anti-nucleocapsid, 0.74 [0.44]; anti-influenza, 1.44 [0.80];  $P < .001$ ). Nonoverlapping placental expression of SARS-CoV-2 receptors angiotensin-converting enzyme 2 and transmembrane serine protease 2 was noted.

**Conclusions and Relevance** In this cohort study, there was no evidence of placental infection or definitive vertical transmission of SARS-CoV-2. Transplacental transfer of anti-SARS-CoV-2 antibodies was inefficient. Lack of viremia and reduced coexpression and colocalization of placental angiotensin-converting enzyme 2 and transmembrane serine protease 2 may serve as protective mechanisms against vertical transmission.

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## 2021-02178

### High Levels of Interferon-Alpha Expressing Macrophages in Human Breast Milk During SARS-CoV-2 Infection: A Case Report.

Yu JC, Khodadadi H, Lopes Salles É, et al (2021), Breastfeeding Medicine vol 16, no 5, May 2021, pp 439-442

**Full URL:** <https://doi.org/10.1089/bfm.2020.0369>

**Introduction:** In addition to hand washing and wearing masks, social distancing and reducing exposure time to <15 minutes are the most effective measures against the spread of COVID-19. Unfortunately, three of these guidelines are very difficult, if not impossible, for nursing babies: they cannot wear masks, stay six feet away from the lactating breasts, nor consistently finish within 15 minutes while nursing. We report a case of a nursing mother with SARS-CoV-2 infection, documenting changes of immune cells and cytokines in breast milk with and without the infection.

**Case Description:** With Institutional Review Board (IRB) approval, we obtained expressed breast milk samples from a lactating mother before and during SARS-CoV-2 infection as documented by reverse transcription-PCR. Using flow cytometry analysis, we measured the immune cell profiles and expression of cytokines such as interferon alpha (IFN $\alpha$ ) in milk leukocytes before and during infection.

**Results:** There was an eightfold increase in IFN $\alpha$ + milk leukocytes, from 1% before SARS-CoV-2 infection to 8% when actively infected. The milk macrophages showed the highest increase in IFN $\alpha$  expression. Both T and B lymphocytes showed mild increase. Innate lymphoid cells, neutrophils, and natural killer cells showed no increase in IFN $\alpha$  expression and the dendritic cells actually showed a reduction.

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Conclusion: We document the presence and high expression of IFN $\alpha$  in the breast milk macrophages of a lactating mother with confirmed COVID-19, compared with her milk before the infection. (Author)

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## 2021-02164

**Comparison of Severe Acute Respiratory Syndrome Coronavirus 2-Specific Antibodies' Binding Capacity Between Human Milk and Serum from Coronavirus Disease 2019-Recovered Women.** Demers-Mathieu V, DaPra C, Medo E (2021), Breastfeeding Medicine vol 16, no 5, May 2021, pp 393-401

Full URL: <https://doi.org/10.1089/bfm.2020.0381>

Background: Human milk from coronavirus disease 2019 (COVID-19)-recovered women may be useful as oral antibody therapy to prevent severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection and provide long-term immunity to neonates and young children. As convalescent plasma is already used as antibody therapy, this study aimed to compare the binding capacity of antibodies specific to the receptor-binding domain (RBD) of SARS-CoV-2 between human milk and serum from COVID-19-recovered women.

Materials and Methods: The areas under the curve (AUCs) for IgA, IgM, and IgG specific to the SARS-CoV-2 RBD in human milk and serum samples were measured using enzyme-linked immunosorbent assay. Milk samples were collected from 12 COVID-19-recovered women, while serum samples were from 10 COVID-19-recovered women. The antibody concentrations were also determined.

Results: Our study reveals that SARS-CoV-2 RBD-specific antibody titers differed between human milk and serum samples from COVID-19-recovered women. When the AUCs were not divided by the antibody concentration, SARS-CoV-2 RBD-specific IgA, IgM, and IgG levels were higher in the serum sample group than the human milk group ( $p < 0.001$ ). However, the titers of SARS-CoV-2 RBD-specific IgM (AUC/ $\mu$ g of IgM) and IgG (AUC/ $\mu$ g of IgG) were higher in human milk samples than serum samples ( $p < 0.05$ ). The titer of SARS-CoV-2 RBD-specific IgA (AUC/mg of IgA) was higher in the serum sample group than the human milk group ( $p < 0.01$ ).

Conclusions: Human milk antibodies specific to the RBD of SARS-CoV-2 must be purified to obtain comparable binding capacity observed with SARS-CoV-2 RBD-specific serum antibodies. (Author)

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## 2021-02062

**Pregnancy, Postpartum Care, and COVID-19 Vaccination in 2021.** Rasmussen SA, Jamieson DJ (2021), JAMA (Journal of the American Medical Association) Vol 325, no 11, 16 March 2021, pp 1099-1100

Full URL: <https://doi.org/10.1001/jama.2021.1683>

This JAMA Insights review summarizes the epidemiology of SARS-CoV-2 infection in pregnant and lactating women, its effects on perinatal outcomes, and compiles guidance from the CDC, FDA, and obstetrics-gynecology specialty organizations on the safety of coronavirus vaccines during pregnancy and while breastfeeding.

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## 2021-02061

**COVID-19 Vaccination in Pregnant and Lactating Women.** Adhikari EH, Spong CY (2021), JAMA (Journal of the American Medical Association) Vol 325, no 11, 16 March 2021, pp 1039-1040

Full URL: <https://doi.org/10.1001/jama.2021.1658>

This Viewpoint discusses the need for shared decision-making when counseling pregnant and nursing women about the unstudied benefits and risks COVID-19 vaccination, calling for rigorously designed studies with real-time, proactive data collection to establish evidence as quickly as possible about coronavirus vaccine safety in mothers and their infants.

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## 2021-02013

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**Why are so many babies dying of Covid-19 in Brazil?** Passarinho N, Barrucho L (2021), BBC News 15 April 2021

**Full URL:** <https://www.bbc.co.uk/news/world-latin-america-56696907>

Reports that, despite the evidence that COVID-19 in babies is rarely fatal, in Brazil, 1300 young children have succumbed to the virus.

Figures from the Brazilian Ministry of Health show that between February 2020 and 15 March 2021, 852 children aged nine and under, including 518 who were less than 12 months old, died of COVID-19. But Dr Fatima Marinho believes the actual number is much higher than this, with the lack of COVID testing leading to underreporting of the disease.

Brazil has the second highest number of COVID cases in the world, and this has increased the likelihood of babies and young children contracting the illness.

Includes the personal experience of Jessika Ricarte, whose one-year-old son, Lucas, died from complications of coronavirus, two months after falling ill and having been refused a test for COVID, as his symptoms were not typical. (JSM)

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## 2021-01803

**Could children born to mothers with COVID-19 be more prone to non-communicable diseases?** Malamitsi-Puchner A, Briana DD, Giudice L, et al (2021), Acta Paediatrica vol 110, no 4, April 2021, pp 1367-1368

Commentary on the potential increase in non-communicable diseases for infants born to mothers with COVID-19. The authors suggest that long-term follow-up studies are urgently needed. (LDO)

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## 2021-01791

**The aftermath of SARS-CoV-2 in NICU: saving or checking accounts? Projected cost-effectiveness analysis.** Galderisi A, Lolli E, Cavicchiolo ME, et al (2021), European Journal of Pediatrics vol 180, no 5, May 2021, pp 1631-1635

**Full URL:** <https://doi.org/10.1007/s00431-020-03884-1>

In the aftermath of the SARS-CoV-2 pandemic, we revised the cost-effectiveness of the exploited interventions in neonatal intensive care unit, to redefine future strategies for hospital management. Costs were revised with respect to the lockdown R0 or under different R0 scenarios to estimate the cost-effectiveness of the screening program adopted. Weekly nasopharyngeal swabs for parents, neonates, and personnel were the major cost during the pandemic, although they effectively reduced the number of cases in our unit.

Conclusion: Parents and healthcare personnel testing appears to be an effective strategy due to the high number of contact they have within the hospital environment and outside, able to minimize the cases within our unit. (Author)

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## 2021-01786

**Compassionate use of remdesivir in children with COVID-19.** Méndez-Echevarría A, Pérez-Martínez A, Gonzalez del Valle L, et al (2021), European Journal of Pediatrics vol 180, no 4, April 2021, pp 1317-1322

**Full URL:** <https://doi.org/10.1007/s00431-020-03876-1>

Children represent a minority of total COVID-19 cases, but studies have reported severe disease and death in pediatric patients. Remdesivir (RDV) has recently demonstrated promising results in adults with COVID-19, but few data have been reported to date in children.

A nationwide multicenter observational study was conducted on children with confirmed SARS-CoV-2 receiving compassionate treatment with RDV in Spain. Eight patients were included in the study, four infants and four older children [median age 5 years old; IQR 4 months–11.6 years old]. Half of them had complex underlying medical conditions, and the rest were mostly infants (3/4). Six out of eight children needed Pediatric Intensive Care Unit Admission. No RDV-related adverse outcomes were observed in our patients. Seven have reached successful clinical outcome, but one patient with serious clinical status died due to complications. However, she received RDV very late

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after the first COVID-19 symptom.

**Conclusions:** In our cohort, most of the patients achieved successful clinical outcome, without observing adverse events. Clinical trials of RDV therapy for children with COVID-19 are urgently needed, to assess the safety, tolerability, efficacy, and pharmacokinetics of RDV in children, as this could be an effective treatment in severe cases. (Author)

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## 2021-01773

**SARS-CoV-2 genome and antibodies in breastmilk: a systematic review and meta-analysis.** Zhu F, Zozaya C, Zhou Q, et al (2021), Archives of Disease in Childhood: Fetal and Neonatal Edition vol 106, no 5, September 2021, pp 514-521

**Full URL:** <http://dx.doi.org/10.1136/archdischild-2020-321074>

### Abstract

**Objective** To systematically review and meta-analyse the rate of SARS-CoV-2 genome identification and the presence of SARS-CoV-2 antibodies in breastmilk of mothers with COVID-19.

**Design** A systematic review of studies published between January 2019 and October 2020 without study design or language restrictions.

**Setting** Data sourced from Ovid Embase Classic+Embase, PubMed, Web of Science, Scopus, relevant bibliographies and the John Hopkins University COVID-19 database.

**Patients** Mothers with confirmed COVID-19 and breastmilk tested for SARS-CoV-2 by RT-PCR or for anti-SARS-CoV-2 antibodies.

**Main outcome measures** Presence of SARS-CoV-2 genome and antibodies in breastmilk.

**Results** We included 50 articles. Twelve out of 183 women from 48 studies were positive for SARS-CoV-2 genome in their breastmilk (pooled proportion 5% (95% CI 2% to 15%; I<sup>2</sup>=48%)). Six infants (50%) of these 12 mothers tested positive for SARS-CoV-2, with one requiring respiratory support. Sixty-one out of 89 women from 10 studies had anti-SARS-CoV-2 antibody in their breastmilk (pooled proportion 83% (95% CI 32% to 98%; I<sup>2</sup>=88%)). The predominant antibody detected was IgA.

**Conclusions** SARS-CoV-2 genome presence in breastmilk is uncommon and is associated with mild symptoms in infants. Anti-SARS-CoV-2 antibodies may be a more common finding. Considering the low proportion of SARS-CoV-2 genome detected in breastmilk and its lower virulence, mothers with COVID-19 should be supported to breastfeed.

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## 2021-01767

**Perinatal COVID-19: review of current evidence and practical approach towards prevention and management.** Vardhelli V, Pandita A, Pillai A, et al (2021), European Journal of Pediatrics vol 180, no 4, April 2021, pp 1009-1031

**Full URL:** <https://doi.org/10.1007/s00431-020-03866-3>

The clinical spectrum of the perinatal COVID-19 and prospective data on neonatal outcomes remains largely unexplored. Most of the existing literature is in the form of case series or single-centre experience. In this review, we aim to summarize available literature on the clinical spectrum of COVID-19 in neonates and mothers and suggest a practical approach towards management of clinical scenarios. This review explores the clinical characteristics and outcomes of COVID-19 in neonates born to mothers who were detected with the virus during the pregnancy. We conducted a comprehensive search of PubMed, Google Scholar and Cochrane Database of Systematic Review between November 2019 and June 2020 and screened articles related to perinatal COVID-19. This review included 786 mothers, among which 64% (504) were delivered by caesarian section. There were 3 still births and 107 (14%) were delivered preterm. Out of 793 neonates born, 629 neonates (79%) were tested after birth. The commonest symptom in neonates was respiratory distress. Respiratory support was needed in 60 neonates (7.6%), with 14 babies needing mechanical

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ventilation (1.8%), 25 needing non-invasive ventilation and 21 needing nasal oxygen. Only 35 of the 629 tested neonates (5.5%) were positive for COVID-19. Of the 35 positive neonates, 14 (40%) were symptomatic. The COVID-19 seems to have favourable neonatal outcomes. Majority of neonates are asymptomatic. Respiratory distress is the most common manifestation. (Author)

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## 2021-01766

**What chances do children have against COVID-19? Is the answer hidden within the thymus?** Güneş H, Dinçer S, Acıpayam C, et al (2021), European Journal of Pediatrics vol 180, no 3, March 2021, pp 983-986

Full URL: <https://doi.org/10.1007/s00431-020-03841-y>

A new type of coronavirus named as SARS-CoV-2 pandemic has begun to threaten human health. As with other types of coronaviruses, SARS-CoV-2 affects children less frequently, and it has been observed that the disease is mild. In the pathogenesis of a standard viral infection, the pathogen's contact with the mucosa is initially followed by an innate immunity response. T cells are the primary decisive element in adaptive immunity capability. For this reason, the adaptive immune response mediated by the thymus is a process that regulates the immune response responsible for preventing invasive damage from a virus. Regulatory T cells (T-reg) are active during the early periods of life and have precise roles in immunomodulation. The thymus is highly active in the intrauterine and neonatal period; it begins to shrink after birth and continues its activity until adolescence. The loss of T-reg function by age results in difficulty with the control of the immune response, increased inflammation as shown in coronavirus disease (COVID-19) as an inflammatory storm. Also, the thymus is typically able to replace the T cells destroyed by apoptosis caused by the virus. Thymus and T cells are the key factors of pathogenesis of SARS-CoV-2 in children.

Conclusion: We speculated that thymus activity and T lymphocyte function in children protect them against the virus effects. Stimulating and preventing the inhibition of the thymus can be possible treatment components against COVID-19. (Author)

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## 2021-01763

**A multicenter study on epidemiological and clinical characteristics of 125 newborns born to women infected with COVID-19 by Turkish Neonatal Society.** Oncel MY, Akin IM, Kanburoglu MK, et al (2021), European Journal of Pediatrics vol 180, no 3, March 2021, pp 733-742

Full URL: <https://doi.org/10.1007/s00431-020-03767-5>

Limited data are available on pregnant women with COVID-19 and their neonates. We aimed to evaluate the epidemiological and clinical characteristics of newborns born to women infected with COVID-19. A multicenter cohort study was conducted among newborns born to mothers with COVID-19 in 34 neonatal intensive care units (NICUs) in Turkey. Pregnant women (n = 125) who had a positive RT-PCR test and their newborns were enrolled. Cesarean section, prematurity, and low-birthweight infant rates were 71.2%, 26.4%, and 12.8%, respectively. Eight of 125 mothers (6.4%) were admitted to an intensive care unit for mechanical ventilation, among whom six died (4.8%). Majority of the newborns (86.4%) were followed in isolation rooms in the NICU. Four of 120 newborns (3.3%) had a positive RT-PCR test result. Although samples taken on the first day were negative, one neonate became positive on the second day and the other two on the fifth day. Sample from deep tracheal aspirate was positive on the first day in an intubated case.

Conclusion: COVID-19 in pregnant women has important impacts on perinatal and neonatal outcomes. Maternal mortality, higher rates of preterm birth and cesarean section, suspected risk of vertical transmission, and low rate of breastfeeding show that family support should be a part of the care in the NICU.

Trial registration: ClinicalTrials.gov identifier: NCT04401540 (Author)

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## 2021-01743

**Universal screening of high-risk neonates, parents, and staff at a neonatal intensive care unit during the SARS-CoV-2**

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**pandemic.** Cavicchiolo ME, Trevisanuto D, Lolli E, et al (2020), European Journal of Pediatrics vol 179, no 12, December 2020, pp 1949-1955

**Full URL:** <https://doi.org/10.1007/s00431-020-03765-7>

Since February 21, 2020, SARS-CoV-2 has spread exponentially worldwide. Neonatal patients needing intensive care are considered a vulnerable population. To report the results of a policy based on multi-timepoint surveillance for SARS-CoV-2 of all neonates admitted to the neonatal intensive care unit (NICU), their parents, and all healthcare providers in a part of Italy with a high prevalence of the infection. Observational study conducted from 21 February to 21 April 2020. Intervention consisted of (a) parental triage on arrival at the neonatal ward; (b) universal testing with nasopharyngeal swabs and blood testing for SARS-CoV-2 IgM and IgG antibodies; (c) use of continuous personal protective equipment at the NICU by parents and staff. A total of 6726 triage procedures were performed on 114 parents, and 954 nasopharyngeal swabs were collected from 226 individuals. Five (2.2%) asymptomatic individuals (2 parents and 3 healthcare providers) tested positive on nasopharyngeal swabs and were kept isolated for 14 days. Of 75 admitted newborn, no one tested positive on nasopharyngeal swabs or antibody tests. Three parents presented with fever or flu-like symptoms at triage; they tested negative on swabs.

**Conclusion:** With universal screening of neonates, parents, and staff, there were no cases of SARS-CoV-2 infection among the neonates admitted to a NICU in an area with a high incidence of SARS-CoV-2. Our experience could be usefully compared with other strategies with a view to developing future evidence-based guidelines for managing high-risk neonates in case of new epidemics. (Author)

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## 2021-01663

**COVID-19 vaccination guidance.** Australian Breastfeeding Association, New Zealand Breastfeeding Alliance, Royal Australian and New Zealand College of Obstetricians and Gynaecologists (2021), Australian Breastfeeding Association 6 April 2021

**Full URL:** <https://www.breastfeeding.asn.au/system/files/RANZCOG-ABA-NZBA%20COVID-19%20vaccination%20and%20breastfeeding%20in%20infographic%20final.pdf>

Up to date information for breastfeeding mothers about compatibility of the COVID-19 vaccine with breastfeeding.

The guidance, in the form of an infographic, was launched by the Australian Breastfeeding Association (ABA), the New Zealand Breastfeeding Alliance (NZBA) and the Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG). (Author)

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## 2021-01571

**The Ripple Effect of a Pandemic on the Parent–Infant Dyad.** Reyna BA (2021), Neonatal Network: the Journal of Neonatal Nursing vol 40, no 2, March/April 2021, pp 117-120

During the 2009 H1N1 pandemic, containment strategies aimed at limiting the spread of the virus were implemented but not to the extent as the current COVID-19 pandemic. Research is ongoing regarding disease symptomatology, transmission, and treatment for COVID-19. There are limited data regarding the effects of social distancing practices and restrictive hospital-visitation policies on the parent–infant dyad. The purpose of this commentary is to explore the implications of isolation practices on the parent–infant dyad during a pandemic. (Author)

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## 2021-01434

**Newborn antibodies to SARS-CoV-2 detected in cord blood after maternal vaccination – a case report.** Paul G, Chad R (2021), BMC Pediatrics vol 21, no 138, 22 March 2021

**Full URL:** <https://doi.org/10.1186/s12887-021-02618-y>

### Background

Maternal vaccination for Influenza and Tetanus, Diphtheria, acellular Pertussis (Tdap) have been well studied in terms of safety and efficacy for protection of the newborn by placental passage of antibodies. Similar newborn protection would be expected after maternal vaccination against severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), the virus responsible for coronavirus disease 2019 (COVID-19). There is a significant and urgent need for research

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regarding safety and efficacy of vaccination against SARS-CoV-2 during pregnancy.

#### Case presentation

A vigorous, healthy, full-term female was born to a COVID-19 naïve mother who had received a single dose of messenger RNA (mRNA) vaccine for SARS-CoV-2 3 weeks prior to delivery. IgG cord blood antibodies were detected to SARS-CoV-2 at the time of birth.

#### Conclusion

Here, we report the first known case of an infant with SARS-CoV-2 IgG antibodies detectable in cord blood after maternal vaccination. (Author)

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#### 2021-01362

**Infant bronchiolitis dramatically reduced during the second French COVID-19 outbreak.** Guedj R, Lorrot M, Lecarpentier T, et al (2021), Acta Paediatrica vol 110, no 4, April 2021, pp 1297-1299

Brief report on rates of infant bronchiolitis during the second wave of the COVID-19 pandemic in France. Results demonstrate that the bronchiolitis burden dramatically decreased and this may be due to changes in hygiene and social distancing. (LDO)

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#### 2021-01361

**It's time to change the recommendations on COVID-19 and human milk donations.** Picaud J-C, Buffin R, Rigourd V, et al (2021), Acta Paediatrica vol 110, no 5, May 2021, pp 1405-1406

Discusses the impact of COVID-19 on breast milk donors and the treatment of donor milk from human milk banks. Presents a three-point action plan and recommendations on the collection of human milk during the pandemic. (LDO)

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#### 2021-01360

**Should decision-making for active resuscitation consider non-communicable disease risks in periviable infants during the COVID-19 pandemic?** Malamitsi-Puchner A (2021), Acta Paediatrica vol 110, no 4, April 2021, p 1366

Short commentary on the ethical dilemmas of active resuscitation and mechanical ventilation for periviable infants during the COVID-19 pandemic. Concludes that these issues will persist until pregnant women are included in large scale vaccination programmes. (LDO)

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#### 2021-01300

**A COVID 19 positive preterm mother and infant: a case report.** George H, Mutema E (2021), Journal of Obstetrics and Gynaecology vol 41, no 8, 2021, pp 1262-1264

Case report of a pregnant woman at 31 weeks' gestation who presented with shortness of breath and a new cough and subsequently tested positive for SARS-CoV-2. The patient had worsening respiratory distress and a caesarean section was successfully performed on day three. The infant later tested positive for SARS-CoV-2 and was treated for respiratory distress syndrome. (LDO)

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#### 20210125-62\*

**Breastfeeding during the novel coronavirus (COVID-19) pandemic: guidelines and challenges.** Dimopoulou D, Triantafylidou P, Daskalaki A, et al (2022), Journal of Maternal-Fetal and Neonatal Medicine vol 35, no 19, 2022, pp 3776-3782

**Full URL:** <https://doi.org/10.1080/14767058.2020.1838481>

COVID-19 pandemic has raised questions on pregnant women and newborns' management. Guidelines, issued by most international agencies and national bodies, recommend rooming-in and direct breastfeeding. In the early days of this pandemic, breastfeeding practices have been challenged by fear among both parents and healthcare workers occasionally resulting in mother-newborn separation. We herein review current breastfeeding guidelines and discuss

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remaining questions and challenges. As we are facing the second wave of this pandemic, more information is gathered, especially regarding possible virus transmissibility through breastfeeding, enabling more definite instructions about breastfeeding practices. (Author)

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#### 20210125-3\*

**The use of eHealth technologies to support communication with parents in the neonatal unit; an updated literature review for the COVID-19 era.** Norris C, Al-Muzaffar I (2021), Journal of Neonatal Nursing vol 27, no 3, June 2021, pp 180-184

##### Introduction

Since the outbreak of COVID-19, there has been a drive towards digital healthcare solutions. This review provides an update as to how eHealth technologies have been used in neonatal intensive care unit settings to help communication with parents and parental education since the last reviews published.

##### Methods

A systematic search of MEDLINE and CINAHL via Ovid was conducted using the keywords 'eHealth', 'mHealth', 'telemedicine', 'neonatal', 'intensive care' and 'NICU'. CASP methodology was used to identify bias and limitations.

##### Results

Electronic searching yielded 69 and 39 papers respectively. Six papers were considered eligible for full text review. Four studies focussed on eHealth interventions post-discharge from NICU, two of which showed reduced emergency visits to hospital.

##### Conclusions

eHealth may benefit infants post-discharge from neonatal intensive care units and is generally well-received by parents. However, technological and organisational adaptations may be necessary for its wider application. More research is needed in the use of communication technologies during infants' admission, and to empirically test educational resources. (Author)

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#### 20210125-2\*

**Engaging parents of hospitalized neonates during a pandemic.** Duff J, Curnen K, Reed A, et al (2021), Journal of Neonatal Nursing vol 27, no 3, June 2021, pp 185-187

##### Background

Engaging families through patient- and family-centered care (PFCC), the NICU nurse upholds the core concepts providing holistic care. The novel coronavirus (COVID-19) pandemic altered the daily routine of visiting parents to hospitals around the nation, particularly for pediatric and neonatal populations.

##### Methods

This paper describes innovative strategies implemented in a large Level IV NICU to promote the core concepts of PFCC that ensured parent-infant bonding while limiting exposure to a pandemic infection, such as COVID-19.

##### Discussion

Strategies discussed include virtual visits between parents and infants to promote bonding; virtual parent support groups to encourage information sharing; remote music therapy options which included take-home music kits; diaries, albums, and celebration boards to support participation; among others. Parent collaboration throughout implementation promoted partnership.

##### Conclusion

Utilizing a variety of unique and innovative approaches to promote PFCC strategies became a critical component of routine planning and care delivery for one large neonatal intensive care unit. (Author)

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#### 20210125-12\*

**Baby Care Units: Coronavirus [written answer].** House of Commons (2020), Hansard Written question 126072, 7 December 2020

**Full URL:** <https://questions-statements.parliament.uk/written-questions/detail/2020-12-07/126072>

Helen Whately responds to a written question from Vicky Foxcroft to the Secretary of State for Health and Social Care, regarding pursuant to the Answer of 3 December 2020 to Question 94484 on Baby Care Units: Coronavirus, what steps

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## 20210122-35\*

**Pregnancy and Breastfeeding During the COVID-19 Pandemic: Your Workplace Rights.** American College of Nurse-Midwives (2020), Journal of Midwifery & Women's Health vol 65, no 6, November/December 2020, pp 835-836

Provides an overview of the reasonable adjustments employers should make for pregnant and breastfeeding women during the COVID-19 pandemic. (LDO)

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## 20210122-12\*

**Clinical characteristics of confirmed COVID-19 in newborns: a systematic review.** Karabay M, Çınar N, Suzan ÖK, et al (2022), Journal of Maternal-Fetal and Neonatal Medicine vol 35, no 22, 2022, pp 4386-4397

**Full URL:** <https://doi.org/10.1080/14767058.2020.1849124>

### Objective

Aim of this systematic review is to investigate the available evidence describing neonatal outcomes in newborns who have SARS-CoV-2 infection in order to guide prevention of COVID-19 in newborns.

### Methods

This is the study protocol for a systematic review. MEDLINE, Web of Science, PubMed, Science Direct, CINAHL, Scopus, Cochrane, TUBITAK databases, and key words of 'Newborn' (neonatal OR clinical characteristics newborn OR infants less than 1 month OR infants less than 28 weeks OR Neonate) AND 'clinical presentation' (epidemiology OR symptoms OR clinical course OR features) AND 'COVID-19' (Coronavirus OR COVID-19 OR Sars-Cov2 OR coronavirus disease 2019 OR Novel Coronavirus OR 2019-nCoV) were searched for this systematic review. Randomized controlled trial, cross-sectional, case-control, and case reports, case reports examining neonatal outcomes in newborns who have SARS-CoV-2 infection were included. Studies were selected according to criteria around the population, intervention, comparator, outcome(s) of interest, and study design (PICOS framework). All citations and full-text articles were searched by independent five authors. The population that newborns with COVID-19 that confirmed within 28 d of birth are included. The interventions included in COVID-19 infection diagnosed via reverse transcription-polymerase chain reaction (RT-PCR) or serological. The primary outcomes were Neonatal clinical outcomes. The methodological quality of the studies was appraised using appropriate tools. Strength of the body of evidence was assessed according to the quality assessment tool for quantitative studies (QATQS).

### Results

The electronic search identified 1051 records that were examined, after evaluating 35 of them were included in the study. Seven studies were research articles and twenty-eight were case reports. Methodological quality was medium. Most of the clinical characteristics of newborns were respiratory difficulty and secondly fever. Some newborns gastrointestinal (GIS) symptoms in the form of diarrhea and feeding intolerance and abdominal distension were present in 50%. The fatality case did not exist in any newborn due to COVID-19. Death occurred in one case due to prematurity.

### Conclusions

The most common symptoms in patients with COVID-19 infection in the neonatal period are respiratory tract symptoms and fever. It has been observed that the COVID-19 infection detected in the neonatal period is not fatal. However, data including more cases are needed. (Author)

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## 20210121-19\*

**Is respiratory syncytial virus infection more dangerous than COVID 19 in the neonatal period?.** Ozdemir SA, Soysal B, Calkavur S, et al (2022), Journal of Maternal-Fetal and Neonatal Medicine vol 35, no 22, 2022, pp 4398-4403

**Full URL:** <https://doi.org/10.1080/14767058.2020.1849125>

### Objective

We aimed to compare the clinical features, laboratory findings and primary outcomes of the neonates with RSV and neonates with SARS-CoV-2 infections.

### Materials and methods

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This nested case-control study included the neonates who were administered in the neonatal intensive care unit (NICU) of the University of Health Sciences, Dr Behçet Uz Children's Hospital during the period of 01 March-30 April 2020. Respiratory PCR samples and COVID-19 samples were taken simultaneously. Only RSV positive and COVID-19 positive infants were compared. Demographic, epidemiological and clinical data were obtained from hospital electronic information system medical records. The chest radiographs at the admission were evaluated by using standard definitions for normal chest X-ray, atelectasis, bronchopneumonia, peribronchial thickening and hyperinflation in various lung volumes.

#### Results

A total of 30 infants were enrolled in the study and RSV was identified in 20/30 infants (66%). No significant differences were observed between the two groups in terms of general characteristics. Comparing to the infants with Covid-19 infections, infants with RSV infections had significantly higher rates of having oxygen support ( $p = .03$ ). Total NICU duration time was  $6.7 \pm 1.6$  days in COVID positive group and  $11.1 \pm 5.1$  days in the RSV group ( $p = .01$ ). Infants with COVID-19 had more normal chest X-rays. Infants with RSV-positive had a significantly higher proportion of atelectasis than those with COVID-19 infants ( $p = .04$ ).

#### Discussion

This is the first study that compares RSV infection and COVID-19 infection. RSV infection can be more serious in the neonatal period. In cases with suspected COVID-19 infection, it should be kept in mind if atelectasis is seen on chest radiography. Respiratory failure may be more serious in RSV positive infants and RSV infection may be more dangerous for the neonatal period. (Author)

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### 20210113-72\*

**Comparison of Clinical and Epidemiologic Characteristics of Young Febrile Infants with and without Severe Acute Respiratory Syndrome Coronavirus-2 Infection.** Leibowitz J, Krief W, Barone S, et al (2021), The Journal of Pediatrics vol 229, February 2021, pp 41-47.e1

Full URL: <https://doi.org/10.1016/j.jpeds.2020.10.002>

#### Objective

To determine features that distinguish febrile young infants with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection.

#### Study design

Retrospective single-center study included febrile infants <57 days of age evaluated in the emergency department of Cohen Children's Medical Center of Northwell Health, New Hyde Park, New York, from March 1 to April 30 of 2018, 2019, and 2020. Sociodemographic and clinical features were compared between those seen during the 2020 coronavirus disease-2019 pandemic and previous years, as well as between infants with SARS-CoV-2 infection and infants without SARS-CoV-2 infection (SARS-CoV-2 negative or evaluated during 2018 and 2019).

#### Results

In all, 124 febrile infants <57 days of age were identified; 38 during the 2-month study period in 2018, 33 in 2019, and 53 in 2020. During 2020, fewer febrile infants had a serious bacterial infection or a positive respiratory viral panel than in prior years (6% vs 21% [ $P = .02$ ]; 15% vs 53% [ $P < .001$ ], respectively). SARS-CoV-2 was the most frequent pathogen detected in 2020; of 30 infants tested, 20 tested positive. Infants with SARS-CoV-2 were more likely to identify as Hispanic ( $P = .004$ ), have public insurance or be uninsured ( $P = .01$ ), exhibited lethargy ( $P = .02$ ), had feeding difficulties ( $P = .002$ ), and had lower white blood cell ( $P = .001$ ), neutrophil ( $P < .001$ ), and lymphocyte counts ( $P = .005$ ) than the 81 infants without SARS-CoV-2 infection. None of the infants with SARS-CoV-2 had concurrent serious bacterial infection or detection of another virus. Overall, disease in infants with SARS-CoV-2 was mild.

#### Conclusions

During the peak of the pandemic, SARS-CoV-2 was the predominant pathogen among febrile infants. Socioeconomic, historical, and laboratory features differed significantly between infants infected or not infected with SARS-CoV-2. None of the 20 infants with SARS-CoV-2 infection had an identified coviral or serious bacterial infection. (Author)

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### 20210113-32\*

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**COVID-19: neonatal–perinatal perspectives.** Barrero-Castillero A, Beam KS, Bernardini LB, et al (2021), Journal of Perinatology vol 41, no 5, May 2021, pp 940-951

**Full URL:** <https://doi.org/10.1038/s41372-020-00874-x>

The coronavirus disease 2019 (COVID-19) pandemic, resulting from infection with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), has caused severe and widespread illness in adults, including pregnant women, while rarely infecting neonates. An incomplete understanding of disease pathogenesis and viral spread has resulted in evolving guidelines to reduce transmission from infected mothers to neonates. Fortunately, the risk of neonatal infection via perinatal/postnatal transmission is low when recommended precautions are followed. However, the psychosocial implications of these practices and racial/ethnic disparities highlighted by this pandemic must also be addressed when caring for mothers and their newborns. This review provides a comprehensive overview of neonatal-perinatal perspectives of COVID-19, ranging from the basic science of infection and recommendations for care of pregnant women and neonates to important psychosocial, ethical, and racial/ethnic topics emerging as a result of both the pandemic and the response of the healthcare community to the care of infected individuals. (Author)

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#### 20210106-22\*

**Considerations for COVID-19 Vaccination in Lactation.** Stuebe A (2021), Breastfeeding Medicine vol 16, no 1, January 2021, p 2

**Full URL:** <https://doi.org/10.1089/bfm.2020.29172.abm>

Statement from the Academy of Breastfeeding Medicine on the safety of the Pfizer/BioNtech and Moderna mRNA vaccines for breastfeeding women. Recommends that future research studies include pregnant and lactating participants. (LDO)

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#### 20210106-21\*

**President's Corner: Introduction to ABM's Statement on Considerations for COVID-19 Vaccination in Lactation.** Stuebe A

(2021), Breastfeeding Medicine vol 16, no 1, January 2021, p 1

The recent emergency use authorization of novel mRNA vaccines to prevent COVID-19 is a triumph for science. Less than a year after the SARS-CoV-2 virus was first identified, we have a 95% effective vaccine in production. There is much to celebrate, and there is also a yawning gap: phase 3 trials of these novel mRNA-based vaccines excluded pregnant and lactating women. This void is the product of decisions made >40 years ago to exclude pregnant and lactating women from research, with the goal of avoiding any risk to the fetus or nursing child. In the short term, this strategy avoided liability; in the long term, it has left providers and patients without clinical data to make informed decisions. Without clinical data, the Academy of Breastfeeding Medicine relied on biological plausibility and expert opinion to craft a statement on considerations for mRNA COVID-19 vaccines during lactation. The available information is reassuring; however, pregnant and lactating people deserve better than plausibility to guide medical decisions. Henceforward, phase 3 clinical trials should routinely include pregnant and lactating participants. It is time to protect pregnant and breastfeeding individuals through research, not from research. (Author)

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#### 20210106-20\*

**Social Support During COVID-19: Perspectives of Breastfeeding Mothers.** Snyder K, Worlton G (2021), Breastfeeding Medicine vol 16, no 1, January 2021, pp 39-45

**Full URL:** <https://doi.org/10.1089/bfm.2020.0200>

**Introduction:** Effective social support can have a critical influence on a mother's ability to initiate and continue breastfeeding. Coronavirus disease (COVID-19) has created unprecedented barriers for breastfeeding mothers to obtain various types of support: emotional, instrumental, informational, and appraisal. However, no research has evaluated the influence the pandemic has had on breastfeeding supports. The purpose of this study was to explore perceptions of social support among breastfeeding mothers during the COVID-19 pandemic.

**Materials and Methods:** A cross-sectional phenomenological approach was taken utilizing semistructured interviews (March-June 2020) with currently breastfeeding mothers (n = 29). Data were analyzed through a process of immersion and crystallization.

**Results:** Mothers are still able to obtain each type of support, however, support has been negatively influenced by the

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pandemic. Mothers reported experiencing increased stress and isolation and had an immense desire to receive in-person support from peers, family, childcare providers, and lactation specialists. Furthermore, mothers of multiple children felt if they did not already have breastfeeding knowledge from previous experiences they would be unsuccessful in breastfeeding due to their current lack of support. Conversely, a majority of mothers felt the pandemic had positively influenced their breastfeeding journeys due to concerns of formula shortages and extended maternity leaves. Finally, mothers were concerned about safely expressing breast milk on their return to work.

Conclusion: Mother's ability to obtain breastfeeding support has been negatively impacted by the pandemic due to the inability to engage with individuals in-person and the lack of access to childcare. First-time mothers may be at higher risk of early breastfeeding cessation due to lack of support. However, breastfeeding journeys have also been positively influenced by allowing mothers more time at home with their child. Resources are needed to support expressing breast milk in the workplace during COVID-19. (Author)

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#### 20210106-18\*

**Best Practices for Human Milk Collection for COVID-19 Research.** McGuire MK, Seppo A, Goga A, et al (2021), Breastfeeding Medicine vol 16, no 1, January 2021, pp 29-38

Full URL: <https://doi.org/10.1089/bfm.2020.0296>

In addition to providing life-giving nutrients and other substances to the breastfed infant, human milk can also represent a vehicle of pathogen transfer. As such, when an infectious disease outbreak, epidemic, or pandemic occurs-particularly when it is associated with a novel pathogen-the question will naturally arise as to whether the pathogen can be transmitted through breastfeeding. Until high-quality data are generated to answer this question, abandonment of breastfeeding due to uncertainty can result. The COVID-19 pandemic, which was in full swing at the time this document was written, is an excellent example of this scenario. During these times of uncertainty, it is critical for investigators conducting research to assess the possible transmission of pathogens through milk, whether by transfer through the mammary gland or contamination from respiratory droplets, skin, breast pumps, and milk containers, and/or close contact between mother and infant. To promote the most rigorous science, it is critical to outline optimal methods for milk collection, handling, storage, and analysis in these situations, and investigators should openly share their methods in published materials. Otherwise, the risks of inconsistent test results from preanalytical and analytical variation, false positives, and false negatives are unacceptably high and the ability to provide public health guidance poor. In this study, we provide 'best practices' for collecting human milk samples for COVID-19 research with the intention that this will also be a useful guide for future pandemics. (Author)

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#### 20210105-7\*

**Impact of COVID-19 on childhood vaccination counts to week 51, and vaccine coverage to November 2020 in England: interim analyses.** Public Health England (2021), Health Protection Report vol 15, no 1, 5 January 2021; pp 1-23

Full URL: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/949448/hpr0121-chldhd-vc\\_wk51b.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/949448/hpr0121-chldhd-vc_wk51b.pdf)

This is the ninth in a series of reports which present an assessment of the extent of COVID-19-related impact on childhood vaccinations, based on both (a) aggregated vaccine counts of dose 1 Hexavalent and dose 1 MMR vaccinations delivered to infants/children and (b) vaccine coverage data for dose 1, 2 and 3 Hexavalent and dose 1 MMR vaccines extracted from ImmForm. This report includes vaccination counts data up to week 51, and vaccine coverage data up to November 2020. (Author, edited)

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#### 2021-00967

**Hospitals: Children [written answer].** House of Commons (2021), Hansard Written question 164356, 8 March 2021

Full URL: <https://questions-statements.parliament.uk/written-questions/detail/2021-03-08/164356>

Ms Nadine Dorries responds to a written question from Sir Mark Hendrick to the Secretary of State for Health and Social Care, regarding what guidance his Department has issued to help ensure that parents of (a) newborn babies and (b) young children in need of in-patient care are able to visit their children in hospital during the covid-19 outbreak. (MB)

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2021-00959

**Covid-19: Breastfeeding women can have vaccine after guidance turnaround.** Rimmer A (2021), BMJ vol 372, 8 January 2021, n64

Full URL: <https://doi.org/10.1136/bmj.n64>

News item reporting that the Medicines and Healthcare Products Regulatory Agency (MHRA) has revised its guidance to allow pregnant and breastfeeding women to have the COVID-19 vaccine. Includes comments from the Royal College of Obstetricians and Gynaecologists. (LDO)

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2021-00956

**Coronavirus: Babies and Parents [written answer].** House of Commons (2021), Hansard Written question 163644, 5 March 2021

Full URL: <https://questions-statements.parliament.uk/written-questions/detail/2021-03-05/163644>

Ms Nadine Dorries responds to a written question from the Secretary of State for Health and Social Care, regarding what steps his Department has taken to ensure the health and safety of (a) newborn babies and (b) new parents who have been diagnosed with covid-19. (JSM)

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2021-00944

**Why were breastfeeding women in the UK denied the covid-19 vaccine?.** Hare H, Womersley K (2021), BMJ vol 372, no 8274, 5 January 2021, n4

Full URL: <https://doi.org/10.1136/bmj.n4>

Commentary piece on the revised guidance from the Medicines and Healthcare Products Regulatory Agency (MHRA) allowing pregnant and breastfeeding women to receive the COVID-19 vaccine. Considers the reasons behind the initial blanket ban and compares the approach taken in the United Kingdom with approaches taken in the European Union, United States and Canada. (LDO)

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2021-00529

**Infant feeding initiation practices in the context of COVID-19 lockdown.** Zanardo V, Tortora D, Guerrini P, et al (2021), Early Human Development vol 152, January 2021, 105286

Full URL: <https://doi.org/10.1016/j.earlhumdev.2020.105286>

Objective

Limited information is available regarding barriers to breastfeeding during the COVID-19 lockdown.

Study design

This study was designed as a non-concurrent case-control study on breastfeeding initiation practices, defined according to WHO, in women giving birth during lockdown, between March 8 and May 18, 2020, in the COVID-19 'hotspot' in Northeastern Italy (study group), with an antecedent puerperae-matched group (control group). Exclusive, complementary, and formula feeding practices were collected from maternal charts at hospital discharge, on the second day post-partum, when puerperae filled out the Edinburgh Postnatal Depression Scale (EPDS).

Results

The COVID-19 study group presented significantly lower exclusive breastfeeding rates than the control group who members gave birth the previous year ( $-15\%$ ,  $p = 0.003$ ), as a consequence of the significantly higher prevalence of complementary feeding practices in the former ( $+20\%$ ,  $p = 0.002$ ). Conversely, the COVID-19 study group showed significantly higher EPDS scores ( $8.03 \pm 4.88$  vs.  $8.03 \pm 4.88$ ,  $p < 0.005$ ) and higher anhedonia ( $0.56 \pm 0.65$  vs.  $0.18 \pm 0.38$ ,  $p < 0.001$ ) and depression ( $0.62 \pm 0.60$  vs.  $0.39 \pm 0.44$ ,  $<0.001$ ) subscale scores. In the general linear model analysis, women practicing exclusive breastfeeding showed significantly lower EPDS scores in comparison with those practicing complementary ( $p = 0.003$ ) and formula feedings ( $p = 0.001$ ). Furthermore, the highest EPDS scores were observed in

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women adopting formula feeding, mainly during the COVID-19 quarantine ( $p = 0.019$ ).

## Conclusion

This study indicates that hospital containment measures adopted during lockdown in the 'hotspot' COVID-19 epidemic area of Northeastern Italy have a detrimental effect on maternal emotions and on breastfeeding exclusivity practices. (Author)

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## 2021-00432

**Breastfed 13 month-old infant of a mother with COVID-19 pneumonia: a case report.** Yu Y, Li Y, Hu Y, et al (2020), International Breastfeeding Journal vol 15, no 68, 6 August 2020

**Full URL:** <https://doi.org/10.1186/s13006-020-00305-9>

**Background:** In China, mothers with confirmed or suspected COVID-19 pneumonia are recommended to stop breastfeeding. However, the evidence to support this guidance is lacking. There have been relatively few cases reported about direct breastfeeding an infant by a mother with SARS-CoV-2 pneumonia. Therefore, it is necessary to assess the safety of breastfeeding and the possible protective effects of breast milk on infants.

**Case presentation:** This report analyzes the case of a mother who continued breastfeeding her 13 month-old child when both were diagnosed with confirmed COVID-19 pneumonia. We describe the clinical presentation, diagnosis, treatment, and outcome. The presence of SARS-CoV-2 nucleic acid was determined in maternal serum, breast milk, nasopharyngeal (NP) swabs and feces, and in infant serum, NP swabs and feces. IgM and IgG antibodies against SARS-CoV-2 were assessed in maternal serum and breast milk and in infant serum. SARS-CoV-2 nucleic acid was not detected in the breast milk, and antibodies against SARS-CoV-2 were detected in the mother's serum and milk.

**Conclusions:** The present case further confirms that the possibility of mother-to-child transmission about SARS-CoV-2 via breast milk alone was very small, and breast milk is safe for direct feeding of infants. (Author)

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## 2021-00431

**A Case of COVID-19 in a 45-Day-Old Infant with Persistent Fecal Virus Shedding for More Than 12 Weeks.** Cho SM, Ha GY (2020), Yonsei Medical Journal vol 61, no 10, October 2020, pp 901-903

**Full URL:** <https://doi.org/10.3349/ymj.2020.61.10.901>

In this report, we describe the case of a SARS-CoV-2 infection (COVID-19) in an infant with mild fever and diarrhea in the absence of respiratory distress. A 45-day-old male infant with COVID-19 was transferred to our pediatric department. He had mild fever and diarrhea at admission. Positive-to-negative nasal swab conversion occurred on the 21st day from the onset of symptoms. However, stool swab positivity persisted during the 6-week admission period and for 7 weeks during follow-up at an outpatient clinic after discharge. Negative conversion in a stool specimen occurred on the 142nd day from the onset of symptoms. This case highlights the potential of fecal virus shedding as an important feature of viral transmission in infants and young children. (Author)

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## 2021-00337

**Coronavirus (COVID-19) infection in pregnancy: Information for healthcare professionals [Version 13] [Superseded by Version 14, 25 August 2021].** Royal College of Obstetricians and Gynaecologists, Royal College of Midwives, Royal College of Paediatrics and Child Health, et al (2021), London: RCOG 19 February 2021. 97 pages

**NB:** This version has now been superseded by version 14, 25 August 2021.

This document aims to provide guidance to healthcare professionals who care for pregnant women during the COVID-19 pandemic. It is not intended to replace existing clinical guidelines, but to act as a supplement with additional advice on how to implement standard practice during this time. The advice in this document is provided as a resource for UK healthcare professionals based on a combination of available evidence, good practice and expert consensus opinion. The priorities are: (i) The reduction of transmission of SARS-CoV-2 to pregnant women, their family members and healthcare workers. (ii) The provision of safe, personalised and woman-centred care during

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pregnancy, birth and the early postnatal period, during the COVID-19 pandemic. (iii) The provision of safe, personalised and woman-centred care to pregnant and postnatal women with suspected or confirmed COVID-19. This is very much an evolving situation requiring this guidance to be a living document that is under regular review and updated as new information and evidence emerges. (Author, edited)

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## 2021-00272

**Umbilical cord clamping and skin-to-skin contact in deliveries from women positive for SARS-CoV-2: a prospective observational study.** Jiménez IM, López RS, Rosas EG, et al (2021), BJOG: An International Journal of Obstetrics and Gynaecology vol 128, no 5, April 2021, pp 908-915

### Objective

To demonstrate that delayed cord clamping (DCC) is safe in mothers with confirmed SARS-CoV-2 infection.

### Design, setting and participants

Prospective observational study involving epidemiological information from 403 pregnant women with SARS-CoV-2 between 1 March and 31 May 2020. Data were collected from 70 centres that participate in the Spanish Registry of COVID-19.

### Methods

Patients' information was collected from their medical chart.

### Main outcomes and measures

The rate of perinatal transmission of SARS-CoV-2 and development of the infection in neonates within 14 days postpartum.

### Results

The early cord clamping (ECC) group consisted of 231 infants (57.3%) and the DCC group consisted of 172 infants (42.7%). Five positive newborns (1.7% of total tests performed) were identified with the nasopharyngeal PCR tests performed in the first 12 hours postpartum, two from the ECC group (1.7%) and three from the DCC group (3.6%). No significant differences between groups were found regarding neonatal tests for SARS-CoV-2. No confirmed cases of vertical transmission were detected. The percentage of mothers who made skin-to-skin contact within the first 24 hours after delivery was significantly higher in the DCC group (84.3% versus 45.9%). Breastfeeding in the immediate postpartum period was also significantly higher in the DCC group (77.3% versus 50.2%).

### Conclusions

The results of our study show no differences in perinatal outcomes when performing ECC or DCC, and skin-to-skin contact, or breastfeeding.

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## 2021-00214

**Coronavirus: Babies and Parents [written answer].** House of Commons (2021), Hansard Written question 148815, 3 February 2021

**Full URL:** <https://questions-statements.parliament.uk/written-questions/detail/2021-02-03/148815>

Ms Nadine Dorries responds to a written question asked by Rebecca Long Bailey to the Secretary of State for Health and Social Care, regarding whether parent and baby groups are permitted to meet during the January 2021 COVID-19 lockdown restrictions; and what guidance his Department has published on such groups meeting. (LDO)

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## 2021-00114

**COVID-19 vaccine development: a pediatric perspective.** Kamidani S, Rostad CA, Anderson EJ (2021), Current Opinion in Pediatrics vol 33, no 1, February 2021, pp 144-151

**Full URL:** [https://journals.lww.com/co-pediatrics/Fulltext/2021/02000/COVID\\_19\\_vaccine\\_development\\_a\\_pediatric.20.aspx](https://journals.lww.com/co-pediatrics/Fulltext/2021/02000/COVID_19_vaccine_development_a_pediatric.20.aspx)

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## Purpose of review

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), the novel coronavirus that causes coronavirus disease 2019 (COVID-19), has caused substantial morbidity and mortality. Operation Warp Speed aims to accelerate the development of a safe and effective vaccine by early 2021. Multiple vaccine candidates with reassuring safety and efficacy profiles have advanced to phase 3 clinical trials in adults. The purpose of this review is to describe the burden of COVID-19 in children, to update pediatricians about adult COVID-19 vaccine clinical trials, to discuss the importance of COVID-19 vaccine trials in children and to instill confidence in the established vaccine development and licensure processes.

## Recent findings

Children of all ages are at risk for SARS-CoV-2 infection and severe disease manifestations. Children are also susceptible to downstream effects of COVID-19, including social isolation and interruption in education. Developing a pediatric COVID-19 vaccine could prevent disease, mitigate downstream effects and enable children to re-engage in their world.

## Summary

Children could benefit both directly and indirectly from vaccination. In light of the safety and immunogenicity results from recent adult COVID-19 vaccine clinical trials, children should have the opportunity to be included in clinical trials in parallel to ongoing adult phase 3 clinical trials in a manner that is careful, methodical and transparent. (Author)

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## 2021-00112

**Management of neonates after postpartum discharge and all children in the ambulatory setting during the coronavirus disease 2019 (COVID-19) pandemic.** Harriel K, Nolt D, Moore S (2020), Current Opinion in Pediatrics vol 32, no 4, August 2020, pp 610-618

**Full URL:** [https://journals.lww.com/co-pediatrics/Fulltext/2020/08000/Management\\_of\\_neonates\\_after\\_postpartum\\_discharge.24.aspx](https://journals.lww.com/co-pediatrics/Fulltext/2020/08000/Management_of_neonates_after_postpartum_discharge.24.aspx)

## Purpose of review

The present coronavirus disease 2019 (COVID-19) pandemic has created additional challenges with an increased number of presumed healthy, full-term newborns being discharged at 24 h after delivery. Short lengths of stay raise the possibility of mother–infant dyads being less ready for discharge, defined as at least one of the three informants (i.e., mother, pediatrician, and obstetrician) believing that either the mother and/or infant should stay longer than the proposed time of discharge. This public health crisis has reduced the number of in-person well child visits, negatively impacting vaccine receipt, and anticipatory guidance.

## Recent findings

Extra precautions should be taken during the transition period between postpartum discharge and follow-up in the ambulatory setting to ensure the safety of all patients and practice team members. This should include restructuring office flow by visit type and location, limiting in-person visits during well infant exams, instituting proper procedures for personal protective equipment and for cleaning of the office, expanding telehealth capabilities for care and education, and prioritizing universal vaccinations and routine well child screenings.

## Summary

Based on current limited evidence, this report provides guidance for the postdischarge management of newborns born to mothers with confirmed or suspected disease in the ambulatory setting as well as prioritizing universal immunizations and routine well child screenings during the COVID-19 pandemic. (Author)

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## 2021-00108

**Coronavirus: Children [written answer].** House of Commons (2021), Hansard Written question 142026, 22 January 2021

**Full URL:** <https://questions-statements.parliament.uk/written-questions/detail/2021-01-22/142026>

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Helen Whately responds to a written question asked by Rachael Maskell to the Secretary of State for Health and Social Care, regarding the number of children aged (a) under one, (b) one, (c) two, (d) three, (e) four and (f) five years who have received a COVID-19 test; and what assessment his department has made of the effect of the sample size on significance in the data sets in identifying the prevalence of COVID-19. (LDO)

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#### 20201221-46

**A crisis and an opportunity.** Hogg S (2020), International Journal of Birth and Parent Education vol 7, no 4, July 2020, p 41  
Column from Sally Hogg discussing the impact of COVID-19 on pregnancy, childbirth, infant development and parental mental health. (LDO)

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#### 20201221-20\*

**Clinical characteristics and outcomes of pregnant women with COVID-19 and the risk of vertical transmission: a systematic review.** Chi J, Gong W, Gao Q (2021), Archives of Gynecology and Obstetrics vol 303, no 2, February 2021, pp 337-345

**Full URL:** <https://doi.org/10.1007/s00404-020-05889-5>

##### Purpose

This systematic review summarizes the clinical features and maternal-infant outcomes of 230 pregnant women (154 patients gave birth) infected with COVID-19 and their 156 infants, including the possibility and evidence of vertical transmission.

##### Methods

An electronic search of PubMed, Embase, Medline, MedRxiv, CNKI, and the Chinese Medical Journal Full Text Database following PRISMA guidelines was performed through April 18, 2020. Search terms included COVID-19, SARS-CoV-2, pregnant women, infants, and vertical transmission.

##### Results

A total of 230 women with COVID-19 (154 deliveries, 66 ongoing pregnancies, and 10 abortions) and 156 newborns from 20 eligible studies were included in this systematic review. A total of 34.62% of the pregnant patients had obstetric complications, and 59.05% of patients displayed fever. Lymphopenia was observed in 40.71% of patients. A total of 5.19% of women received mechanical ventilation. Seven women were critically ill. One mother and two newborns died. A total of 24.74% of newborns were premature. Five newborns' throat swab tests of SARS-CoV-2 were positive, all of which were delivered by cesarean section. For eight newborns with negative throat swab tests, three had both elevated IgM and IgG against SARS-CoV-2. Nucleic acid tests of vaginal secretions, breast milk, amniotic fluid, placental blood, and placental tissues were negative.

##### Conclusion

Most pregnant patients were mildly ill. The mortality of pregnant women with COVID-19 was lower than that of overall COVID-19 patients. Cesarean section was more common than vaginal delivery for pregnant women with COVID-19. Premature delivery was the main adverse event for newborns. The vertical transmission rate calculated by SARS-CoV-2 nucleic acid tests was 3.91%. Serum antibodies against SARS-CoV-2 should be tested more frequently, and multiple samples should be included in pathogenic testing. (Author)

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#### 20201221-1\*

**SOGC Statement on COVID-19 Vaccination in Pregnancy [Reaffirmed 3 March 2021].** Society of Obstetricians and Gynaecologists of Canada (2020), Ottawa, Canada: SOGC 18 December 2020

**Full URL:** [https://www.sogc.org/common/Uploaded%20files/Latest%20News/SOGC\\_Statement\\_COVID-19\\_Vaccination\\_in\\_Pregnancy.pdf](https://www.sogc.org/common/Uploaded%20files/Latest%20News/SOGC_Statement_COVID-19_Vaccination_in_Pregnancy.pdf)

Consensus statement from the Society of Obstetricians and Gynaecologists of Canada (SOGC) on COVID-19 vaccination in pregnancy. Recommends that the COVID-19 vaccine should be offered as the documented risk of not getting the vaccine outweighs the theorised risk of being vaccinated during pregnancy or while breastfeeding. (LDO)

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#### 20201218-1\*

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**Detection of SARS-CoV-2 in placental but not fetal tissues in the second trimester.** Valk JE, Chong AM, Uhlemann A-C, et al (2021), Journal of Perinatology vol 41, no 5, May 2021, pp 1184-1186  
Full URL: <https://doi.org/10.1038/s41372-020-00877-8>

Correspondence piece discussing the presence of SARS-CoV-2 in placental and fetal tissues in two infected women who presented with miscarriage and preterm labour in the second trimester. Results show that SARS-CoV-2 was found in the placentas but not the fetal organs. (LDO)

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## 20201217-9\*

**Trends in intensive neonatal care during the COVID-19 outbreak in Japan.** Maeda Y, Nakamura M, Ninomiya H, et al (2021), Archives of Disease in Childhood: Fetal and Neonatal Edition vol 106, no 3, May 2021, pp 327-329

Full URL: <http://dx.doi.org/10.1136/archdischild-2020-320521>

Objective Informed consent is standard in research. International guidelines allow for research without prior consent in emergent situations, such as neonatal resuscitation. Research without prior consent was incorporated in the Vermont Oxford Network Heat Loss Prevention Trial. We evaluated whether significant differences in outcomes exist based on the consent method.

Design Subgroup analysis of infants enrolled in a randomised controlled trial conducted from 2004 to 2010.

Setting A multicentre trial with 38 participating centres.

Participants Infants born 24-27 weeks of gestation. 3048 infants assessed, 2231 excluded due to fetal congenital anomalies, failure to obtain consent or gestation less than 24 weeks. 817 randomised, 4 withdrew consent, total of 813 analysed.

Main outcome measure The difference in mortality between consent groups.

Results No significant differences were found in mortality at 36 weeks (80.2%, 77.4%,  $p=0.492$ ) or 6 months corrected gestational age (80.7%, 79.7%,  $p=0.765$ ). Infants enrolled after informed consent were more likely to have mothers who had received antenatal steroids (95.2%, 84.0%,  $p<0.0001$ ). They also had significantly higher Apgar scores at 1 (5.0, 4.4,  $p=0.019$ ), 5 (7.3, 6.7,  $p=0.025$ ) and 10 min (7.5, 6.3,  $p=0.0003$ ).

Conclusions and relevance Research without prior consent resulted in the inclusion of infants with different baseline characteristics than those enrolled after informed consent. There were no significant differences in mortality. Significantly higher Apgar scores in the informed consent group suggest that some of the sicker infants would have been excluded from enrolment under informed consent. Research without prior consent should be considered in neonatal resuscitation research. (Author) [Erratum: Archives of Disease in Childhood: Fetal and Neonatal Edition, vol 106, no 4, July 2021, p e3.

<http://dx.doi.org/10.1136/archdischild-2020-320521corr1>

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## 20201217-55\*

**COVID-19 vaccination and pregnancy.** Royal College of Obstetricians and Gynaecologists (2020), London: RCOG 17 December 2020

Full URL: <https://www.rcog.org.uk/en/news/covid-19-vaccination-and-pregnancy/>

Short news item reporting that the Royal College of Obstetricians and Gynaecologists is advising against the use of the new Pfizer-BioNTech COVID-19 vaccine in pregnancy and in breastfeeding women, until more information about it is available. (JSM)

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## 20201215-9\*

**Clinical Characteristics and Disease Severity Among Infants With SARS-CoV-2 Infection in Montreal, Quebec, Canada.**

Panetta L, Proulx C, Drouin O, et al (2020), JAMA Network Open vol 3, no 12, December 2020, e2030470

Full URL: <https://doi.org/10.1001/jamanetworkopen.2020.30470>

Research letter exploring the manifestations and severity of disease among infants with SARS-CoV-2 infection in Canada.

Findings show that 25 infants had confirmed positive results and eight of those required hospitalisation. (LDO) [Erratum: JAMA Network Open, vol 4, no 2, February 2021, e210356].

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## 20201211-15\*

**\$20.6 billion to help women, newborns, young children and adolescents.** Partnership for Maternal, Newborn and Child Health (PMNCH) (2020), Geneva: Partnership for Maternal, Newborn and Child Health (PMNCH) 10 December 2020

News item reporting that various countries and foundations are making pledges of \$20.6 billion to protect services for women, newborns, children and adolescents during the COVID-19 pandemic. (LDO)

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## 20201210-3\*

**Extremely premature infants, scarcity and the COVID-19 pandemic.** Kaempf JW, Dirksen KM, Kockler NJ (2021), Acta Paediatrica vol 110, no 4, April 2021, pp 1100-1103

Discusses scarcity and justice in the care of extremely premature infants during the COVID-19 pandemic. Highlights the cost of premature infant care, neurodevelopmental outcomes, allocation of ventilators, informed choice, trial-of-life care and palliative care. (LDO)

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## 20201204-13\*

**Baby Care Units: Coronavirus [written answer].** House of Commons (2020), Hansard Written question 94484, 23 September 2020

**Full URL:** <https://questions-statements.parliament.uk/written-questions/detail/2020-09-23/94484>

Ms Nadine Dorries responds to a written question from Vicky Foxcroft to the Secretary of State for Health and Social Care, pursuant to the Answer of 30 June 2020 to Question 64381 on Baby Care Units: Coronavirus, if he will make it his policy for rapid testing for parents of babies in neonatal care to be prioritised in line with the recommendations of the First Report of the Petitions Committee of Session 2019-21, entitled The impact of Covid-19 on maternity and parental leave, HC 526, published on 6 July 2020. (Author, edited)

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## 20201201-2\*

**Hospitals: Coronavirus [written answer].** House of Commons (2020), Hansard Written answer 120764, 25 November 2020

**Full URL:** <https://questions-statements.parliament.uk/written-questions/detail/2020-11-25/120764>

Ms Nadine Dorries responds to a written question asked by Tim Loughton to the Secretary of State for Health and Social Care regarding what steps his Department is taking to ensure that measures to limit the transmission of covid-19 in hospitals does not lead to the separation of mothers and babies. (MB)

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## 20201130-9\*

**Maternal and perinatal outcomes in pregnant women infected by SARS-CoV-2: A meta-analysis.** Bellos I, Pandita A, Panza R (2021), European Journal of Obstetrics & Gynecology and Reproductive Biology vol 256, January 2021, pp 194-204

**Full URL:** <https://doi.org/10.1016/j.ejogrb.2020.11.038>

Evidence concerning coronavirus disease-19 (covid-19) in pregnancy is still scarce and scattered. This meta-analysis aims to evaluate maternal and neonatal outcomes in covid-19 pregnancies and identify factors associated with perinatal viral transmission. Medline, Scopus, CENTRAL, Web of Science and Google Scholar databases were systematically searched to 3 June 2020. Overall, 16 observational studies and 44 case reports/series were included. Fever was the most frequent maternal symptom, followed by cough and shortness of breath, while about 15 % of infected were asymptomatic. Severe disease was estimated to occur in 11 % of women in case reports/series and in 7 % (95 % CI: 4 %-10 %) in observational studies. Two maternal deaths were reported. The rate of neonatal transmission did not differ between women with and without severe disease (OR: 1.94, 95 % CI: 0.50-7.60). Preterm birth occurred in 29.7 % and 16 % (95 % CI: 11 %-21 %) in data obtained from case series and observational studies, respectively. Stillbirth occurred in 3 cases and 2 neonatal deaths were observed. Vertical transmission was suspected in 4 cases. Fever was the most common neonatal symptom (40 %), followed by shortness of breath (28 %) and vomiting (24 %), while 20 % of neonates were totally asymptomatic. In conclusion, the maternal and neonatal clinical course the infection is typically mild, presenting low mortality rates. The risk of vertical transmission is suggested to be low and may not be affected by the severity of maternal disease. Further large-scale studies are needed to clarify the risk

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#### 20201130-62\*

**Health Visitors [written answer].** House of Commons (2020), Hansard Written question 114763, 12 November 2020

**Full URL:** <https://questions-statements.parliament.uk/written-questions/detail/2020-11-12/114763>

Jo Churchill responds to a written question from Tim Loughton to the Secretary of State for Health and Social Care, regarding how many and what proportion of (a) children and (b) children on child in need or child protection plans have received (i) remote and (ii) face to face contact with a health visitor for (A) antenatal, (B) new birth visit, (C) six to eight week review, (D) 12 month development review and (E) two and a half year review purposes, since 23 March 2020. (Author)

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#### 20201127-1\*

**Maternal and child healthcare in India during COVID-19 pandemic.** Paul P, Mondal D (2021), Midwifery vol 92, January 2021, 102865

**Full URL:** <https://doi.org/10.1016/j.midw.2020.102865>

Editorial discussing maternal and child healthcare in India during the COVID-19 pandemic. Highlights the high rates of maternal and infant mortality prior to the pandemic and outlines strategies to minimise further adverse outcomes. (LDO)

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#### 20201123-24\*

**How a portable negative pressure incubator for COVID-19 was created with minor modifications.** Kumar A, Kumar N, et al (2020), Acta Paediatrica vol 109, no 11, November 2020, pp 2423-2424

Discusses the creation of a portable negative pressure incubator for neonatal patients with COVID-19. The incubator allows for oxygen therapy and aerosol generating procedures while preventing aerosol dispersion. (LDO)

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#### 20201118-9

**Newly qualified health visitor: Working with families to support breastfeeding.** Boddy B (2020), Journal of Health Visiting vol 8, no 11, November 2020, pp 452-453

Bethany Boddy explores the barriers to breastfeeding in the UK and how practitioners can promote breastfeeding within health visitor practice. (Author)

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#### 20201116-94\*

**Clinical care of pregnant and postpartum women with COVID-19: Living recommendations from the National COVID-19 Clinical Evidence Taskforce.** Vogel JP, Tendal B, Giles M, et al (2020), Australian and New Zealand Journal of Obstetrics and Gynaecology (ANZJOG) vol 60, no 6, December 2020, pp 840-851

To date, 18 living recommendations for the clinical care of pregnant and postpartum women with COVID-19 have been issued by the National COVID-19 Clinical Evidence Taskforce. This includes recommendations on mode of birth, delayed umbilical cord clamping, skin-to-skin contact, breastfeeding, rooming-in, antenatal corticosteroids, angiotensin-converting enzyme inhibitors, disease-modifying treatments (including dexamethasone, remdesivir and hydroxychloroquine), venous thromboembolism prophylaxis and advanced respiratory support interventions (prone positioning and extracorporeal membrane oxygenation). Through continuous evidence surveillance, these living recommendations are updated in near real-time to ensure clinicians in Australia have reliable, evidence-based guidelines for clinical decision-making. Please visit <https://covid19evidence.net.au/> for the latest recommendation updates. (Author)

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#### 20201116-46\*

**Management of the mother-infant dyad with suspected or confirmed SARS-CoV-2 infection in a highly epidemic**

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**context.** Pietrasanta C, Pagni L, Ronchi A, et al (2020), Journal of Neonatal-Perinatal Medicine vol 13, no 3, 2020

In the context of SARS-CoV-2 pandemic, the hospital management of mother-infant pairs poses to obstetricians and neonatologists previously unmet challenges. In Lombardy, Northern Italy, 59 maternity wards networked to organise the medical assistance of mothers and neonates with suspected or confirmed SARS-CoV-2 infection. Six 'COVID-19 maternity centres' were identified, the architecture and activity of obstetric and neonatal wards of each centre was reorganised, and common assistance protocols for the management of suspected and proven cases were formulated. Here, we present the key features of this reorganization effort, and our current management of the mother-infant dyad before and after birth, including our approach to rooming-in practice, breastfeeding and neonatal follow-up, based on the currently available scientific evidence. Considered the rapid diffusion of COVID-19 all over the world, we believe that preparedness is fundamental to assist mother-infant dyads, minimising the risk of propagation of the infection through maternity and neonatal wards. (Author)

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## 20201116-39\*

**The changing landscape of SARS-CoV-2: Implications for the maternal-infant dyad.** Elgin TG, Fricke EM, Hernandez Reyes ME, et al (2020), Journal of Neonatal-Perinatal Medicine vol 13, no 3, 2020

The COVID-19 pandemic represents the greatest challenge to date faced by the medical community in the 21st century. The rate of rapid dissemination, magnitude of viral contagiousness, person to person transmission at an asymptomatic phase of illness pose a unique and dangerous challenge for all patients, including neonatal and obstetric patients. Although scientific understanding of the pathophysiology of the disease, nature of transmission, and efficacy of mitigation strategies is growing, neither a cure or vaccine have been developed. While COVID-19 is primarily a disease of older patients, infection is now seen across all age demographics with reports of illness in pregnant patients and infants. Altered hormone status and predominance of Th-2 immune helper cells may result in increased predisposition to SARS-CoV-2. Case reports of pregnant patients demonstrate a clinical presentation comparable to non-pregnant adults, but evidence of vertical transmission to the fetus is controversial. Neonatal reports demonstrate an inconsistent and non-specific phenotype, and it is often difficult to separate COVID-19 from the underlying conditions of prematurity or bacterial infection. The development of international registries to enable risk profiling of COVID-19 positive pregnant mothers and/or their offspring may facilitate the development of enhanced mitigation strategies, medical treatments and effective vaccinations. (Author)

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## 20201116-2\*

**Multi-centre study showed reduced compliance with the World Health Organization recommendations on exclusive breastfeeding during COVID-19.** del Río R, Dip Pérez E, Marín Gabriel MÁ, et al (2021), Acta Paediatrica vol 110, no 3, March 2021, pp 935-936

Brief report exploring the impact of COVID-19 measures on the incidence of exclusive breastfeeding at the time of hospital discharge among a Spanish cohort. Results indicate that 43.5% of infants did not receive immediate skin-to-skin contact after birth and 45.9% were separated from their mothers. There was a strong negative correlation between separation after birth and exclusive breastfeeding. (LDO)

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## 20201112-28\*

**Longitudinal Survey of COVID-19 Burden and Related Policies in U.S. Neonatal Intensive Care Units.** Ahmad KA, Darcy-Mahoney A, Kelleher AS, et al (2021), American Journal of Perinatology vol 38, no 1, January 2021, pp 93-98

**Full URL:** <https://doi.org/10.1055/s-0040-1718944>

**Objective** This study aimed to determine the prevalence of confirmed novel coronavirus disease 2019 (COVID-19) disease or infants under investigation among a cohort of U.S. neonatal intensive care units (NICUs). Secondly, to evaluate hospital policies regarding maternal COVID-19 screening and related to those infants born to mothers under investigation or confirmed to have COVID-19.

**Study Design** Serial cross-sectional surveys of MEDNAX-affiliated NICUs from March 26 to April 3, April 8 to April 19, May 4 to May 22, and July 13 to August 2, 2020. The surveys included questions regarding COVID-19 patient burden and policies regarding infant separation, feeding practices, and universal maternal screening.

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**Results** Among 386 MEDNAX-affiliated NICUs, responses were received from 153 (42%), 160 (44%), 165 (45%), 148 (38%) across four rounds representing an active patient census of 3,465, 3,486, 3,452, and 3,442 NICU admitted patients on the day of survey completion. Confirmed COVID-19 disease in NICU admitted infants was rare, with the prevalence rising from 0.03 (1 patient) to 0.44% (15 patients) across the four survey rounds, while the prevalence of patients under investigation increased from 0.8 to 2.6%. Hospitals isolating infants from COVID-19-positive mothers fell from 46 to 20% between the second and fourth surveys, while centers permitting direct maternal breastfeeding increased 17 to 47% over the same period. Centers reporting universal severe acute respiratory syndrome-coronavirus-2 (SARS-CoV-2) screening for all expectant mothers increased from 52 to 69%.

**Conclusion** Among a large cohort of NICU infants, the prevalence of infants under investigation or with confirmed neonatal COVID-19 disease was low. Policies regarding universal maternal screening for SARS-CoV-2, infant isolation from positive mothers, and direct maternal breastfeeding for infants born to positive mothers are rapidly evolving. As universal maternal screening for SARS-CoV-2 becomes more common, the impact of these policies requires further investigation. (Author)

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## 20201111-4\*

**Characteristics and outcomes of neonatal SARS-CoV-2 infection in the UK: a prospective national cohort study using active surveillance.** Gale C, Quigley MA, Placzek A, et al (2021), The Lancet Child & Adolescent Health vol 5, no 2, February 2021, pp 113-121

**Full URL:** [https://doi.org/10.1016/S2352-4642\(20\)30342-4](https://doi.org/10.1016/S2352-4642(20)30342-4)

### Background

Babies differ from older children with regard to their exposure to severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). However, data describing the effect of SARS-CoV-2 in this group are scarce, and guidance is variable. We aimed to describe the incidence, characteristics, transmission, and outcomes of SARS-CoV-2 infection in neonates who received inpatient hospital care in the UK.

### Methods

We carried out a prospective UK population-based cohort study of babies with confirmed SARS-CoV-2 infection in the first 28 days of life who received inpatient care between March 1 and April 30, 2020. Infected babies were identified through active national surveillance via the British Paediatric Surveillance Unit, with linkage to national testing, paediatric intensive care audit, and obstetric surveillance data. Outcomes included incidence (per 10 000 livebirths) of confirmed SARS-CoV-2 infection and severe disease, proportions of babies with suspected vertically and nosocomially acquired infection, and clinical outcomes.

### Findings

We identified 66 babies with confirmed SARS-CoV-2 infection (incidence 5.6 [95% CI 4.3-7.1] per 10 000 livebirths), of whom 28 (42%) had severe neonatal SARS-CoV-2 infection (incidence 2.4 [1.6-3.4] per 10 000 livebirths). 16 (24%) of these babies were born preterm. 36 (55%) babies were from white ethnic groups (SARS-CoV-2 infection incidence 4.6 [3.2-6.4] per 10 000 livebirths), 14 (21%) were from Asian ethnic groups (15.2 [8.3-25.5] per 10 000 livebirths), eight (12%) were from Black ethnic groups (18.0 [7.8-35.5] per 10 000 livebirths), and seven (11%) were from mixed or other ethnic groups (5.6 [2.2-11.5] per 10 000 livebirths). 17 (26%) babies with confirmed infection were born to mothers with known perinatal SARS-CoV-2 infection, two (3%) were considered to have possible vertically acquired infection (SARS-CoV-2-positive sample within 12 h of birth where the mother was also positive). Eight (12%) babies had suspected nosocomially acquired infection. As of July 28, 2020, 58 (88%) babies had been discharged home, seven (11%) were still admitted, and one (2%) had died of a cause unrelated to SARS-CoV-2 infection.

### Interpretation

Neonatal SARS-CoV-2 infection is uncommon in babies admitted to hospital. Infection with neonatal admission following birth to a mother with perinatal SARS-CoV-2 infection was unlikely, and possible vertical transmission rare, supporting international guidance to avoid separation of mother and baby. The high proportion of babies from Black, Asian, or minority ethnic groups requires investigation.

### Funding

UK National Institute for Health Research Policy Research Programme. (Author)

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20201111-3\*

**Parents urged to keep childhood vaccination appointments during national COVID-19 restrictions.** Public Health England (2020), London: PHE 10 November 2020

**Full URL:** <https://www.gov.uk/government/news/parents-urged-to-keep-childhood-vaccination-appointments-during-national-covid-19-restrictions>

Public Health England (PHE) is reminding parents that the national COVID-19 restrictions should not stop children from receiving life-saving vaccines. (Author)

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20201111-2\*

**Impact of COVID-19 on childhood vaccination counts to week 43, and vaccine coverage to September 2020 in England: interim analyses.** Public Health England (2020), Health Protection Report vol 14, no 21, 10 November 2020, pp 1-17

**Full URL:** [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/933545/hpr2120\\_chldhd-vc-wk43.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/933545/hpr2120_chldhd-vc-wk43.pdf)

These reports review aggregated childhood vaccination counts (updated weekly from the electronic records of one supplier of IT services to general practices in England) as a means of assessing the impact of physical distancing measures on vaccination delivery. These data are not for the whole of England, nor do they reflect regional or local variations. This fifth report includes vaccination counts data up to week 43 and vaccine coverage data to September 2020. (Author, edited)

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20201030-16\*

**Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) Antibodies at Delivery in Women, Partners, and**

**Newborns.** Egerup P, Fich Olsen L, Christiansen A-MH, et al (2021), Obstetrics & Gynecology vol 137, no 1, January 2021, pp 49-55

**Full URL:** <https://doi.org/10.1097/AOG.0000000000004199>

**OBJECTIVE:**

To investigate the frequency of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) antibodies in parturient women, their partners, and their newborns and the association of such antibodies with obstetric and neonatal outcomes.

**METHODS:**

From April 4 to July 3, 2020, in a single university hospital in Denmark, all parturient women and their partners were invited to participate in the study, along with their newborns. Participating women and partners had a pharyngeal swab and a blood sample taken at admission; immediately after delivery, a blood sample was drawn from the umbilical cord. The swabs were analyzed for SARS-CoV-2 RNA by polymerase chain reaction, and the blood samples were analyzed for SARS-CoV-2 antibodies. Full medical history and obstetric and neonatal information were available.

**RESULTS:**

A total of 1,313 parturient women (72.5% of all women admitted for delivery at the hospital in the study period), 1,188 partners, and 1,206 newborns participated in the study. The adjusted serologic prevalence was 2.6% in women and 3.5% in partners. Seventeen newborns had SARS-CoV-2 immunoglobulin G (IgG) antibodies, and none had immunoglobulin M antibodies. No associations between SARS-CoV-2 antibodies and obstetric or neonatal complications were found (eg, preterm birth, preeclampsia, cesarean delivery, Apgar score, low birth weight, umbilical arterial pH, need for continuous positive airway pressure, or neonatal admission), but statistical power to detect such differences was low. Full serologic data from 1,051 families showed an absolute risk of maternal infection of 39% if the partner had antibodies.

**CONCLUSION:**

We found no association between SARS-CoV-2 infection and obstetric or neonatal complications. Sixty-seven percent of newborns delivered by mothers with antibodies had SARS-CoV-2 IgG antibodies. A limitation of our study is that we lacked statistical power to detect small but potentially meaningful differences between those with and without evidence of infection. (Author)

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## 20201030-10\*

**The implications of face masks for babies and families during the COVID-19 pandemic: A discussion paper.** Green J, Petty J, Staff L, et al (2021), Journal of Neonatal Nursing vol 27, no 1, February 2021, pp 21-25

Full URL: <https://doi.org/10.1016/j.jnn.2020.10.005>

COVID-19 has changed the way that newborn babies are cared for within the neonatal setting due to the introduction of social distancing and wearing of face masks to limit the spread of the infection. Potential implications exist related to the normal development of bonding and connections with others. This paper discusses the importance of face to face interactions for early attachment between babies and parents within the context of relevant underpinning developmental theory. Mask wearing can also potentially impact relational communication, requiring us to change our current ways of working. Decreasing face to face interactions and relational communication, along with key recommendations for both parents and health professionals are further highlighted to mitigate the potential negative effects of masks on long-term development related to human connection and attachment. (Author)

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## 20201028-56\*

**Impact of physical distancing measures due to COVID-19 pandemic in England on childhood vaccination counts up to week 41, and vaccine coverage up to August 2020.** Public Health England (2020), Health Protection Report vol 14, no 20, 27 October 2020, pp 1-13

Full URL: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/929754/hpr2020\\_chldhd-vc\\_wk41.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/929754/hpr2020_chldhd-vc_wk41.pdf)

These reports review aggregated childhood vaccination counts (updated weekly from the electronic records of one supplier of IT services to general practices in England) as a means of assessing the impact of physical distancing measures on vaccination delivery. These data are not for the whole of England, nor do they reflect regional or local variations. This fourth report includes vaccination counts data up to week 41 and vaccine coverage data to August 2020. (Author, edited)

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## 20201028-29\*

**Coronavirus (COVID-19) infection in pregnancy: Information for healthcare professionals [Version 12] [Superseded by Version 13, 19 February 2021].** Royal College of Obstetricians and Gynaecologists, Royal College of Midwives, Royal College of Paediatrics and Child Health, et al (2020), London: RCOG 14 October 2020. 77 pages

Full URL: <https://www.rcm.org.uk/media/4383/2020-10-14-coronavirus-covid-19-infection-in-pregnancy-v12.pdf>

NB: This version has been superseded by version 13, 19 February 2021.

This document aims to provide guidance to healthcare professionals who care for pregnant women during the COVID-19 pandemic. It is not intended to replace existing clinical guidelines, but to act as a supplement with additional advice on how to implement standard practice during this time. The advice in this document is provided as a resource for UK healthcare professionals based on a combination of available evidence, good practice and expert consensus opinion. The priorities are: (i) The reduction of transmission of SARS-CoV-2 to pregnant women. (ii) The provision of safe, personalised and woman-centred care during pregnancy, birth and the early postnatal period, during the COVID-19 pandemic. (iii) The provision of safe, personalised and woman-centred care to pregnant and postnatal women with suspected/confirmed COVID-19. This is very much an evolving situation requiring this guidance to be a living document that is under regular review and updated as new information and evidence emerges. (Author, edited)

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## 20201026-10\*

**Kawasaki disease or Kawasaki-like disease: Influence of SARS-CoV-2 infections in Japan.** Iio K, Uda K, Hataya H, et al (2021), Acta Paediatrica vol 110, no 2, February 2021, pp 600-601

Brief report discussing the relationship between Kawasaki disease (KD) and SARS-CoV-2 infections at Tokyo Metropolitan Children's Medical Center in Japan. Findings indicate that most patients during the COVID-19 pandemic had classical KD rather than paediatric inflammatory multisystem syndrome temporally associated with SARS-CoV-2

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#### 20201023-21

**A structured approach to facilitate the reintroduction of parents in transport during the SARS-CoV-2 pandemic.** Rattigan S, Perry R, Job S (2020), Infant vol 16, no 5, September 2020, pp 186-188

In response to the COVID-19 pandemic, transport teams ceased taking parents with them on neonatal transfers except in exceptional circumstances. With the easing of lockdown, the Acute Neonatal Transfer Service of the East of England (ANTS) recognises how important it is for parents to be involved in their baby's journey and has developed a set of recommendations to mitigate the risk of horizontal transmission of SARS-CoV-2 in transport. (Author)

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#### 20201023-20

**Changing referral patterns, reduced feeding-related problems and changes in breastfeeding during COVID-19.** Bean AE, Skene C, Peirce E, et al (2020), Infant vol 16, no 5, September 2020, pp 190-192

Due to the current global pandemic, the maternity services at Jessop Wing, Sheffield Teaching Hospitals NHS Foundation Trust, have had to place restrictions on visitors to the hospital environment. During this time, we have seen a significant decrease in the number of term babies referred with common feeding-related problems, while also noting an increase in breastfeeding rates at discharge. We explore the possible reasons for this and what lessons may be learned. (Author)

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#### 20201023-17

**COVID-19 surveillance swabbing in a tertiary NICU.** Tanney K, Eaton K, Hesketh L, et al (2020), Infant vol 16, no 5, September 2020, p 178

Like other neonatal units around the world, COVID-19 raised many questions for us about personal protective equipment, parental presence, and how best to cohort babies in the neonatal intensive care unit (NICU). There is limited guidance on the use of routine swabbing to guide practice in neonatal care. However, as we were caring for a group of very vulnerable patients, it was felt that regular surveillance would provide the assurance to staff and parents that the unit remained safe and COVID-19 free. With the support of the Clinical Virology and Infection Prevention Control teams, we instituted twice weekly surveillance swabbing for those babies who were deemed high-risk, ie all of our babies who were undergoing aerosol-generating procedures. (Author)

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#### 20201021-6\*

**Ready, Set, BABY Live Virtual Prenatal Breastfeeding Education for COVID-19.** Palmquist AEL, Parry KC, Wouk K, et al (2020), Journal of Human Lactation vol 36, no 4, November 2020, pp 614-618

Full URL: <https://doi.org/10.1177/0890334420959292>

Discusses the adaptation of the 'Ready, Set, BABY' antenatal breastfeeding education programme during the COVID-19 pandemic. The new digital programme 'Ready, Set, BABY Live' was launched on 15 April 2020 and is available in English and Spanish. (LDO)

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#### 20201021-5\*

**Telelactation: A Necessary Skill With Puppet Adjuncts During the COVID-19 Pandemic.** Dhillon S, Dhillon PS (2020), Journal of Human Lactation vol 36, no 4, November 2020, pp 619-621

Full URL: <https://doi.org/10.1177/0890334420958623>

Sarah Dhillon shares her experience of providing telelactation services using knitted breasts and hand puppets during the COVID-19 outbreak. (LDO)

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#### 20201021-4\*

**Universal Screening for SARS-CoV-2 of all Human Milk Bank Samples.** Salvatori G, Umberto De Rose D, Amadio P, et al

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Correspondence piece discussing the universal screening of human milk samples and containers for SARS-CoV-2 at a milk bank at Bambino Gesù Children's Hospital in Rome, Italy. Approximately 304 L of human milk was collected and none of the samples or container swabs tested positive for SARS-CoV-2. (LDO)

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#### 20201021-31\*

**New-Onset Type 1 Diabetes in Children During COVID-19: Multicenter Regional Findings in the U.K.** Unsworth R, Wallace S, Oliver NS, et al (2020), Diabetes Care vol 43, no 11, November 2020, pp e170-e171

Full URL: <https://doi.org/10.2337/dc20-1551>

Correspondence reporting the main findings of a multicenter study looking at the incidence of new-onset type 1 diabetes and diabetic ketoacidosis (DKA) in 30 children from 23 months up to the age of 16 years, during the peak of the COVID-19 pandemic, using data gathered from five inpatient units in North West London. (JSM)

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#### 20201021-3\*

**Operation of the First Regional Milk Bank in Poland During a SARS-CoV-2 (COVID-19) Pandemic.** Sinkiewicz-Darol E, Bernatowicz-Łojko U (2020), Journal of Human Lactation vol 36, no 4, November 2020, pp 626-627

Full URL: <https://doi.org/10.1177/0890334420957971>

The authors share their experience of operating a human milk bank in Poland during the COVID-19 pandemic. The milk bank has maintained sufficient resources, but there has been an increase in anxiety from donors and the profile of lactation consultants has changed significantly. (LDO)

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#### 20201020-31\*

**Early Identification of IgA Anti-SARSCoV-2 in Milk of Mother With COVID-19 Infection.** Lebrão CW, Navarro Cruz M, Henrique da Silva M, et al (2020), Journal of Human Lactation vol 36, no 4, November 2020, pp 609-613

##### Introduction

Human milk cannot currently be considered a major source of COVID-19 infection. On the other hand, it can contain specific antibodies that could modulate a possible newborn infection by SARS-CoV-2.

##### Main issue

A 32-year-old pregnant woman, gestational age 37 and 3/7 weeks, was admitted with a flu-like syndrome caused by COVID-19. The female newborn was appropriate for gestational age, with a birth weight of 2,890 g, length 48 cm, and head circumference 34 cm.

##### Management

The mother-infant dyad remained in the rooming-in unit during hospitalization, exclusively breastfeeding and following World Health Organization recommendations for contact and airway precautions. On the 3rd day after delivery, two mother's milk samples (3 and 5 mL) were collected by hand expression. The samples were centrifuged for 10 min twice consecutively to separate fat, which was removed, and the remaining material was transferred to another tube to determine anti-SARS-CoV-2 Immunoglobulin A and Immunoglobulin G (ELISA, Kit EUROIMMUN AG, Luebeck, Germany). Anti-SARS-CoV-2 Immunoglobulin A was detected in the two samples evaluated, whose values were 2.5 and 1.9, respectively. No anti-SARSCoV-2 immunoglobulin G was detected. The exclusively-breastfed infant remained well through 45 days of age.

##### Conclusion

The presence of SARS-CoV-2 Immunoglobulin A in the milk of mothers infected with COVID-19 may be related to protection against the transmission and severity of the disease in their infants. (Author)

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#### 20201019-6\*

**Infants Born to Mothers with COVID-19 During Pregnancy: The First Four Months of the Pandemic.** Murphy C, O'Reilly D, McCallion N, et al (2020), Irish Medical Journal vol 113, no 9, October 2020, P193

Full URL: <http://imj.ie/infants-born-to-mothers-with-covid-19-during-pregnancy-the-first-four-months-of-the-pandemic/>

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Correspondence piece exploring the outcomes of infants born to women with SARS-CoV-2 detected during pregnancy at the Rotunda Hospital, Ireland. Results show that there was a high rate of prematurity but none of the infants developed suspected or confirmed COVID-19. (LDO)

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#### 20201019-11\*

**Evaluation for SARS-CoV-2 in Breast Milk From 18 Infected Women.** Chambers C, Krogstad P, Bertrand K, et al (2020), JAMA (Journal of the American Medical Association) vol 324, no 13, 6 October 2020, pp 1347-1348

**Full URL:** <https://doi.org/10.1001/jama.2020.15580>

Research letter exploring the presence of SARS-CoV-2 RNA in breast milk from 18 women in the United States. Findings revealed SARS-CoV-2 RNA in one breast milk sample, but viral RNA was not detected in samples taken 12 and 41 days later. (LDO)

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#### 20201016-31\*

**Coronavirus infection in neonates: a systematic review.** Trevisanuto D, Cavallin F, Cavicchiolo ME, et al (2021), Archives of Disease in Childhood: Fetal and Neonatal Edition vol 106, no 3, May 2021, pp 330-335

**Full URL:** <http://dx.doi.org/10.1136/archdischild-2020-319837>

**Objective** To summarise currently reported neonatal cases of SARS-CoV-2 infection.

**Methods** A search strategy was designed to retrieve all articles published from 1 December 2019 to 12 May 2020, by combining the terms 'coronavirus' OR 'covid' OR 'SARS-CoV-2') AND ('neonat\*' OR 'newborn') in the following electronic databases: MEDLINE/Pubmed, Scopus, Web of Science, MedRxiv, the Cochrane Database of Systematic Review and the WHO COVID-19 database, with no language restrictions. Quality of studies was evaluated by using a specific tool for assessment of case reports and/or case series.

**Results** Twenty-six observational studies (18 case reports and 8 case series) with 44 newborns with confirmed SARS-CoV-2 infection were included in the final analysis. Studies were mainly from China and Italy. Half of neonates had a documented contact with the infected mother and one out of three infected neonates was admitted from home. Median age at diagnosis was 5 days. One out of four neonates was asymptomatic, and the remaining showed mild symptoms typical of acute respiratory infections and/or gastrointestinal symptoms. The majority of neonates were left in spontaneous breathing (room air) and had good prognosis after a median duration of hospitalisation of 10 days.

**Conclusions** Most neonates with SARS-CoV-2 infection were asymptomatic or presented mild symptoms, generally were left in spontaneous breathing and had a good prognosis after median 10 days of hospitalisation. Large epidemiological and clinical cohort studies, as well as the implementation of collaborative networks, are needed to improve the understanding of the impact of SARS-CoV-2 infection in neonates.

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#### 20201016-19\*

**Protecting newborn infants during the COVID-19 pandemic should be based on evidence and equity.** Sacks E, Sripath P, Ndwiga C, et al (2020), Acta Paediatrica vol 109, no 12, December 2020, pp 2448-2450

Commentary on recommendations presented in interim guidance published in April 2020 by the American Academy of Pediatrics, which the authors claim are neither evidence-based nor equitable. (MB)

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#### 20201014-5\*

**Beyond the First Wave: Consequences of COVID-19 on High-Risk Infants and Families.** Lemmon ME, Chapman I, Malcolm W, et al (2020), American Journal of Perinatology vol 37, no 12, October 2020, pp 1283-1288

**Full URL:** <https://doi.org/10.1055/s-0040-1715839>

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The novel coronavirus disease 2019 (COVID-19) pandemic is affecting care for high-risk newborns in ways that will likely be sustained beyond the initial pandemic response. These novel challenges present an urgent imperative to understand how COVID-19 impacts parent, family, and infant outcomes. We highlight three areas that warrant targeted attention: (1) inpatient care: visitation policies, developmental care, and communication practices; (2) outpatient care: high-risk infant follow-up and early intervention programs; and (3) parent psychosocial distress: mental health, social support, and financial toxicity. Changes to care delivery in these areas provide an opportunity to identify and implement novel strategies to provide family-centered care during COVID-19 and beyond. (Author)

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#### 20201014-4\*

**Impact of physical distancing measures due to COVID-19 pandemic in England on childhood vaccination counts up to week 39, 2020 and vaccine coverage up to August 2020.** Public Health England (2020), Health Protection Report vol 14, no 18, 14 October 2020, pp 1-12

**Full URL:** [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/926375/hpr1820\\_chldhd-VC\\_wk39b.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/926375/hpr1820_chldhd-VC_wk39b.pdf)

These reports review aggregated childhood vaccination counts (updated weekly from the electronic records of one supplier of IT services to general practices in England) as a means of assessing the impact of physical distancing measures on vaccination delivery. These data are not for the whole of England, nor do they reflect regional or local variations. This report includes data up to week 39 of 2020. (Author, edited)

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#### 20201007-11\*

**Supporting breastfeeding.** Pieper-Callan B (2020), World of Irish Nursing & Midwifery vol 28, no 7, September 2020, p 49

**Full URL:** <https://online.flippingbook.com/view/166730/48/>

Brenda Pieper-Callan discusses the effect that Covid-19 has had on the ability to provide breastfeeding support to new mothers. (Author)

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#### 20201006-24\*

**Routine childhood immunisation during the COVID-19 pandemic in Africa: a benefit-risk analysis of health benefits versus excess risk of SARS-CoV-2 infection.** Abbas K, Procter SR, van Zandvoort K, et al (2020), The Lancet Global Health vol 8, no 10, October 2020, pp E1264-E1272

**Full URL:** [https://doi.org/10.1016/S2214-109X\(20\)30308-9](https://doi.org/10.1016/S2214-109X(20)30308-9)

##### Background

National immunisation programmes globally are at risk of suspension due to the severe health system constraints and physical distancing measures in place to mitigate the ongoing COVID-19 pandemic. We aimed to compare the health benefits of sustaining routine childhood immunisation in Africa with the risk of acquiring severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection through visiting routine vaccination service delivery points.

##### Methods

We considered a high-impact scenario and a low-impact scenario to approximate the child deaths that could be caused by immunisation coverage reductions during COVID-19 outbreaks. In the high-impact scenario, we used previously reported country-specific child mortality impact estimates of childhood immunisation for diphtheria, tetanus, pertussis, hepatitis B, Haemophilus influenzae type b, Streptococcus pneumoniae, rotavirus, measles, meningitis A, rubella, and yellow fever to approximate the future deaths averted before 5 years of age by routine childhood vaccination during a 6-month COVID-19 risk period without catch-up campaigns. In the low-impact scenario, we approximated the health benefits of sustaining routine childhood immunisation on only the child deaths averted from measles outbreaks during the COVID-19 risk period. We assumed that contact-reducing interventions flattened the outbreak curve during the COVID-19 risk period, that 60% of the population will have been infected by the end of that period, that children can be infected by either vaccinators or during transport, and that upon child infection the whole household will be infected. Country-specific household age structure estimates and age-dependent infection-fatality rates were applied to calculate the number of deaths attributable to the vaccination clinic visits. We present benefit-risk ratios for routine childhood immunisation, with 95% uncertainty intervals (UIs) from a probabilistic

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sensitivity analysis.

#### Findings

In the high-impact scenario, for every one excess COVID-19 death attributable to SARS-CoV-2 infections acquired during routine vaccination clinic visits, 84 (95% UI 14-267) deaths in children could be prevented by sustaining routine childhood immunisation in Africa. The benefit-risk ratio for the vaccinated children is 85 000 (4900-546 000), for their siblings (<20 years) is 75 000 (4400-483 000), for their parents or adult carers (aged 20-60 years) is 769 (148-2700), and for older adults (>60 years) is 96 (14-307). In the low-impact scenario that approximates the health benefits to only the child deaths averted from measles outbreaks, the benefit-risk ratio to the households of vaccinated children is 3 (0.5-10); if the risk to only the vaccinated children is considered, the benefit-risk ratio is 3000 (182-21 000).

#### Interpretation

The deaths prevented by sustaining routine childhood immunisation in Africa outweigh the excess risk of COVID-19 deaths associated with vaccination clinic visits, especially for the vaccinated children. Routine childhood immunisation should be sustained in Africa as much as possible, while considering other factors such as logistical constraints, staff shortages, and reallocation of resources during the COVID-19 pandemic.

#### Funding

Gavi, the Vaccine Alliance; Bill & Melinda Gates Foundation. (Author)

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#### 20200930-16\*

**Building resilient societies after COVID-19: the case for investing in maternal, neonatal, and child health.** Jacob CM, Briana DP, Di Renzo GP, et al (2020), The Lancet Public Health vol 5, no 11, November 2020, pp e624-e627

**Full URL:** [https://doi.org/10.1016/S2468-2667\(20\)30200-0](https://doi.org/10.1016/S2468-2667(20)30200-0)

Resilient societies respond rapidly and effectively to health challenges and the associated economic consequences, and adapt to be more responsive to future challenges. Although it is only possible to recognise resilience retrospectively, the COVID-19 pandemic has occurred at a point in human history when, uniquely, sufficient knowledge is available on the early-life determinants of health to indicate clearly that a focus on maternal, neonatal, and child health (MNCH) will promote later resilience. This knowledge offers an unprecedented opportunity to disrupt entrenched strategies and to reinvest in MNCH in the post-COVID-19 so-called new normal. Furthermore, analysis of the short-term, medium-term, and longer-term consequences of previous socioeconomic shocks provides important insights into those domains of MNCH, such as neurocognitive development and nutrition, for which investment will generate the greatest benefit. Such considerations apply to high-income countries (HICs) and low-income and middle-income countries (LMICs). However, implementing appropriate policies in the post-COVID-19 recovery period will be challenging and requires political commitment and public engagement. (Author)

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#### 20200929-45\*

**Difference in levels of SARS-CoV-2 S1 and S2 subunits- and nucleocapsid protein-reactive SIgM/IgM, IgG and SIgA/IgA antibodies in human milk.** Demers-Mathieu V, Dung M, Mathijssen GB, et al (2021), Journal of Perinatology vol 41, no 4, April 2021, pp 850-859

**Full URL:** <https://doi.org/10.1038/s41372-020-00805-w>

#### Objective

This study evaluated the presence and the levels of antibodies reactive to SARS-CoV-2 S1 and S2 subunits (S1 + S2), and nucleocapsid protein.

#### Study design

The levels of SARS-CoV-2 S1 + S2- and nucleocapsid-reactive SIgM/IgM, IgG and SIgA/IgA were measured in human milk samples from 41 women during the COVID-19 pandemic (2020-HM) and from 16 women 2 years prior to the outbreak (2018-HM).

#### Results

SARS-CoV-2 S1 + S2-reactive SIgA/IgA, SIgM/IgM and IgG were detected in 97.6%, 68.3% and 58.5% in human milk whereas nucleocapsid-reactive antibodies were detected in 56.4%, 87.2% and 46.2%, respectively. S1 + S2-reactive IgG was higher in milk from women that had symptoms of viral respiratory infection(s) during the last year than in milk

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from women without symptom. S1 + S2- and nucleocapsid-reactive IgG were higher in the 2020-HM group compared to the 2018-HM group.

#### Conclusions

The presence of SARS-CoV-2-reactive antibodies in human milk could provide passive immunity to breastfed infants and protect them against COVID-19 diseases. (Author) [Erratum: Journal of Perinatology, vol 41, no 5, May 2021, p 1207.

<https://doi.org/10.1038/s41372-020-00816-7>

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#### 20200929-15\*

**Impact of restrictions on parental presence in neonatal intensive care units related to coronavirus disease 2019.** Mahoney AD, White RD, Velasquez A, et al (2020), Journal of Perinatology vol 40, suppl 1, September 2020, pp 36-46

**Full URL:** <https://doi.org/10.1038/s41372-020-0753-7>

#### Objectives

To determine the relationship between the emergence of COVID-19 and neonatal intensive care unit (NICU) family presence as well as how NICU design affects these changes.

#### Study design

A cross-sectional survey from April 21 to 30, 2020. We queried sites regarding NICU demographics, NICU restrictions on parental presence, and changes in ancillary staff availability.

#### Results

Globally, 277 facilities responded to the survey. NICU policies preserving 24/7 parental presence decreased (83-53%,  $p < 0.001$ ) and of preserving full parental participation in rounds fell (71-32%,  $p < 0.001$ ). Single-family room design NICUs best preserved 24/7 parental presence after the emergence of COVID-19 (single-family room 65%, hybrid-design 57%, open bay design 45%,  $p = 0.018$ ). In all, 120 (43%) NICUs reported reductions in therapy services, lactation medicine, and/or social work support.

#### Conclusions

Hospital restrictions have significantly limited parental presence for NICU admitted infants, although single-family room design may attenuate this effect. (Author)

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#### 20200928-36\*

**Nurturing visual social development in the NICU.** Burns KH, Saunders BS, Burns SA (2021), Journal of Perinatology vol 41, no 8, August 2021, pp 2108-2109

**Full URL:** <https://doi.org/10.1038/s41372-020-00813-w>

Short correspondence piece discussing mask usage and developmental considerations when caring for infants and young children. The authors propose six interventions to be implemented in neonatal intensive care units to mitigate the impact of exclusively masked interactions. (LDO)

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#### 20200928-3\*

**Impact of physical distancing measures due to COVID-19 pandemic in England on childhood vaccination counts (data to week 37, 2020).** Public Health England (2020), Health Protection Report vol 14, no 17, 28 September 2020, pp 1-10

**Full URL:** [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/921566/hpr1720\\_chldhd-VC\\_wk37.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/921566/hpr1720_chldhd-VC_wk37.pdf)

This series of reports reviews aggregated childhood vaccination counts of the first hexavalent vaccinations delivered to infants younger than 6 months and of the first MMR vaccinations delivered to children aged 12 to 18 months updated weekly from The Phoenix Partnership (TPP) GP IT system supplier as the means of assessing the impact of physical distancing measures on vaccination delivery. This second report includes data up to week 37 of 2020. (Author, edited)

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#### 20200928-2\*

**Impact of physical distancing measures due to COVID-19 pandemic in England on childhood vaccination counts.** Public Health England (2020), Health Protection Report vol 14, no 16, 14 September 2020, pp 1-10

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This report reviews aggregated childhood vaccination counts of the first hexavalent vaccinations delivered to infants younger than 6 months and of the first MMR vaccinations delivered to children aged 12 to 18 months updated weekly from The Phoenix Partnership (TPP) GP IT system supplier as the means of assessing the impact of physical distancing measures on vaccination delivery. (Author, edited)

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#### 20200928-14\*

**Reflections on COVID -19 and the potential impact on preterm infant feeding and speech, language and communication development.** Harding C, Aloysius A, Bell N, et al (2021), Journal of Neonatal Nursing vol 27, no 3, June 2021, pp 220-222

Infants needing the support of a neonatal unit have unique, individual needs that require a Synactive approach to enable effective management of both the environment and the infant themselves (Als, 1986). Parents working in partnership with neonatal colleagues play an essential role in developing competent skills to appraise an infant's function. For parents, learning to care and interact with their infant on a neonatal unit presents unexpected complications including learning to cope and be close to their baby in an unfamiliar setting (Cardin, 2020). The current COVID -19 pandemic has challenged all aspects of neonatal work causing anxiety and stress for all involved in infant care. Neonatal teams have been working together to continue to provide excellent care, and to make adaptations in a difficult and unfamiliar situation. A major change to practice has been the need to limit parent visiting time and access to the cot -side. This is further complicated by the need for practitioner use of face - masks and personal protective equipment when treating infants on neonatal units which has inevitably altered the traditional developmental care approaches undertaken in the UK (Altimier et al., 2015). (Author)

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#### 20200923-98\*

**Spectrum of neonatal COVID-19 in Iran: 19 infants with SARS-CoV-2 perinatal infections with varying test results, clinical findings and outcomes.** Schwartz DA, Mohagheghi P, Beigi B, et al (2022), Journal of Maternal-Fetal and Neonatal Medicine vol 35, no 14, 2022, pp 2731-2740

**Full URL:** <https://doi.org/10.1080/14767058.2020.1797672>

##### Background

There have been few cohorts of neonates with coronavirus disease-2019 (COVID-19) reported. As a result, there remains much to be learned about mechanisms of neonatal infection including potential vertical transmission, best methods of testing, and the spectrum of clinical findings. This communication describes the epidemiology, diagnostic test results and clinical findings of neonatal COVID-19 during the pandemic in Iran.

##### Materials and methods

This is a retrospective cohort study of 19 neonates infected with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) from 10 hospitals throughout Iran. We analyzed obstetrical information, familial COVID-19 status, neonatal medical findings, perinatal complications, hospital readmissions, patterns of repeated testing, and clinical outcomes.

##### Results

Eleven neonates had family members infected. Five mothers were negative for COVID-19 and four neonates had no identifiable family source of infection. The neonatal mortality rate from COVID-19 was 10%. Seven newborns (37%) were discharged from the hospital as healthy but required readmission for symptoms of COVID-19. There were 2 multifetal gestations - one set each of twins and triplets, each with disparate testing and clinical outcomes. Premature delivery was common, occurring in 12 of 19 infants (63%). Initial testing for COVID-19 was negative in 4 of the 19 neonates (21%) who subsequently became positive. In 2 cases, neonates tested positive at 1 and 2 h after birth which was suspicious for vertical transmission of SARS-CoV-2.

##### Conclusions

These cases have notable variation in the epidemiology, clinical features, results of testing and clinical outcomes among the infected newborns. Neonates initially testing negative for COVID-19 may require readmission due to

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infection. Two neonates were highly suspicious for intrauterine vertical transmission. Repeat testing of neonates who initially test negative for COVID-19 is recommended, without which 21% of neonatal infections would have been undiagnosed. (Author)

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#### 20200923-94\*

**COVID-19 and maternal, fetal and neonatal mortality: a systematic review.** Hessami K, Homayoon N, Hashemi A, et al (2022), Journal of Maternal-Fetal and Neonatal Medicine vol 35, no 15, 2022, pp 2936-2941

##### Objective

This is the first comprehensive review to focus on currently available evidence regarding maternal, fetal and neonatal mortality cases associated with Coronavirus Disease 2019 (COVID-19) infection, up to July 2020.

##### Methods

We systematically searched PubMed, Scopus, Google Scholar and Web of Science databases to identify any reported cases of maternal, fetal or neonatal mortality associated with COVID-19 infection. The references of relevant studies were also hand-searched.

##### Results

Of 2815 studies screened, 10 studies reporting 37 maternal and 12 perinatal mortality cases (7 fetal demise and 5 neonatal death) were finally eligible for inclusion to this review. All maternal deaths were seen in women with previous co-morbidities, of which the most common were obesity, diabetes, asthma and advanced maternal age. Acute respiratory distress syndrome (ARDS) and severity of pneumonia were considered as the leading causes of all maternal mortalities, except for one case who died of thromboembolism during postpartum period. Fetal and neonatal mortalities were suggested to be a result of the severity of maternal infection or the prematurity, respectively. Interestingly, there was no evidence of vertical transmission or positive COVID-19 test result among expired neonates.

##### Conclusion

Current available evidence suggested that maternal mortality mostly happened among women with previous co-morbidities and neonatal mortality seems to be a result of prematurity rather than infection. However, further reports are needed so that the magnitude of the maternal and perinatal mortality could be determined more precisely. (Author)

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#### 20200923-72\*

**Study of amniotic fluid in pregnant women infected with SARS-CoV-2 in first and second trimester. Is there evidence of vertical transmission?** Lorente AMR, Guillen MP, Jimenez NL, et al (2022), Journal of Maternal-Fetal and Neonatal Medicine vol 35, no 15, 2022, pp 2969-2971

COVID-19 is a respiratory disease caused by Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The effects of this infection on fetal development and whether there is vertical transmission are currently unknown. We present two cases of pregnant women with COVID-19 infection during the first and second trimester of gestation in which a PCR study of SARS-CoV-2 in amniotic fluid extracted by amniocentesis is performed to try to determine if there is vertical transmission. In both cases, the PCR result was negative. This fact could support the absence of vertical transmission when the infection occurs in these quarters. It would be advisable to carry out more extensive studies to be able to make this statement safely. (Author)

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#### 20200922-60\*

**Community-Onset Severe Acute Respiratory Syndrome Coronavirus 2 Infection in Young Infants: A Systematic Review.** Mark EG, Golden WC, Gilmore MM, et al (2021), The Journal of Pediatrics vol 228, January 2021, pp 94-100.e3

**Full URL:** <https://doi.org/10.1016/j.jpeds.2020.09.008>

##### Objective

To summarize and evaluate current reports on community-onset severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection in young infants.

##### Study design

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We performed a systematic review to identify reports published from November 1, 2019, until June 15, 2020, on laboratory-confirmed community-onset SARS-CoV-2 infection in infants less than 3 months of age. We excluded studies reporting neonates with perinatal COVID exposure and diagnosis prior to hospital discharge and hospital-onset disease, as well as clinically diagnosed cases without confirmation. Two independent reviewers performed study screening, data abstraction, and risk of bias assessment. Variables of interest included patient age, exposure to COVID-19, past medical history, clinical symptoms, SARS-CoV-2 testing, laboratory findings, clinical course, and disposition.

#### Results

38 publications met inclusion criteria, including 23 single case reports, 14 case series, and 1 cohort study, describing 63 infants under 3 months of age with laboratory confirmed SARS-CoV-2 infection. Most cases were mild to moderate. Fever, respiratory, gastrointestinal, cardiac, and neurologic findings were reported. Laboratory abnormalities included neutropenia, lymphopenia, and elevated serum levels of inflammatory markers and aminotransferases. Fifty-eight (92%) infants were hospitalized, 13 (21%) were admitted to the intensive care unit (ICU), and 2 (3%) required mechanical ventilation. No death was reported.

#### Conclusions

Among young infants with laboratory-confirmed SARS-CoV-2 infection, most cases were mild to moderate and improved with supportive care. Our results demonstrate a need for a high index of suspicion for SARS-CoV-2 infection in young infants presenting with generalized symptoms such as fever or decreased feeding, even in the absence of respiratory symptoms.

(Author)

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#### 20200922-57\*

**Meeting the Challenges of the COVID-19 Pandemic: Virtual Developmental Music Therapy Class for Infants in the Neonatal Intensive Care Unit.** Negrete B (2020), Pediatric Nursing vol 46, no 4, July/August 2020, pp 198-201, 206

The COVID-19 pandemic has changed the way some music therapists provide developmental support in the Neonatal Intensive Care Unit (NICU). Due to safety restrictions in the NICU, adaptations have been put in place to support the developmental needs of patients and social needs of family members, through virtual developmental music therapy classes. These interactive classes provide developmental support, parent-to-parent connections, and socialization between patients. (Author)

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#### 20200917-4\*

**Vertical transmission of antibodies in infants born from mothers with positive serology to COVID-19 pneumonia.** Vendola N, Stampini V, Amadori R, et al (2020), European Journal of Obstetrics & Gynecology and Reproductive Biology vol 253, October 2020, pp 331-332

Full URL: <https://doi.org/10.1016/j.ejogrb.2020.08.023>

Correspondence piece discussing the vertical transmission of immunoglobulin G antibodies in pregnant women with COVID-19. The authors present two cases demonstrating the presence of antibodies in the umbilical cord and peripheral blood. (LDO)

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#### 20200915-58\*

**Characteristics of Newborns Born to SARS-CoV-2-Positive Mothers: A Retrospective Cohort Study.** Farghaly MAA, Kupferman F, Castillo F, et al (2020), American Journal of Perinatology vol 37, no 13, November 2020, pp 1310-1316

Full URL: <https://doi.org/10.1055/s-0040-1715862>

**Objective** The novel virus known as severe acute respiratory syndrome-coronavirus-2 (SARS-CoV-2) has led to a terrifying pandemic. The range of illness severity among children is variable. This study aims to assess the characteristics of newborns born to SARS-CoV-2-positive women compared with those mothers who tested negative.

**Study Design** This was a retrospective cohort study performed at Brookdale Hospital Medical Center in New York City from March to May 2020. Electronic medical records of mother-baby dyads were reviewed.

**Results** Seventy-nine mothers tested for SARS-CoV-2 were included, out of which 18.98% of mothers tested SARS-CoV-2 positive. We found a significant association between symptoms and SARS-CoV-2 status. We observed a

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significant association between newborns of SARS-CoV-2 positive and SARS-CoV-2 negative mothers regarding skin-to-skin contact ( $p < 0.001$ ). Both groups showed significant differences regarding isolation ( $p < 0.001$ ). Interestingly, regarding SARS-CoV-2 infection in newborns, only one newborn tested SARS-CoV-2 positive and was unstable in the neonatal intensive care unit (NICU). With the multivariable logistic regression model, babies of SARS-CoV-2 positive mothers were three times as likely to have desaturations in comparison to newborns from negative mothers. Also, newborns of SARS-CoV-2-positive mothers were four times more likely to have poor feeding, compared with newborns of SARS-CoV-2-negative mothers. Finally, babies of SARS-CoV-2-positive mothers were ten times more likely to be symptomatic at the 2-week follow-up.

**Conclusion** SARS-CoV-2 has caused major morbidity and mortality worldwide. Neonates born to mothers with confirmed or suspected SARS-CoV-2 are most of the time asymptomatic. However, neonatal critical illness due to SARS-CoV-2 is still a possibility; thus, isolation precautions (such as avoiding skin-to-skin contact and direct breastfeeding) and vertical transmission should be studied thoroughly. In addition, testing these newborns by nasopharyngeal swab at least at 24 hours after birth and monitoring them for the development of symptoms for 14 days after birth is needed. (Author)

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#### 20200915-50\*

**Clinical Analysis of Neonates Born to Mothers with or without COVID-19: A Retrospective Analysis of 48 Cases from Two Neonatal Intensive Care Units in Hubei Province.** Liu W, Cheng H, Wang J, et al (2020), American Journal of Perinatology vol 37, no 13, November 2020, pp 1317-1323

**Full URL:** <https://doi.org/10.1055/s-0040-1716505>

**Objective** The perinatal consequences of neonates born to severe acute respiratory syndrome-associated coronavirus-2 (SARS-CoV-2) infected mothers are uncertain. This study aimed to compare the differences in clinical manifestation, laboratory results, and outcomes of neonates born to mothers with or without coronavirus disease 2019 (COVID-19).

**Study Design** A total of 48 neonates were admitted to Tongji Hospital and Huangshi Maternal and Child Healthcare Hospital from January 17 to March 4, 2020. The neonates were divided into three groups according to the mothers' conditions: neonates born to mothers with confirmed COVID-19, neonates born to mothers with clinically diagnosed COVID-19, and neonates born to mothers without COVID-19. The clinical data of mothers and infants in the three groups were collected, compared, and analyzed.

**Results** The deliveries occurred in a negative pressure isolation room, and the neonates were separated from their mothers immediately after birth for further observation and treatment. None of the neonates showed any signs of fever, cough, dyspnea, or diarrhea. SARS-CoV-2 reverse transcriptase-polymerase chain reaction of the throat swab and feces samples from the neonates in all three groups was negative. No differences were detected in the whole blood cell, lymphocytes, platelet, and liver and renal function among the three groups. All mothers and their infants showed satisfactory outcomes, including a 28-week preterm infant.

**Conclusion** The clinical manifestations, radiological, and biochemical results did not show any difference between the three groups. No evidence of vertical transmission was found in this study whether the pregnant women developed coronavirus infection in the third (14 cases) or second trimester (1 case). (Author)

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#### 20200915-42\*

**Breastfeeding in COVID-19: A Pragmatic Approach.** Ng YPM, Low YF, Goh XL, et al (2020), American Journal of Perinatology vol 37, no 13, November 2020, pp 1377-1384

**Full URL:** <https://doi.org/10.1055/s-0040-1716506>

The novel coronavirus disease 2019 (COVID-19) pandemic has resulted in changes to perinatal and neonatal care, concentrating on minimizing risks of transmission to the newborn and health care staff while ensuring medical care is not compromised for both mother and infant. Current recommendations on infant care and feeding when mother has COVID-19 ranges from mother-infant separation and avoidance of human milk feeding, to initiation of early skin-to-skin contact and direct breastfeeding. Health care providers fearing risks of severe acute respiratory syndrome-coronavirus-2 (SARS-CoV-2) maternal-infant transmission may veer toward restricted breastfeeding

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practices. We reviewed guidelines and published literature and propose three options for infant feeding depending on various scenarios. Option A involves direct breastfeeding with the infant being cared for by the mother or caregiver. In option B, the infant is cared for by another caregiver and receives mother's expressed milk. In the third option, the infant is not breastfed directly and does not receive mother's expressed milk. We recommend joint decision making by parents and the health care team. This decision is also flexible as situation changes. We also provide a framework for counseling mothers on these options using a visual aid and a corresponding structured training program for health care providers. Future research questions are also proposed. We conclude that evidence and knowledge about COVID-19 and breastfeeding are still evolving. Our options can provide a quick and flexible reference guide that can be adapted to local needs. (Author)

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#### 20200911-27\*

**Management strategy of pregnant women during COVID-19 pandemic.** Suzumori N, Goto S, Sugiura-Ogasawara M (2020), Australian and New Zealand Journal of Obstetrics and Gynaecology (ANZJOG) vol 60, no 4, August 2020, pp E9-E10

Letter to the editor presenting a strategy in flowchart format for the management of pregnant women during the COVID-19 pandemic. The authors suggest that mode of delivery should be caesarean section in all cases of COVID-19, and neonates should be rapidly separated from mothers to prevent transmission. (LDO)

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#### 20200910-32\*

**Comparative nanostructure consideration on Wuhan novel coronavirus and possibility of transplacental transmission.**

Sriwijitalai W, Wiwanitkit V (2020), American Journal of Obstetrics & Gynecology (AJOG) vol 223, no 6, December 2020, p 955

Full URL: <https://doi.org/10.1016/j.ajog.2020.08.061>

Short correspondence piece suggesting that transplacental vertical transmission of SARS-CoV-2 is unlikely. The authors argue that SARS-CoV-2 infection in neonates may be due to respiratory transmission from close contact with the mother. (LDO)

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#### 20200910-16\*

**Review of guidelines and recommendations from 17 countries highlights the challenges that clinicians face caring for neonates born to mothers with COVID-19.** Yeo KT, Oei JL, De Luca D, et al (2020), Acta Paediatrica vol 109, no 11, November 2020, pp 2192-2207

##### Aim

This review examined how applicable national and regional clinical practice guidelines and recommendations for managing neonates born to mothers with COVID-19 mothers were to the evolving pandemic.

##### Methods

A systematic search and review identified 20 guidelines and recommendations that had been published by May 25, 2020. We analysed documents from 17 countries: Australia, Brazil, Canada, China, France, India, Italy, Japan, Saudi Arabia, Singapore, South Africa, South Korea, Spain, Sweden, Switzerland, the UK and the United States.

##### Results

The documents were based on expert consensus with limited evidence and were of variable, low methodological rigour. Most did not provide recommendations for delivery methods or managing symptomatic infants. None provided recommendations for post-discharge assimilation of potentially infected infants into the community. The majority encouraged keeping mothers and infants together, subject to infection control measures, but one-third recommended separation. Although breastfeeding or using breastmilk was widely encouraged, two countries specifically prohibited this.

##### Conclusion

The guidelines and recommendations for managing infants affected by COVID-19 were of low, variable quality and may be unsustainable. It is important that transmission risks are not increased when new information is incorporated into clinical recommendations. Practice guidelines should emphasise the extent of uncertainty and clearly define gaps in the evidence. (Author)

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20200909-13\*

**Novel coronavirus infection (COVID-19) in children younger than one year: A systematic review of symptoms, management and outcomes.** Raba AA, Abobaker A, Elgenaidi IS, et al (2020), Acta Paediatrica vol 109, no 10, October 2020, pp 1948-1955

**Full URL:** <https://doi.org/10.1111/apa.15422>

**Aim**

The aim of this systematic review was to evaluate the clinical characteristics of COVID-19 in neonates and children under one year of age.

**Methods**

A systematic literature review of the MEDLINE, PubMed, CINAHL, Embase and EBSCO databases was carried out for studies from January 1, 2020, to April 7, 2020. We included all papers that addressed clinical manifestations, laboratory results, imaging findings and outcomes in infants and neonates.

**Results**

Our search identified 77 peer-reviewed papers, and 18 papers covering 160 infants were reviewed. One paper was from Vietnam, and the other 17 were from China: eight were cross-sectional studies, eight were case reports, one was a case series, and one was a prospective cohort study. The most common clinical symptoms were fever (54%) and cough (33%). Most infants were treated symptomatically, with frequent use of various empirical medications. Infants and neonates tended to have more severe COVID-19 disease than older children: 11 (7%) were admitted to intensive care and one infant died. The mortality rate was 0.006%, with favourable outcomes in most cases.

**Conclusion**

Infants and neonates were more vulnerable to more severe COVID-19 disease than older children, but morbidity and mortality were low. (Author)

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20200908-4\*

**Appropriate care for neonates born to mothers with COVID-19 disease.** Tran HT, Nguyen PTK, Huynh LT, et al (2020), Acta Paediatrica vol 109, no 9, September 2020, pp 1713-1716

The global COVID-19 pandemic has been associated with high rates of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) transmission, morbidity and mortality in the general population. Evidence-based guidance on caring for babies born to mothers with COVID-19 is needed. There is currently insufficient evidence to suggest vertical transmission between mothers and their newborn infants. However, transmission can happen after birth from mothers or other carers. Based on the currently available data, prolonged skin-to-skin contact and early and exclusive breastfeeding remain the best strategies to reduce the risks of morbidity and mortality for both the mother with COVID-19 and her baby. (Author)

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20200908-17\*

**Overview of the care of mothers and newborns with COVID-19; joint position statement.** National Association of Neonatal Nurses, National Perinatal Association (2020), Advances in Neonatal Care vol 20, no 4, August 2020, p 268

**Full URL:** <https://doi.org/10.1097/ANC.0000000000000776>

A joint position statement from the National Association of Neonatal Nurses (NANN), and the National Perinatal Association (NPA) on the care of the mother-infant dyad during the COVID-19 pandemic. (JSM)

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20200908-13\*

**Spectrum of COVID-19 in children.** Ranabothu S, Onteddu S, Nalleballe K, et al (2020), Acta Paediatrica vol 109, no 9, September 2020, pp 1899-1900

Brief report on the clinical characteristics of infants and children with laboratory confirmed COVID-19. Findings demonstrate that the most common symptoms were a fever and cough. (LDO)

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20200907-16\*

**Neonatal outcome in 29 pregnant women with COVID-19: A retrospective study in Wuhan, China.** Wu Y-T, Liu J, Xu J-J, et al (2020), PLoS Medicine vol 17, no 7, 28 July 2020, e1003195

**Full URL:** <https://doi.org/10.1371/journal.pmed.1003195>

#### Background

As of June 1, 2020, coronavirus disease 2019 (COVID-19) has caused more than 6,000,000 infected persons and 360,000 deaths globally. Previous studies revealed pregnant women with COVID-19 had similar clinical manifestations to nonpregnant women. However, little is known about the outcome of neonates born to infected women.

#### Methods and findings

In this retrospective study, we studied 29 pregnant women with COVID-19 infection delivered in 2 designated general hospitals in Wuhan, China between January 30 and March 10, 2020, and 30 neonates (1 set of twins). Maternal demographic characteristics, delivery course, symptoms, and laboratory tests from hospital records were extracted. Neonates were hospitalized if they had symptoms (5 cases) or their guardians agreed to a hospitalized quarantine (13 cases), whereas symptom-free neonates also could be discharged after birth and followed up through telephone (12 cases). For hospitalized neonates, laboratory test results and chest X-ray or computed tomography (CT) were extracted from hospital records. The presence of antibody of SARS-CoV-2 was assessed in the serum of 4 neonates.

Among 29 pregnant COVID-19-infected women (13 confirmed and 16 clinical diagnosed), the majority had higher education (56.6%), half were employed (51.7%), and their mean age was 29 years. Fourteen women experienced mild symptoms including fever (8), cough (9), shortness of breath (3), diarrhea (2), vomiting (1), and 15 were symptom-free. Eleven of 29 women had pregnancy complications, and 27 elected to have a cesarean section delivery.

Of 30 neonates, 18 were admitted to Wuhan Children's Hospital for quarantine and care, whereas the other 12 neonates discharged after birth without any symptoms and had normal follow-up. Five hospitalized neonates were diagnosed as COVID-19 infection (2 confirmed and 3 suspected). In addition, 12 of 13 other hospitalized neonates presented with radiological features for pneumonia through X-ray or CT screening, 1 with occasional cough and the others without associated symptoms. SARS-CoV-2 specific serum immunoglobulin M (IgM) and immunoglobulin G (IgG) were measured in 4 neonates and 2 were positive. The limited sample size limited statistical comparison between groups.

#### Conclusions

In this study, we observed COVID-19 or radiological features of pneumonia in some, but not all, neonates born to women with COVID-19 infection. These findings suggest that intrauterine or intrapartum transmission is possible and warrants clinical caution and further investigation.

#### Trial registration

Chinese Clinical Trial Registry, ChiCTR2000031954 (Maternal and Perinatal Outcomes of Women with coronavirus disease 2019 (COVID-19): a multicenter retrospective cohort study). (Author)

20200907-13\*

**Clinical and epidemiological characteristics of pediatric SARS-CoV-2 infections in China: A multicenter case series.** Zhang C, Gu J, Chen Q, et al (2020), PLoS Medicine vol 17, no 6, 16 June 2020, e1003130

**Full URL:** <https://doi.org/10.1371/journal.pmed.1003130>

#### Background

As of April 18, 2020, over 2,000,000 patients had been diagnosed with coronavirus disease-2019 (COVID-19) globally, and more than 140,000 deaths had been reported. The clinical and epidemiological characteristics of adult patients have been documented recently. However, information on pediatric patients is limited. We describe the clinical and epidemiological characteristics of pediatric patients to provide valuable insight into the early diagnosis and assessment of COVID-19 in children.

#### Methods and findings

This retrospective, observational study involves a case series performed at 4 hospitals in West China. Thirty-four pediatric patients with COVID-19 were included from January 27 to February 23, 2020. The final follow-up visit was completed by March 16, 2020. Clinical and epidemiological characteristics were analyzed on the basis of demographic data, medical history, laboratory tests, radiological findings, and treatment information. Data analysis was performed

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for 34 pediatrics patients with COVID-19 aged from 1 to 144 months (median 33.00, interquartile range 10.00-94.25), among whom 14 males (41%) were included. All the patients in the current study presented mild (18%) or moderate (82%) forms of COVID-19. A total of 48% of patients were noted to be without a history of exposure to an identified source. Mixed infections of other respiratory pathogens were reported in 16 patients (47%). Comorbidities were reported in 6 patients (18%). The most common initial symptoms were fever (76%) and cough (62%). Expectoration (21%), vomiting (12%), and diarrhea (12%) were also reported in a considerable portion of cases. A substantial increase was detected in serum amyloid A for 17 patients (among 20 patients with available data; 85%) and in high-sensitivity C-reactive protein for 17 patients (among 29 patients with available data; 59%), whereas a decrease in prealbumin was noticed in 25 patients (among 32 patients with available data; 78%). In addition, significant increases in the levels of lactate dehydrogenase and  $\alpha$ -hydroxybutyrate dehydrogenase were detected in 28 patients (among 34 patients with available data; 82%) and 25 patients (among 34 patients with available data; 74%), respectively. Patchy lesions in lobules were detected by chest computed tomographic scans in 28 patients (82%). Ground-glass opacities, which were a typical feature in adults, were rare in pediatric patients (3%). Rapid radiologic progression and a late-onset pattern of lesions in the lobules were also noticed. Lesions in lobules still existed in 24 (among 32 patients with lesions; 75%) patients that were discharged, although the main symptoms disappeared a few days after treatment. All patients were discharged, and the median duration of hospitalization was 10.00 (8.00-14.25) days. The current study was limited by the small sample size and a lack of dynamic detection of inflammatory markers.

#### Conclusions

Our data systemically presented the clinical and epidemiological features, as well as the outcomes, of pediatric patients with COVID-19. Stratified analysis was performed between mild and moderate cases. The findings offer new insight into early identification and intervention in pediatric patients with COVID-19. (Author)

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#### 20200902-36

**Fetal Transient Skin Edema in Two Pregnant Women With Coronavirus Disease 2019 (COVID-19).** Garcia-Manau P, Garcia-Ruiz I, Rodo C, et al (2020), Obstetrics & Gynecology vol 136, no 5, November 2020, pp 1016-1020

#### BACKGROUND:

The risk of vertical transmission of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection remains unknown. Positive reverse-transcription polymerase chain reaction (RT-PCR) test results for SARS-CoV-2 infection in neonates and placental tissue have been reported, and immunoglobulin M antibodies have been detected in neonates born to mothers with infection.

#### CASES:

The first case is a woman at 22 3/7 weeks of gestation with coronavirus disease 2019 (COVID-19) who was admitted to the intensive care unit. In the second case, the patient remained at home with mild symptoms, starting at 20 weeks of gestation. In both cases, fetal skin edema was observed on ultrasound examination while maternal SARS-CoV-2 RT-PCR test results were positive and resolved when maternal SARS-CoV-2 RT-PCR test results became negative. The RT-PCR test result for SARS-CoV-2 in amniotic fluid was negative in both cases. The two pregnancies are ongoing and uneventful.

#### CONCLUSION:

Transient fetal skin edema noted in these two patients with COVID-19 in the second trimester may represent results of fetal infection or altered fetal physiology due to maternal disease or may be unrelated to the maternal illness. (Author)

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#### 20200902-31\*

**Ventilators: Children [written answer].** House of Commons (2020), Hansard Written question 74675, 15 July 2020

**Full URL:** <https://www.parliament.uk/business/publications/written-questions-answers-statements/written-question/Commons/2020-07-15/74675/>

Edward Argar responds to a written question from Vicky Foxcroft to the Secretary of State for Health and Social Care, regarding what recent assessment he has made of the adequacy of ventilator stock for long term ventilated children. (JSM)

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20200902-29\*

**Ventilators: Children [written answer].** House of Commons (2020), Hansard Written question 78738, 22 July 2020

**Full URL:** <https://www.parliament.uk/business/publications/written-questions-answers-statements/written-question/Commons/2020-07-22/78738/>

Edward Argar responds to written question from Vicky Foxcroft to the Secretary of State for Health and Social Care, regarding whether he will make an assessment of the potential merits of ring-fencing ventilator supply budgets to help ensure the adequacy of supplies for the treatment of children requiring long-term ventilation in the winter months of 2020-21. (JSM)

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20200902-25\*

**Ventilators: Children [written answer].** House of Commons (2020), Hansard Written question 74676, 15 July 2020

**Full URL:** <https://www.parliament.uk/business/publications/written-questions-answers-statements/written-question/Commons/2020-07-15/74676/>

Edward Argar responds to a written question from Vicky Foxcroft to the Secretary of State for Health and Social Care, regarding what steps he is taking to help ensure an adequate supply of (a) bacterial filters, (b) circuits and (c) other ventilator consumables for the treatment of children requiring ventilation. (JSM)

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20200901-27\*

**A review of newborn outcomes during the COVID-19 pandemic.** Kyle MH, Glassman ME, Khan A, et al (2020), Seminars in Perinatology vol 44, no 7, November 2020, 151286

**Full URL:** <https://doi.org/10.1016/j.semperi.2020.151286>

As the COVID-19 pandemic continues to spread worldwide, it is crucial that we determine populations that are at-risk and develop appropriate clinical care policies to protect them. While several respiratory illnesses are known to seriously impact pregnant women and newborns, preliminary data on the novel SARS-CoV-2 Coronavirus suggest that these groups are no more at-risk than the general population. Here, we review the available literature on newborns born to infected mothers and show that newborns of mothers with positive/suspected SARS-CoV-2 infection rarely acquire the disease or show adverse clinical outcomes. With this evidence in mind, it appears that strict postnatal care policies, including separating mothers and newborns, discouraging breastfeeding, and performing early bathing, may be more likely to adversely impact newborns than they are to reduce the low risk of maternal transmission of SARS-CoV-2 or the even lower risk of severe COVID-19 disease in otherwise healthy newborns. (Author)

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20200901-24\*

**Care of the COVID-19 exposed complex newborn infant.** Krishnamurthy G, Sahni R, Leone T, et al (2020), Seminars in Perinatology vol 44, no 7, November 2020, 151282

**Full URL:** <https://doi.org/10.1016/j.semperi.2020.151282>

As we confront COVID-19, the global public health emergency of our times, new knowledge is emerging that, combined with information from prior epidemics, can provide insights on how to manage this threat in specific patient populations. Severe Acute Respiratory Syndrome (SARS) and Middle East Respiratory Syndrome (MERS), both caused by coronaviruses, caused serious respiratory illness in pregnant women that resulted in adverse perinatal outcomes. Thus far, COVID-19 appears to follow a mild course in the vast majority of pregnant women. A significant proportion of pregnant women appear to be asymptomatic carriers of SARS-CoV-2. However, there is limited information on how COVID-19 impacts the fetus and whether vertical transmission occurs. While these knowledge gaps are addressed, it is important to recognize the highly efficient transmission characteristics of SARS-CoV-2 and its potential for causing serious disease in vulnerable individuals, including health care workers. This review provides perspectives from a single center in New York City, the epicenter of the pandemic within the United States. It offers an overview of the preparations required for deliveries of newborns of mothers with COVID-19 and the management of neonates with particular emphasis on those born with complex issues. (Author)

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20200824-84\*

**Visitation restrictions: is it right and how do we support families in the NICU during COVID-19?** Murray PD, Swanson JR (2020), Journal of Perinatology vol 40, no 10, October 2020, pp 1576-1581

**Full URL:** <https://doi.org/10.1038/s41372-020-00781-1>

Although the COVID-19 pandemic has largely not clinically affected infants in neonatal intensive care units around the globe, it has affected how care is provided. Most hospitals, including their NICUs, have significantly reduced parental and family visitation privileges. From an ethical perspective, this restriction of parental visitation in settings where infectious risk is difficult to understand. No matter what the right thing to do is, NICUs are currently having to support families of their patients via different mechanisms. In this perspective, we discuss ways NICUs can support parents and families when they are home and when they are in the NICU as well as provide infants the support needed when family members are not able to visit. (Author)

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20200821-4\*

**The downstream effects of COVID-19: a call for supporting family wellbeing in the NICU.** Erdei C, Liu CH (2020), Journal of Perinatology vol 40, no 9, September 2020, pp 1283-1285

**Full URL:** <https://doi.org/10.1038/s41372-020-0745-7>

Parents of NICU infants are a vulnerable population from a psychological perspective, and often experience high levels of acute stress, depression, anxiety, and post-traumatic stress. The added burden of the current SARS CoV-2 disease (COVID-19) pandemic is likely to exacerbate these issues, with potential implications for the wellbeing of infants and families in the short- and long-term. In this paper, we propose utilizing the stress contagion framework and consider how psychosocial stress can 'spill over' into the parent-infant relationship domain, which can impact child development and family wellbeing longer term. As the effects of the pandemic will likely persist well beyond the acute stage, we offer advocacy points and general guidelines for healthcare professionals to consider in their quest to mitigate stress and build resilience in NICU families. (Author)

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20200821-33\*

**The COVID-19 Pandemic: The Role of Childbirth Educators in Promoting and Protecting Breastfeeding.** Spatz DL (2020), The Journal of Perinatal Education vol 29, no 3, Summer 2020, pp 120-122

The healthcare system is being challenged in the United States and worldwide due to the pandemic of coronavirus disease 2019 (COVID-19). However, all through this pandemic, families will continue to birth children. Childbirth educators play a particularly important role in ensuring that families receive appropriate evidence-based information about human milk and breastfeeding as a lifesaving medical intervention. In the current COVID-19 crisis, breastfeeding and the provision of human milk remains recommended by national and international organizations. (Author)

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20200821-3\*

**Covid-19 and breastfeeding: what's the risk?** Hand IL, Noble L (2020), Journal of Perinatology vol 40, no 10, October 2020, pp 1459-1461

**Full URL:** <https://doi.org/10.1038/s41372-020-0738-6>

Short commentary on the risks and benefits of breastfeeding during the COVID-19 pandemic. Discusses vertical disease transmission and the protective qualities of antibodies in breast milk. (LDO)

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20200821-2\*

**Newborns of COVID-19 mothers: short-term outcomes of colocating and breastfeeding from the pandemic's epicenter.** Patil UP, Maru S, Krishnan P, et al (2020), Journal of Perinatology vol 40, no 10, October 2020, pp 1455-1458

**Full URL:** <https://doi.org/10.1038/s41372-020-0765-3>

Retrospective study on live births to women who tested positive for SARS-CoV-2 at a Baby Friendly Hospital in Queens, New York. 11% of well newborns were placed in isolation, 16% were admitted to neonatal intensive care units and 94% were breastfed within one hour of birth. 73% of newborns tested negative and 6.6% tested positive for

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## 20200820-6\*

**COVID-19 and pregnancy: A review of clinical characteristics, obstetric outcomes and vertical transmission.** Pettiroso E, Giles M, Cole S, et al (2020), Australian and New Zealand Journal of Obstetrics and Gynaecology (ANZJOG) vol 60, no 5, October 2020, pp 640-659

### Background

Since its emergence in December 2019, COVID-19 has spread to over 210 countries, with an estimated mortality rate of 3-4%. Little is understood about its effects during pregnancy.

### Aims

To describe the current understanding of COVID-19 illness in pregnant women, to describe obstetric outcomes and to identify gaps in the existing knowledge.

### Methods

Medline Ovid, EMBASE, World Health Organization COVID-19 research database and Cochrane COVID-19 in pregnancy spreadsheet were accessed on 18/4, 18/5 and 23/5 2020. Articles were screened via Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines. The following were excluded: reviews, opinion pieces, guidelines, articles pertaining solely to other viruses, single case reports.

### Results

Sixty articles were included in this review. Some pregnant participants may have been included in multiple publications, as admission dates overlap for reports from the same hospital. However, a total of 1287 confirmed SARS-CoV-2 positive pregnant cases are reported. Where universal testing was undertaken, asymptomatic infection occurred in 43.5-92% of cases. In the cohort studies, severe and critical COVID-19 illness rates approximated those of the non-pregnant population. Eight maternal deaths, six neonatal deaths, seven stillbirths and five miscarriages were reported. Thirteen neonates were SARS-CoV-2 positive, confirmed by reverse transcription polymerase chain reaction of nasopharyngeal swabs.

### Conclusions

Where universal screening was conducted, SARS-CoV-2 infection in pregnancy was often asymptomatic. Severe and critical disease rates approximate those in the general population. Vertical transmission is possible; however, it is unclear whether SARS-CoV-2 positive neonates were infected in utero, intrapartum or postpartum. Future work should assess risks of congenital syndromes and adverse perinatal outcomes where infection occurs in early and mid-pregnancy. (Author)

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## 20200820-50\*

**Maternal and infant outcomes of full-term pregnancy combined with COVID-2019 in Wuhan, China: retrospective case series.** Chen Y, Bai J (2020), Archives of Gynecology and Obstetrics vol 302, no 3, September 2020, pp 545-551

**Full URL:** <https://doi.org/10.1007/s00404-020-05573-8>

### Objective

To investigate the maternal and infant outcomes of full-term pregnant patients in Wuhan, China, who were infected with 2019 severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) that is responsible for coronavirus disease 2019 (COVID-2019).

### Design

Retrospective case series.

### Setting

The Central Hospitals of Wuhan, Tongji Medical College, Huazhong University of Science and Technology in Wuhan, China.

### Participants

Twenty one full-term pregnant patients who were admitted to the Central Hospital of Wuhan, Tongji Medical College, Huazhong University of Science and Technology, confirmed SARS-CoV-2 infection and COVID-2019 with laboratorial and clinical methods, were reviewed by our medical team, and the data were collected from January 20, 2020 to

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February 29, 2020.

#### Main clinical data collection

Clinical data had been collecting using a standard case report form, such as epidemiological history, clinical manifestations, auxiliary examination of major laboratory and clinic, etc. All the information was collected and confirmed by our medical team.

#### Results

Twenty one full-term pregnant patients were reviewed (median age 29 years), and no patients were admitted to intensive care unit (ICU), and died during the treating progress. According to our review, all the cases were infected by human to human transmission, and the most common symptoms at onset of illness were cough in 17 (80.95%), fatigue in 10 (47.62%), fever in 7 (33.33%), expectoration in 1 (4.76%), and only one patient (4.76%) developed shortness of breath on admission. The median time from exposure to onset of illness was 10 days (interquartile range 7 -2 days), and from onset of symptoms to first hospital admission was 1 day (interquartile range 1-2 days).

#### Conclusions

As of February 29, 2020, all the patients who were full-term pregnancy combined with COVID-2019 were cured and delivered successfully, and all the newborns were not infected with SARS-CoV-2, and there were no evidence of mother-to-child transmission. (Author)

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#### 20200820-114\*

**Vertical transmission of coronavirus disease 2019: a systematic review and meta-analysis.** Kotlyar A, Grechukhina O, Chen A, et al (2021), American Journal of Obstetrics & Gynecology (AJOG) vol 224, no 1, January 2021, pp 35-53.e3

Full URL: <https://doi.org/10.1016/j.ajog.2020.07.049>

#### Objective

We sought to conduct a systematic review of the current literature to determine estimates of vertical transmission of COVID-19 based upon early RNA detection of SARS-CoV-2 after birth from various neonatal/fetal sources and neonatal serology.

#### Data sources

Eligible studies published up to May 28, 2020 were retrieved from Pubmed, EMBase, MedRXiv, BioRXiv collection databases.

#### Study eligibility criteria

This systematic review included cohort studies, case series and case reports of pregnant women who had COVID-19 infection as confirmed by positive SARS-CoV-2 viral RNA testing, and had reported data regarding testing of neonates/fetuses for SARS-CoV-2 immediately after birth and up to within 48hrs of birth. In total, 30 eligible case reports describing 43 tested neonates, and 38 cohort/case series studies describing 936 tested neonates were included.

#### Study appraisal and synthesis methods

The methodological quality of all included studies was evaluated by a modified Newcastle-Ottawa scale. Quantitative synthesis was performed on cohort/case series studies according to neonatal biological specimen site to reach pooled proportions of vertical transmission.

#### Results

Our quantitative synthesis revealed that of 936 neonates from COVID-19 infected mothers, 27 neonates had SARS-CoV-2 viral RNA positive nasopharyngeal swab, indicating a pooled proportion of 3.2% (95% CI 2.2-4.3%) for vertical transmission. Notably, the pooled proportion of SARS-CoV-2 positivity in neonates by nasopharyngeal swab in studies from China was 2.0% (8/397) which was similar to pooled proportion of 2.7% (14/517) in studies from outside of China. SARS-CoV-2 viral RNA testing in neonatal cord blood was positive in 2.9% (1/34) of samples, 7.7% (2/26) of placenta samples, 0% (0/51) of amniotic fluid and 0% (0/17) of urine samples and 9.7% (3/31) of fecal/rectal swabs. Neonatal serology was positive in 3/82 (3.7%) (based upon the presence of IgM).

#### Conclusion

Vertical transmission of SARS-CoV-2 is possible and appears to occur in a minority of cases of maternal COVID-19 infection in third trimester. Rates of infection are similar to other pathogens that cause congenital infections. However, given the paucity of early trimester data, no assessment can yet be made regarding rates of vertical

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#### 20200819-64\*

**Protecting Breastfeeding during the COVID-19 Pandemic.** Cheema R, Partridge E, Kair LR, et al (2023), American Journal of Perinatology vol 40, no 3, February 2023, pp 260-266

The severe acute respiratory syndrome-coronavirus-2 (SARS-CoV-2) pandemic has impacted all patient populations including pregnant mothers. There is an incomplete understanding of SARS-CoV-2 pathogenesis and transmission potential at this time and the resultant anxiety has led to variable breastfeeding recommendations for suspected or confirmed mothers with novel coronavirus disease 2019 (COVID-19). Due to the potential concern for transmission of infection from maternal respiratory secretions to the newborn, temporary separation of the maternal-baby dyad, allowing for expressed breast milk to be fed to the infant, was initially recommended but later revised to include breastfeeding by the American Academy of Pediatrics in contrast to international societies, which recommend direct breastfeeding. This separation can have negative health and emotional implications for both mother and baby. Only two publications have reported SARS-CoV-2 in human breast milk but the role of breast milk as a vehicle of transmission of COVID-19 to the newborns still remains unclear and may indeed be providing protective antibodies against SARS-CoV-2 infection even in infected neonates. Other modes of transmission of infection to neonates from infected mothers or any care providers cannot be overemphasized. Symptomatic mothers on hydroxychloroquine can safely breastfeed and no adverse effects were reported in a baby treated with remdesivir in another drug trial. The excretion of sarilumab in human breast milk is unknown at this time. Hence, given the overall safety of breast milk and both short-term and long-term nutritional, immunological, and developmental advantages of breast milk to newborn, breast milk should not be withheld from baby. The setting of maternal care, severity of maternal infection and availability of resources can impact the decision of breastfeeding, the role of shared decision making on breastfeeding between mother and physician needs to be emphasized. We strongly recommend direct breastfeeding with appropriate hygiene precautions unless the maternal or neonatal health condition warrants separation of this dyad. (Author)

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#### 20200819-63\*

**Intrauterine transfusion in COVID-19 positive mother vertical transmission risk assessment.** Filimonovic D, Lackovic M, Filipovic I, et al (2020), European Journal of Obstetrics & Gynecology and Reproductive Biology vol 252, September 2020, pp 617-618

**Full URL:** <https://doi.org/10.1016/j.ejogrb.2020.07.039>

Short correspondence piece discussing an intrauterine transfusion in a 33-year-old pregnant woman diagnosed with COVID-19. The premature infant was delivered at 32 weeks' gestation via caesarean section and tested negative for SARS-CoV-2. (LDO)

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#### 20200819-48\*

**Outcomes in COVID-19 Positive Neonates and Possibility of Viral Vertical Transmission: A Narrative Review.** Sheth S, Shah N, Bhandari V (2020), American Journal of Perinatology vol 37, no 12, October 2020, pp 1208-1216

**Objective** Novel coronavirus disease 2019 (COVID-19) seems to affect adults and pediatric patients differently. While neonates are a special population, little is known about the neonatal outcomes. This study aimed to investigate the outcomes in COVID-19 positive neonates and incidence of vertical transmission of the virus by reviewing available literature.

**Study Design** This study is a narrative review of available literature on 'COVID-19 in neonates,' for which PubMed and Google Scholar were used to search the published articles.

**Results** We summarized the data from 39 published studies that are comprised of 326 COVID-19 positive peripartum mothers with respective neonatal outcomes. Twenty-three neonates have been reported to be COVID-19 positive. Male neonates were affected significantly more (79%) than female neonates. Approximately 3% neonates acquired infection through suspected vertical transmission. Strict infection prevention measures during the perinatal time can significantly reduce the chance of horizontal transmission of the virus. Overall, neonates were asymptomatic or mildly symptomatic regardless of gestational age at birth and required only supportive measures. There was 0% mortality in

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COVID-19 positive neonates.

**Conclusion** From available published data to date, we can conclude that the prognosis of COVID-19 positive neonates is good with no mortality. There appears to be minimal vertical transmission of the infection. (Author)

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#### 20200819-46\*

**Vertical Transmission of SARS-CoV-2 (COVID-19): Are Hypotheses More than Evidences?.** Auriti C, De Rose DU, Tzialla C, et al (2020), American Journal of Perinatology 5 August 2020, online

In spite of the increasing, accumulating knowledge on the novel pandemic coronavirus severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2), questions on the coronavirus disease-2019 (COVID-19) infection transmission from mothers to fetuses or neonates during pregnancy and peripartum period remain pending and have not been addressed so far. SARS-CoV-2, a RNA single-stranded virus, has been detected in the amniotic fluid, in the cord blood and in the placentas of the infected women. In the light of these findings, the theoretical risk of intrauterine infection for fetuses, or of peripartum infection occurring during delivery for neonates, has a biological plausibility. The extent of this putative risk might, however, vary during the different stages of pregnancy, owing to several variables (physiological modifications of the placenta, virus receptors' expression, or delivery route). This brief review provides an overview of the current evidence in this area. Further data, based on national and international multicenter registries, are needed not only to clearly assess the extent of the risk for vertical transmission, but also to ultimately establish solid guidelines and consistent recommendations. (Author)

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#### 20200819-39\*

**A Case Report to Assess Passive Immunity in a COVID Positive Pregnant Patient.** Toner LE, Gelber SE, Pena JA, et al (2020), American Journal of Perinatology vol 37, no 12, October 2020, pp 1280-1282

**Full URL:** <https://doi.org/10.1055/s-0040-1715643>

**Introduction** Data regarding transplacental passage of maternal coronavirus disease 2019 (COVID-19) antibodies and potential immunity in the newborn is limited.

**Case Report** We present a 25-year-old multigravida with known red blood cell isoimmunization, who was found to be COVID-19 positive at 27 weeks of gestation while undergoing serial periumbilical blood sampling and intrauterine transfusions. Maternal COVID-19 antibody was detected 2 weeks after positive molecular testing. Antibodies were never detected on cord blood samples from two intrauterine fetal cord blood samples as well as neonatal cord blood at the time of delivery.

**Conclusion** This case demonstrates a lack of passive immunity of COVID-19 antibodies from a positive pregnant woman to her fetus, neither in utero nor at the time of birth. Further studies are needed to understand if passage of antibodies can occur and if that can confer passive immunity in the newborn.

#### Key Points

Passive immunity should not be assumed in COVID-19 infection in pregnancy.

Isoimmunization may impair passive immunity of certain antibodies.

Vaccination to or maternal infection of COVID-19 may not be protective for the fetus. (Author)

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#### 20200819-32\*

**Epidemiological trends in Kawasaki disease during COVID-19 in Singapore.** Yung CF, Nadua KD, Oh BK, et al (2020), The Journal of Pediatrics 24 July 2020, online

**Full URL:** <https://doi.org/10.1016/j.jpeds.2020.07.063>

To the Editor

We read with interest the clinical profile of 33 children with multisystem inflammatory syndrome in children (MIS-C) by Kaushik et al from three New York City tertiary care children's hospitals [1]. There have been similar reports of a surge in children presenting with systemic inflammation, including Kawasaki-like disease from Europe and other parts of the United States but not from Asia to date [2, 3, 4, 5]. We compared the epidemiologic trends in Kawasaki disease at the only public specialist children's hospital in Singapore pre-COVID-19 (January 1, 2017-December 31, 2019) and during COVID-19 (January 1, 2020-April 30, 2020). (Author)

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20200819-22\*

**Impact of Maternal SARS-CoV-2 Detection on Breastfeeding Due to Infant Separation at Birth.** Popofsky S, Noor A, Leavens-Maurer J, et al (2020), The Journal of Pediatrics vol 226, November 2020, pp 64-70

Full URL: <https://doi.org/10.1016/j.jpeds.2020.08.004>

#### Objective

To assess the impact of separation of SARS-CoV-2 PCR-positive mother-newborn dyads on breastfeeding outcomes.

#### Study design

This is an observational longitudinal cohort study of SARS-CoV-2 PCR-positive mothers and their infants at three NYU Langone Health hospitals from March 25, 2020 through May 30, 2020. Mothers were surveyed by telephone regarding pre-delivery feeding plans, in-hospital feeding, and home feeding of their neonates. Any change prompted an additional question to determine whether this change was due to COVID-19.

#### Results

Of the 160 mother-newborn dyads, 103 mothers were reached by telephone, and 85 consented to participate. No significant difference was observed in pre-delivery feeding plan between the separated and unseparated dyads ( $P = .268$ ). Higher rates of breastfeeding were observed in the unseparated dyads compared with the separated dyads in the hospital ( $p < 0.001$ ), and at home ( $p = 0.012$ ). Only two mothers in each group reported expressed breast milk as the hospital feeding source (5.6% of unseparated vs 4.1% of separated). COVID-19 was more commonly cited as the reason for change among the separated compared with the unseparated group (49.0% vs 16.7%,  $p < 0.001$ ). When dyads were further stratified by symptom status into four groups (asymptomatic separated, asymptomatic unseparated, symptomatic separated, and symptomatic unseparated), results remained unchanged.

#### Conclusion

In the setting of COVID-19, separation of mother-newborn dyads impacts breastfeeding outcomes, with lower rates of breastfeeding both during hospitalization and at home following discharge compared with unseparated mothers and infants. No evidence of vertical transmission was observed; one case of postnatal transmission occurred from an unmasked symptomatic mother who held her infant at birth. (Author)

20200819-163\*

**Management of mothers and neonates in low resources setting during covid-19 pandemic.** Trevisanuto D, Weiner G, Lakshminrusimha S, et al (2022), Journal of Maternal-Fetal and Neonatal Medicine vol 35, no 12, 2022, pp 2395-2406

The coronavirus disease (COVID-19) epidemic started in the Hubei province of China, but is rapidly spreading all over the world. Much of the information and literature have been centered on the adult population while a few reports pertaining to COVID-19 and neonates have been published so far. Actual guidelines are based on expert opinion and show significant differences among the official neonatal societies around the world. Recommendations for the care of neonates born to suspected or confirmed COVID-19 positive mothers in low-resource settings are very limited. This perspective aims to provide practical support for the planning of delivery, resuscitating, stabilizing, and providing postnatal care to an infant born to a mother with suspected or confirmed COVID-19 in low-resource settings where resources for managing emergency situations are limited. (Author)

20200819-162\*

**Vertical transmission risk of SARS-CoV-2 infection in the third trimester: a systematic scoping review.** Thomas P, Alexander PE, Ahmed U, et al (2022), Journal of Maternal-Fetal and Neonatal Medicine vol 35, no 12, 2022, pp 2387-2394

Full URL: <https://doi.org/10.1080/14767058.2020.1786055>

Background: Studies on COVID-19 infection in pregnancy thus far have largely focused on characterizing maternal and neonatal clinical characteristics. However, another evolving focus is assessing and mitigating the risk of vertical transmission amongst COVID-19-positive mothers. The objective of this review was to summarize the current evidence on the vertical transmission potential of COVID-19 infection in the third trimester and its effects on the neonate.

Methods: OVID MEDLINE, EMBASE, and Cochrane Central Register of Controlled Trial (CENTRAL) were searched from

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January 2020 to May 2020, with continuous surveillance.

Results: 18 studies met the inclusion criteria, consisting of 157 mothers and 160 neonates. The mean age of the pregnant patients was 30.8 years and the mean gestational period was 37 weeks and 1 d. Currently, there is currently no conclusive evidence to suggest that vertical transmission of SARS-CoV-2 occurs. Amongst 81 (69%) neonates who were tested for SARS-CoV-2, 5 (6%) had a positive result. However, amongst these 5 neonates, the earliest test was performed at 16 h after birth, and only 1 neonate was positive when they were later re-tested. However, this neonate initially tested negative at birth, suggesting that the SARS-CoV-2 infection was likely hospital-acquired rather than vertically transmitted. 13 (8%) neonates had complications or symptoms.

Conclusions: The findings of this rapid descriptive review based on early clinical evidence suggest that vertical transmission of SARS-CoV-2 from mother to neonate/newborn did not occur. Future studies are needed to determine the optimal management of neonates born to COVID-19-positive mothers. (Author)

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#### 20200819-147\*

**Pregnancy and COVID-19: a systematic review of maternal, obstetric and neonatal outcomes.** Trocadero V, Silvestre-Machado J, Azevedo L, et al (2022), Journal of Maternal-Fetal and Neonatal Medicine vol 35, no 12, 2022, pp 2362-2374

**Full URL:** <https://doi.org/10.1080/14767058.2020.1781809>

#### Background

There is limited information related to COVID-19 in pregnancy.

#### Objectives

Evaluate the impact of COVID-19 during pregnancy.

Search strategy: Searches were systematically carried out in PubMed, Scopus database and WHO database.

Selection criteria: Studies with information related to the effects of COVID-19 in pregnancy, concerning maternal, obstetric, and neonatal outcomes were included.

Data collection and analysis: Data were extracted for systematic review following PRISMA guidelines. CARE and STROBE were used to evaluate the quality of data.

Main Results: A total of 8 studies involving 95 pregnant women and 51 neonates were included. Overall, the quality was considered good in four studies, moderate in three and poor in one. Among pregnant women, 26% had a history of epidemiological exposure to SARS-CoV-2. The most common symptoms presented were fever (55%), cough (38%) and fatigue (11%). In 50 deliveries, 94% were cesarean sections and 35% were preterm births. Of the 51 neonates, 20% had low birth weight and 1 tested positive for Sars-CoV-2. There was 1 neonatal death, not related to the viral infection, and no cases of severe neonatal asphyxia.

#### Conclusions

The information compiled in this systematic review may help healthcare providers administer the best possible care. (Author)

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#### 20200819-132\*

**SARS-CoV-2 is not present in the vaginal fluid of pregnant women with COVID-19.** Aslan MM, Yuvacı HU, Köse O, et al (2022), Journal of Maternal-Fetal and Neonatal Medicine vol 35, no 15, 2022, pp 2876-2878

#### Background

Data concerning the presence of SARS-CoV-2 in the female genital system is scarce; however, this information is important for understanding whether the virus can transmit sexually or from mother to child. The aim of this study was to investigate whether pregnant women with COVID-19 have virus in their lower genital tract.

#### Methods

In this cross-sectional study, we present an analysis of prospectively gathered data collected at a single tertiary university hospital from 19 April to 19 May 2020. We included 13 pregnant women hospitalized with suspected COVID-19. Results of laboratory tests, imaging tests, and nucleic acid tests on vaginal swabs for SARS-CoV-2 were also analyzed for pregnant women with a clinical diagnosis of COVID-19.

#### Results

Twelve pregnant women with confirmed COVID-19 were included in this study. Mean age was  $32 \pm 7.9$  years. All

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patients had mild symptoms and were followed in the maternity ward, with none of them needing critical care unit follow-up. All lower genital tract samples were negative for SARS-CoV-2.

#### Conclusion

We demonstrated that SARS-CoV-2 was not present in the vaginal fluid of pregnant women. This finding may indicate that the female genital tract is not a route of SARS-CoV-2 transmission. (Author)

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#### 20200819-121\*

**Vertical transmission of SARS CoV-2: a systematic review.** Deniz M, Tezer H (2022), Journal of Maternal-Fetal and Neonatal Medicine vol 35, no 14, 2022, pp 2655-2662

#### Objective

The aim of this study is to review the current evidence on the vertical transmission of SARS CoV-2.

#### Methods

Combination of the following keywords; COVID-19, SARS CoV-2, placenta, vertical transmission, intrauterine infection, breast milk were searched in databases.

#### Results

In the 50 studies included, 17 newborns testing positive for SARS CoV-2 by RT-PCR were reported. In three neonates, SARS-CoV-2 IgG and IgM levels were elevated. Eight placental tissues testing positive for the virus were reported. Three positive RT-PCR results of test of breast milk have been reported recently. One amniotic fluid testing positive was reported.

#### Conclusion

Possible vertical transmission of SARS CoV-2 has been observed in some studies currently. More RT-PCR tests on amniotic fluid, placenta, breast milk and cord blood are required. (Author)

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#### 20200819-117\*

**Perinatal management of SARS-CoV-2 infection in a level III University Hospital.** Pissarra S, Rosário M, Moucho M, et al (2022), Journal of Maternal-Fetal and Neonatal Medicine vol 35, no 15, 2022, pp 2961-2964

Over the past 4 months, SARS-CoV-2 pandemic has spread all over the world. The lack of understanding of this pandemic epidemiological characteristics, clinical implications and long term consequences have raised concern among healthcare workers. Pregnant women and newborns are a particularly worrisome population since data referring to real infection impact in these patients are scarce and management controversial. We report on the perinatal management of the first consecutive ten mother-infant dyads of SARS-CoV-2 infection complicated pregnancy. All mothers were included in newborn management planning prior to delivery and decided on separation from their newborns; nine decided on postponing breastfeeding until SARS-CoV-2 negativity while maintaining lactation stimulation. No evidence of vertical transmission was found (all NP swab and bronchial secretions SARS-CoV-2 RT-PCR were negative). No newborn developed clinical evidence of infection. In the face of current scientific uncertainty, decisions of perinatal management, such as mother-infant separation and breastfeeding, must involve parents in a process of shared decision making. (Author)

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#### 20200819-116\*

**Perinatal transmission with SARS-CoV-2 and route of pregnancy termination: a narrative review.** Gracia PVG, Luo C, Malpassi RE (2022), Journal of Maternal-Fetal and Neonatal Medicine vol 35, no 15, 2022, pp 2949-2953

#### Objective

Analyze newborns diagnosed with SARS-CoV-2 performed with RT-PCR at birth or during the first days of birth and to look for an association with the route of birth.

#### Methods

We conducted a comprehensive literature search for newborns diagnosed with COVID-19 using PubMed, LILACS and Google scholar until May 15, 2020, looking for published articles with pregnancy, vertical transmission, intrauterine transmission, neonates, delivery.

#### Results

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There were found 10 articles with a total of 15 newborn infected with SARS-CoV-2 according to positive PCR at birth or in the first days of birth. Eleven newborn birth by cesarean section and 4 vaginally. Of the 11 cases with cesarean section, two presented premature rupture of the membranes. Seven newborns developed pneumonia, of which two had ruptured membranes and one was born by vaginal delivery.

#### Conclusion

This review shows that there is perinatal or neonatal infection with SARS-CoV-2 by finding a positive PCR in the first days of birth. In addition, that there is more possibility of neonatal infection if the birth is vaginal or if there is premature rupture of the membranes before cesarean section. Vaginal delivery and premature rupture of membranes should be considered as risk factors for perinatal infection. (Author)

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#### 20200819-102\*

**Novel coronavirus infection and Kawasaki disease.** Bitsadze VO, Grigoreva K, Khizroeva JKH, et al (2022), Journal of Maternal-Fetal and Neonatal Medicine vol 35, no 16, 2022, pp 3044-3048

There is a global problem of increment of the number of children with clinical features that mimic Kawasaki Disease (KD) during the ongoing Coronavirus Disease 2019 (COVID-19) pandemic. The disease was first reported by Tomisaku Kawasaki, a Japanese pediatrician, in a four-year-old child with a rash and fever at the Red Cross Hospital in Tokyo in January 1961. Now Kawasaki disease is recognized worldwide. The complexity of symptoms was defined as an «acute febrile mucocutaneous lymphnode syndrome». At the moment, it is still unclear whether the coronavirus itself can lead to development of mucocutaneous lymph node syndrome. However, it is believed that COVID-19 virus infection worsens the course of Kawasaki disease, and in some cases, children affected by SARS-V-2 may develop a disease that has a clinical picture similar to Kawasaki disease. (Author)

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#### 20200817-47\*

**Outcome of universal screening of neonates for COVID-19 from asymptomatic mothers.** McDevitt KEM, Ganjoo N, Mlangeni D, et al (2020), Journal of Infection vol 81, no 3, September 2020, pp 452-482

Full URL: <https://doi.org/10.1016/j.jinf.2020.06.037>

Correspondence reporting on the results of a universal screening programme of asymptomatic and healthy mothers together with their newborns. (MB)

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#### 20200817-34\*

**Promoting attachment between parents and neonates despite the COVID-19 pandemic.** Tscherning C, Sizun J, Kuhn P (2020), Acta Paediatrica vol 109, no 10, October 2020, pp 1937-1943

Social distancing is the only option available during the COVID-19 pandemic until a vaccine is developed. However, this is having a major impact on human relationships and bonding between parents and neonates is a major concern. Separation during this health emergency could have lifelong consequences for offspring, and there are even greater concerns if newborn infants are sick or vulnerable and need intensive care. We look at how bonding can be safely supported and maintained without risking infecting neonates, by comparing the international guidelines and proposing safe actions within those frameworks. (Author)

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#### 20200817-29\*

**Multicentre Spanish study found no incidences of viral transmission in infants born to mothers with COVID-19.** Gabriel MAM, Cuadrado I, Fernández BÁ, et al (2020), Acta Paediatrica vol 109, no 11, November 2020, pp 2302-2308

#### Aim

Our aim was to describe the clinical features of mothers infected with COVID-19 and examine any potential vertical mother to newborn transmission. We also assessed how effective the discharge recommendations were in preventing transmission during the first month of life.

#### Methods

This multicentre descriptive study involved 16 Spanish hospitals. We reviewed the medical records of 42 pregnant

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women diagnosed with COVID-19 from March 13, 2020, to March 29, 2020, when they were in their third trimester of pregnancy. They and their newborn infants were monitored until the infant was 1 month old.

#### Results

Over half (52.4%) of the women had a vaginal delivery. The initial clinical symptoms were coughing (66.6%) and fever (59.5%), and one mother died due to thrombo-embolic events. We admitted 37 newborn infants to the neonatal unit (88%), and 28 were then admitted to intermediate care for organisational virus-related reasons. No infants died, and no vertical transmission was detected during hospitalisation or follow-up. Only six were exclusively breastfed at discharge.

#### Conclusion

There was no evidence of COVID-19 transmission in any of the infants born to COVID-19 mothers, and the post-discharge advice seemed effective. The measures to avoid transmission appeared to reduce exclusive breastfeeding at discharge. (Author)

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#### 20200814-2\*

**Skin-to-Skin Contact at Birth in the COVID-19 Era: In Need of Help!**. Davanzo R, Merewood A, Manzoni P (2020), American Journal of Perinatology 9 August 2020, online

Full URL: <https://doi.org/10.1055/s-0040-1714255>

Editorial on the challenges of implementing skin-to-skin care during the COVID-19 pandemic. Recommends that skin-to-skin contact should continue for all women and infants, as there is no evidence of increased risk of SARS-CoV-2 infection in the neonate and appropriate infection control measures can be followed. (LDO)

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#### 20200812-6\*

**Vaccination: Children [written answer]**. House of Commons (2020), Hansard Written question 66149, 29 June 2020

Full URL: <https://www.parliament.uk/business/publications/written-questions-answers-statements/written-question/Commons/2020-06-29/66149/>

Jo Churchill responds to a written question from Catherine West to the Secretary of State for Health and Social Care, regarding what recent assessment he has made of the effect of the covid-19 outbreak on the delivery of routine child vaccination programmes. (JSM)

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#### 20200812-5\*

**Vaccination: Children [written answer]**. House of Commons (2020), Hansard Written question 66150, 29 June 2020

Full URL: <https://www.parliament.uk/business/publications/written-questions-answers-statements/written-question/Commons/2020-06-29/66150/>

Jo Churchill responds to a written question from Catherine West to the Secretary of State for Health and Social Care, regarding what steps he is taking to (a) ensure vulnerable children receive routine vaccinations during the covid-19 outbreak and (b) provide a catch-up programme for vulnerable children who may have missed their vaccinations. (JSM)

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#### 20200812-2\*

**Setting realistic goals for feeding infants when their mothers have suspected or confirmed COVID-19**. Mosalli R, Paes B (2020), Acta Paediatrica vol 109, no 10, October 2020, pp 1934-1936

Provides an overview of the existing evidence and guidelines on infant feeding during the COVID-19 pandemic. Explores infant feeding via breast milk, expressed breast milk, donor milk and infant formula when the mother tests positive or is awaiting results for SARS-CoV-2. Also explores infant feeding practices when the infant is separated from the mother and remains in the neonatal intensive care unit. (LDO)

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#### 20200812-10\*

**Detection of severe acute respiratory syndrome coronavirus 2 in placentas with pathology and vertical transmission.**

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Research letter presenting a study on placental pathology and SARS-CoV-2 viral particles within the placental tissue. Findings suggest that SARS-CoV-2 viral particles are uncommon in placentas from positive mothers at late gestation. (LDO)

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#### 20200811-25\*

**COVID-19 and Treg/Th17 imbalance: Potential relationship to pregnancy outcomes.** Muyayalo KP, Huang DH, Zhao SJ, et al (2020), American Journal of Reproductive Immunology 14 July 2020, online

Caused by a novel type of virus, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), coronavirus disease 2019 (COVID-19) constitutes a global public health emergency. Pregnant women are considered to have a higher risk of severe morbidity and even mortality due to their susceptibility to respiratory pathogens and their particular immunologic state. Several studies assessing SARS-CoV-2 infection during pregnancy reported adverse pregnancy outcomes in patients with severe conditions, including spontaneous abortion, preterm labor, fetal distress, cesarean section, preterm birth, neonatal asphyxia, neonatal pneumonia, stillbirth, and neonatal death. However, whether these complications are causally related to SARS-CoV-2 infection is not clear. Here, we reviewed the scientific evidence supporting the contributing role of Treg/Th17 cell imbalance in the uncontrolled systemic inflammation characterizing severe cases of COVID-19. Based on the recognized harmful effects of these CD4+ T-cell subset imbalances in pregnancy, we speculated that SARS-CoV-2 infection might lead to adverse pregnancy outcomes through the deregulation of otherwise tightly regulated Treg/Th17 ratios, and to subsequent uncontrolled systemic inflammation. Moreover, we discuss the possibility of vertical transmission of COVID-19 from infected mothers to their infants, which could also explain adverse perinatal outcomes. Rigorous monitoring of pregnancies and appropriate measures should be taken to prevent and treat early eventual maternal and perinatal complications. (Author)

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#### 20200810-24\*

**Breastfeeding, Human Milk Collection and Containers, and Human Milk Banking: Hot Topics During the COVID-19 Pandemic.** Moro GE, Bertino E (2020), Journal of Human Lactation vol 36, no 4, November 2020, pp 604-608

**Full URL:** <https://doi.org/10.1177/0890334420934391>

Provides an overview of the practical issues related to breastfeeding, human milk collection and human milk donation during the COVID-19 pandemic. Recommends that breastfeeding should be promoted whenever possible, human milk containers should be handled in the correct way to prevent SARS-CoV-2 contamination, strict control measures should be implemented in milk banks, and donor milk should be allocated to the smallest and most at risk premature infants. (LDO)

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#### 20200810-23\*

**A Call to Ensure Access to Human Milk for Vulnerable Infants During the COVID-19 Epidemic.** Rigourd V, Lapillonne A (2020), Journal of Human Lactation vol 36, no 4, November 2020, pp 624-625

**Full URL:** <https://doi.org/10.1177/0890334420938036>

Provides a brief overview of the challenges related to donor milk supply in France during the COVID-19 pandemic. Discusses the steps taken to overcome supply issues at a milk bank in Paris, including training collectors to safely collect donor milk at home, making the exclusion criteria for donors less restrictive, and launching a widespread awareness campaign across neonatal units and maternity wards. (LDO)

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#### 20200810-19\*

**Implications of the COVID-19 Pandemic Response for Breastfeeding, Maternal Caregiving Capacity and Infant Mental Health.** Gribble K, Marinelli KA, Tomori C, et al (2020), Journal of Human Lactation vol 36, no 4, November 2020, pp 591-603

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**Full URL:** <https://doi.org/10.1177/0890334420949514>

Provides an overview of the current evidence on SARS-CoV-2 in infants and infant feeding, summarises national and international guidelines, describes the results of policies preventing skin to skin contact and draws comparisons to the HIV pandemic. (LDO)

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#### 20200810-16\*

**Protecting and Supporting the WHO International Code During COVID-19.** Dodgson JE (2020), Journal of Human Lactation vol 36, no 3, August 2020, pp 387-389

**Full URL:** <https://doi.org/10.1177/0890334420939554>

Editorial on upholding the International Code of Marketing Breast-milk Substitutes during the COVID-19 pandemic. The author encourages readers to be aware of the tenets of the code, intervene through advocacy efforts and make any unethical practices visible. (LDO)

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#### 20200807-8

**Who is providing a safety net for babies and young children?.** Morton A (2020), Journal of Health Visiting vol 8, no 7, July 2020, pp 276-278

With many health visitors in England redeployed during the early weeks of the pandemic, Alison Morton considers the consequences for children and families, as well as the health visitors intended to support them. (Author)

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#### 20200807-24

**What do we know about COVID-19 in infants?.** Gasibat Q (2020), Infant vol 16, no 4, July 2020, p 141

Correspondence piece providing a brief overview of current evidence on COVID-19 in infants. The author suggests that neonatal healthcare professionals should engage with up-to-date evidence as new data are constantly emerging. (LDO)

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#### 20200807-23

**Minimising COVID-19 transmission risk during neonatal transport: a practical approach from ANTS.** Walton S, Garnell S, Rattigan S, et al (2020), Infant vol 16, no 4, July 2020, pp 138-140

The Acute Neonatal Transfer Service of the East of England (ANTS) has been involved in the transfer of four suspected or confirmed neonatal SARS-CoV-2 (COVID-19) cases. Through this unique clinical experience and related educational activities, we have constructed additional practical recommendations aimed at minimising horizontal SARS-CoV-2 spread during neonatal transfer. Here we present these recommendations for consideration by neonatal transport teams and neonatal units managing neonatal COVID-19 transfers. (Author)

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#### 20200805-61\*

**Babies in Lockdown: listening to parents to build back better. Executive summary.** Best Beginnings, Home-Start UK, Parent-Infant Foundation (2020), London: Best Beginnings, Home-Start UK, Parent-Infant Foundation August 2020. 20 pages

**Full URL:** [https://babiesinlockdown.files.wordpress.com/2020/08/babies\\_in\\_lockdown\\_executive\\_summary.pdf](https://babiesinlockdown.files.wordpress.com/2020/08/babies_in_lockdown_executive_summary.pdf)

Summarises the findings of a joint research report from charities Best Beginnings, Home Start UK and the Parent-Infant Foundation, drawing on the experiences of expectant and new parents, looking at the effect lockdown during the COVID-19 pandemic has had on the first months and years of their babies' development. (JSM)

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#### 20200805-46\*

**Babies in Lockdown: listening to parents to build back better.** Best Beginnings, Home-Start UK, Parent-Infant Foundation (2020), London: Best Beginnings, Home-Start UK, and the Parent-Infant Foundation August 2020. 92 pages

**Full URL:** <https://babiesinlockdown.files.wordpress.com/2020/08/babies-in-lockdown-main-report-final-version.pdf>

Joint research report from charities Best Beginnings, Home Start UK and the Parent-Infant Foundation, drawing on the

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experiences of expectant and new parents, looking at the effect lockdown during the COVID-19 pandemic has had on the first months and years of their babies' development. Reveals a great deal of variation in parents experiences, with some welcoming the extra time to spend with their families, while others, already at greater risk of poorer outcomes, such as those on lower incomes or from Black, Asian and Minority Ethnic backgrounds (BAME) have been hardest hit during the crisis. Includes the experiences of those working on the frontline while pregnant. (JSM)

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#### 20200804-8\*

**After COVID-19, a future for the world's children?.** The WHO-UNICEF-Lancet Commissioners (2020), The Lancet 2 July 2020, online

**Full URL:** [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(20\)31481-1/fulltext?cid=DM68466&bid=78408290&utm\\_campaign=OP1007&utm\\_medium=email&utm\\_dgroup=20N18184&utm\\_acid=7788381&dgcid=OP1007&CMX\\_ID=0&utm\\_in=DM68466&utm\\_delid=DM68466](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)31481-1/fulltext?cid=DM68466&bid=78408290&utm_campaign=OP1007&utm_medium=email&utm_dgroup=20N18184&utm_acid=7788381&dgcid=OP1007&CMX_ID=0&utm_in=DM68466&utm_delid=DM68466)

Discusses how COVID-19 is exacerbating many of the threats that already exist for children, such as climate change and the related crises of poverty, migration and malnutrition, but argues that recovery and adaptation to COVID-19 could result in a better world for children and future generations. (JM)

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#### 20200804-6\*

**COVID-19 in children and young people.** Felsenstein S, Hedrich CM (2020), The Lancet Rheumatology 29 June 2020, online

**Full URL:** [https://doi.org/10.1016/S2665-9913\(20\)30212-5](https://doi.org/10.1016/S2665-9913(20)30212-5)

Discusses the evidence around the asymptomatic and symptomatic course of COVID-19 in children and young people. (JSM)

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#### 20200804-58\*

**Perceptions of obstetricians and pediatricians about the risk of COVID-19 for pregnant women and newborns.** Obeidat N, Saadeh R, Obeidat M, et al (2020), International Journal of Gynecology & Obstetrics vol 150, no 3, September 2020, pp 306-311

**Objective**

To assess the perception of obstetricians and pediatricians about risks of COVID-19 on pregnant women and possible complications in newborns.

**Methods**

A structured 27-item online survey was sent via social media messaging to obstetricians and pediatricians from public, academic, and private sectors in Jordan between March 23-30, 2020. Descriptive statistics were used to represent numbers and percentages of participants' responses to survey items.

**Results**

A total of 147 physicians participated (107 obstetricians, 40 pediatricians). Participants were well informed about the symptoms, diagnosis, modes of transmission, and methods of prevention. Participants had variable perceptions about COVID-19 risk during pregnancy, including potential vertical transmission, preferred route of delivery, and safety of breastfeeding. Most participants felt that pregnant women should be prioritized for testing and medical care provision.

**Conclusion**

While evidence-based strategies to reduce the risks of COVID-19 in pregnant women and newborns are evolving, healthcare providers showed excellent knowledge of the infection and were vigilant regarding its complications for mothers and newborns. To ensure safe pregnancy, physicians must keep informed of developing guidance on best and safest prenatal and perinatal health services. Implementing local hospital policies and adequate training in infection control measures is strongly encouraged. (Author)

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#### 20200804-4\*

**Outcomes of Maternal-Newborn Dyads After Maternal SARS-CoV-2.** Verma S, Bradshaw C, Auyeung NSF, et al (2020), Pediatrics 31 July 2020, online

**Full URL:** <https://doi.org/10.1542/peds.2020-005637>

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**Background and Objectives:** Infection with a novel coronavirus namely Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), has become a global pandemic. There is limited data describing the impact of SARS-CoV-2 infection on pregnant mothers and their newborns. The objective of this study is to describe characteristics and outcomes of maternal-newborn dyads with confirmed maternal SARS-CoV-2. **Methods:** This was a multicenter, observational, descriptive cohort study collecting data from charts of maternal-newborn dyads that delivered at four major New York City metropolitan area hospitals between March 1 and May 10, 2020 with maternal SARS-CoV-2 infection. **Results:** There were a total of 149 mothers with SARS-CoV-2 infection and 149 newborns analyzed (3 sets of twins; 3 stillbirths). Forty percent of these mothers were asymptomatic. Approximately 15% of symptomatic mothers required some form of respiratory support and 8% required intubation. Eighteen newborns (12%) were admitted to the intensive care unit. Fifteen (10%) were born preterm, and five (3%) required mechanical ventilation. Symptomatic mothers had more premature deliveries (16% vs 3%,  $P=0.02$ ) and their newborns were more likely to require intensive care (19% vs. 2%,  $P=0.001$ ) than asymptomatic mothers. One newborn tested positive for SARS-CoV-2, which was considered a case of horizontal postnatal transmission. **Conclusion:** Although there was no distinct evidence of vertical transmission from mothers with SARS-CoV-2 to their newborns, we did observe perinatal morbidities among both mothers and newborns. Symptomatic mothers were more likely to experience premature delivery and their newborns to require intensive care. (Author)

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#### 20200804-3\*

**Multisystem inflammatory syndrome in children (MIS-C).** Anon (2020), Elsevier Healthcare Hub 29 July 2020, online

**Full URL:** [https://covid-19.elsevier.health/en-US/clinical-key/multisystem-inflammatory-syndrome-in-children-mis-c?campid=20N18184&utm\\_campaign=ckphy\\_awcovid-19healthcarehub\\_em\\_20N18184&mm=cima-thornhillk®=naJT=ckphy&utm\\_medium=em&utm\\_source=database&utm\\_content=awcovid-19healthcarehub&cid=DM68466&bid=78408290&utm\\_campaign=OP1007&utm\\_medium=email&utm\\_dgroup=20N18184&utm\\_acid=7788381&dgcid=OP1007&CMX\\_ID=0&utm\\_in=DM68466&utm\\_delid=DM68466#diagnosis](https://covid-19.elsevier.health/en-US/clinical-key/multisystem-inflammatory-syndrome-in-children-mis-c?campid=20N18184&utm_campaign=ckphy_awcovid-19healthcarehub_em_20N18184&mm=cima-thornhillk®=naJT=ckphy&utm_medium=em&utm_source=database&utm_content=awcovid-19healthcarehub&cid=DM68466&bid=78408290&utm_campaign=OP1007&utm_medium=email&utm_dgroup=20N18184&utm_acid=7788381&dgcid=OP1007&CMX_ID=0&utm_in=DM68466&utm_delid=DM68466#diagnosis)

MIS-C (multisystem inflammatory syndrome in children) is a recently described clinical syndrome in children and adolescents, first recognized in temporal association with a high local prevalence of COVID-19. Subsequently, most reported cases have had laboratory evidence of recent infection with SARS-CoV-2, the virus that causes COVID-19.

Characterized by persistent fever, laboratory markers of inflammation, and evidence of single or multiorgan dysfunction, including myocarditis. Abdominal pain (often severe) and diarrhea (which may be profuse) are common presenting symptoms. May include features suggestive of Kawasaki syndrome (conjunctival and mucosal injection, rash, swelling of hands and feet, coronary artery dilation), or toxic shock syndrome (erythroderma, renal involvement, hypotension).

Some patients develop severe shock and require fluid resuscitation and hemodynamic support.

There is no specific diagnostic test; diagnosis is based on a constellation of clinical, laboratory, echocardiographic, and epidemiologic factors. Most patients have laboratory evidence of SARS-CoV-2 (polymerase chain reaction, antigen, or antibody).

Patients with mild disease can be managed conservatively. Treat patients who have more severe disease, including those with myocarditis or who meet criteria for Kawasaki disease or toxic shock syndrome, with IV immunoglobulin. Corticosteroids and immune modulators also have been used.

Most patients have responded promptly to therapy and have done well. Owing to resemblance to Kawasaki syndrome and observation of coronary artery aneurysms in some patients with MIS-C, serial follow-up echocardiography is recommended. (Author, edited)

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#### 20200803-2\*

**Caring for Women Who Are Planning a Pregnancy, Pregnant, or Postpartum During the COVID-19 Pandemic.** Rasmussen SA, Jamieson DJ (2020), JAMA (Journal of the American Medical Association) vol 324, no 2, 14 July 2020, pp 190-191

**Full URL:** <https://doi.org/10.1001/jama.2020.8883>

Discusses the effects of COVID-19 on pregnancy and the risk of intrauterine transmission to the neonate. Provides an overview of guidelines from the Centers for Disease Control and Prevention (CDC) and other organisations, including the use of early epidural analgesia, adequate hygiene and face masks when breastfeeding, and the temporary

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## 20200803-15

**Infant feeding: the Covid effect.** Entwistle F (2020), Community Practitioner vol 93, no 4, July/August 2020, pp 48-

The pandemic has caused breastfeeding support in some areas of the UK to be stripped back to the bare minimum, writes Francesca Entwistle of the Unicef UK Baby Friendly Initiative. But it's still crucial for infant health. (Author)

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## 20200729-5\*

**Pregnancy, Birth, and Breastfeeding with Covid-19.** Smith CK (2020), Midwifery Today no 134, Summer 2020

Provides an overview of existing guidelines on pregnancy, labour, the postpartum period and breastfeeding during the COVID-19 pandemic. Includes guidelines from the Center for Disease Control and Prevention (CDC) and the American College of Obstetricians and Gynecologists (ACOG). (LDO)

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## 20200729-1\*

**COVID-19: paediatric surveillance [Last updated 4 May 2021].** Public Health England (2020), London: PHE 27 April 2020

Full URL: <https://www.gov.uk/guidance/covid-19-paediatric-surveillance>

Description and contact details of PHE paediatric surveillance programmes for COVID-19. (Publisher)

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## 20200728-21\*

**Optimising maternity services and maternal and newborn outcomes in a pandemic. A rapid analytic scoping review.**

**Conducted for the Royal College of Midwives by the RCM Professional Advisory Group [Version 4].** Renfrew MJ, Cheyne H, Hunter B, et al (2020), London: RCM 8 April 2020. 21 pages

Full URL: <https://www.rcm.org.uk/media/3869/rapid-review-optimising-maternity-services-for-rcm-v4-8-april.pdf>

Childbearing women and newborn infants continue to require care during the current COVID-19 pandemic. When staff and services are under extreme stress there is a real risk of increasing avoidable harm, including an increased risk of infection and reductions in the overall quality of care. Safety, quality, and avoiding harm must be key priorities in decision-making.

### Review questions

Three related review questions were addressed. All considered safety, quality and minimising avoidable harm in the provision of midwifery services:

1. What is the evidence on the impact of community care vs centralisation of care during pandemics, for childbearing women, newborn infants, families, staff, and resources?
  2. How to optimise availability of midwifery expertise when staffing becomes heavily affected by the midwifery workforce being off sick, self-isolating, fear of pandemic or other major unavoidable events?
  3. What is the evidence on viral load of SARS-COV-2 in domestic settings and hospitals, relevant to informing the safety of community and hospital settings for health professionals? (Author)
- 

## 20200727-9\*

**Histological characterization of placenta in COVID19 pregnant women.** Cribiù FM, Croci GA, Del Gobbo A, et al (2020), European Journal of Obstetrics & Gynecology and Reproductive Biology vol 252, September 2020, pp 619-621

Full URL: <https://doi.org/10.1016/j.ejogrb.2020.06.041>

Correspondence piece discussing histological alterations in placentas from pregnant women with SARS-CoV-2

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infection. Distal villous hypoplasia was detectable in 22% of cases, delayed villous maturation was shown in 55% of cases and no significant T- and B-cell infiltrate was observed in any of the cases. (LDO)

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#### 20200727-71\*

**Novel coronavirus in a 15-day-old neonate with clinical signs of sepsis, a case report.** Aghdam MK, Jafari N, Eftekhari K (2020), Infectious Diseases vol 52, no 6, June 2020, pp 427-429

**Full URL:** <https://doi.org/10.1080/23744235.2020.1747634>

**Introduction:** Novel coronavirus or coronavirus disease (COVID-19) can affect all age groups. The clinical course of the disease in children and infants is milder than in adults. It should be noted that, although typical symptoms may be present in children, non-specific symptoms could be noted in the neonate. The disease is rare in the neonate, so, its suspicion in this group can help to make a quick diagnose. **Case report:** A 15-day-old neonate was admitted with fever, lethargy, cutaneous mottling, and respiratory distress without cough. His mother had symptoms of Novel coronavirus. So Reverse-Transcription Polymerase Chain Reaction (RT-PCR) assay was done for the neonate and showed to be positive. The newborn was isolated and subjected to supportive care. Antibiotic and antiviral treatment was initiated. Eventually, the baby was discharged in good general condition. **Conclusion:** When a newborn presents with non-specific symptoms of infection with an added history of COVID-19 in his/her parents, it indicates the need for PCR testing for Novel coronavirus. (Author)

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#### 20200727-47\*

**Maternal COVID-19 infection, clinical characteristics, pregnancy, and neonatal outcome A prospective cohort study.** Antoun L, Taweel NE, Ahmed I, et al (2020), European Journal of Obstetrics & Gynecology and Reproductive Biology vol 252, September 2020, pp 559-562

**Full URL:** <https://doi.org/10.1016/j.ejogrb.2020.07.008>

##### Objective

To study the effect of COVID-19 on pregnancy and neonatal outcomes.

##### Study design

Prospective cohort study in a large tertiary maternity unit within a university hospital with an average annual birth of over 10,000 births. We prospectively collected and analysed data for a cohort of 23 pregnant patients including singleton and multiple pregnancies tested positive for COVID-19 between February 2020 and April 2020 inclusive to assess the effect of COVID-19 on pregnancy, and neonatal outcomes.

##### Results

Twenty-three pregnant patients tested positive for COVID-19, delivering 20 babies including a set of twins, with four ongoing pregnancies at the time of manuscript submission. 16/23 (70%) whom tested positive were patients from Asian (Indian sub-continent) background. The severity of the symptoms ranged from mild in 13/23 (65.2%) of the patients, moderate in 2/23 (8.7%), and severe in 8/23 (34.8%). Four out of total 23 COVID-19 pregnant patients (17.4%) developed severe adult respiratory distress syndrome complications requiring ICU support, one of whom led to maternal death 1/23 (4.3%). 11/23 (48%) of the patients had pre-existing co-morbidities, with morbid obesity 5/23 (21.7%) and diabetes 4/23 (17.4%) being the more commonly represented. Of the 23 pregnant patients 19 were in their third trimester of pregnancy and delivered; 7/19 (36.8%) had preterm birth, 3/19 (15.8%) developed adult respiratory distress syndrome before delivery, and 2/19 (10.5%) had pre-eclampsia. 16/19 (84%) of patients delivered by C-section. Out of the 20 new-borns, 18 were singletons with a set of twin.

##### Conclusion

COVID-19 is associated with high prevalence of preterm birth, preeclampsia, and caesarean section compared to non-COVID pregnancies. COVID-19 infection was not found in the newborns and none developed severe neonatal complications. (Author)

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#### 20200727-46\*

**COVID-19 in pregnant women: A systematic review and meta-analysis.** Capobianco G, Sadari L, Aliberti S, et al (2020), European Journal of Obstetrics & Gynecology and Reproductive Biology vol 252, September 2020, pp 543-558

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**Full URL:** <https://doi.org/10.1016/j.ejogrb.2020.07.006>

#### Objective

Coronavirus disease 2019 (COVID-19) is a novel infectious disease caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Several reports highlighted the risk of infection and disease in pregnant women and neonates. To assess the risk of clinical complications in pregnant women and neonates infected with SARS-CoV-2 carrying out a systematic review and meta-analysis of observational studies.

#### Data sources

Search of the scientific evidence was performed using the engines PubMed and Scopus, including articles published from December 2019 to 15 April 2020.

#### Study eligibility criteria

Only observational studies focused on the assessment of clinical outcomes associated with pregnancy in COVID-19 women were selected.

#### Study appraisal and synthesis methods

The first screening was based on the assessment of titles and abstracts, followed by the evaluation of full-texts. Qualitative variables were summarized with frequencies, whereas quantitative variables with central and variability indicators depending on their parametric distribution. Forest plots were used to describe point estimates and in-between studies variability. Study quality assessment was performed.

#### Results

Thirteen studies were selected. All of them were carried out in China. The mean (SD) age and gestational age of pregnant women were 30.3 (1.5) years and 35.9 (2.9) weeks, respectively. The mean (SD) duration from the first symptoms to the hospital admission and to labour were 5.5 (2.0) and 9.5 (8.7) days, respectively. Patients mainly complained of fever and cough (pooled (95 % CI) proportions were 76.0 % (57.0 %-90.0 %) and 38.0 (28.0 %-47.0 %), respectively). Several antibiotics, antivirals, and corticosteroids were prescribed in different combinations. The pooled prevalence of maternal complications and of caesarean section were 45.0 % (95 % CI: 24.0 %-67.0 %) and 88.0 % (95 %CI: 82.0 %-94.0 %). A proportion of pregnant women less than 20 % were admitted to ICU. The pooled proportion of preterm infants was 23.0 % (95 %CI: 11.0 %-39.0 %). The most frequent neonatal complications were pneumonia and respiratory distress syndrome. The pooled percentage of infected neonates was 6.0 % (95 %CI: 2.0 %-12.0 %).

#### Conclusions

The present study suggests a high rate of maternal and neonatal complications in infected individuals. However, the current scientific evidence highlights a low risk of neonatal infection. Multicentre, cohort studies are needed to better elucidate the role of SARS-CoV-2 during pregnancy. (Author)

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#### 20200727-42\*

**Maternal and neonatal characteristics and outcomes among COVID-19 infected women: An updated systematic review and meta-analysis.** Dubey P, Reddy S, Manuel S, et al (2020), European Journal of Obstetrics & Gynecology and Reproductive Biology vol 252, September 2020, pp 490-501

**Full URL:** <https://doi.org/10.1016/j.ejogrb.2020.07.034>

#### Objective

Coronavirus disease 2019 (COVID-19) has become a global pandemic and may adversely affect pregnancy outcomes. We estimated the adverse maternal and neonatal characteristics and outcomes among COVID-19 infected women and determined heterogeneity in the estimates and associated factors.

#### Study Designs

PubMed search was performed of confirmed COVID-19 pregnant cases and related outcomes were ascertained prior to July 8, 2020, in this systematic review and meta-analysis. Studies reporting premature birth, low birth weight, COVID-19 infection in neonates, or mode of delivery status were included in the study. Two investigators independently performed searches, assessed quality of eligible studies as per the Cochrane handbook recommendations, extracted and reported data according to PRISMA guidelines. Pooled proportions of maternal and neonatal outcomes were estimated using meta-analyses for studies with varying sample sizes while a systematic review with descriptive data analysis was performed for case report studies. Maternal and neonatal outcomes included C-section, premature birth, low birth weight, adverse pregnancy events and COVID transmission in neonates.

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## Results

A total of 790 COVID-19 positive females and 548 neonates from 61 studies were analyzed. The rates of C-section, premature birth, low birth weight, and adverse pregnancy events were estimated as 72 %, 23 %, 7 %, and 27 % respectively. In the heterogeneity analysis, the rate of C-section was substantially higher in Chinese studies (91 %) compared to the US (40 %) or European (38 %) studies. The rates of preterm birth and adverse pregnancy events were also lowest in the US studies (12 %, 15 %) compared to Chinese (17 %, 21 %), and European studies (19 %, 19 %). In case reports, the rates of C-section, preterm birth, and low birth weight were estimated as 69 %, 56 %, and 35 %, respectively. Adverse pregnancy outcomes were associated with infection acquired at early gestational ages, more symptomatic presentation, myalgia symptom at presentation, and use of oxygen support therapy.

## Conclusions

Adverse pregnancy outcomes were prevalent in COVID-19 infected females and varied by location, type, and size of the studies. Regular screening and early detection of COVID-19 in pregnant women may provide more favorable outcomes. (Author)

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## 20200727-11\*

**Maternal transmission of SARS-COV-2 to the neonate, and possible routes for such transmission: a systematic review and critical analysis.** Walker KF, O'Donoghue K, Grace N, et al (2020), BJOG: An International Journal of Obstetrics and Gynaecology vol 127, no 11, October 2020, pp 1324-1336

### Background

Early reports of COVID-19 in pregnancy described management by caesarean, strict isolation of the neonate and formula feeding. Is this practice justified?

### Objective

To estimate the risk of the neonate becoming infected with SARS-CoV-2 by mode of delivery, type of infant feeding and mother-infant interaction.

### Search strategy

Two biomedical databases were searched between September 2019 and June 2020.

### Selection criteria

Case reports or case series of pregnant women with confirmed COVID-19, where neonatal outcomes were reported.

### Data collection and analysis

Data were extracted on mode of delivery, infant infection status, infant feeding and mother-infant interaction. For reported infant infection, a critical analysis was performed to evaluate the likelihood of vertical transmission.

### Main results

Forty nine studies included information on mode of delivery and infant infection status for 655 women and 666 neonates. In all, 28/666 (4%) tested positive postnatally. Of babies born vaginally, 8/292 (2.7%) tested positive compared with 20/374 (5.3%) born by Caesarean. Information on feeding and baby separation were often missing, but of reported breastfed babies 7/148 (4.7%) tested positive compared with 3/56 (5.3%) for reported formula fed ones. Of babies reported as nursed with their mother 4/107 (3.7%) tested positive, compared with 6/46 (13%) for those who were reported as isolated.

### Conclusions

Neonatal COVID-19 infection is uncommon, rarely symptomatic, and the rate of infection is no greater when the baby is born vaginally, breastfed or remains with the mother.

### Tweetable abstract

Risk of neonatal infection with COVID-19 by delivery route, infant feeding and mother-baby interaction. (Author)

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## 20200724-4\*

**COVID-19: minimising contaminated aerosol spreading during CPAP treatment.** Donaldsson S, Naver L, Jonsson B, et al (2020), Archives of Disease in Childhood: Fetal and Neonatal Edition vol 105, no 6, November 2020, pp 669-671

**Full URL:** <http://dx.doi.org/10.1136/archdischild-2020-319431>

**Background** The COVID-19 pandemic has raised concern for healthcare workers getting infected via aerosol from

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non-invasive respiratory support of infants. Attaching filters that remove viral particles in air from the expiratory limb of continuous positive airway pressure (CPAP) devices should theoretically decrease the risk. However, adding filters to the expiratory limb could add to expiratory resistance and thereby increase the imposed work of breathing (WOB). Objective To evaluate the effects on imposed WOB when attaching filters to the expiratory limb of CPAP devices. Methods Two filters were tested on three CPAP systems at two levels of CPAP in a mechanical lung model. Main outcome was imposed WOB. Results There was a minor increase in imposed WOB when attaching the filters. The differences between the two filters were small. Conclusion To minimise contaminated aerosol generation during CPAP treatment, filters can be attached to expiratory tubing with only a minimal increase in imposed WOB in a non-humidified environment. Care has to be taken to avoid filter obstruction and replace filters as recommended. This article is made freely available for use in accordance with BMJ's website terms and conditions for the duration of the covid-19 pandemic or until otherwise determined by BMJ. You may use, download and print the article for any lawful, non-commercial purpose (including text and data mining) provided that all copyright notices and trade marks are retained. (Author)

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## 20200724-2\*

**Neonatal management and outcomes during the COVID-19 pandemic: an observation cohort study.** Salvatore CM, Han J-Y, Acker KP, et al (2020), The Lancet Child & Adolescent Health vol 4, no 10, October 2020, pp 721-727

**Full URL:** [https://doi.org/10.1016/S2352-4642\(20\)30235-2](https://doi.org/10.1016/S2352-4642(20)30235-2)

### Background

The risk of vertical and perinatal transmission of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2, which causes COVID-19), the most appropriate management, and the neonate's risk of developing COVID-19 during the perinatal period are unknown. Therefore, we aimed to elucidate best practices regarding infection control in mother-newborn dyads, and identify potential risk factors associated with transmission.

### Methods

In this observational cohort study, we identified all neonates born between March 22 and May 17, 2020, at three New York Presbyterian Hospitals in New York City (NY, USA) to mothers positive for SARS-CoV-2 at delivery. Mothers could practice skin-to-skin care and breastfeed in the delivery room, but had to wear a surgical mask when near their neonate and practice proper hand hygiene before skin-to-skin contact, breastfeeding, and routine care. Unless medically required, neonates were kept in a closed Giraffe isolette in the same room as their mothers, and were held by mothers for feeding after appropriate hand hygiene, breast cleansing, and placement of a surgical mask. Neonates were tested for SARS-CoV-2 by use of real-time PCR on nasopharyngeal swabs taken at 24 h, 5-7 days, and 14 days of life, and were clinically evaluated by telemedicine at 1 month of age. We recorded demographics, neonatal, and maternal clinical presentation, as well as infection control practices in the hospital and at home.

### Findings

Of 1481 deliveries, 116 (8%) mothers tested positive for SARS-CoV-2; 120 neonates were identified. All neonates were tested at 24 h of life and none were positive for SARS-CoV-2. 82 (68%) neonates completed follow-up at day 5-7 of life. Of the 82 neonates, 68 (83%) roomed in with the mothers. All mothers were allowed to breastfeed; at 5-7 days of life, 64 (78%) were still breastfeeding. 79 (96%) of 82 neonates had a repeat PCR at 5-7 days of life, which was negative in all; 72 (88%) neonates were also tested at 14 days of life and none were positive. None of the neonates had symptoms of COVID-19.

### Interpretation

Our data suggest that perinatal transmission of COVID-19 is unlikely to occur if correct hygiene precautions are undertaken, and that allowing neonates to room in with their mothers and direct breastfeeding are safe procedures when paired with effective parental education of infant protective strategies.

### Funding

None. (Author)

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20200724-1\*

**Coronavirus: Mothers 'unlikely to infect newborns'.** Anon (2020), BBC News 24 July 2020

**Full URL:** <https://www.bbc.co.uk/news/health-53514003>

Women who have COVID-19 are unlikely to pass on the infection to their babies during childbirth if precautions are in place, a small study suggests (1).

1. Salvatore CM et al. Neonatal management and outcomes during the COVID-19 pandemic: an observation cohort study. The Lancet Child & Adolescent Health, 23 July 2020, online. (Author, edited)

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20200723-72\*

**Pregnancy and breastfeeding during COVID-19 pandemic: A systematic review of published pregnancy cases.** Rodrigues C, Baia I, Domingues R, et al (2020), Frontiers in Public Health 23 November 2020, online

**Full URL:** <https://doi.org/10.3389/fpubh.2020.558144>

Background: The COVID-19 pandemic is an emerging concern regarding the potential adverse effects during pregnancy. This study reviews knowledge on the impact of COVID-19 on pregnancy and describes the outcome of published cases of pregnant women diagnosed with COVID-19.

Methods: Searches were conducted in PubMed®, Scopus®, Web of Science®, and MedRxiv® up to 26th June 2020, using PRISMA standards, to identify original published studies describing pregnant women at any gestational age diagnosed COVID-19. There were no date or language restrictions on the search. All identified studies were included irrespective of assumptions on study quality.

Results: We identified 161 original studies reporting 3,985 cases of pregnant women with COVID-19 (1,007 discharged while pregnant). The 2,059 published cases with pregnancy outcomes resulted in 42 abortions, 21 stillbirths, and 2,015 live births. Preterm birth occurred in 23% of cases. Around 6% of pregnant women required admission to an intensive care unit and 28 died. There were 10 neonatal deaths. From the 163 cases with amniotic fluid, placenta, and/or cord blood analyzed for the SARS-CoV-2 virus, 10 were positive. Sixty-one newborns were positive for SARS-CoV-2. Four breast milk samples from 92 cases showed evidence of SARS-CoV-2.

Conclusion: Emerging evidence suggests that vertical transmission is possible, however, there is still a limited number of reported cases with intrapartum samples. Information, counseling and adequate monitoring are essential to prevent and manage adverse effects of SARS-CoV-2 infection during pregnancy. (Author)

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20200722-89\*

**Maintaining certainty in the most uncertain of times.** Dethier D, Abernathy A (2020), Birth vol 47, no 3, September 2020, pp 257-258

Personal experience of a physician caring for a mother in the early postnatal period during the COVID-19 pandemic. Discusses the disproportionate effect of the virus on marginalised women, universal testing at admission to the labour and delivery ward, and the separation of the mother and newborn after birth. (LDO)

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20200722-7\*

**Multisystem Inflammatory Syndrome in Children (MIS-C) Associated with COVID-19: What Do We Know?.** Barron SA, Marshall HD (2020), EBSCO Health Notes 15 June 2020, online

**Full URL:** <https://bit.ly/3eJXloA>

A scary new facet of COVID-19 in children is starting to emerge. Here's what we know about multisystem inflammatory syndrome in children (MIS-C). (Author)

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20200722-41\*

**Simulations of Deliveries of SARS-CoV-2 Positive Pregnant Women and Their Newborn Babies: Plan to Implement a**

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**Full URL:** <https://doi.org/10.1055/s-0040-1713602>

Management of severe acute respiratory Syndrome corona virus-2 (SARS-CoV-2) infected pregnant women at time of delivery presents a unique challenge. The variability in the timing and the method of delivery, ranging from normal vaginal delivery to an emergent cesarean section, adds complexity to the role of the health care providers in the medical care of the patient and in the interactions, they have with other providers. These variations are further influenced by the availability of isolation rooms in the facility and adequacy of personal protective equipment. The protocols already set in place can be further challenged when the facility reaches its capacity to manage the patients.

To fulfill the goal of providing adequate management to the SARS-CoV-2 infected pregnant women and their infants, avoid variation from suggested guidelines, and decrease risk of exposure of the health care workers, the health care provider team needs to review the variations regularly. While familiarity can be achieved by reviewing the guidelines, clinical case simulations provide a more hands-on approach.

Using case-based simulations and current guidance from the Center for Disease Control, American Academy of Pediatrics, and recent reviews, we discuss a management guideline developed at our institution to facilitate provision of care to SARS-CoV-2 infected pregnant women during delivery and to their infants, while protecting health care providers from exposure, and in keeping with the local facility logistics. (Author)

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## 20200722-38\*

**Clinical Implications of SARS-CoV-2 Infection in the Viable Preterm Period.** Gulersen M, Blitz MJ, Rochelson B, et al (2020), American Journal of Perinatology vol 37, no 11, September 2020, pp 1077-1083

**Full URL:** <https://doi.org/10.1055/s-0040-1713851>

**Objective** This study aimed to determine the rate of preterm birth (PTB) during hospitalization among women diagnosed with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) between 23 and 37 weeks of gestation and whether this rate differs by gestational age at diagnosis of infection.

**Study Design** Retrospective, cross-sectional study of all women diagnosed with SARS-CoV-2 infection between 23 and 37 weeks of gestation within a large integrated health system from March 13 to April 24, 2020. Cases with severe fetal structural malformations detected prior to infection were excluded. Women were stratified into two groups based on gestational age at diagnosis: early preterm (230/7 to 336/7 weeks) versus late preterm (34 to 366/7 weeks). We compared the rate of PTB during hospitalization with infection between the two groups. Statistical analysis included use of Wilcoxon rank sum and Fisher exact tests, as well as a multivariable logistic regression. Statistical significance was defined as a p-value <0.05.

**Results** Of the 65 patients included, 36 (53.7%) were diagnosed in the early preterm period and 29 (46.3%) were diagnosed in the late preterm period. Baseline demographics were similar between groups. The rate of PTB during hospitalization with infection was significantly lower among women diagnosed in the early preterm period compared with late preterm (7/36 [19.4%] vs. 18/29 [62%], p-value = 0.001). Of the 25 patients who delivered during hospitalization with infection, the majority were indicated deliveries (64%, 16/25). There were no deliveries <33 weeks of gestation for worsening coronavirus disease 2019 and severity of disease did not alter the likelihood of delivery during hospitalization with SARS-CoV-2 infection (adjusted odds ratio [aOR]: 0.64; 95% confidence interval [CI]: 0.24-1.59). Increased maternal age was associated with a lower likelihood of delivery during hospitalization with SARS-CoV-2 infection (aOR: 0.77; 95% CI: 0.58-0.96), while later gestational age at diagnosis of infection was associated with a higher likelihood of delivery during hospitalization (aOR: 2.9; 95% CI: 1.67-8.09).

**Conclusion** The likelihood of PTB during hospitalization with SARS-CoV-2 infection is significantly lower among women diagnosed in the early preterm period compared with late preterm. Most women with SARS-CoV-2 infection in the early preterm period recovered and were discharged home. The majority of PTB were indicated and not due to spontaneous preterm labor. (Author)

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## 20200722-18\*

**Incidence of SARS-CoV-2 vertical transmission: a meta-analysis.** Goh XL, Low YF, Ng CH, et al (2021), Archives of Disease in Childhood: Fetal and Neonatal Edition vol 106, no 1, January 2021, pp 112-113

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Full URL: <http://dx.doi.org/10.1136/archdischild-2020-319791>

Short meta-analysis of the incidence of vertical transmission of SARS-CoV-2 intrauterine or during delivery. The average pooled incidence of vertical transmission was 16 per 1000 newborns. Studies from larger and diverse populations are required to provide a more accurate estimation of the incidence of neonatal infection. (LDO)

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#### 20200722-17\*

**The Impact of COVID-19 Infection on Labor and Delivery, Newborn Nursery, and Neonatal Intensive Care Unit: Prospective Observational Data from a Single Hospital System.** Griffin I, Benarba F, Peters C, et al (2020), American Journal of Perinatology vol 37, no 10, August 2020, pp 1022-1030

Full URL: <https://doi.org/10.1055/s-0040-1713416>

**Objective** Since its emergence in late 2019, severe acute respiratory syndrome-coronavirus-2 (SARS-CoV-2), the novel coronavirus that causes novel coronavirus disease 2019 (COVID-19), has spread globally. Within the United States, some of the most affected regions have been New York, and Northern New Jersey. Our objective is to describe the impact of COVID-19 in a large delivery service in Northern New Jersey, including its effects on labor and delivery (L&D), the newborn nursery, and the neonatal intensive care unit (NICU).

**Materials and Methods** Between April 21, 2020 and May 5, 2020, a total of 78 mothers (3.6% of deliveries) were identified by screening history or examination to either be COVID-19 positive or possible positives (persons under investigation). Of the mothers who were tested after admission to L&D, 28% tested positive for SARS-CoV-2.

**Discussion** Isolation between mother and infant was recommended in 62 cases, either because the mother was positive for SARS-CoV-2 or because the test was still pending. Fifty-four families (87%) agreed to isolation and separation. The majority of infants, 51 (94%), were initially isolated on the newborn nursery. Six needed NICU admission. No infants had clinical evidence of symptomatic COVID-19 infection. Fourteen infants whose mothers were positive for SARS-CoV-2, and who had been separated from the mother at birth were tested for SARS-CoV-2 postnatally. All were negative.

**Results** COVID-19 posed a significant burden to mothers, infants, and staff over the 5-week study period. The yield from screening mothers for COVID-19 on L&D was high. Most families accepted the need for postnatal isolation and separation of mother and newborn.

**Conclusion** Our study suggests that the transmission of SARS-CoV-2 from mother to her fetus/newborn seems to be uncommon if appropriate separation measures are performed at birth. (Author)

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#### 20200721-45\*

**Coronavirus disease 2019 in children: surprising findings in the midst of a global pandemic.** Goldman RD (2020), Canadian Family Physician vol 66, no 5, May 2020, pp 332-334

Full URL: <https://www.cfp.ca/content/66/5/332>

**Question** Coronavirus disease 2019 (COVID-19) is affecting millions of people worldwide. It seems that it affects mostly adults older than 40 years of age, and the death rate is highest for older individuals in the population. What should I tell parents worried about their children contracting the coronavirus (SARS-CoV-2) causing COVID-19, and what symptoms should I look for to determine if there is a need to test for the virus?

**Answer** The COVID-19 global pandemic affects all ages. Severe respiratory manifestations have been the mainstay of illness in adults, with what seems to be rapid deterioration necessitating mechanical ventilation. Only 5% of those tested and found to have COVID-19 have been younger than 19 years, possibly owing to limited testing, as the symptoms in children are usually mild. Symptoms in children include fever, dry cough, rhinorrhea, sore throat, and fatigue, and in 10% diarrhea or vomiting. Rarely dyspnea or hypoxemia were also described. Blood tests and imaging have been shown to be of little value in children and should only be ordered for those in whom you would normally order these investigations for viral-like illness. No specific therapy is available and supportive care with rest, fluids, and antipyretics for children is the recommended approach. Ibuprofen or acetaminophen for fever and pain can be given. Antiviral and immunomodulatory treatment is not recommended at this time for otherwise healthy children, and corticosteroids should also not be used. Children with immunocompromised states should be isolated and avoid contact with others. (Author)

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20200720-16\*

**Perinatal COVID-19 Infection Prevention: Infographics for Patients and Providers.** Lakshminrusimha S, Sridhar A, Herrera Guerra AA (2020), American Journal of Perinatology vol 37, no 12, October 2020, pp 1185-1188

Full URL: <https://doi.org/10.1055/s-0040-1714387>

Editorial discussing the use of simple infographics rather than text guidelines to provide information to pregnant patients during the COVID-19 pandemic. The authors present two infographics on social distancing during pregnancy and the care of infants born to mothers with COVID-19. (LDO)

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20200715-4\*

**Lactoferrin is an important factor when breastfeeding and COVID-19 are considered.** Peroni DG, Fanos V (2020), Acta Paediatrica vol 109, no 10, October 2020, pp 2139-2140

Brief report on the protective antiviral effects of lactoferrin in breast milk against COVID-19. Lactoferrin interacts with cell receptors to prevent viral anchoring, surface accumulation and cell entry. (LDO)

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20200715-29\*

**Paediatric ethical issues during the COVID-19 pandemic are not just about ventilator triage.** Haward MF, Moore GP, Lantos J, et al (2020), Acta Paediatrica vol 109, no 8, August 2020, pp 1519-1521

Commentary on the ethics of redistributing ventilators away from extremely premature infants to critically ill adults during the COVID-19 pandemic. The authors also discuss the moral distress faced by clinicians over the shortage of resources and personal protective equipment. (LDO)

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20200715-2\*

**Invasive mechanical ventilation in a former preterm infant with COVID-19.** Nyholm S, Edner A, Myrelid Å, et al (2020), Acta Paediatrica vol 109, no 10, October 2020, pp 2141-2143

Brief report on a set of preterm twins in Sweden with COVID-19 symptoms. The female twin tested negative and had mild respiratory symptoms whereas the male twin tested positive and required intensive care and invasive ventilatory support. Possible risk factors for severe COVID-19 in this case may have been repeated viral exposure, preterm birth, African descent and male gender. (LDO)

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20200715-1\*

**Is the effect of COVID-19 on children underestimated in low- and middle- income countries?.** Simba J, Sinha I, Mburugu P, et al (2020), Acta Paediatrica 18 June 2020, online

Discusses the impact of COVID-19 on children and infants in sub-Saharan African countries such as Kenya. Children in low- and middle-income countries are at risk of developing severe acute respiratory infections as a result of malnutrition, immunodeficiency, variable housing quality, air pollution, poor health behaviour and barriers to affordable care. Children are further affected by school closures, education inequalities and the economic impact of the pandemic. (LDO)

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20200714-71\*

**Navigating pregnancy during the coronavirus disease (COVID-19) pandemic. An expert midwife on how to best protect yourself and your baby.** UNICEF (2020), UNICEF 11 May 2020

Full URL: <https://www.unicef.org/coronavirus/navigating-pregnancy-during-coronavirus-disease-covid-19-pandemic>

Pregnancy is a special time full of excitement and anticipation. But for expectant mothers facing the outbreak of the coronavirus disease (COVID-19), fear, anxiety and uncertainty are clouding this otherwise happy time. To learn more about how women can protect themselves and their little one, we spoke with Franka Cadée, President of the International Confederation of Midwives. COVID-19 is a new virus and research into it is ongoing. We will update this article as new information becomes available. (Author)

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20200714-65\*

**When separation is not the answer: breastfeeding mothers and infants affected by COVID-19.** Tomoroi C, Gribble K, Palmquist AEL, et al (2020), Maternal & Child Nutrition 26 May 2020, online

The World Health Organisation (WHO) has provided detailed guidance on the care of infants of women who are a person under investigation (PUI) or confirmed to have COVID-19, which supports immediate postpartum mother-infant contact and breastfeeding with appropriate respiratory precautions. Although many countries have followed WHO guidance, others have implemented infection prevention and control policies (IPC) that impose varying levels of postpartum separation and discourage or prohibit breastfeeding or provision of expressed breastmilk. These policies aim to protect infants from the potential harm of infection from their mothers, yet they may fail to fully account for the impact of separation. Global COVID-19 data are suggestive of potentially lower susceptibility and a typically milder course of disease among children, although the potential for severe disease in infancy remains. Separation causes cumulative harms, including disrupting breastfeeding and limiting its protection against infectious disease, which has disproportionate impacts on vulnerable infants. Separation also presumes the replaceability of breastfeeding - a risk that is magnified in emergencies. Moreover, separation does not ensure lower viral exposure during hospitalizations and post-discharge, and contributes to the burden on overwhelmed health systems. Finally, separation magnifies maternal health consequences of insufficient breastfeeding and compounds trauma in communities who have experienced long-standing inequities and violence, including family separation. Taken together, separating PUI/confirmed SARS-CoV-2 positive mothers and their infants may lead to excess preventable illnesses and deaths among infants and women around the world. Health services must consider the short-and-long-term impacts of separating mothers and infants in their policies. (Author)

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20200714-5\*

**Maternal-fetal vertical SARS-CoV2 transmission cannot be dismissed.** European Society for Human Reproduction and Embryology (ESHRE) (2020), European Society for Human Reproduction and Embryology 36th Annual Meeting 2020, 5-8 July 2020

**Full URL:** <https://www.focusonreproduction.eu/article/ESHRE-News-Annual-Meeting-2020-Bahadur>

Summarises the results of a systematic review of 80 publications, which aimed to answer the question 'Is there vertical transmission (from woman to baby antenatally or intrapartum) after SARS-CoV-2 (COVID-19) infected pregnancy?' The findings from the review were presented at the virtual 36th Annual Meeting of the European Society for Human Reproduction and Embryology (ESHRE) held between 5-8 July 2020, and suggest that vertical transmission is possible and therefore must not be dismissed. (JSM)

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20200714-49\*

**Optimising mother-baby contact and infant feeding in a pandemic [Version 2].** Renfrew MJ, Cheyne H, Dykes F, et al (2020), RCM Professional Advisory Group 24 June 2020. 47 pages

**Full URL:** <https://www.rcm.org.uk/media/4142/optimising-mother-baby-contact-and-infant-feeding-in-a-pandemic-version-2-final-24th-june-2020.pdf>

Optimising close, ongoing contact between mothers and newborn infants and enabling women to breastfeed/feed with breastmilk, or to use breastmilk substitutes as effectively and safely as possible, are key elements of maternity and neonatal care. They are especially important during the COVID-19 pandemic. Extensive evidence-based positive developments in policy and practice to promote and support mother-baby contact, attachment, and breastfeeding have been implemented across maternity and neonatal care in the UK and many other countries in the last 15-20 years, though such changes have not been universally implemented and barriers still exist in many settings. The coronavirus pandemic and the inevitable focus on reducing infection has disrupted many of these positive developments and adversely affected mother-baby contact and infant feeding in many contexts, augmenting existing barriers. Societal changes such as hygiene measures and social distancing, lockdown, isolation, fear, and food security challenges complicate the lives of women and families. Health service changes in the UK and other countries have included virtual contact between women and staff, increased separation of mothers and babies, restrictions on parental visiting in neonatal units, the use of masks and personal protective equipment, staff redeployment and

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shortages, and the interruption of Unicef UK Baby Friendly Initiative accreditation programmes. Taken together, these changes pose a risk to immediate, close and loving contact between the mother and newborn infant and with the other parent and the wider family, to the initiation and continuation of breastfeeding, and to future individual and family well-being and public health. Some reports are emerging about potential positive impacts of the restrictions on postnatal visiting and increased levels of virtual contact for some families in some countries. In the context of the COVID-19 pandemic and the need to prevent or reduce infection, this rapid analytic review considers: What is the evidence base and best practice on optimising mother-baby contact? What is the evidence base and best practice on optimising infant feeding? What are the implications of this knowledge for guidance for health professionals, the care of women and babies, and information for women and families? (Author)

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#### 20200714-40\*

**The clinical course of SARS-CoV-2 positive neonates.** De Barnardo G, Giordano M, Zollo G, et al (2020), Journal of Perinatology vol 40, no 10, October 2020, pp 1462-1469

Full URL: <https://doi.org/10.1038/s41372-020-0715-0>

The COVID-19 pneumonia was firstly reported in Wuhan, China, in December 2019. The disease had a rapid spread all over the world becoming an international public health emergency. Limited data were available on COVID-19 positive neonates. We reviewed relevant literature to understand the clinical course of disease and transmission routes in affected neonates. The aim of the study was evaluating the clinical course and prognosis of SARS-CoV-2 positive neonates. Based on current literature, the hypothesis of vertical transmission of SARS-CoV-2, though conceivable, remains unproven. A research conducted on PubMed database from December 2019 to April 27, 2020 revealed that were reported 25 neonates affected by SARS-CoV-2. Main symptoms were fever, cough, or shortness of breath but often these neonates did not show other symptoms during length stay in hospital. No deaths occurred. (Author)

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#### 20200713-27\*

**Virolactia in an Asymptomatic Mother with COVID-19.** Bastug A, Hanifehnezhad A, Tayman C, et al (2020), Breastfeeding Medicine vol 15, no 8, August 2020, pp 488-491

Full URL: <https://doi.org/10.1089/bfm.2020.0161>

Background: Limited data are available on the perinatal and postnatal transmission of novel coronavirus disease 2019 (COVID-19). The Centers for Disease Control and Prevention (CDC) and World Health Organization (WHO) recommended breastfeeding with necessary precautions to mothers with COVID-19.

Case Presentation: A 20-year-old pregnant woman with no symptoms of COVID-19 presented to the hospital for delivery at 39 weeks of gestation. She was tested for severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) by reverse transcriptase polymerase chain reaction (RT-PCR) because her father had been diagnosed with COVID-19. A nasopharyngeal swab RT-PCR test was positive for SARS-CoV-2. Therefore, the baby and the mother were cared for separately after delivery. Breast milk obtained after first lactation was tested by real-time RT-PCR and was positive for SARS-CoV-2.

Conclusions: In this article, we aimed to report the presence of SARS-CoV-2 in breast milk. Although further studies are needed, this situation may have an impact on breastfeeding recommendations. (Author)

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#### 20200713-25\*

**Negative Transmission of SARS-CoV-2 to Hand-Expressed Colostrum from SARS-CoV-2-Positive Mothers.** Gabriel MAM, Martinez AMM, Martinez MEM, et al (2020), Breastfeeding Medicine vol 15, no 8, August 2020, pp 492-494

Aim: The objective of our study was to determine whether the SARS-CoV-2-positive mothers transmit the virus to their hand-expressed colostrum.

Methods: This is an observational prospective study that included pregnant women who tested positive for SARS-CoV-2 by PCR test on a nasopharyngeal swab at the moment of childbirth and who wanted to breastfeed their newborns. A colostrum sample was obtained from the mothers by manual self-extraction. To collect the samples, the mothers wore surgical masks, washed their hands with an 85% alcohol-based gel, and washed their breast with gauze that was saturated with soap and water.

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Results: We obtained seven colostrum samples from different mothers in the first hours postdelivery. SARS-CoV-2 was not detected in any of the colostrum samples obtained in our study.

Conclusion: In our study, breast milk was not a source of SARS-CoV-2 transmission. Hand expression (assuring that a mask is used and that appropriate hygienic measures are used for the hands and the breast), when direct breastfeeding is not possible, appears to be a safe way of feeding newborns of mothers with COVID-19. (Author)

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#### 20200713-12\*

**COVID 19 in babies: Knowledge for neonatal care.** Green J, Petty J, Bromley P, et al (2020), Journal of Neonatal Nursing vol 26, no 5, October 2020, pp 239-246

Full URL: <https://doi.org/10.1016/j.jnn.2020.06.005>

Infection is a leading cause of death worldwide in babies under one month of age who are more susceptible to sepsis due to immature host defence mechanisms. Usually, babies may become acutely unwell from infective pathogens due to specific differences in their respiratory and immune systems. However, with the Covid-19 virus, the focus of this paper, it appears that the neonatal population is not significantly affected in the same way as adults. That said, knowledge about this novel virus is rapidly emerging. Therefore, it is vital that neonatal nurses, midwives and other healthcare professionals are adequately informed and educated about the potential impact on neonatal practice. This review paper draws upon key findings and themes from a selection of recent literature to provide an overview of current knowledge on Covid-19 and the implications for care within the neonatal field. The discussion focuses on the nature of Covid-19, its pathophysiology and transmission relevant to maternal and neonatal care. This is followed by implications for practice; namely, maternal issues, the importance of human breast milk, neonatal care relating to parenting and specific management before a final review of the current World Health Organization guidance. (Author)

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#### 20200710-2\*

**The 2020 COVID-19 pandemic.** Altimier L, Seiver A (2020), Journal of Neonatal Nursing vol 26, no 4, August 2020, pp 183-191

Full URL: <https://doi.org/10.1016/j.jnn.2020.06.002>

Provides an overview of the pathophysiology, diagnosis, transmission and treatment of COVID-19. The authors specifically discuss the clinical characteristics and outcomes of SARS-CoV-2 infections in newborn infants, children and pregnant women. (LDO)

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#### 20200710-1\*

**Holder pasteurization of donated human milk is effective in inactivating SARS-CoV-2.** Unger S, Christie-Holmes N, Guvenc F, et al (2020), Canadian Medical Association Journal (CMAJ) vol 192, no 31, 4 August 2020, pp E871-E874

Full URL: <https://doi.org/10.1503/cmaj.201309>

Background: Provision of pasteurized donor human milk, as a bridge to mother's own milk, is the standard of care for very low-birth-weight infants in hospital. The aim of this research was to confirm that Holder pasteurization (62.5°C for 30 min) would be sufficient to inactivate severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) in donated human milk samples.

Methods: We spiked frozen milk samples from 10 donors to the Rogers Hixon Ontario Human Milk Bank with SARSCoV-2 to achieve a final concentration of  $1 \times 10^7$  TCID<sub>50</sub>/mL (50% of the tissue culture infectivity dose per mL). We pasteurized samples using the Holder method or held them at room temperature for 30 minutes and plated serial dilutions on Vero E6 cells for 5 days. We included comparative controls in the study using milk samples from the same donors without addition of virus (pasteurized and unpasteurized) as well as replicates of Vero E6 cells directly inoculated with SARS-CoV-2. We reported cytopathic effects as TCID<sub>50</sub>/mL.

Results: We detected no cytopathic activity in any of the SARS-CoV-2-spiked milk samples that had been pasteurized using the Holder method. In the SARSCoV-2-spiked milk samples that were not pasteurized but were kept at room temperature for 30 minutes, we observed a reduction in infectious viral titre of about 1 log.

Interpretation: Pasteurization of human milk by the Holder method (62.5°C for 30 min) inactivates SARS-CoV-2. Thus, in the event that donated human milk contains SARS-CoV-2 by transmission through the mammary gland or by contamination, this method of pasteurization renders milk safe for consumption and handling by care providers.

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## 20200709-40\*

**Spotlight on child abuse and neglect response in the time of COVID-19.** York Thomas E, Anurudran A, Robb K, et al (2020), The Lancet Public Health vol 5, no 7, July 2020, p E371

**Full URL:** [https://doi.org/10.1016/S2468-2667\(20\)30143-2](https://doi.org/10.1016/S2468-2667(20)30143-2)

Supports the request by Chandan et al (1) for the adoption of a public health approach to the increased risk of domestic violence, child abuse and neglect during pandemics, which can lead to future problems such as mental health disorders, sexually transmitted infections, unwanted pregnancies, and substance abuse. Argues that the framework for evaluating and addressing these issues can result in public health benefits which will outlive the current coronavirus crisis. 1. Chandon JS et al. COVID-19: a public health approach to manage domestic violence is needed. Lancet Public Health, vol 5, no 6, 2020, e309. (JSM)

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## 20200708-6\*

**Pregnancy and COVID-19.** Elsevier Patient Education (2020), London: Elsevier 14 April 2020. 3 pages

**Full URL:** [https://www.elsevier.com/\\_data/assets/pdf\\_file/0008/1010312/Pregnancy-and-COVID-19\\_14042020.pdf?campid=20N18119&utm\\_campaign=ckphy\\_awcovid-19healthcarehub\\_em\\_20N18119&mm=cima-thornhillk®=naTJ=ckphy&utm\\_medium=&utm\\_source=database&utm\\_content=awcovid-19healthcarehub&cid=DM65132&bid=64070031&utm\\_campaign=OP1007&utm\\_medium=email&utm\\_dgroup=20N18119&utm\\_acid=7788381&dgcid=OP1007&CMX\\_ID=0&utm\\_in=DM65132&utm\\_delid=DM65132](https://www.elsevier.com/_data/assets/pdf_file/0008/1010312/Pregnancy-and-COVID-19_14042020.pdf?campid=20N18119&utm_campaign=ckphy_awcovid-19healthcarehub_em_20N18119&mm=cima-thornhillk®=naTJ=ckphy&utm_medium=&utm_source=database&utm_content=awcovid-19healthcarehub&cid=DM65132&bid=64070031&utm_campaign=OP1007&utm_medium=email&utm_dgroup=20N18119&utm_acid=7788381&dgcid=OP1007&CMX_ID=0&utm_in=DM65132&utm_delid=DM65132)

Consumer information summarising what is known so far about COVID-19 in pregnancy. (JSM)

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## 20200708-27\*

**Evidence and possible mechanisms of rare maternal-fetal transmission of SARS-CoV-2.** Egloff C, Vauloup-Fellous C, Picone O, et al (2020), Journal of Clinical Virology vol 128, no 104447, July 2020

**Full URL:** <https://doi.org/10.1016/j.jcv.2020.104447>

While SARS-CoV-2 infection has spread rapidly worldwide, data remains scarce about the natural history of infection in pregnant women and the risk of mother-to-fetal transmission. Current data indicates that viral RNA levels in maternal blood are low and there is no evidence of placental infection with SARS-CoV-2. Published reports to date suggest that perinatal transmission of SARSCoV- 2 can occur but is rare. Among 179 newborns tested for SARS-CoV2 at birth from mothers with COVID-19, transmission was suspected in 8 cases, 5 with positive nasopharyngeal SARS-CoV-2 RT-PCR and 3 with SARS-CoV-2 IgM. However, these cases arise from maternal infection close to childbirth and there are no information about exposition during first or second trimester of pregnancy. Well designed prospective cohort studies with rigorous judgement criteria are needed to determine the incidence and risk factors for perinatal transmission of SARS-CoV-2. (Author)

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## 20200708-2\*

**Clinical characteristics and diagnostic challenges of pediatric COVID-19: A systematic review and meta-analysis.** Chang T-S, Wu J-L, Chang L-Y (2020), Journal of the Formosan Medical Association vol 119, no 5, May 2020, pp 982-989

**Full URL:** <https://doi.org/10.1016/j.jfma.2020.04.007>

**Background/Purpose**

Current studies on pediatric coronavirus disease 2019 (COVID-19) are rare. The clinical characteristics and spectrum are still unknown. Facing this unknown and emerging pathogen, we aimed to collect current evidence about COVID-19 in children.

**Methods**

We performed a systematic review in PubMed and Embase to find relevant case series. Because some reports were published in Chinese journals, the journals and publications of the Chinese Medical Association related to COVID-19 were completely reviewed. A random effects model was used to pool clinical data in the meta-analysis.

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## Results

Nine case series were included. In the pooled data, most of patients (75%) had a household contact history. The disease severity was mainly mild to moderate (98%). Only 2 children (2%) received intensive care. Fever occurred in 59% of the patients, while cough in 46%. Gastrointestinal symptoms (12%) were uncommon. There are 26% children are asymptomatic. The most common radiographic finding was ground glass opacities (48%). Currently, there is no evidence of vertical transmission to neonates born to mothers with COVID-19. Compared with the most relevant virus, SARS-CoV, SARS-CoV-2 causes less severe disease.

## Conclusion

COVID-19 has distinct features in children. The disease severity is mild. Current diagnosis is based mainly on typical ground glass opacities on chest CT, epidemiological suspicion and contact tracing. (Author)

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### 20200707-11\*

**Coronavirus (COVID-19) infection in pregnancy: Information for healthcare professionals [Version 11] [Superseded by Version 12, 14 October 2020].** Royal College of Obstetricians and Gynaecologists, Royal College of Midwives, Royal College of Paediatrics and Child Health, et al (2020), Royal College of Obstetricians and Gynaecologists (RCOG) 24 July 2020. 68 pages

**Full URL:** <https://www.rcm.org.uk/media/4181/2020-07-24-coronavirus-covid-19-infection-in-pregnancyv11.pdf>

NB: This version has been superseded by Version 12, 14 October 2020]

Guidance for healthcare professionals on Coronavirus (COVID-19) infection in pregnancy, published by the RCOG, Royal College of Midwives, Royal College of Paediatrics and Child Health, Public Health England and Health Protection Scotland. The guidance, which will be updated on a regular basis, covers: epidemiology; transmission; effect of COVID-19 on pregnant women; effect of COVID-19 on the fetus; travel advice for pregnant women; advice for women who may have been exposed; diagnosis; advice for women who have been advised to self-isolate; management of pregnant women with confirmed COVID-19; postnatal management: neonatal care and infant feeding; admissions flowchart; information for women and their families. (Publisher). [This version of the guidance has now been superseded by Version 12:

<https://www.rcm.org.uk/media/4383/2020-10-14-coronavirus-covid-19-infection-in-pregnancy-v12.pdf>]

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### 20200703-27\*

**COVID-19 and maternal and infant health: are we getting the balance right? A rapid scoping review.** Topalidou A, Thomson G, Downe S (2020), The Practising Midwife vol 23, no 7, July/August 2020, pp 36-45

**Aim:** The purpose of this study was to summarise the evidence of the clinical and psychological impacts of COVID-19 on perinatal women and their infants.

**Methods:** A rapid scoping review was conducted based on methods proposed by Arksey and O'Malley, and the World Health Organization's (WHO) practical guide for rapid reviews. We searched EMBASE, MEDLINE(R) and MIDIRS.

**Results:** From 1,319 hits, 26 met the inclusion criteria and were included. Most of the studies (n=22) were from China. The majority of the publications are single case studies or case reports. The findings were analysed narratively, and six broad themes emerged. These were: Vertical transmission and transmission during birth, mother-baby separation, breastmilk, likelihood of infection and clinical picture, analgesia or anaesthesia, and infants and young children. The literature search revealed that there is very little formal evidence on the impact of COVID-19 on pregnant, labouring and postnatal women, or their babies. The clinical evidence to date suggests that pregnant and childbearing women, and their babies, are not at increased risk of either getting infected, or of having severe symptoms or consequences, when compared to the population as a whole, which contrasts with outcomes for this group in other viral pandemics. There is no evidence on the short- and longer-term psychological impacts on childbearing women during COVID-19.

**Conclusion:** Despite this lack of evidence, many maternity services have been imposing severe restrictions on aspects of maternity care previously acknowledged as vital to optimum health (including birth companionship, breastfeeding, and contact between mother and baby). There is a critical research gap relating to the clinical and psychological consequences of both COVID-19 and of maternity service responses to the pandemic. (Author)

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#### 20200701-25\*

**Baby Care Units: Coronavirus [written answer].** House of Commons (2020), Hansard Written question 64106, 24 June 2020

**Full URL:** <https://www.parliament.uk/business/publications/written-questions-answers-statements/written-question/Commons/2020-06-24/64106/>

Ms Nadine Dorries responds to a written question asked by Mrs Sharon Hodgson to the Secretary of State for Health and Social Care, regarding the assessment he has made of the effect of the COVID-19 outbreak on the level of access to neonatal units by parents of newborn babies. (LDO)

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#### 20200701-21\*

**Baby Care Units: Coronavirus [written answer].** House of Commons (2020), Hansard Written question 64108, 24 June 2020

**Full URL:** <https://www.parliament.uk/business/publications/written-questions-answers-statements/written-question/Commons/2020-06-24/64108/>

Ms Nadine Dorries responds to a written question asked by Mrs Sharon Hodgson to the Secretary of State for Health and Social Care, regarding the steps he has taken to ensure that parents in England are (a) encouraged and (b) financially supported to spend time with their newborn children in neonatal units during the COVID-19 outbreak. (LDO)

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#### 20200701-18\*

**Baby Care Units: Coronavirus [written answer].** House of Commons (2020), Hansard Written question 64381, 24 June 2020

**Full URL:** <https://www.parliament.uk/business/publications/written-questions-answers-statements/written-question/Commons/2020-06-24/64381/>

Ms Nadine Dorries responds to a written question asked by Vicky Foxcroft to the Secretary of State for Health and Social Care, regarding the steps his Department has taken to ensure that parents with babies on neonatal units have urgent access to COVID-19 testing. (LDO)

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#### 20200701-15\*

**Baby Care Units: Coronavirus [written answer].** House of Commons (2020), Hansard Written question 64109, 24 June 2020

**Full URL:** <https://www.parliament.uk/business/publications/written-questions-answers-statements/written-question/Commons/2020-06-24/64109/>

Ms Nadine Dorries responds to a written question asked by Mrs Sharon Hodgson to the Secretary of State for Health and Social Care, regarding the plans his Department has to expand rapid testing for COVID-19 in hospitals to the parents of newborn babies in neonatal units. (LDO)

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#### 20200629-19\*

**Rates of Maternal and Perinatal Mortality and Vertical Transmission in Pregnancies Complicated by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) Infection: A Systematic Review.** Huntley BJ, Huntley ES, Di Mascio D, et al (2020), Obstetrics & Gynecology vol 136, no 2, August 2020, pp 303-312

**Full URL:** <https://doi.org/10.1097/AOG.0000000000004010>

##### OBJECTIVE:

To ascertain the frequency of maternal and neonatal complications, as well as maternal disease severity, in pregnancies affected by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection.

##### DATA SOURCES:

MEDLINE, Ovid, ClinicalTrials.gov, MedRxiv, and Scopus were searched from their inception until April 29, 2020. The analysis was limited to reports with at least 10 pregnant patients with SARS-CoV-2 infection that reported on maternal and neonatal outcomes.

##### METHODS OF STUDY SELECTION:

Inclusion criteria were pregnant women with a confirmed diagnosis of SARS-CoV-2 infection. A systematic search of the selected databases was performed by implementing a strategy that included the MeSH terms, key words, and word variants for 'coronavirus,' 'SARS-CoV-2,' 'COVID-19,' and 'pregnancy.' The primary outcomes were maternal

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admission to the intensive care unit (ICU), critical disease, and death. Secondary outcomes included rate of preterm birth, cesarean delivery, vertical transmission, and neonatal death. Categorical variables were expressed as percentages with number of cases and 95% CIs.

#### TABULATION, INTEGRATION, AND RESULTS:

Of the 99 articles identified, 13 included 538 pregnancies complicated by SARS-CoV-2 infection, with reported outcomes on 435 (80.9%) deliveries. Maternal ICU admission occurred in 3.0% of cases (8/263, 95% CI 1.6-5.9) and maternal critical disease in 1.4% (3/209, 95% CI 0.5-4.1). No maternal deaths were reported (0/348, 95% CI 0.0-1.1). The preterm birth rate was 20.1% (57/284, 95% CI 15.8-25.1), the cesarean delivery rate was 84.7% (332/392, 95% CI 80.8-87.9), the vertical transmission rate was 0.0% (0/310, 95% CI 0.0-1.2), and the neonatal death rate was 0.3% (1/313, 95% CI 0.1-1.8).

#### CONCLUSION:

With data from early in the pandemic, it is reassuring that there are low rates of maternal and neonatal mortality and vertical transmission with SARS-CoV-2. The preterm birth rate of 20% and the cesarean delivery rate exceeding 80% seems related to geographic practice patterns.

#### SYSTEMATIC REVIEW REGISTRATION:

PROSPERO, CRD42020181497. (Author)

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## 20200626-33\*

**Vaginal delivery in SARS-CoV-2-infected pregnant women in Northern Italy: a retrospective analysis.** Ferrazzi E, Frigerio L, Savasi V, et al (2020), BJOG: An International Journal of Obstetrics and Gynaecology vol 127, no 9, August 2020, pp 1116-1121

#### Objective

To report mode of delivery and immediate neonatal outcome in women infected with COVID-19.

#### Design

Retrospective study.

#### Setting

Twelve hospitals in northern Italy.

#### Participants

Pregnant women with COVID-19-confirmed infection who delivered.

#### Exposure

COVID 19 infection in pregnancy.

#### Methods

SARS-CoV-2-infected women who were admitted and delivered from 1 to 20 March 2020 were eligible. Data were collected from the clinical records using a standardised questionnaire on maternal general characteristics, any medical or obstetric co-morbidity, course of pregnancy, clinical signs and symptoms, treatment of COVID 19 infection, mode of delivery, neonatal data and breastfeeding.

#### Main outcome and measures

Data on mode of delivery and neonatal outcome.

#### Results

In all, 42 women with COVID-19 delivered at the participating centres; 24 (57.1%, 95% CI 41.0-72.3) delivered vaginally. An elective caesarean section was performed in 18/42 (42.9%, 95% CI 27.7-59.0) cases: in eight cases the indication was unrelated to COVID-19 infection. Pneumonia was diagnosed in 19/42 (45.2%, 95% CI 29.8-61.3) cases: of these, 7/19 (36.8%, 95% CI 16.3-61.6) required oxygen support and 4/19 (21.1%, 95% CI 6.1-45.6) were admitted to a critical care unit. Two women with COVID-19 breastfed without a mask because infection was diagnosed in the postpartum period: their newborns tested positive for SARS-Cov-2 infection. In one case, a newborn had a positive test after a vaginal operative delivery.

#### Conclusions

Although postpartum infection cannot be excluded with 100% certainty, these findings suggest that vaginal delivery is associated with a low risk of intrapartum SARS-Cov-2 transmission to the newborn.

#### Tweetable abstract

This study suggests that vaginal delivery may be associated with a low risk of intrapartum SARS-Cov-2 transmission to

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**20200625-32\***

**SARS-CoV-2 Infection in Infants Less than 90 Days Old.** Mithal LB, Machut KZ, Muller WJ, et al (2020), The Journal of Pediatrics vol 224, September 2020, pp 150-152

This is a single-center US case series of 18 infants <90 days old who tested positive for SARS-CoV-2. These infants had a mild febrile illness without significant pulmonary disease. One half were hospitalized; one had bacterial urinary tract co-infection. Nasopharyngeal viral loads were notably high. Latinx ethnicity was overrepresented. (Author)

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**20200624-44\***

**Analysis of vaginal delivery outcomes among pregnant women in Wuhan, China during the COVID-19 pandemic.** Liao J, He X, Gong Q, et al (2020), International Journal of Gynecology & Obstetrics vol 150, no 1, July 2020, pp 53-57

**Objective**

To study vaginal delivery outcomes and neonatal prognosis and summarize the management of vaginal delivery during the COVID-19 pandemic.

**Methods**

A retrospective analysis of medical records and comparison of vaginal delivery outcomes between 10 pregnant women with clinical diagnosis of COVID-19 and 53 pregnant women without COVID-19 admitted to Zhongnan Hospital of Wuhan University between January 20 and March 2, 2020. Results of laboratory tests, imaging tests, and SARS-CoV-2 nucleic acid tests were also analyzed in neonates delivered by pregnant women with clinical diagnosis of COVID-19.

**Results**

There were no significant differences in gestational age, postpartum hemorrhage, and perineal resection rates between the two groups. There were no significant differences in birth weight of neonates and neonatal asphyxia rates between the two groups. Neonates delivered by pregnant women with clinical diagnosis of COVID-19 tested negative for SARS-CoV-2 infection.

**Conclusions**

Under the premise of full evaluation of vaginal delivery conditions and strict protection measures, pregnant women with ordinary type COVID-19 can try vaginal delivery without exacerbation of COVID-19 and without increasing the risk of SARS-CoV-2 infection in neonates. (Author)

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**20200624-4\***

**Delayed umbilical cord clamping and breastfeeding after childbirth in mothers affected by COVID 19: Recommended or not?.** Kohan S, Rahnemai FA (2020), European Journal of Obstetrics & Gynecology and Reproductive Biology vol 250, July 2020, p 264

**Full URL:** [https://www.ejog.org/article/S0301-2115\(20\)30324-9/fulltext](https://www.ejog.org/article/S0301-2115(20)30324-9/fulltext)

Short correspondence piece on early cord clamping, isolation of the newborn, lack of skin-to-skin contact and infant feeding practices to reduce the risk of COVID-19 infection in neonates. (LDO)

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**20200623-35\***

**Coronavirus: Newborn Mexican triplets test positive in 'unprecedented' case.** Anon (2020), BBC News 23 June 2020

**Full URL:** <https://www.bbc.co.uk/news/world-latin-america-53147483>

Newborn triplets in Mexico have tested positive for coronavirus in an 'unprecedented' case, according to local health authorities. (Author, edited)

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**20200622-4\***

**Risks to children during the covid-19 pandemic: some essential epidemiology.** Bhopal SS, Bagaria J, Bhopal R (2020), BMJ vol 369, no 8250, 10 June 2020, m2290

**Full URL:** <https://doi.org/10.1136/bmj.m2290>

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**20200622-3\***

**'Women and children last'-effects of the covid-19 pandemic on reproductive, perinatal, and paediatric health.** von Dadelsen P, Khalil A, Wolfe I, et al (2020), BMJ vol 369, no 8250, 10 June 2020, m2287

Correspondence discussing the risks to children during the covid-19 pandemic. (MB)

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**20200622-29\***

**COVID-19: reflections on childbirth and neonatal care in Italy.** Varsalone FF, Dermyshe E (2020), Infant vol 16, no 3, May 2020, pp 101-102

In Italy, the spread of the SARS-CoV-2 infection has hit with an uneven distribution and, fortunately, in the neonatal setting the virus affects fewer patients and with less severity. Nevertheless, the moment of childbirth has turned into a more complex event for healthcare professionals as we have to work with visors, masks and gowns. The continuously increasing number of COVID-19 cases has also given rise to the need for specific protocols to protect pregnant women and newborn babies. (Author)

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**20200622-27\***

**Response of UK milk banks to ensure the safety and supply of donor human milk in the COVID-19 pandemic and beyond.**

Shenker N, Hughes J, Barnett D, et al (2020), Infant vol 16, no 3, May 2020, pp 108-121

The COVID-19 pandemic is presenting several challenges to human milk banks and has highlighted a number of vulnerabilities in service provision that have been long known by those who work in the sector. In recent weeks, milk banks across the UK have worked together to understand any risks posed to infants, milk bank staff and volunteers by COVID-19, and to put in place mitigation strategies to ensure the safeguarded provision and safety of donor human milk. The authors call on policymakers to better support these essential services for vulnerable neonates during the COVID-19 pandemic and minimise the impact of future challenges through greater investment in milk bank infrastructure, research and innovation. (Author)

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**20200622-25\***

**Practical considerations for the emergency delivery of babies from mothers with confirmed or suspected COVID-19.** Wells P, Taylor A, Battersby C, et al (2020), Infant vol 16, no 3, May 2020, pp 94-98

Maternity and neonatal departments must be prepared for the delivery of babies from COVID-19 positive women. We describe a guideline developed at the North Middlesex University Hospital maternity unit, for multidisciplinary team members attending an emergency caesarean section of mothers with confirmed or suspected COVID-19. Anticipated staff actions and personal protective equipment were considered to optimise staff safety and reduce transmission of SARS-CoV-2. We recommend units generate individualised guidance suitable to their settings. (Author)

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**20200622-22\***

**COVID-19: the importance of healthcare professionals in protecting human milk and breastfeeding.** Spatz DL (2020), Infant vol 16, no 3, May 2020, pp 116-117

It is clear that the world will never be the same since the onset of the COVID-19 pandemic. Our daily routines and the healthcare system will be forever changed. Nonetheless, families will continue to conceive and bring new lives into the world. Now more than ever, families need access to evidence-based lactation care and support. With social distancing there are both opportunities and risks: opportunities to improve breastfeeding outcomes; risks that families may not be able to access much-needed lactation care or lactation technology. (Author)

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**20200622-20\***

**Parents are caregivers not visitors, even during a pandemic.** Anderson J, Lee-Davey C (2020), Infant vol 16, no 3, May 2020,

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While in most ways, daily life has changed drastically over the last couple of months in response to the unprecedented COVID-19 crisis, some things remain the same. Babies are still being born, and around 300 of them will continue to be admitted to neonatal care every day in the UK. Neonatal services are part of the system-wide response to COVID-19 and have had to make changes to how they operate. But now is not the time to abandon family-centred care on neonatal units - indeed it is more important than ever. (Author)

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#### 20200622-17\*

**National research to understand and better manage neonatal COVID-19.** Gale C on behalf of The Neonatal Complications of COVID-19 Surveillance Group (2020), Infant vol 16, no 3, May 2020, pp 90-91

The novel coronavirus SARS-CoV-2 was identified in late December 2019 and causes coronavirus disease (COVID-19). This disease has been declared a pandemic by the World Health Organization and is an international public health crisis. So far there is only relatively limited information describing the incidence, clinical course, treatments or outcomes of SARS-CoV-2 infection and COVID-19 in neonates up to 28 days old. (Author)

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#### 20200619-37\*

**Critically ill pregnant patient with COVID-19 and neonatal death within two hours of birth.** Li J, Wang Y, Zeng Y, et al (2020), International Journal of Gynecology & Obstetrics vol 150, no 1, July 2020, pp 126-128

COVID-19 may lead to a sharp decline in blood oxygen, can cause sudden changes in the fetal intrauterine environment, and could possibly result in neonatal death. (Author)

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#### 20200618-59\*

**Novel Coronavirus Infection in Febrile Infants Aged 60 Days and Younger.** McLaren SH, Dayan PS, Fenster DB, et al (2020), Pediatrics vol 146, no 3, September 2020, e20201550

**Full URL:** <https://doi.org/10.1542/peds.2020-1550>

In this case series, we describe the clinical course and outcomes of 7 febrile infants aged  $\leq 60$  days with confirmed SARS-CoV-2 infection. No infant had severe outcomes, including the need for mechanical ventilation or intensive care unit level of care, during hospitalization or at 7-day follow up. Two infants had concurrent urinary tract infections which were treated with antibiotics. While a small sample, our data suggest that febrile infants with SARS-CoV-2 infection often have mild illness. (Author)

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#### 20200617-3\*

**Probable congenital SARS-CoV-2 infection in a neonate born to a woman with active SARS-CoV-2 infection.** Kirtsman M, Diambomba Y, Poutanen SM, et al (2020), Canadian Medical Association Journal (CMAJ) vol 192, no 24, 15 June 2020, pp E647-E650

**Full URL:** <https://doi.org/10.1503/cmaj.200821>

#### KEY POINTS

Neonates born to women with confirmed or suspected severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection should have testing of the nasopharynx, placenta and cord blood as soon as possible after birth, after thorough cleaning of the neonate.

Sample timing, collection methods and types of samples should be documented to help differentiate congenital, intrapartum and postpartum acquisition of SARS-CoV-2 infection in neonates. (Author)

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#### 20200616-80\*

**Vertical Transmission of Severe Acute Respiratory Syndrome Coronavirus 2: A Systematic Review.** Yang Z, Liu Y (2020), American Journal of Perinatology vol 37, no 10, August 2020, pp 1055-1060

**Full URL:** <https://doi.org/10.1055/s-0040-1712161>

**Objective** The aim of this study is to summarize currently available evidence on vertical transmission of severe

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acute respiratory syndrome coronavirus 2 (SARS-CoV-2).

**Study Design** A systematic review was conducted following the guidelines of the Preferred Reporting Items for Systematic Reviews and Meta-analysis Statement.

**Results** A total of 22 studies comprising 83 neonates born to mothers diagnosed with coronavirus disease 2019 were included in the present systematic review. Among these neonates, three were confirmed with SARS-CoV-2 infection at 16, 36, and 72 hours after birth, respectively, by nasopharyngeal swab real-time polymerase chain reaction (RT-PCR) tests; another six had elevated virus-specific antibody levels in serum samples collected after birth, but negative RT-PCR test results. However, without positive RT-PCR tests of amniotic fluid, placenta, or cord blood, there is a lack of virologic evidence for intrauterine vertical transmission.

**Conclusion** There is currently no direct evidence to support intrauterine vertical transmission of SARS-CoV-2. Additional RT-PCR tests on amniotic fluid, placenta, and cord blood are needed to ascertain the possibility of intrauterine vertical transmission. For pregnant women infected during their first and second trimesters, further studies focusing on long-term outcomes are needed. (Author)

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#### 20200616-49\*

**Vertical Transmission of SARS-CoV-2: What is the Optimal Definition?**. Blumberg DA, Underwood MA, Hedriana HL, et al (2020), American Journal of Perinatology vol 37, no 8, June 2020, pp 769-772

Editorial discussing the different modes of vertical transmission of SARS-CoV-2 from the mother to the infant. The authors develop definitions for intrauterine transmission, intrapartum transmission and superficial exposure. (LDO)

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#### 20200616-12\*

**Argentine couple finally meet son born to surrogate mother.** Anon (2020), BBC News 11 June 2020

**Full URL:** <https://www.bbc.co.uk/news/av/world-europe-53000956/argentine-couple-finally-meet-son-born-to-surrogate-mother>

In Ukraine, efforts are continuing to unite newborn babies born to surrogate mothers with their biological parents. Last month officials said that more than a hundred babies had been left stranded in Kyiv after coronavirus restrictions prevented parents from travelling from around the world to Ukraine. Reporter Jonah Fisher speaks to one couple who have finally made it to Kyiv to meet their son - ten weeks after he was born. (Author, edited)

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#### 20200615-58\*

**National active surveillance to understand and inform neonatal care in COVID-19.** Gale C, Knight M, Ladhani S, et al (2020), Archives of Disease in Childhood: Fetal and Neonatal Edition vol 105, no 4, July 2020, pp 346-347

**Full URL:** <http://dx.doi.org/10.1136/archdischild-2020-319372>

Discusses vertical and horizontal transmission of SARS-CoV-2 to infants. Suggests that active population surveillance is the best way to determine true infection rates and inform optimal perinatal and neonatal care. (LDO)

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#### 20200611-24\*

**Serious covid-linked condition in children 'now in decline'.** Discombe M (2020), Health Service Journal 11 June 2020, online

A serious coronavirus-linked illness which put up to 100 children in intensive care now appears to be in decline as the number of covid-19 cases also falls, HSJ has been told. (Author)

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#### 20200611-22\*

**Effects of the Global COVID-19 Pandemic on Early Childhood Development: Short- and Long-Term Risks and Mitigating Program and Policy Actions.** Yoshikawa H, Wuermli AJ, Britto PR, et al (2020), The Journal of Pediatrics 19 May 2020, online

**Full URL:** <https://doi.org/10.1016/j.jpeds.2020.05.020>

In just a matter of weeks, the COVID-19 pandemic has led to huge societal public health and economic challenges worldwide. The clinical effects of COVID-19 on young children are uncertain when compared with older age groups, with lower morbidity and mortality rates and no conclusive evidence supporting transmission during pregnancy, on

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the one hand, 1,2 but some emerging evidence of rising rates of child hyperinflammatory shock, on the other.<sup>3</sup> Research on the effects of prior pandemics and disasters clearly indicates that there will be both immediate and long-term adverse consequences for many children, with particular risks faced during early childhood, when brain architecture is still rapidly developing and highly sensitive to environmental adversity<sup>4</sup>. Estimates predict a rise in maternal and child mortality in low- and middle-income countries as health services for non-COVID related issues become scarce. For example, a conservative scenario of 15% reduction in coverage of life-saving essential health interventions for 6 months in low- and middle-income countries is associated with a 9.8% increase in under-5 mortality and an 8.3% increase in maternal mortality.<sup>5</sup> Before the pandemic, 43 % of all children under 5 years of age in the world were estimated to be at risk of not achieving their developmental potential.<sup>6</sup> Unless there is a commitment to support coordinated, multisectoral approaches in which low-and middle-income countries governments receive international support to scale up essential interventions, a much higher percentage of children are at risk of devastating physical, socioemotional, and cognitive consequences over the entire course of their lives. We review the evidence base on short- and long-term risks for children during early childhood development (ECD, defining this from prenatal to 8 years of age). We also present evidence-based mitigating program and policy actions that may reduce these risks. (Author)

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#### 20200611-21\*

##### **Severe neutropenia in infants with severe acute respiratory syndrome caused by the novel coronavirus 2019 infection.**

Venturini E, Palmas G, Montagnani C, et al (2020), The Journal of Pediatrics vol 222, July 2020, pp 259-261

Full URL: <https://doi.org/10.1016/j.jpeds.2020.04.051>

Describes the case of 23-day-old and a 39-day-old infants with mild COVID-19 and severe neutropenia. (MB)

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#### 20200610-81\*

##### **COVID19 and Breastfeeding: Not That Simple.** Berveiller P, Guerby P, Garabedian C (2020), Journal of Human Lactation vol 36, no 2,

May 2020, pp 369-370

Full URL: <https://doi.org/10.1177%2F0890334420917102>

Correspondence reviewing the literature and arguing that it is not prudent to discourage mothers with COVID-19 from breastfeeding, given the known advantages of breast milk for the baby, and that there is no evidence to suggest the virus can be transmitted through breast milk. (JSM)

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#### 20200610-8\*

##### **Vertical transmission of coronavirus disease 2019: severe acute respiratory syndrome coronavirus 2 RNA on the fetal side of the placenta in pregnancies with coronavirus disease 2019-positive mothers and neonates at birth.** Patanè L, Morotti D, Giunta MR, et al (2020), American Journal of Obstetrics & Gynecology MFM vol 2, no 3, suppl, August 2020, 100145

Full URL: <https://doi.org/10.1016/j.ajogmf.2020.100145>

The authors present their experience with placental SARS-CoV-2 markers of infection in a series of mothers who received a diagnosis of COVID-19 in their third trimester of pregnancy. This is the first known report of positive polymerase chain reaction (PCR) results for SARS-CoV-2 in the mother, neonate and the placental tissues. (LDO)

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#### 20200610-17\*

##### **How to reduce the potential risk of vertical transmission of SARS-CoV-2 during vaginal delivery?.** Carosso A, Cosma S, Serafini P, et al (2020), European Journal of Obstetrics & Gynecology and Reproductive Biology vol 250, July 2020, pp 246-249

Full URL: <https://doi.org/10.1016/j.ejogrb.2020.04.065>

The risk of vertical transmission during vaginal delivery in COVID-19 pregnant patients is currently a topic of debate. Obstetric norms on vaginal birth assistance to reduce the potential risk of perinatal infection should be promoted by ensuring that the risk of contamination from maternal anus and faecal material is reduced during vaginal delivery. (Author)

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## 20200609-8\*

### **BC Perinatal and Neonatal Health Care Provider Speciality Education Guidance during COVID-19 Pandemic: Took Kit.**

Perinatal Services BC, Provincial Health Services Authority (2020), Perinatal Services BC June 2020, 22 pages

**Full URL:** <http://www.perinatalservicesbc.ca/Documents/Resources/Alerts/Covid19-provincial-education-guidance-tool-kit.pdf>

This tool kit has been developed to support perinatal and neonatal health care provider speciality education instructors, sites, and Health Authorities in gradually resuming perinatal and neonatal health care provider (HCP) education and training activities, while adhering to BCCDC and WorkSafeBC guidelines. The BC COVID-19 epidemiology is different from many provinces and, as such, the education strategies used in British Columbia may differ from strategies being employed in other Canadian provinces or territories. (Author)

## 20200609-38\*

### **An outbreak of severe Kawasaki-like disease at the Italian epicentre of the SARS-CoV-2 epidemic: an observational cohort study.** Verdoni L, Mazza A, Gervasoni A, et al (2020), The Lancet vol 365, no 10239, 6 June 2020, pp 1771-1778

**Full URL:** [https://doi.org/10.1016/S0140-6736\(20\)31103-X](https://doi.org/10.1016/S0140-6736(20)31103-X)

#### Background

The Bergamo province, which is extensively affected by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) epidemic, is a natural observatory of virus manifestations in the general population. In the past month we recorded an outbreak of Kawasaki disease; we aimed to evaluate incidence and features of patients with Kawasaki-like disease diagnosed during the SARS-CoV-2 epidemic.

#### Methods

All patients diagnosed with a Kawasaki-like disease at our centre in the past 5 years were divided according to symptomatic presentation before (group 1) or after (group 2) the beginning of the SARS-CoV-2 epidemic. Kawasaki-like presentations were managed as Kawasaki disease according to the American Heart Association indications. Kawasaki disease shock syndrome (KDSS) was defined by presence of circulatory dysfunction, and macrophage activation syndrome (MAS) by the Paediatric Rheumatology International Trials Organisation criteria. Current or previous infection was sought by reverse-transcriptase quantitative PCR in nasopharyngeal and oropharyngeal swabs, and by serological qualitative test detecting SARS-CoV-2 IgM and IgG, respectively.

#### Findings

Group 1 comprised 19 patients (seven boys, 12 girls; aged 3.0 years [SD 2.5]) diagnosed between Jan 1, 2015, and Feb 17, 2020. Group 2 included ten patients (seven boys, three girls; aged 7.5 years [SD 3.5]) diagnosed between Feb 18 and April 20, 2020; eight of ten were positive for IgG or IgM, or both. The two groups differed in disease incidence (group 1 vs group 2, 0.3 vs ten per month), mean age (3.0 vs 7.5 years), cardiac involvement (two of 19 vs six of ten), KDSS (zero of 19 vs five of ten), MAS (zero of 19 vs five of ten), and need for adjunctive steroid treatment (three of 19 vs eight of ten; all  $p < 0.01$ ).

#### Interpretation

In the past month we found a 30-fold increased incidence of Kawasaki-like disease. Children diagnosed after the SARS-CoV-2 epidemic began showed evidence of immune response to the virus, were older, had a higher rate of cardiac involvement, and features of MAS. The SARS-CoV-2 epidemic was associated with high incidence of a severe form of Kawasaki disease. A similar outbreak of Kawasaki-like disease is expected in countries involved in the SARS-CoV-2 epidemic.

#### Funding

None. (Author)

## 20200609-37\*

### **Kawasaki-like disease: emerging complication during the COVID-19 pandemic.** Viner RM, Whittaker E (2020), The Lancet vol 365, no 10239, 6 June 2020, pp 1741-1743

**Full URL:** [https://doi.org/10.1016/S0140-6736\(20\)31129-6](https://doi.org/10.1016/S0140-6736(20)31129-6)

Comments on the clusters of cases that have been reported across the world of a Kawasaki disease-like symptoms in children testing positive for COVID-19. (MB)

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20200609-35\*

**Coronavirus: Children [written answer].** House of Lords (2020), Hansard Written question HL4696, 19 May 2020

**Full URL:** <https://www.parliament.uk/business/publications/written-questions-answers-statements/written-question/Lords/2020-05-19/HL4696/>

Lord Bethell responds to a written question asked by Lord Kennedy of Southwark to Her Majesty's Government, regarding the assessment they have made of the risks posed by any emergence of a Kawasaki-like disease in children who may have been exposed to COVID-19. (LDO)

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20200608-14\*

**Clinical and Transmission Dynamics Characteristics of 406 Children With Coronavirus Disease 2019 in China: A Review.**

Zhen-Dong Y, Gao-Jun Z, Run-Ming J, et al (2020), Journal of Infection 28 April 2020, online

**Full URL:** [https://www.journalofinfection.com/article/S0163-4453\(20\)30241-3/pdf](https://www.journalofinfection.com/article/S0163-4453(20)30241-3/pdf)

**Objective:** Chinese pediatricians are working on the front line to fight COVID-19. They have published a great amount of first-hand clinical data. Collecting their data and forming a large sample for analysis is more conducive to the recognition, prevention and treatment of coronavirus disease 2019 in children. The epidemic prevention and control experience of Chinese pediatricians should be shared with the world.

**Methods:** By searching Chinese and English literature, the data of 406 children with COVID-19 in China were analyzed.

**Results:** It was found that the clustered incidence of children's families is a dynamic transmission feature; the incidence is low; asymptomatic infections and mild cases account for 44.8%, with only 7 cases of critical illness; laboratory examination of lymphocyte counts is not reduced, as it is for adults; chest CT findings are less severe than those for adults. These presentations are the clinical features of COVID-19 in children. Only 55 of the 406 cases were tested by anal swab for virus nucleic acid, 45 of which were positive, accounting for 81.8% of stool samples.

**Conclusion:** There are more children than adults with asymptomatic infections, milder conditions, faster recovery, and a better prognosis. Some concealed morbidity characteristics also bring difficulties to the early identification, prevention and control of COVID-19. COVID-19 screening is needed in the pediatric fever clinic, and respiratory and digestive tract nucleic acid tests should be performed. Efforts should be made to prevent children from becoming a hidden source of transmission in kindergartens, schools or families. Furthermore, China's experience in treating COVID-19 in children has led to faster recovery of sick children. (Author)

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20200608-1\*

**The maternity response to COVID-19: an example from one maternity unit in Taiwan.** Liao S-C, Chang Y-S, Chien L-Y, et al (2020), Midwifery vol 88, September 2020, 102756

**Full URL:** <https://doi.org/10.1016/j.midw.2020.102756>

Discusses the preventative measures introduced in Taiwan at the government and hospital level to minimise the spread of COVID-19. The authors focus on a maternity unit in Taipei city which introduced designated walkways, fever screening, visitor restrictions, negative-pressure birth rooms and personal protective equipment. (LDO)

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20200605-9

**The danger indoors.** Astrup J (2020), Community Practitioner vol 93, no 3, May-June 2020, pp 14-17

Explores the worrying surge in domestic abuse during the Covid-19 lockdown, the concerns for children living in households where domestic violence is taking place, and what is being done to address it. (Author, edited)

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20200605-4\*

**Kawasaki-like multisystem inflammatory syndrome in children during the covid-19 pandemic in Paris, France: prospective observational study.** Toubiana J, Poirault C, Corsia A, et al (2020), BMJ vol 369, no 8250, 3 June 2020, m2094

**Full URL:** <https://doi.org/10.1136/bmj.m2094>

**Objectives** To describe the characteristics of children and adolescents affected by an outbreak of Kawasaki-like

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multisystem inflammatory syndrome and to evaluate a potential temporal association with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection.

Design Prospective observational study.

Setting General paediatric department of a university hospital in Paris, France.

Participants 21 children and adolescents (aged  $\leq 18$  years) with features of Kawasaki disease who were admitted to hospital between 27 April and 11 May 2020 and followed up until discharge by 15 May 2020.

Main outcome measures The primary outcomes were clinical and biological data, imaging and echocardiographic findings, treatment, and outcomes. Nasopharyngeal swabs were prospectively tested for SARS-CoV-2 using reverse transcription-polymerase chain reaction (RT-PCR) and blood samples were tested for IgG antibodies to the virus.

Results 21 children and adolescents (median age 7.9 (range 3.7-16.6) years) were admitted with features of Kawasaki disease over a 15 day period, with 12 (57%) of African ancestry. 12 (57%) presented with Kawasaki disease shock syndrome and 16 (76%) with myocarditis. 17 (81%) required intensive care support. All 21 patients had noticeable gastrointestinal symptoms during the early stage of illness and high levels of inflammatory markers. 19 (90%) had evidence of recent SARS-CoV-2 infection (positive RT-PCR result in 8/21, positive IgG antibody detection in 19/21). All 21 patients received intravenous immunoglobulin and 10 (48%) also received corticosteroids. The clinical outcome was favourable in all patients. Moderate coronary artery dilations were detected in 5 (24%) of the patients during hospital stay. By 15 May 2020, after 8 (5-17) days of hospital stay, all patients were discharged home.

Conclusions The ongoing outbreak of Kawasaki-like multisystem inflammatory syndrome among children and adolescents in the Paris area might be related to SARS-CoV-2. In this study an unusually high proportion of the affected children and adolescents had gastrointestinal symptoms, Kawasaki disease shock syndrome, and were of African ancestry. (Author)

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#### 20200605-21\*

**Wet Nurses to Donor Milk Banks and Back Again: The Continuum of Sharing Our Milk to Save Lives.** Marinelli K (2020), Journal of Human Lactation vol 36, no 2, May 2020, pp 213-216

Full URL: <https://doi.org/10.1177/2F0890334420927329>

Editorial discussing the ways in which breastmilk is given to babies whose mothers are unable to feed them themselves, whether this is because of illness, separation, death or lactation insufficiency, or who chose not to. Charts the history of wet-nursing, which is seen as life-saving in circumstances when a mother cannot feed her own child, and donor milk banking. Considers infant feeding in the context of the current COVID-19 pandemic. (JSM)

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#### 20200604-93\*

**Breastfeeding Risk from Detectable Severe Acute Respiratory Syndrome Coronavirus 2 in Breastmilk.** Zhu C, Liu W, Su H, et al (2020), Journal of Infection vol 81, no 3, September 2020, pp 452-482

Full URL: <https://doi.org/10.1016/j.jinf.2020.06.001>

Correspondence reporting on the clinical characteristics of COVID-19 pneumonia in perinatal women and evidence of SARS-CoV-2 shedding in their breastmilk. (MB)

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#### 20200604-69\*

**Stalled vaccine programmes 'putting children's lives at risk'.** Mazumdar T (2020), BBC News 4 June 2020

Full URL: <https://www.bbc.co.uk/news/health-52911972>

Reports on disruptions to vaccination programmes as a result of coronavirus in 68 countries. It is estimated that 34.8 million babies have missed routine vaccinations in South East Asia and 22.9 million have missed vaccinations in Africa. (LDO)

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#### 20200603-55\*

**Coronavirus: Babies [written answer].** House of Commons (2020), Hansard Written question 49114, 19 March 2020

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**Full URL:** <https://www.parliament.uk/business/publications/written-questions-answers-statements/written-question/Commons/2020-05-19/49114/>

Ms Nadine Dorries responds to a written question asked by Marsha de Cordova to the Secretary of State for Health and Social Care, regarding what estimate he has made of the number of babies born with covid-19. (MB)

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#### 20200603-39\*

**Delivery in pregnant women infected with SARS -CoV-2: A fast review.** Parazzini F, Bortolus R, Mauri PA, et al (2020), International Journal of Gynecology & Obstetrics vol 150, no 1, July 2020, pp 41-46

##### Background

Few case reports and clinical series exist on pregnant women infected with SARS -CoV-2 who delivered.

##### Objective

To review the available information on mode of delivery, vertical/peripartum transmission, and neonatal outcome in pregnant women infected with SARS -CoV-2.

##### Search strategy

Combination of the following key words: COVID -19, SARS -CoV-2, and pregnancy in Embase and PubMed databases.

##### Selection criteria

Papers reporting cases of women infected with SARS -CoV-2 who delivered.

##### Data collection and analysis

The following was extracted: author; country; number of women; study design; gestational age at delivery; selected clinical maternal data; mode of delivery; selected neonatal outcomes.

##### Main results

In the 13 studies included, vaginal delivery was reported in 6 cases (9.4%; 95% CI , 3.5-19.3). Indication for cesarean delivery was worsening of maternal conditions in 31 cases (48.4%; 95% CI , 35.8-61.3). Two newborns testing positive for SARS -CoV-2 by real-time RT -PCR assay were reported. In three neonates, SARS -CoV-2 IgG and IgM levels were elevated but the RT -PCR test was negative.

##### Conclusions

The rate of vertical or peripartum transmission of SARS -CoV-2 is low, if any, for cesarean delivery; no data are available for vaginal delivery. Low frequency of spontaneous preterm birth and general favorable immediate neonatal outcome are reassuring. (Author)

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#### 20200602-14\*

**Detection of SARS-CoV-2 in human breastmilk.** Groß R, Conzelman C, Müller JA, et al (2020), The Lancet vol 365, no 10239, 21 May 2020, pp 1757-1758

**Full URL:** [https://doi.org/10.1016/S0140-6736\(20\)31181-8](https://doi.org/10.1016/S0140-6736(20)31181-8)

Correspondence reporting on the results of investigations into the breast milk of two nursing mothers infected with SARS-CoV-2. (MB)

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#### 20200601-1\*

**Ethnicity and COVID-19 in children with comorbidities.** Harman K, Verma A, Zoica B, et al (2020), The Lancet Child & Adolescent Health 28 May 2020, online

**Full URL:** [https://doi.org/10.1016/S2352-4642\(20\)30167-X](https://doi.org/10.1016/S2352-4642(20)30167-X)

Describes the effect of COVID-19 on children with underlying health conditions. (MB)

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#### 20200528-9\*

**Women leaders take action for women and children during COVID-19.** The Partnership for Maternal, Newborn & Child Health (2020), Geneva: The Partnership for Maternal, Newborn & Child Health 28 May 2020

**Full URL:** <https://www.who.int/pmnch/media/news/2020/women-leaders-action-on-COVID-19/en/>

Reports on the meeting of women leaders to discuss the impact of COVID-19 on women and children. The meeting highlighted access to contraception, women working as health professionals and caregivers, and children under the

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age of one at risk of diseases such as diphtheria, measles and polio. The leaders included Princess Sarah Zeid of Jordan and Henrietta Fore, Executive Director of UNICEF. (LDO)

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#### 20200528-10\*

**Acute Respiratory Distress Syndrome in a Preterm Pregnant Patient With Coronavirus Disease 2019 (COVID-19).** Blauvelt CA, Chiu C, Donovan AL, et al (2020), *Obstetrics & Gynecology* vol 136, no 1, July 2020, pp 46-51

**Full URL:** <https://doi.org/10.1097/AOG.0000000000003949>

#### BACKGROUND:

Data suggest that pregnant women are not at elevated risk of acquiring severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection or developing severe disease compared with nonpregnant patients. However, management of pregnant patients who are critically ill with coronavirus disease 2019 (COVID-19) infection is complicated by physiologic changes and other pregnancy considerations and requires balancing maternal and fetal well-being.

#### CASE:

We report the case of a patient at 28 weeks of gestation with acute respiratory distress syndrome (ARDS) from COVID-19 infection, whose deteriorating respiratory condition prompted delivery. Our patient's oxygenation and respiratory mechanics improved within hours of delivery, though she required prolonged mechanical ventilation until postpartum day 10. Neonatal swabs for SARS-CoV-2 and COVID-19 immunoglobulin (Ig) G and IgM were negative.

#### CONCLUSION:

We describe our multidisciplinary management of a preterm pregnant patient with ARDS from COVID-19 infection and her neonate. (Author)

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#### 20200527-52\*

**Women and children will pay for this pandemic - unless we act.** Kaljulaid K, Clark H, Varela JA, et al (2020), Geneva: The Partnership for Maternal, Newborn & Child Health 27 May 2020

**Full URL:** <https://news.trust.org/item/20200526130612-rofbs>

Suggests that, in the current coronavirus crisis, we should draw on the knowledge gleaned from past pandemics, such as the Ebola outbreak of 2014-15 in Sierra Leone, to ensure a better outcome for groups such as women, children, adolescents and vulnerable populations, who may have not been given access to sufficient resources and excluded from decision making in the past. (JSM)

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#### 20200525-9\*

**The Impact of the Current SARS-CoV-2 Pandemic on Neonatal Care.** Arnaez J, Montes MT, Herranz-Rubia N, et al (2020), *Frontiers in Pediatrics* 30 April 2020, online

**Full URL:** <https://doi.org/10.3389/fped.2020.00247>

Discusses the ways in which the current coronavirus pandemic is affecting care policies in neonatology units and emphasises the importance of contact between mother and newborn baby for bonding. (JSM)

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#### 20200525-8\*

**Dilemmas and Priorities in the Dilemmas and Priorities in the Neonatal Intensive Care Unit Neonatal Intensive Care Unit during the COVID-19 Pandemic.** Breindahl M, Zachariassen G, S nderby Christensen P, et al (2020), *Danish Medical Journal* vol 67, no 4, April 2020, A205021

**Full URL:** [https://ugeskriftet.dk/files/scientific\\_article\\_files/2020-04/a205021\\_web.pdf](https://ugeskriftet.dk/files/scientific_article_files/2020-04/a205021_web.pdf)

Editorial discussing best practice in caring for families with suspected or confirmed COVID-19 in the NICU. (JSM)

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#### 20200525-7\*

**Current State of Knowledge About SARS-CoV-2 and COVID-19 Disease in Pregnant Women.** Gujski M, Humeniuk E, Bojar I (2020), *Medical Science Monitor:International Medical Journal of Experimental and Clinical Research* 9 May 2020, online

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**Full URL:** <https://www.medscimonit.com/abstract/index/idArt/924725>

During any epidemic of infectious diseases, pregnant women constitute an extremely sensitive group due to altered physiology and immune functions, and thus altered susceptibility to infection. With regard to the management of pregnant COVID-19 patients, in addition to the treatment of the infection itself, which is not that different from generally accepted principles, it is interesting to consider which obstetric procedures should be used to minimize the adverse effects on mother and child. Questions arise concerning the continuation of pregnancy, how to terminate the pregnancy, the possibility of virus transmission through the placenta, isolation of the newborn after birth, and breastfeeding. The aim of this study was to review the current state of knowledge about SARS-CoV-2 infection and COVID-19 disease in pregnant women. Because the epidemic began in China, most of the available literature comes from studies conducted there. The studies used to prepare this review article are the first non-randomized studies containing small groups of examined women. They do not provide clear indications, but show that in an epidemic situation, special care should be taken in pregnancy management, making decisions about termination of pregnancy, and handling of the newborn baby to minimize the risk of subsequent health consequences. Further analysis is needed on the incidence of COVID-19 among pregnant women and its consequences. This will allow us to develop recommendations on how to deal with patients in the future in case of repeated epidemic emergencies. (Author)

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**20200525-5\***

**Are Covid-19-positive Mothers Dangerous for Their Term and Well Newborn Babies? Is There an Answer?** Stanojević M (2020), Journal of Perinatal Medicine 13 May 2020, online

**Full URL:** <https://doi.org/10.1515/jpm-2020-0186>

Background: The pandemic caused by the new coronavirus SARS-CoV-2 (Covid-19) is quite a challenging experience for the world. At the moment of birth, the fetus is prepared to face the challenge of labor and the exposure to the outside world, meaning that labor and birth represent the first extrauterine major exposure to a complex microbiota. The vagina, which is a canal for reproduction, is by evolution separated (but not far) from the anus and urethra. Passing through the birthing canal is a mechanism for intergenerational transmission of vaginal and gut microorganisms for the vertical transmission of microbiota not only from our mothers and grandmothers but also from earlier ancestors. Methods: Many national and international instructions have been developed since the beginning of the Covid-19 outbreak in January 2020 in Wuhan in China. All of them pointed out hygiene measures, social distancing and avoidance of social contacts as the most important epidemiological preventive measures. Pregnancy and neonatal periods are considered as high risk for Covid-19 infection. Results: The instructions defined the care for pregnant women in the delivery room, during a hospital stay and after discharge. The controversial procedures in the care of Covid-19-suspected or -positive asymptomatic women in labor were: mode of delivery, companion during birth and labor, skin-to-skin contact, breastfeeding, and visits during a hospital stay. Conclusion: There is a hope that instruction on coping with the coronavirus (Covid-19) infection in pregnancy with all proposed interventions affecting mothers, babies and families, besides saving lives, are beneficial and efficient by exerting no harm. (Author)

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**20200525-4\***

**Importance of Inclusion of Pregnant and Breastfeeding Women in COVID-19 Therapeutic Trials.** LaCourse SM, John-Stewart G, Adams Waldorf KM (2020), Clinical Infectious Diseases 15 April 2020, online

**Full URL:** <https://doi.org/10.1093/cid/cia444>

Investigators are employing unprecedented innovation in the design of clinical trials to rapidly and rigorously assess potentially promising therapies for COVID-19; this is in stark contrast to the continued near universal regressive practice of exclusion of pregnant and breastfeeding women from these trials. The few trials which allow their inclusion focus on post-exposure prophylaxis or outpatient treatment of milder disease, limiting the options available to pregnant women with severe COVID-19 to compassionate use of remdesivir, or off-label drug use of hydroxychloroquine or other therapies. These restrictions were put in place despite experience with these drugs in pregnant women. In this Viewpoint, we call attention to the need and urgency to engage pregnant women in COVID-19 treatment trials now in order to develop data-driven recommendations regarding the risks and benefits of therapies in this unique but not uncommon population. (Author)

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## 20200525-3\*

**Remdesivir.** Anon (2020), Drugs and Lactation Database 11 May 2020

**Full URL:** <https://www.ncbi.nlm.nih.gov/books/NBK556881/>

Remdesivir is an investigational antiviral drug that is being tested for use against the novel coronavirus disease, COVID-19. Remdesivir is given intravenously because it is poorly absorbed orally, so infants are not likely to absorb clinically important amounts of the drug from milk. In addition, a newborn infants have received intravenous remdesivir therapy for Ebola with no serious adverse drug reactions. Given this limited information, it does not appear that mothers receiving remdesivir need to avoid nursing, but until more data are available, remdesivir should be used with careful infant monitoring during breastfeeding. The most common adverse effects reported after intravenous infusion include elevated aminotransferase and bilirubin levels and other liver function tests. Diarrhea, rash, renal impairment and hypotension have also been reported. (Author)

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## 20200525-26\*

**Safety and Efficacy of Different Anesthetic Regimens for Parturients With COVID-19 Undergoing Cesarean Delivery: A Case Series of 17 Patients.** Chen R, Zhang Y, Huang L, et al (2020), Canadian Journal of Anesthesia vol 67, no 6, June 2020, pp 655-633

**Full URL:** <https://doi.org/10.1007/s12630-020-01630-7>

**Purpose:** To assess the management and safety of epidural or general anesthesia for Cesarean delivery in parturients with coronavirus disease (COVID-19) and their newborns, and to evaluate the standardized procedures for protecting medical staff. **Methods:** We retrospectively reviewed the cases of parturients diagnosed with severe acute respiratory syndrome coronavirus (SARS-CoV-2) infection disease (COVID-19). Their epidemiologic history, chest computed tomography scans, laboratory measurements, and SARS-CoV-2 nucleic acid positivity were evaluated. We also recorded the patients' demographic and clinical characteristics, anesthesia and surgery-related data, maternal and neonatal complications, as well as the health status of the involved medical staff.

**Results:** The clinical characteristics of 17 pregnant women infected with SARS-CoV-2 were similar to those previously reported in non-pregnant adult patients. All of the 17 patients underwent Cesarean delivery with anesthesia performed according to standardized anesthesia/surgery procedures. Fourteen of the patients underwent continuous epidural anesthesia with 12 experiencing significant intraoperative hypotension. Three patients received general anesthesia with tracheal intubation because emergency surgery was needed. Three of the parturients are still recovering from their Cesarean delivery and are receiving in-hospital treatment for COVID-19. Three neonates were born prematurely. There were no deaths or serious neonatal asphyxia events. All neonatal SARS-CoV-2 nucleic acid tests were negative. No medical staff were infected throughout the patient care period.

**Conclusions:** Both epidural and general anesthesia were safely used for Cesarean delivery in the parturients with COVID-19. Nevertheless, the incidence of hypotension during epidural anesthesia appeared excessive. Proper patient transfer, medical staff access procedures, and effective biosafety precautions are important to protect medical staff from COVID-19. (Author)

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## 20200525-25\*

**COVID-19 in Children, Pregnancy and Neonates: A Review of Epidemiologic and Clinical Features.** Zimmermann P, Curtis N (2020), The Pediatric Infectious Disease Journal vol 39, no 6, June 2020, pp 469-477

**Full URL:** <https://doi.org/10.1097/inf.0000000000002700>

The novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) pandemic has spread rapidly across the globe. In contrast to initial reports, recent studies suggest that children are just as likely as adults to become infected with the virus but have fewer symptoms and less severe disease. In this review, we summarize the epidemiologic and clinical features of children infected with SARS-CoV-2 reported in pediatric case series to date. We also summarize the perinatal outcomes of neonates born to women infected with SARS-CoV-2 in pregnancy. We found 11 case series including a total of 333 infants and children. Overall, 83% of the children had a positive contact history, mostly with family members. The incubation period varied between 2 and 25 days with a mean of 7 days. The virus could be

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isolated from nasopharyngeal secretions for up to 22 days and from stool for more than 30 days. Co-infections were reported in up to 79% of children (mainly mycoplasma and influenza). Up to 35% of children were asymptomatic. The most common symptoms were cough (48%; range 19%-100%), fever (42%; 11%-100%) and pharyngitis (30%; 11%-100%). Further symptoms were nasal congestion, rhinorrhea, tachypnoea, wheezing, diarrhea, vomiting, headache and fatigue. Laboratory test parameters were only minimally altered. Radiologic findings were unspecific and included unilateral or bilateral infiltrates with, in some cases, ground-glass opacities or consolidation with a surrounding halo sign. Children rarely needed admission to intensive care units (3%), and to date, only a small number of deaths have been reported in children globally. Nine case series and 2 case reports described outcomes of maternal SARS-CoV-2 infection during pregnancy in 65 women and 67 neonates. Two mothers (3%) were admitted to intensive care unit. Fetal distress was reported in 30% of pregnancies. Thirty-seven percent of women delivered preterm. Neonatal complications included respiratory distress or pneumonia (18%), disseminated intravascular coagulation (3%), asphyxia (2%) and 2 perinatal deaths. Four neonates (3 with pneumonia) have been reported to be SARS-CoV-2 positive despite strict infection control and prevention procedures during delivery and separation of mother and neonates, meaning vertical transmission could not be excluded. (Author)

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## 20200525-24\*

**Clinical Characteristics of 19 Neonates Born to Mothers With COVID-19.** Liu W, Wang J, Li W, et al (2020), *Frontiers in Medicine* vol 14, no 2, April 2020, pp 193-198

**Full URL:** <https://doi.org/10.1007/s11684-020-0772-y>

The aim of this study was to investigate the clinical characteristics of neonates born to SARS-CoV-2 infected mothers and increase the current knowledge on the perinatal consequences of COVID-19. Nineteen neonates were admitted to Tongji Hospital from January 31 to February 29, 2020. Their mothers were clinically diagnosed or laboratory-confirmed with COVID-19. We prospectively collected and analyzed data of mothers and infants. There are 19 neonates included in the research. Among them, 10 mothers were confirmed COVID-19 by positive SARS-CoV-2 RT-PCR in throat swab, and 9 mothers were clinically diagnosed with COVID-19. Delivery occurred in an isolation room and neonates were immediately separated from the mothers and isolated for at least 14 days. No fetal distress was found. Gestational age of the neonates was  $38.6 \pm 1.5$  weeks, and average birth weight was  $3293 \pm 425$  g. SARS-CoV-2 RT-PCR in throat swab, urine, and feces of all neonates were negative. SARS-CoV-2 RT-PCR in breast milk and amniotic fluid was negative too. None of the neonates developed clinical, radiologic, hematologic, or biochemical evidence of COVID-19. No vertical transmission of SARS-CoV-2 and no perinatal complications in the third trimester were found in our study. The delivery should occur in isolation and neonates should be separated from the infected mothers and care givers. (Author)

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## 20200525-23\*

**COVID-19 in Children: Clinical Approach and Management.** Sankar J, Dhochak N, Kabra SK, et al (2020), *Indian Journal of Pediatrics* vol 87, no 6, June 2020, pp 433-442

**Full URL:** <https://doi.org/10.1007/s12098-020-03292-1>

COVID-19 pandemic caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is a major public health crisis threatening humanity at this point in time. Transmission of the infection occurs by inhalation of infected droplets or direct contact with soiled surfaces and fomites. It should be suspected in all symptomatic children who have undertaken international travel in the last 14 d, all hospitalized children with severe acute respiratory illness, and asymptomatic direct and high-risk contacts of a confirmed case. Clinical symptoms are similar to any acute respiratory viral infection with less pronounced nasal symptoms. Disease seems to be milder in children, but situation appears to be changing. Infants and young children had relatively more severe illness than older children. The case fatality rate is low in children. Diagnosis can be confirmed by Reverse transcriptase - Polymerase chain reaction (RT-PCR) on respiratory specimen (commonly nasopharyngeal and oropharyngeal swab). Rapid progress is being made to develop rapid diagnostic tests, which will help ramp up the capacity to test and also reduce the time to getting test results. Management is mainly supportive care. In severe pneumonia and critically ill children, trial of hydroxychloroquine or lopinavir/ritonavir should be considered. As per current policy, children with mild disease also need to be

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hospitalized; if this is not feasible, these children may be managed on ambulatory basis with strict home isolation. Pneumonia, severe disease and critical illness require admission and aggressive management for acute lung injury and shock and/or multiorgan dysfunction, if present. An early intubation is preferred over non-invasive ventilation or heated, humidified, high flow nasal cannula oxygen, as these may generate aerosols increasing the risk of infection in health care personnel. To prevent post discharge dissemination of infection, home isolation for 1-2 wk may be advised. As of now, no vaccine or specific chemotherapeutic agents are approved for children. (Author)

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#### 20200525-22\*

**Potential Maternal and Infant Outcomes From (Wuhan) Coronavirus 2019-nCoV Infecting Pregnant Women: Lessons From SARS, MERS, and Other Human Coronavirus Infections.** Schwartz DA, Graham AL (2020), Viruses vol 12, no 2, February 2020, Article no: 194

Full URL: <https://doi.org/10.3390/v12020194>

In early December 2019 a cluster of cases of pneumonia of unknown cause was identified in Wuhan, a city of 11 million persons in the People's Republic of China. Further investigation revealed these cases to result from infection with a newly identified coronavirus, termed the 2019-nCoV. The infection moved rapidly through China, spread to Thailand and Japan, extended into adjacent countries through infected persons travelling by air, eventually reaching multiple countries and continents. Similar to such other coronaviruses as those causing the Middle East respiratory syndrome (MERS) and severe acute respiratory syndrome (SARS), the new coronavirus was reported to spread via natural aerosols from human-to-human. In the early stages of this epidemic the case fatality rate is estimated to be approximately 2%, with the majority of deaths occurring in special populations. Unfortunately, there is limited experience with coronavirus infections during pregnancy, and it now appears certain that pregnant women have become infected during the present 2019-nCoV epidemic. In order to assess the potential of the Wuhan 2019-nCoV to cause maternal, fetal and neonatal morbidity and other poor obstetrical outcomes, this communication reviews the published data addressing the epidemiological and clinical effects of SARS, MERS, and other coronavirus infections on pregnant women and their infants. Recommendations are also made for the consideration of pregnant women in the design, clinical trials, and implementation of future 2019-nCoV vaccines. (Author)

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#### 20200525-20\*

**Neonatal Coronavirus 2019 (COVID-19) Infection: A Case Report and Review of Literature.** Dumpa V, Kamity R, Vinci AN, et al (2020), Cureus vol 12, no 5, 17 May 2020, e8165

Full URL: <https://doi.org/10.7759/cureus.8165>

Coronavirus disease 2019 (COVID-19), caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), has led to a global pandemic affecting 213 countries as of April 26, 2020. Although this disease is affecting all age groups, infants and children seem to be at a lower risk of severe infection, for reasons unknown at this time. We report a case of neonatal infection in New York, United States, and provide a review of the published cases. A 22-day-old, previously healthy, full-term neonate was hospitalized after presenting with a one-day history of fever and poor feeding. Routine neonatal sepsis evaluation was negative. SARS-CoV-2 polymerase chain reaction (PCR) testing was obtained, given rampant community transmission, which returned positive. There were no other laboratory or radiographic abnormalities. The infant recovered completely and was discharged home in two days once his feeding improved. The family was advised to self-quarantine to prevent the transmission of COVID-19. We believe that the mode of transmission was horizontal spread from his caregivers. This case highlights the milder presentation of COVID-19 in otherwise healthy, full-term neonates. COVID-19 must be considered in the evaluation of a febrile infant. Infants and children may play an important role in the transmission of COVID-19 in the community. Hence, with an understanding of the transmission patterns, parents and caregivers would be better equipped to limit the spread of the virus and protect the more vulnerable population. (Author)

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#### 20200525-19\*

**Management of the Mother-Infant Dyad With Suspected or Confirmed SARS-CoV-2 Infection in a Highly Epidemic Context.** Pietrasanta C, Pugni L, Ronchi A, et al (2020), Journal of Neonatal-Perinatal Medicine 20 May 2020, online

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Full URL: <https://doi.org/10.3233/npm-200478>

Addresses a number of aspects of the mother-infant dyad management during SARS-CoV-2 epidemic. Networking among maternity centers and anticipatory planning is essential to organise the assistance to mothers and neonates in maternity and neonatal wards. Early identification of SARS-CoV-2 infected mothers, before delivery, allows their management through dedicated protocols and minimizes the risk of contagion for other patients and healthcare providers. Vertical transmission of SARS-CoV-2 cannot be excluded at present, and should be ruled out as soon as possible after birth. Rooming in of infected mothers and neonates, provided their good clinical conditions, is not contraindicated based on current knowledge. The choice of breastfeeding should be carefully discussed with parents based on current, evolving scientific evidence. (Author)

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#### 20200525-18\*

##### **Lack of viral transmission to preterm newborn from a COVID-19 positive breastfeeding mother at 11 days postpartum.**

Perrone S, Giordano M, Meoli A, et al (2020), Journal of Medical Virology 21 May 2020, online

In December 2019, novel coronavirus 2019 has appeared in China. On 11 February 2020, the World Health Organization officially names the disease as COVID-19 (1). The new coronavirus is highly contagious. The rapid spread of SARS-CoV-2 lead to declare the pandemic on the 11th March 2020. On 10 May 2020 the number of infected people is 4,132,373 worldwide (2). 1. Hong H et al. Clinical characteristics of novel coronavirus disease 2019 (COVID-19) in newborns, infants and children. Pediatric Neonatology, vol 61, no 2, . pp 131-132. 2. Worldometer. Covid-19 coronavirus pandemic. Retrieved from <https://www.worldometers.info/coronavirus/> (Accessed on 10 May 2020) Davanzo R. Breast feeding at the time of COVID-19: do not forget expressed mother's milk, please. Archives of Disease in Childhood: Fetal Neonatal Edition. 2020, 6 April 2020, online. (Author)

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#### 20200525-17\*

##### **Can SARS-CoV-2-infected women breastfeed after viral clearance?..** Lang GJ, Zhao H (2020), Journal of Zhejiang University.Science B vol 21, no 5, May 2020, pp 405-407

Full URL: <https://doi.org/10.1631/jzus.b2000095>

The recently emerged novel coronavirus pneumonia, named the coronavirus disease 2019 (COVID-19), shares several clinical characteristics with severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS), and spread rapidly throughout China in December of 2019 (Huang et al., 2020). The pathogen 2019 novel coronavirus (2019-nCoV) is now named SARS coronavirus 2 (SARS-CoV-2) and is highly infectious. As of Apr. 9, 2020, over 80 000 confirmed cases had been reported, with an estimated mortality rate of 4.0% (Chinese Center for Disease Control and Prevention, 2020). Person-to-person transmission and familial clustering have been reported (Chan et al., 2020; Nishiura et al., 2020; Phan et al., 2020). However, there is no evidence of fetal intrauterine infection in pregnant women who have been infected with SARS-CoV-2 in their third trimester (Chen et al., 2020). It is unclear whether breastfeeding transmits the virus from previously infected and recovered mothers to their babies. Here we report the clinical course of a pregnant woman with COVID-19. In order to determine whether SARS-CoV-2 can be transmitted to newborns through breastfeeding, we measured viral RNA in the patient's breastmilk samples at different time points after delivery. (Author)

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#### 20200525-15\*

##### **Management of Newborns Exposed to Mothers With Confirmed or Suspected COVID-19.** Amatya S, Corr TE, Gandhi CK, et al (2020), Journal of Perinatology vol 40, no 7, July 2020, pp 987-996

Full URL: <https://doi.org/10.1038/s41372-020-0695-0>

There is limited information about newborns with confirmed or suspected COVID-19. Particularly in the hospital after delivery, clinicians have refined practices in order to prevent secondary infection. While guidance from international associations is continuously being updated, all facets of care of neonates born to women with confirmed or suspected COVID-19 are center-specific, given local customs, building infrastructure constraints, and availability of protective equipment. Based on anecdotal reports from institutions in the epicenter of the COVID-19 pandemic close to our

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hospital, together with our limited experience, in anticipation of increasing numbers of exposed newborns, we have developed a triage algorithm at the Penn State Hospital at Milton S. Hershey Medical Center that may be useful for other centers anticipating a similar surge. We discuss several care practices that have changed in the COVID-19 era including the use of antenatal steroids, delayed cord clamping (DCC), mother-newborn separation, and breastfeeding. Moreover, this paper provides comprehensive guidance on the most suitable respiratory support for newborns during the COVID-19 pandemic. We also present detailed recommendations about the discharge process and beyond, including providing scales and home phototherapy to families, parental teaching via telehealth and in-person education at the doors of the hospital, and telehealth newborn follow-up. (Author)

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#### 20200525-14\*

**Clinical Course of Coronavirus Disease-2019 in Pregnancy.** Pereira A, Cruz-Melguizo S, Adrien M, et al (2020), Acta Obstetrica et Gynecologica Scandinavica vol 99, no 7, July 2020, pp 839-847

**Introduction:** The aim of this study is to report our clinical experience in the management of pregnant women infected with Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) during the first thirty days of the Coronavirus disease (COVID-19) pandemic.

**Material and methods:** We reviewed clinical data from the first 60 pregnant women with COVID-19 whose care was managed at Puerta de Hierro University Hospital, Madrid, Spain from March 14th to April 14th, 2020. Demographic data, clinical findings, laboratory test results, imaging findings, treatment received, and outcomes were collected. An analysis of variance (Kruskal-Wallis test) was performed to compare the medians of laboratory parameters. Fisher's exact test was used to evaluate categorical variables. A correspondence analysis was used to explore associations between variables.

**Results:** A total of 60 pregnant women were diagnosed with COVID-19. The most common symptoms were fever and cough (75.5%, each) followed by dyspnea (37.8%). Forty-one patients (68.6%) required hospital admission (18 due to disease worsening and 23 for delivery) of whom 21 patients (35%) underwent pharmacological treatment, including hydroxychloroquine, antivirals, antibiotics and tocilizumab. No renal or cardiac failures or maternal deaths were reported. Lymphopenia (50%), thrombocytopenia (25%), and elevated C-reactive protein (CRP) (59%) were observed in the early stages of the disease. Median CRP, D-dimer and the neutrophil/lymphocyte ratio were elevated. High CRP and D-dimer levels were the parameters most frequently associated with severe pneumonia. The Neutrophil/lymphocyte ratio was found to be the most sensitive marker for disease improvement (relative risk: 6.65; 95% CI: 4.1-5.9). During the study period, 18 of the women (78%) delivered vaginally. All newborns tested negative for SARS-CoV-2 and none of them were infected during breastfeeding. No SARS-CoV-2 was detected in placental tissue.

**Conclusions:** Most of the pregnant COVID-19 positive patients had a favorable clinical course. However, one-third of them developed pneumonia, of whom 5% presented a critical clinical status. CRP and D-dimer levels positively correlated with severe pneumonia and the neutrophil/lymphocyte ratio decreased as the patients improved clinically. Seventy-eight percent of patients had a vaginal delivery. No vertical or horizontal transmissions were diagnosed in the neonates during labor or breastfeeding. (Author)

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#### 20200525-13\*

**Novel Coronavirus disease (COVID-19) in newborns and infants: what we know so far.** De Rose DU, Piersigilli F, Ronchetti MP, et al (2020), Italian Journal of Pediatrics vol 46, no 1, 29 April 2020, Article no: 56

**Full URL:** <https://doi.org/10.1186/s13052-020-0820-x>

Recently, an outbreak of viral pneumonitis in Wuhan, Hubei, China successively spread as a global pandemic, led to the identification of a novel betacoronavirus species, the 2019 novel coronavirus, successively designated 2019-nCoV then SARS-CoV-2). The SARS-CoV-2 causes a clinical syndrome designated coronavirus disease 2019 (COVID19) with a spectrum of manifestations ranging from mild upper respiratory tract infection to severe pneumonitis, acute respiratory distress syndrome (ARDS) and death. Few cases have been observed in children and adolescents who seem to have a more favorable clinical course than other age groups, and even fewer in newborn babies. This review provides an overview of the knowledge on SARS-CoV-2 epidemiology, transmission, the associated clinical presentation and outcomes in newborns and infants up to 6 months of life. (Author)

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20200525-12\*

**Improving the quality of care in pregnancy and childbirth with coronavirus (COVID-19): a systematic review.** Abdollahpour S, Khadivzadeh T (2022), Journal of Maternal-Fetal and Neonatal Medicine vol 35, no 8, 2022, pp 1601-1609

**Full URL:** <https://doi.org/10.1080/14767058.2020.1759540>

In the context of serious coronavirus epidemic, it is critical that pregnant women not be ignored potentially life-saving interventions. So, this study was designed to improve the quality of care by health providers through what they need to know about coronavirus during pregnancy and childbirth. We conducted a systematic review of electronic databases was performed for published in English, before 25 March 2020. Finally, 29 papers which had covered the topic more appropriately were included in the study. The results of the systematic review of the existing literature are presented in the following nine sections: Symptoms of the COVID-19 in pregnancy, Pregnancy management, Delivery Management, Mode of delivery, Recommendations for health care provider in delivery, Neonatal outcomes, Neonatal care, Vertical Transmission, Breastfeeding. In conclusion, improving quality of care in maternal health, as well as educating, training, and supporting healthcare providers in infection management to be prioritized. Sharing data can help to countries that to prevent maternal and neonatal morbidity associated with the COVID-19. (Author)

20200525-11\*

**Vaginal delivery in SARS-CoV-2 infected pregnant women in Northern Italy: a retrospective analysis.** Ferrazzi E, Frigerio L, Savasi V, et al (2020), BJOG: An International Journal of Obstetrics and Gynaecology 27 April 2020, online

**Objective:** To report mode of delivery and immediate neonatal outcome in COVID-19 infected women.

**Design:** This is a retrospective study.

**Setting:** Twelve hospitals in northern Italy.

**Participants:** Pregnant women with COVID-19 confirmed infection who delivered.

**Exposure:** COVID 19 infection in pregnancy.

**Methods:** SARS-CoV-2 infected women who were admitted and delivered during the period 1-20 march 2020 were eligible.

Data were collected from the clinical records using a standardized questionnaire on maternal general characteristics, any medical or obstetric co-morbidity, course of pregnancy, clinical signs and symptoms, treatment of COVID 19 infection, mode of delivery, neonatal data and breastfeeding  
**MAIN OUTCOME AND MEASURE:** Data on mode of delivery and neonatal outcome

**RESULTS:** 42 women with COVID-19 delivered at the participating centres: 24(57,1%, 95% CI= 41,0-72,3) delivered vaginally. An elective cesarean section was performed in 18/42 (42,9%, 95%CI 27,7-59,0) cases: in 8 cases the indication was unrelated to COVID-19 infection. Pneumonia was diagnosed in 19/42(45,2%, 95%CI 29,8-61,3) cases: of these 7/19(36,8%,95CI 16,3-61,6) required oxygen support and 4/19(21,1%,95%CI=6,1-45,6) were admitted to a critical care unit. Two women with COVID-19 breastfed without a mask because infection was diagnosed in the post-partum period: their new-borns tested positive for SARS-Cov-2 infection. In one case a new-born had a positive test after a vaginal operative delivery.

**Conclusions:** Although post-partum infection cannot be excluded with 100% certainty, these findings suggest that vaginal delivery is associated with a low risk of intrapartum SARS-Cov-2 transmission to the new-born. (Author)

20200525-10\*

**SARS-CoV-2 Infection in Pregnancy - a Review of the Current Literature and Possible Impact on Maternal and Neonatal Outcome.** Stumpfe FM, Titzmann A, Schneider MO, et al (2020), Geburtshilfe und Frauenheilkunde vol 80, no 4, 2020, pp 380-390

**Full URL:** <https://www.thieme-connect.de/products/ejournals/html/10.1055/a-1134-5951?articleLanguage=en>

In December 2019, cases of pneumonia of unknown cause first started to appear in Wuhan in China; subsequently, a new coronavirus was soon identified as the cause of the illness, now known as Coronavirus Disease 2019 (COVID-19). Since then, infections have been confirmed worldwide in numerous countries, with the number of cases steadily rising. The aim of the present review is to provide an overview of the new severe acute respiratory syndrome (SARS) coronavirus 2 (SARS-CoV-2) and, in particular, to deduce from it potential risks and complications for pregnant patients. For this purpose, the available literature on cases of infection in pregnancy during the SARS epidemic of

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2002/2003, the MERS (Middle East respiratory syndrome) epidemic ongoing since 2012, as well as recent publications on cases infected with SARS-CoV-2 in pregnancy are reviewed and reported. Based on the literature available at the moment, it can be assumed that the clinical course of COVID-19 disease may be complicated by pregnancy which could be associated with a higher mortality rate. It may also be assumed at the moment that transmission from mother to child in utero is unlikely. Breastfeeding is possible once infection has been excluded or the disease declared cured. (Author)

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#### 20200525-1\*

**Favipiravir.** Anon (2020), Drugs and Lactation Database 11 May 2020

**Full URL:** <https://www.ncbi.nlm.nih.gov/books/NBK556878/>

Favipiravir is an investigational antiviral drug that is being tested for use against the novel coronavirus disease, COVID-19. No information is available on the use of favipiravir during breastfeeding or its excretion into breastmilk. Favipiravir is a small molecule that is about 60% protein bound in plasma, so it would be expected to appear in breastmilk and be absorbed by the infant, probably in small amounts. In clinical trials, favipiravir has been well tolerated, but has caused liver enzyme abnormalities, gastrointestinal symptoms, and serum uric acid elevations.[1-3] If favipiravir is used in a nursing mother, these parameters should be monitored in the breastfed infant. (Author)

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#### 20200522-25\*

**Horizontal transmission of severe acute respiratory syndrome coronavirus 2 to a premature infant: multiple organ injury and association with markers of inflammation.** Cook J, Harman K, Zoica B, et al (2020), The Lancet Child & Adolescent Health vol 4, no 7, July 2020, pp 548-551

**Full URL:** [https://doi.org/10.1016/S2352-4642\(20\)30166-8](https://doi.org/10.1016/S2352-4642(20)30166-8)

Reports the case of an infant with severe disease caused by SARS-CoV-2 resulting in multiple organ injury. (MB)

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#### 20200521-44\*

**Severe COVID-19 during Pregnancy and Possible Vertical Transmission.** Alzamora MC, Paredes T, Caceres D, et al (2020), American Journal of Perinatology vol 37, no 8, June 2020, pp 861-865

There are few cases of pregnant women with novel corona virus 2019 (COVID-19) in the literature, most of them with a mild illness course. There is limited evidence about in utero infection and early positive neonatal testing. A 41-year-old G3P2 with a history of previous cesarean deliveries and diabetes mellitus presented with a 4-day history of malaise, low-grade fever, and progressive shortness of breath. A nasopharyngeal swab was positive for COVID-19, COVID-19 serology was negative. The patient developed respiratory failure requiring mechanical ventilation on day 5 of disease onset. The patient underwent a cesarean delivery, and neonatal isolation was implemented immediately after birth, without delayed cord clamping or skin-to-skin contact. The neonatal nasopharyngeal swab, 16 hours after delivery, was positive for severe acute respiratory syndrome-coronavirus 2 (SARS-CoV-2) real-time polymerase chain reaction (RT-PCR), and immunoglobulin (Ig)-M and IgG for SARS-CoV-2 were negative. Maternal IgM and IgG were positive on postpartum day 4 (day 9 after symptom onset). We report a severe presentation of COVID-19 during pregnancy. To our knowledge, this is the earliest reported positive PCR in the neonate, raising the concern for vertical transmission. We suggest pregnant women should be considered as a high-risk group and minimize exposures for these reasons. (Author)

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#### 20200521-24\*

**COVID-19 and Neonatal Respiratory Care: Current Evidence and Practical Approach.** Shalish W, Lakshminrusimha S, Manzoni P, et al (2020), American Journal of Perinatology vol 37, no 8, June 2020, pp 780-791

The novel coronavirus disease 2019 (COVID-19) pandemic has urged the development and implementation of guidelines and protocols on diagnosis, management, infection control strategies, and discharge planning. However, very little is currently known about neonatal COVID-19 and severe acute respiratory syndrome-coronavirus-2 (SARS-CoV-2) infections. Thus, many questions arise with regard to respiratory care after birth, necessary protection to

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health care workers (HCW) in the delivery room and neonatal intensive care unit (NICU), and safety of bag and mask ventilation, noninvasive respiratory support, deep suctioning, endotracheal intubation, and mechanical ventilation. Indeed, these questions have created tremendous confusion amongst neonatal HCW. In this manuscript, we comprehensively reviewed the current evidence regarding COVID-19 perinatal transmission, respiratory outcomes of neonates born to mothers with COVID-19 and infants with documented SARS-CoV-2 infection, and the evidence for using different respiratory support modalities and aerosol-generating procedures in this specific population. The results demonstrated that to date, neonatal COVID-19 infection is uncommon, generally acquired postnatally, and associated with favorable respiratory outcomes. The reason why infants display a milder spectrum of disease remains unclear. Nonetheless, the risk of severe or critical illness in young patients exists. Currently, the recommended respiratory approach for infants with suspected or confirmed infection is not evidence based but should include all routinely used types of support, with the addition of viral filters, proper personal protective equipment, and placement of infants in isolation rooms, ideally with negative pressure. As information is changing rapidly, clinicians should frequently watch out for updates on the subject. (Author)

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#### 20200521-1\*

**Skin-to-Skin Care and COVID-19.** Boscia C (2020), Pediatrics vol 146, no 2, August 2020, e20201836

Full URL: <https://doi.org/10.1542/peds.2020-1836>

Examines the issues surrounding skin to skin care immediately after birth during the COVID-19 pandemic. (MB)

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#### 20200520-32\*

**COVID-19 in Newborns and Infants-Low Risk of Severe Disease: Silver Lining or Dark Cloud?.** Rawat M, Chandrasekharan P, Hicar MD, et al (2020), American Journal of Perinatology vol 37, no 8, June 2020, pp 845-849

One hundred years after the 1918 influenza pandemic, we now face another pandemic with the severe acute respiratory syndrome-novel coronavirus-2 (SARS-CoV-2). There is considerable variability in the incidence of infection and severe disease following exposure to SARS-CoV-2. Data from China and the United States suggest a low prevalence of neonates, infants, and children, with those affected not suffering from severe disease. In this article, we speculate different theories why this novel agent is sparing neonates, infants, and young children. The low severity of SARS-CoV-2 infection in this population is associated with a high incidence of asymptomatic or mildly symptomatic infection making them efficient carriers. (Author)

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#### 20200519-8\*

**Corona Virus Disease 2019, a growing threat to children?.** Yang P, Liu P, Li D, et al (2020), Journal of Infection vol 80, no 6, June 2020, pp 671-693

Full URL: [https://www.journalofinfection.com/article/S0163-4453\(20\)30105-5/fulltext](https://www.journalofinfection.com/article/S0163-4453(20)30105-5/fulltext)

Highlights: • COVID-19 was reported in Wuhan, China and spread rapidly to nationwide and 25 other countries. • Most of children COVID-19 are familial clusters with mild clinical symptoms. • Early isolation should be performed to protect underlying diseases children. • It is necessary to isolate the newborns immediately after delivery. (Author)

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#### 20200519-7\*

**Clinical and CT imaging features of the COVID-19 pneumonia: Focus on pregnant women and children.** Liu H, Liu F, Li J, et al (2020), Journal of Infection vol 80, no 5, May 2020, pp E7-E13

Full URL: <https://doi.org/10.1016/j.jinf.2020.03.007>

##### Background

The ongoing outbreak of COVID-19 pneumonia is globally concerning. We aimed to investigate the clinical and CT features in the pregnant women and children with this disease, which have not been well reported.

##### Methods

Clinical and CT data of 59 patients with COVID-19 from January 27 to February 14, 2020 were retrospectively reviewed, including 14 laboratory-confirmed non-pregnant adults, 16 laboratory-confirmed and 25 clinically-diagnosed pregnant

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women, and 4 laboratory-confirmed children. The clinical and CT features were analyzed and compared.

#### Findings

Compared with the non-pregnant adults group (n = 14), initial normal body temperature (9 [56%] and 16 [64%]), leukocytosis (8 [50%] and 9 [36%]) and elevated neutrophil ratio (14 [88%] and 20 [80%]), and lymphopenia (9 [56%] and 16 [64%]) were more common in the laboratory-confirmed (n = 16) and clinically-diagnosed (n = 25) pregnant groups. Totally 614 lesions were detected with predominantly peripheral and bilateral distributions in 54 (98%) and 37 (67%) patients, respectively. Pure ground-glass opacity (GGO) was the predominant presence in 94/131 (72%) lesions for the non-pregnant adults. Mixed consolidation and complete consolidation were more common in the laboratory-confirmed (70/161 [43%]) and clinically-diagnosed (153/322 [48%]) pregnant groups than 37/131 (28%) in the non-pregnant adults (P = 0.007, P < 0.001). GGO with reticulation was less common in 9/161 (6%) and 16/322 (5%) lesions for the two pregnant groups than 24/131 (18%) for the non-pregnant adults (P = 0.001, P < 0.001). The pulmonary involvement in children with COVID-19 was mild with a focal GGO or consolidation. Twenty-three patients underwent follow-up CT, revealing progression in 9/13 (69%) at 3 days whereas improvement in 8/10 (80%) at 6-9 days after initial CT scans.

#### Interpretation

Atypical clinical findings of pregnant women with COVID-19 could increase the difficulty in initial identification. Consolidation was more common in the pregnant groups. The clinically-diagnosed cases were vulnerable to more pulmonary involvement. CT was the modality of choice for early detection, severity assessment, and timely therapeutic effects evaluation for the cases with epidemic and clinical features of COVID-19 with or without laboratory confirmation. The exposure history and clinical symptoms were more helpful for screening in children versus chest CT. (Author)

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#### 20200519-22\*

**Perinatal aspects on the covid-19 pandemic: a practical resource for perinatal-neonatal specialists.** Mimouni F, Lakshminrusimha S, Pearlman SA, et al (2020), Journal of Perinatology vol 40, no 5, May 2020, pp 820-826

**Full URL:** <https://doi.org/10.1038/s41372-020-0665-6>

#### Background

Little is known about the perinatal aspects of COVID-19.

#### Objective

To summarize available evidence and provide perinatologists/neonatologists with tools for managing their patients.

#### Methods

Analysis of available literature on COVID-19 using Medline and Google scholar.

#### Results

From scant data: vertical transmission from maternal infection during the third trimester probably does not occur or likely it occurs very rarely. Consequences of COVID-19 infection among women during early pregnancy remain unknown. We cannot conclude if pregnancy is a risk factor for more severe disease in women with COVID-19. Little is known about disease severity in neonates, and from very few samples, the presence of SARS-CoV-2 has not been documented in human milk. Links to websites of organizations with updated COVID-19 information are provided. Infographics summarize an approach to the pregnant woman or neonate with suspected or confirmed COVID-19.

#### Conclusions

As the pandemic continues, more data will be available that could lead to changes in current knowledge and recommendations. (Author)

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#### 20200519-14\*

**Evidence of a significant secretory-IgA-dominant SARS-CoV-2 immune response in human milk following recovery from COVID-19.** Fox A, Marino J, Amanat F, et al (2020), MedRxiv 8 May 2020, online

**Full URL:** <https://doi.org/10.1101/2020.05.04.20089995>

[This article is a preprint and has not been peer-reviewed. It reports new medical research that has yet to be evaluated and so should not be used to guide clinical practice]

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In this preliminary report, 15 milk samples obtained from donors previously-infected with SARS-CoV-2 as well as 10 negative control samples obtained prior to December 2019 were tested for reactivity to the Receptor Binding Domain (RBD) of the SARS-CoV-2 Spike protein by ELISAs measuring IgA, IgG, IgM, and secretory Ab. Eighty percent of samples obtained post-COVID-19 exhibited IgA reactivity, and all these samples were also positive for secretory Ab reactivity, suggesting the IgA is predominantly sIgA. COVID-19 group mean OD values of undiluted milk were significantly greater for IgA ( $p < 0.0001$ ), secretory-type Abs ( $p < 0.0001$ ), and IgG ( $p = 0.017$ ), but not for IgM, compared to pre-pandemic group mean values. Overall, these data indicate that there is strong sIgA-dominant SARS-CoV-2 immune response in human milk after infection in the majority of individuals, and that a comprehensive study of this response is highly warranted. (Author, edited)

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#### 20200518-11\*

**Antibodies in Infants Born to Mothers With COVID-19 Pneumonia.** Zeng H, Xu C, Fan J, et al (2020), JAMA (Journal of the American Medical Association) vol 323, no 18, 12 May 2020, pp 1848-1849

**Full URL:** <https://doi.org/10.1001/jama.2020.4861>

This study describes results of IgM and IgG antibody testing from throat swabs of newborns born to mothers with COVID-19 pneumonia. (Author)

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#### 20200518-10\*

**Possible Vertical Transmission of SARS-CoV-2 From an Infected Mother to Her Newborn.** Dong L, Tian J, He S, et al (2020), JAMA (Journal of the American Medical Association) vol 323, no 18, 12 May 2020, pp 1846-1848

**Full URL:** <https://doi.org/10.1001/jama.2020.4621>

This case report describes birth of an infant with elevated anti-SARS-CoV-2 IgM antibodies and cytokine levels to a mother with polymerase chain reaction-confirmed coronavirus disease 2019 (COVID-19) despite no physical contact. (Author)

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#### 20200515-8\*

**Early estimates of the indirect effects of the COVID-19 pandemic on maternal and child mortality in low-income and middle-income countries: a modelling study.** Robertson T, Carter ED, Chou VB, et al (2020), The Lancet Global Health vol 8, no 7, July 2020, pp E901-E908

**Full URL:** [https://doi.org/10.1016/S2214-109X\(20\)30229-1](https://doi.org/10.1016/S2214-109X(20)30229-1)

##### Background

While the COVID-19 pandemic will increase mortality due to the virus, it is also likely to increase mortality indirectly. In this study, we estimate the additional maternal and under-5 child deaths resulting from the potential disruption of health systems and decreased access to food.

##### Methods

We modelled three scenarios in which the coverage of essential maternal and child health interventions is reduced by 9.8-51.9% and the prevalence of wasting is increased by 10-50%. Although our scenarios are hypothetical, we sought to reflect real-world possibilities, given emerging reports of the supply-side and demand-side effects of the pandemic. We used the Lives Saved Tool to estimate the additional maternal and under-5 child deaths under each scenario, in 118 low-income and middle-income countries. We estimated additional deaths for a single month and extrapolated for 3 months, 6 months, and 12 months.

##### Findings

Our least severe scenario (coverage reductions of 9.8-18.5% and wasting increase of 10%) over 6 months would result in 253 500 additional child deaths and 12 200 additional maternal deaths. Our most severe scenario (coverage reductions of 39.3-51.9% and wasting increase of 50%) over 6 months would result in 1 157 000 additional child deaths and 56 700 additional maternal deaths. These additional deaths would represent an increase of 9.8-44.7% in under-5 child deaths per month, and an 8.3-38.6% increase in maternal deaths per month, across the 118 countries. Across our three scenarios, the reduced coverage of four childbirth interventions (parenteral administration of uterotronics,

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antibiotics, and anticonvulsants, and clean birth environments) would account for approximately 60% of additional maternal deaths. The increase in wasting prevalence would account for 18-23% of additional child deaths and reduced coverage of antibiotics for pneumonia and neonatal sepsis and of oral rehydration solution for diarrhoea would together account for around 41% of additional child deaths.

#### Interpretation

Our estimates are based on tentative assumptions and represent a wide range of outcomes. Nonetheless, they show that, if routine health care is disrupted and access to food is decreased (as a result of unavoidable shocks, health system collapse, or intentional choices made in responding to the pandemic), the increase in child and maternal deaths will be devastating. We hope these numbers add context as policy makers establish guidelines and allocate resources in the days and months to come.

#### Funding

Bill & Melinda Gates Foundation, Global Affairs Canada. (Author)

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20200515-3\*

**Clinical Characteristics and Outcomes of Hospitalized and Critically Ill Children and Adolescents with Coronavirus Disease 2019 (COVID-19) at a Tertiary Care Medical Center in New York City.** Chao JY, Derespina KM, Herold BC, et al (2020), The Journal of Pediatrics vol 223, August 2020, pp 14-19.e2

**Full URL:** <https://doi.org/10.1016/j.jpeds.2020.05.006>

#### Objective

To describe the clinical profiles and risk factors for critical illness in hospitalized children and adolescents with COVID-19.

#### Study design

Children 1 month to 21 years with COVID-19 from a single tertiary care children's hospital between March 15-April 13, 2020 were included. Demographic and clinical data were collected.

#### Results

67 children tested positive for COVID-19; 21 (31.3%) were managed as outpatients. Of 46 admitted patients, 33 (72%) were admitted to the general pediatric medical unit and 13 (28%) to the pediatric intensive care unit (PICU). Obesity and asthma were highly prevalent but not significantly associated with PICU admission ( $p=0.99$ ). Admission to the PICU was significantly associated with higher C-reactive protein, procalcitonin, and pro-B type natriuretic peptide levels and platelet counts ( $p<0.05$  for all). Patients in the PICU were more likely to require high-flow nasal cannula ( $p=0.0001$ ) and were more likely to have received Remdesivir through compassionate release ( $p<0.05$ ). Severe sepsis and septic shock syndromes were observed in 7 (53.8%) PICU patients. Acute respiratory distress syndrome (ARDS) was observed in 10 (77%) PICU patients, 6 of whom (46.2%) required invasive mechanical ventilation for a median of 9 days. Of the 13 patients in the PICU, 8 (61.5%) were discharged home, and 4 (30.7%) patients remain hospitalized on ventilatory support at day 14. One patient died after withdrawal of life-sustaining therapy because of metastatic cancer.

#### Conclusions

We describe a higher than previously recognized rate of severe disease requiring PICU admission in pediatric patients admitted to the hospital with COVID-19.

The first reports of novel coronavirus disease 2019 (COVID-19) noted the infrequency of disease in children with one of the earliest studies including only 9 children under 14 years of age among 1,011 total patients (0.89%) (1,2). Since then, multiple reports have described children affected by COVID-19 with varying degrees of severity. (3, 4, 5)

Epidemiologic studies have consistently demonstrated that children are at lower risk of developing severe symptoms or critical illness compared with adults. (5,6) In a study of 2,143 pediatric patients in China with confirmed ( $n=731$ ) or suspected ( $n=1412$ ) COVID-19, over one-half had only mild illness, and  $<1\%$  had severe or critical illness (5). In another study from China describing 36 children, no severe or critically ill case was observed. (6) The only study to describe children requiring admission to a pediatric intensive care unit (PICU) was a study from Spain of 365 children tested for COVID-19. (7) The authors found that 41 (11%) of children tested had virus detected; 25/41 (61%) required hospitalization, and 4/41 (16%) were admitted to the PICU. Details of clinical characteristics were not described.

Overall, the incidence of critical illness in children with COVID-19 is not well known, with limited data on possible

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associated risk factors. The objectives of this study were (1) to describe the clinical profile of critically ill children with SARS-CoV-2 infection admitted to our tertiary care facility, and (2) to study the risk factors associated with critical illness. (Author)

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#### 20200515-2\*

**Delivery Room Preparedness and Early Neonatal Outcomes During COVID19 Pandemic in New York City.** Perlman J, Oxford C, Chang C, et al (2020), Pediatrics vol 146, no 2, August 2020, e20201567

**Full URL:** <https://doi.org/10.1542/peds.2020-1567>

Since the initial report of a novel Coronavirus SARS-CoV-2 in Wuhan in December 2019 there has been widespread dissemination of disease worldwide. The impact on the neonatal population has been reported almost exclusively from China. The study goal is to characterize for the first time in the United States, the delivery room (DR) management and early course of infants born to COVID19 positive mothers, during three weeks at the peak of the pandemic in NYC, and to describe the challenges and approaches developed to meet these excessive needs. (Author)

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#### 20200515-13\*

**COVID-19 in a 26-week preterm neonate.** Piersigilli F, Carkeek K, Hocq C, et al (2020), The Lancet Child & Adolescent Health vol 4, no 6, June 2020, pp 476-478

**Full URL:** [https://doi.org/10.1016/S2352-4642\(20\)30140-1](https://doi.org/10.1016/S2352-4642(20)30140-1)

Reports the case of an extremely preterm infant with COVID-19. (MB)

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#### 20200515-12\*

**Maintaining safety and service provision in human milk banking: a call to action in response to the COVID-19 pandemic.**

Shenker N on behalf of the Virtual Collaborative Network of Human Milk Banks and Associations (2020), The Lancet Child & Adolescent Health vol 4, no 7, July 2020, pp 484-485

**Full URL:** [https://doi.org/10.1016/S2352-4642\(20\)30134-6](https://doi.org/10.1016/S2352-4642(20)30134-6)

Calls for policy makers to ensure that neonatal nutrition is an essential focus during emergencies, for increased funding into research to optimise human milk banking and for investment in innovation across all aspects of milk banking systems during the COVID-19 pandemic. (MB)

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#### 20200515-1\*

**Caring for Newborns Born to Mothers with COVID-19: More Questions than Answers.** Gupta M, Zupancic JAF, Pursley DM (2020), Pediatrics vol 146, no 2, August 2020, e2020001842

**Full URL:** <https://doi.org/10.1542/peds.2020-001842>

Comments on research [1] into outcomes for 31 newborns born to mothers with COVID-19 over a 3-week period at their center in New York City. 1. Perlman J et al. Delivery room preparedness and early neonatal outcomes during COVID-19 pandemic in New York City. Pediatrics. 2020;146(2):e20201567 (MB)

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#### 20200514-9\*

**Is there evidence of intra-uterine vertical transmission potential of COVID-19 infection in samples tested by quantitative RT-PCR?** Cheruiyot I, Henry BM, Lippi G (2020), European Journal of Obstetrics & Gynecology and Reproductive Biology vol 249, June 2020, pp 100-101

**Full URL:** <https://doi.org/10.1016/j.ejogrb.2020.04.034>

Systematic review of COVID-19 in pregnant women and the risk of intrauterine vertical transmission. The findings suggest that there is currently no evidence of mother-to-child transmission in the third trimester. The potential of transmission in the first and second trimesters is still unknown. (LDO)

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#### 20200514-8\*

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**Oligohydramnion in COVID19.** Aliji N, Aliu F (2020), European Journal of Obstetrics & Gynecology and Reproductive Biology vol 249, June 2020, p 102

**Full URL:** <https://doi.org/10.1016/j.ejogrb.2020.04.047>

Discusses the case of a 27-year-old woman at 34 weeks' gestation who presented with oligohydramnios and symptoms of COVID-19. The patient underwent a caesarean section due to fetal distress. The mother later tested positive and the premature infant tested negative for the virus. (LDO)

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#### 20200514-7\*

**Obstetric network reorganization during the COVID-19 pandemic: Suggestions from an Italian regional model.** Giannubilo SR, Giannella L, Carpinì GD, et al (2020), European Journal of Obstetrics & Gynecology and Reproductive Biology vol 249, June 2020, pp 103-105

**Full URL:** <https://doi.org/10.1016/j.ejogrb.2020.04.062>

Discusses the obstetric network model used in Italy during the COVID-19 outbreak. The model includes separate hospital entrances and exits, local protocols for the triage of pregnant women with symptoms, single occupancy rooms, the use of personal protective equipment, restricted numbers of visitors, surgical masks during breastfeeding, the swabbing of all neonates born to positive or high suspicion mothers, and the discharge of asymptomatic women two days after delivery. (LDO)

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#### 20200514-65\*

**Coronavirus disease 2019 in pregnant women: A report based on 116 cases.** Yan J, Guo J, Fan C, et al (2020), American Journal of Obstetrics & Gynecology (AJOG) vol 223, no 1, July 2020, pp 111.e1-111.e14

**Full URL:** <https://doi.org/10.1016/j.ajog.2020.04.014>

##### Background

The coronavirus disease 2019 (COVID-19), caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), is a global public health emergency. Data on the effect of COVID-19 in pregnancy are limited to small case series.

##### Objectives

To evaluate the clinical characteristics and outcomes in pregnancy and the vertical transmission potential of SARS-CoV-2 infection.

##### Study Design

Clinical records were retrospectively reviewed for 116 pregnant women with COVID-19 pneumonia from 25 hospitals in China between January 20 and March 24, 2020. Evidence of vertical transmission was assessed by testing for SARS-CoV-2 in amniotic fluid, cord blood, and neonatal pharyngeal swab samples.

##### Results

The median gestational age on admission was 38+0 (IQR 36+0-39+1) weeks. The most common symptoms were fever (50.9%, 59/116) and cough (28.4%, 33/116); 23.3% (27/116) patients presented without symptoms. Abnormal radiologic findings were found in 96.3% (104/108) of cases. There were eight cases (6.9%, 8/116) of severe pneumonia but no maternal deaths. One of eight patients (1/8) that presented in the first- and early-second-trimester had a missed spontaneous abortion. Twenty-one of 99 patients (21.2%, 21/99) that had delivered had preterm birth, including six with preterm premature rupture of membranes. The rate of spontaneous preterm birth before 37 weeks was 6.1% (6/99). There was one case of severe neonatal asphyxia that resulted in neonatal death. Eighty-six of the 100 neonates that had testing for SARS-CoV-2 had negative results, of these ten neonates had paired amniotic fluid and cord blood samples that were tested negative for SARS-CoV-2.

##### Conclusions

SARS-CoV-2 infection during pregnancy is not associated with an increased risk of spontaneous abortion and spontaneous preterm birth. There is no evidence of vertical transmission of SARS-CoV-2 infection when the infection manifests during the third-trimester of pregnancy. (Author)

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#### 20200514-60\*

**Evidence for and against vertical transmission for severe acute respiratory syndrome coronavirus 2.** Lamouroux A,

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Attie-Bitach T, Martinovic J, et al (2020), American Journal of Obstetrics & Gynecology (AJOG) vol 223, no 1, July 2020, pp 91.e1-91.e4

Full URL: <https://doi.org/10.1016/j.ajog.2020.04.039>

COVID-19 can severely affect pregnant women Furthermore, issues regarding vertical transmission of severe acute respiratory syndrome coronavirus 2 are emerging. In patients and neonates who are showing symptoms of coronavirus disease 2019, real-time polymerase chain reaction of nasal and throat swabs, sputum, and feces is performed to detect the presence of severe acute respiratory syndrome coronavirus 2. In addition, real-time polymerase chain reaction of vaginal swabs, amniotic fluid, placenta, cord blood, neonatal blood, or breast milk for the detection of severe acute respiratory syndrome coronavirus 2 did not show substantial results. Viremia was present in 1% of adult patients who were showing symptoms of coronavirus disease 2019. Here, we reviewed 12 articles published between Feb. 10, 2020, and April 4, 2020, that reported on 68 deliveries and 71 neonates with maternal infection in the third trimester of pregnancy. To determine whether infection occurred congenitally or perinatally, perinatal exposure, mode of delivery, and time interval from delivery to the diagnosis of neonatal infection were considered. Neonates with severe acute respiratory syndrome coronavirus 2 infection are usually asymptomatic. In 4 cases, a diagnostic test for severe acute respiratory syndrome coronavirus 2 infection was performed within 48 hours of life. Furthermore, detection rates of real-time polymerase chain reaction and the interpretation of immunoglobulin M and immunoglobulin G antibodies levels in cord and neonatal blood were discussed in relation with the immaturity of the fetal and neonatal immune system. (Author)

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#### 20200514-6\*

**Re: Novel Coronavirus COVID-19 in late pregnancy: Outcomes of first nine cases in an inner city London hospital.** Govind A, Essien S, Kartikeyan A, et al (2020), European Journal of Obstetrics & Gynecology and Reproductive Biology vol 251, August 2020, pp 272-274

Full URL: <https://doi.org/10.1016/j.ejogrb.2020.05.004>

Discusses the cases of nine mothers with COVID-19 who delivered at an inner-city London hospital. Three women delivered by emergency caesarean section, six women underwent elective caesarean section and one woman delivered vaginally. Only one of the nine infants tested positive for the virus. (LDO)

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#### 20200514-5\*

**COVID-19 during pregnancy: Potential risk for neurodevelopmental disorders in neonates?** Martins-Filho PR, Tanajura DM, Santos Jr HP, et al (2020), European Journal of Obstetrics & Gynecology and Reproductive Biology vol 250, July 2020, pp 255-256

Full URL: <https://doi.org/10.1016/j.ejogrb.2020.05.015>

The authors hypothesise that cytokine storms and hyperinflammation found in pregnant women with SARS-CoV-2 may increase the risk for neurodevelopmental disorders in neonates. (LDO)

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#### 20200514-36\*

**COVID-19 and Infant Formula Feeding: Frequently Asked Questions.** Perinatal Services BC (2020), Perinatal Services BC 14 May 2020

Full URL: <http://www.perinatalservicesbc.ca/Documents/Resources/Alerts/FAQ-Covid19-Formula-Feeding.pdf>

This handout is intended to provide families who are using infant formula, or are thinking about doing so, with information on how to safely feed their baby during the COVID-19 pandemic. (Author)

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#### 20200514-2\*

**A Case Series of the 2019 Novel Coronavirus (SARS-CoV-2) in Three Febrile Infants in New York.** Feld L, Belfer J, Kabra R, et al (2020), Pediatrics 13 May 2020, online

No abstract available

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#### 20200514-12\*

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This handout is intended to provide families with information about breastfeeding their baby / young child during the COVID-19 pandemic. (Author)

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#### 20200514-10\*

**Coronavirus: Children affected by rare Kawasaki-like disease.** Anon (2020), BBC News 14 May 2020

**Full URL:** <https://www.bbc.co.uk/news/health-52648557>

Reports on a rare inflammatory disease linked to coronavirus among children in the United Kingdom and United States of America. Symptoms include a rash, swollen glands in the neck and dry and cracked lips. (LDO)

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#### 20200514-1\*

**Unfavorable outcomes in pregnant patients with COVID-19 outside Wuhan, China.** Huang W, Zhao Z, He Z, et al (2020), Journal of Infection vol 81, no 2, August 2020, E99-E101

**Full URL:** <https://doi.org/10.1016/j.jinf.2020.05.014>

Correspondence reporting on 8 cases of SARS-CoV-2 infection during late pregnancy that resulted in severe maternal and neonatal complications. (MB)

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#### 20200513-4\*

**Proposal for prevention and control of the 2019 novel coronavirus disease in newborn infants.** Li F, Feng ZC, Shi Y, et al (2020), Archives of Disease in Childhood: Fetal and Neonatal Edition vol 105, no 6, November 2020, pp 683-684

**Full URL:** <http://dx.doi.org/10.1136/archdischild-2020-318996>

Proposal for the prevention and control of COVID-19 in newborn infants. Discusses the preparation of the delivery or operating room, clinical manifestations of infected neonates, discharge requirements, the use of personal protective equipment and psychological support for parents and medical staff. This proposal will be continuously modified based on accumulated clinical evidence. (LDO)

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#### 20200513-30\*

**Detection of severe acute respiratory syndrome coronavirus 2 in placental and fetal membrane samples.** Penfield CA, Brubaker SG, Limaye MA, et al (2020), American Journal of Obstetrics & Gynecology MFM vol 2, no 3, suppl, August 2020, 100133

**Full URL:** <https://doi.org/10.1016/j.ajogmf.2020.100133>

Study on the presence of SARS-CoV-2 in placental and fetal membrane samples in a series of COVID-19 positive mothers. Three out of 11 swabs tested positive for SARS-CoV-2. None of the infants tested positive or displayed symptoms of COVID-19 infection. This is the first study to demonstrate the presence of SARS-CoV-2 RNA in placental or membrane samples. (LDO)

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#### 20200513-16\*

**Safe delivery for pregnancies affected by COVID-19.** Qi H, Luo X, Zheng Y, et al (2020), BJOG: An International Journal of Obstetrics and Gynaecology vol 127, no 8, July 2020, pp 927-929

Discusses existing guidelines on the safe delivery of infants in pregnancies affected by COVID-19. Includes the timing of delivery, requirements for caesarean section, prevention of infection in the delivery room, anaesthesia and monitoring the neonate. (LDO)

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#### 20200512-3\*

**Hyperinflammatory shock in children during COVID-19 pandemic.** Riphagen S, Gomez X, Gonzalez-Martinez C, et al (2020), The Lancet vol 395, no 10237, 23 May 2020, pp 1607-1608

**Full URL:** [https://doi.org/10.1016/S0140-6736\(20\)31094-1](https://doi.org/10.1016/S0140-6736(20)31094-1)

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Describes an unprecedented cluster of eight children with hyperinflammatory shock, which the authors suggest represent a new phenomenon affecting previously asymptomatic children with SARS-CoV-2 infection manifesting as a hyperinflammatory syndrome with multiorgan involvement similar to Kawasaki disease shock syndrome. (MB)

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#### 20200512-20\*

**The importance of continuing breastfeeding during COVID-19: in support to the WHO statement on breastfeeding during the pandemic.** Williams J, Namazova-Baranova L, Weber M, et al (2020), The Journal of Pediatrics vol 223, August 2020, pp 234-236

Full URL: <https://doi.org/10.1016/j.jpeds.2020.05.009>

Aims to provide guidance on breastfeeding and related safety measures during COVID-19, particularly in situations where a mother has or may have COVID-19. (MB)

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#### 20200512-11\*

**Characteristics and outcomes of pregnant women admitted to hospital with confirmed SARS-CoV-2 infection in UK: national population based cohort study.** Knight M, Bunch K, Vousden N, et al on behalf of the UK Obstetric Surveillance System SARS-CoV-2 Infection in Pregnancy Collaborative Group (2020), BMJ vol 369, no 8251, 27 June 2020, m2107

Full URL: <https://doi.org/10.1136/bmj.m2107>

Objectives To describe a national cohort of pregnant women admitted to hospital with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection in the UK, identify factors associated with infection, and describe outcomes, including transmission of infection, for mothers and infants.

Design Prospective national population based cohort study using the UK Obstetric Surveillance System (UKOSS).

Setting All 194 obstetric units in the UK.

Participants 427 pregnant women admitted to hospital with confirmed SARS-CoV-2 infection between 1 March 2020 and 14 April 2020.

Main outcome measures Incidence of maternal hospital admission and infant infection. Rates of maternal death, level 3 critical care unit admission, fetal loss, caesarean birth, preterm birth, stillbirth, early neonatal death, and neonatal unit admission.

Results The estimated incidence of admission to hospital with confirmed SARS-CoV-2 infection in pregnancy was 4.9 (95% confidence interval 4.5 to 5.4) per 1000 maternities. 233 (56%) pregnant women admitted to hospital with SARS-CoV-2 infection in pregnancy were from black or other ethnic minority groups, 281 (69%) were overweight or obese, 175 (41%) were aged 35 or over, and 145 (34%) had pre-existing comorbidities. 266 (62%) women gave birth or had a pregnancy loss; 196 (73%) gave birth at term. Forty one (10%) women admitted to hospital needed respiratory support, and five (1%) women died. Twelve (5%) of 265 infants tested positive for SARS-CoV-2 RNA, six of them within the first 12 hours after birth.

Conclusions Most pregnant women admitted to hospital with SARS-CoV-2 infection were in the late second or third trimester, supporting guidance for continued social distancing measures in later pregnancy. Most had good outcomes, and transmission of SARS-CoV-2 to infants was uncommon. The high proportion of women from black or minority ethnic groups admitted with infection needs urgent investigation and explanation.

Study registration ISRCTN 40092247. (Author)

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#### 20200511-55\*

**Coronavirus Disease 2019 (COVID-19) and pregnancy: what obstetricians need to know.** Rasmussen SA, Smulian JC, Lednický JA, et al (2020), American Journal of Obstetrics & Gynecology (AJOG) vol 222, no 5, May 2020, pp 415-426

Full URL: <https://doi.org/10.1016/j.ajog.2020.02.017>

This expert review is aimed at practising obstetricians and highlights current research on COVID-19, SARS and MERS during pregnancy. The review includes information on infection control, diagnostic testing, in utero transmission and breastfeeding. (LDO)

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20200507-9\*

**Coronavirus: Concerns for wellbeing of babies born in lockdown.** Richardson H (2020), BBC News 7 May 2020

Full URL: <https://www.bbc.co.uk/news/education-52560388>

Concerns for the wellbeing of babies born in lockdown are being raised, as parents struggle to access regular support services. (Author)

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20200506-8\*

**Laboratory Findings of COVID-19 Infection are Conflicting in Different Age Groups and Pregnant Women: A Literature Review.** Vakili S, Savardashtaki A, Jamalnia S, et al (2020), Archives of Medical Research vol 51, no 7, October 2020, pp 603-607

Coronavirus disease 2019 (COVID-19), a new type and rapidly spread viral pneumonia, is now producing an outbreak of pandemic proportions. The clinical features and laboratory results of different age groups are different due to the general susceptibility of the disease. The laboratory findings of COVID-19 in pregnant women are also conflicting. Para-clinical investigations including laboratory tests and radiologic findings play an important role in early diagnosis and treatment monitoring of COVID-19. The majority of previous reports on the COVID-19 laboratory results were based on data from the general population and limited information is available based on age difference and pregnancy status. This review aimed to describe the COVID-19 laboratory findings in neonates, children, adults, elderly and pregnant women altogether for the first time. The most attracting and reliable markers of COVID-19 in patients were: normal C-reactive protein (CRP) and very different and conflicting laboratory results regardless of clinical symptoms in neonates, normal or temporary elevated CRP, conflicting WBC count results and procalcitonin elevation in children, lymphopenia and elevated lactate dehydrogenase (LDH) in adult patients, lymphopenia and elevated CRP and LDH in the elderly people, leukocytosis and elevated neutrophil ratio in pregnant women. (Author)

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20200506-26\*

**Classification system and case definition for SARS-CoV-2 infection in pregnant women, fetuses, and neonates.** Shah PS, Diambomba Y, Acharya G, et al (2020), Acta Obstetrica et Gynecologica Scandinavica vol 99, no 5, May 2020, pp 565-568

The authors develop a classification system and case definition for maternal-fetal-neonatal SARS-CoV-2 infections. The classification system includes five categories for the likelihood of infection: (a) confirmed, (b) probable, (c) possible, (d) unlikely, and (e) not infected. (LDO)

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20200506-1\*

**The curious case of COVID-19 in children.** Gupta S, Malhotra N, Gupta N, et al (2020), The Journal of Pediatrics vol 222, July 2020, pp 258-259

Full URL: <https://doi.org/10.1016/j.jpeds.2020.04.062>

Correspondence presenting data on the epidemiological differences in childhood cases of three coronavirus diseases (SARS, MERS and COVID-19) and the H1N1 influenza pandemic (2009). (MB)

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20200505-9\*

**Women's Rights in Childbirth Must be Upheld During the Coronavirus Pandemic.** International Confederation of Midwives (2020), The Hague, The Netherlands: International Confederation of Midwives 2020, 3 pages

Full URL: <https://www.internationalmidwives.org/assets/files/news-files/2020/03/icm-statement-upholding-womens-rights-during-covid19-5e83ae2ebfe59.pdf>

Guidance for midwives on how to uphold the rights of women and their newborns during the COVID-19 pandemic. Includes recommendations on consent, birth partners, breastfeeding and reproductive health care. (LDO)

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20200505-4\*

**Atypical presentation of COVID-19 in young infants.** Nathan N, Prevost B, Corvol H, et al (2020), The Lancet vol 395, no 10235, 9 May 2020, p 1481

Full URL: [https://doi.org/10.1016/S0140-6736\(20\)30980-6](https://doi.org/10.1016/S0140-6736(20)30980-6)

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Describes the cases of five infants diagnosed with COVID-19 who were admitted to hospital with fever but no respiratory symptoms. (MB)

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#### 20200505-2\*

**Interim Guidance for Basic and Advanced Life Support in Children and Neonates With Suspected or Confirmed COVID-19.**

Topjian A, Aziz K, Kamath-Rayne BD, et al (2020), Pediatrics 4 May 2020, online

**Full URL:** <https://doi.org/10.1542/peds.2020-1405>

Interim guidance from the American Heart Association (AHA), produced in collaboration with the American Academy of Pediatrics, American Association for Respiratory Care, American College of Emergency Physicians, The Society of Critical Care Anesthesiologists, and American Society of Anesthesiologists, and with the support of the American Association of Critical Care Nurses and National EMS Physicians, for the treatment of victims of cardiac arrest with suspected or confirmed COVID-19. (MB)

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#### 20200505-1\*

**Early Neonatal SARS-CoV-2 Infection Manifesting With Hypoxemia Requiring Respiratory Support.** Sinelli MT, Paterlini G,

Citterio M, et al (2020), Pediatrics 4 May 2020, online

**Full URL:** <https://doi.org/10.1542/peds.2020-1121>

We describe a case of neonatal SARS-CoV-2 infection, diagnosed 3 days after birth, and manifesting with silent hypoxemia, requiring respiratory support. (Author)

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#### 20200504-2\*

**Coronavirus: Parents urged to keep up child vaccinations.** Kleinman Z (2020), BBC News 2 May 2020

**Full URL:** <https://www.bbc.co.uk/news/health-52499701>

NHS England says it is still offering essential vaccinations and is appealing to parents not to miss appointments for their children during the pandemic. (Author)

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#### 20200501-5\*

**Coronavirus: high-risk pregnancies could be missed due to pandemic, experts warn.** Cowburn A (2020), The Independent 1 May 2020

**Full URL:** <https://www.independent.co.uk/news/uk/politics/coronavirus-concerns-raised-highrisk-pregnancies-could-be-missed-due-to-pandemic-a9493856.html>

Reports that Gill Walton, CEO of the Royal College of Midwives, has warned of a potential rise in stillbirths and neonatal deaths because high-risk pregnancies may be missed owing to a reluctance among pregnant women to present themselves to maternity services during the current coronavirus pandemic..However, she added that technology has meant that follow-ups on women who missed scans and appointments has improved through virtual contact between women and midwives and maternity services. Her comments were made during a session of Westminster's health and social care committee. (JSM)

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#### 20200501-1\*

**Vaccine Update.** Public Health England (2020), London: PHE no 307, April 2020, pp 1-14

**Full URL:** [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/882560/PHE\\_11652\\_VU\\_307\\_April\\_2020.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/882560/PHE_11652_VU_307_April_2020.pdf)

A special edition of Vaccine Update to mark World Immunization Week (WIW), which this year runs from 26th-30th April, and is the World Health Organization's annual celebration of immunisation, best practice, new advances and the work of immunisers, held with the aim of promoting the use of vaccines to protect people of all ages from disease, reflected in the name of this year's theme #VaccinesWork for All. In this, The International Year of the Nurse and Midwife, WHO and Public Health England acknowledge the crucial role played by nurses and midwives as advocates of vaccination throughout the life course. Includes sections on the delivery of immunisation services during the

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#### 20200430-3\*

**US NICUs and donor milk banks brace for COVID-19.** Furlow B (2020), The Lancet Child & Adolescent Health vol 4, no 5, May 2020, p 355

**Full URL:** [https://doi.org/10.1016/S2352-4642\(20\)30103-6](https://doi.org/10.1016/S2352-4642(20)30103-6)

Reports on preparations being made by neonatal intensive care units (NICUs) and donor human milk programmes across the United States to continue to provide services during the coronavirus disease 2019 (COVID-19) pandemic. (MB)

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#### 20200429-9\*

**Clinical management of severe acute respiratory infection (SARI) when COVID-19 disease is suspected. Interim guidance.**

World Health Organization (2020), Geneva: World Health Organization 13 March 2020

**Full URL:** <https://www.who.int/>

This is the second edition (version 1.2) of this document, which was originally adapted from Clinical management of severe acute respiratory infection when MERS-CoV infection is suspected (WHO, 2019). It is intended for clinicians involved in the care of adult, pregnant, and paediatric patients with or at risk for severe acute respiratory infection (SARI) when infection with the COVID-19 virus is suspected. Considerations for paediatric patients and pregnant women are highlighted throughout the text. It is not meant to replace clinical judgment or specialist consultation but rather to strengthen clinical management of these patients and to provide up-to-date guidance. Best practices for infection prevention and control (IPC), triage and optimized supportive care are included. (Author)

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#### 20200429-7\*

**Frequently asked questions: Breastfeeding and COVID-19 for health care workers.** World Health Organization (2020), Geneva: World Health Organization 28 April 2020

**Full URL:** [https://www.who.int/docs/default-source/maternal-health/faqs-breastfeeding-and-covid-19.pdf?sfvrsn=d839e6c0\\_1](https://www.who.int/docs/default-source/maternal-health/faqs-breastfeeding-and-covid-19.pdf?sfvrsn=d839e6c0_1)

This FAQ complements the WHO interim guidance: Clinical management of severe acute respiratory infection (SARI) when COVID-19 disease is suspected (13 March 2020

[www.who.int/publications-detail/clinical-management-of-severe-acute-respiratory-infection-when-novel-coronavirus-\(ncov\)-infection-is-suspected](http://www.who.int/publications-detail/clinical-management-of-severe-acute-respiratory-infection-when-novel-coronavirus-(ncov)-infection-is-suspected)) and provides responses to questions that have arisen about the recommendations. The interim guidance and FAQ reflect: i. the available evidence regarding transmission risks of COVID-19 through breastmilk; ii. the protective effects of breastfeeding and skin-to-skin contact, and, iii. the harmful effects of inappropriate use of infant formula milk. The FAQ also draws on other WHO recommendations on Infant and Young Child Feeding and the Interagency Working Group Operational Guidance on Infant and Young Child Feeding in Emergencies. A decision tree shows how these recommendations may be implemented by health workers in maternity services and community settings, as part of daily work with mothers and families. [www.who.int/news-room/q-a-detail/q-a-on-covid-19-and-breastfeeding](http://www.who.int/news-room/q-a-detail/q-a-on-covid-19-and-breastfeeding). (Author)

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#### 20200429-5\*

**A call for action for COVID-19 surveillance and research during pregnancy.** Buekens P, Alger J, Bréart G, et al (2020), The Lancet Global Health 22 April 2020, online

**Full URL:** [https://doi.org/10.1016/S2214-109X\(20\)30206-0](https://doi.org/10.1016/S2214-109X(20)30206-0)

Calls for cooperation between countries in order to address the gaps in knowledge about COVID-19 and its effect on pregnant women and their babies. (MB)

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#### 20200429-37\*

**Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) Vertical Transmission in Neonates Born to Mothers With Coronavirus Disease 2019 (COVID-19) Pneumonia.** Hu X, Gao J, Luo X, et al (2020), Obstetrics & Gynecology vol 136, no 1,

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#### 20200428-26\*

**Coronavirus alert: Rare syndrome seen in UK children.** Roberts M (2020), BBC News 27 April 2020

Full URL: <https://www.bbc.co.uk/news/health-52439005>

Reports on severe and unusual symptoms in children that may be linked to COVID-19. Features include a high temperature, low blood pressure, inflammation of the heart and abnormal blood test results. 20 cases in England have been noted by clinicians so far. (LDO)

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#### 20200428-2\*

**SARS-CoV-2 Infection in Children.** Lu X, Zhang L, Du H, et al (2020), The New England Journal of Medicine vol 382, no 17, 23 April 2020, pp 1663-1665

Full URL: <http://dx.doi.org/10.1056/NEJMc2005073>

Correspondence describing a spectrum of illness in 1391 children with SARS-CoV-2 infection. (MB)

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#### 20200427-7\*

**Exclusive: National alert as 'coronavirus-related condition may be emerging in children'.** West D (2020), Health Service Journal 27 April 2020, online

Full URL: <https://www.hsj.co.uk/>

A serious coronavirus-related syndrome may be emerging in the UK, according to an 'urgent alert' issued to doctors, following a rise in cases in the last two to three weeks, HSJ has learned. (Author)

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#### 20200427-4\*

**Managing COVID-19-Positive Maternal-Infant Dyads: An Italian Experience.** Salvatori G, De Rose DU, Concato C, et al (2020), Breastfeeding Medicine vol 15, no 5, May 2020, pp 347-348

Full URL: <https://doi.org/10.1089/bfm.2020.0095>

Describes the management and breastfeeding experience of 32 COVID-19 positive mothers and their newborns. (MB)

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#### 20200427-37\*

**Neurosurgery in an infant with COVID-19.** Carrabba G, Tariciotti L, Guez S, et al (2020), The Lancet vol 395, no 10234, 2 May 2020, p E76

Full URL: [https://doi.org/10.1016/S0140-6736\(20\)30927-2](https://doi.org/10.1016/S0140-6736(20)30927-2)

Case report of an 8-month-old baby with a complex hydrocephalus who had a shunt malfunction during the COVID-19 pandemic. (MB)

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#### 20200424-8\*

**Novel Coronavirus Infection in Hospitalized Infants Under 1 Year of Age in China.** Wei M, Yuan J, Liu Y, et al (2020), JAMA (Journal of the American Medical Association) vol 323, no 13, 7 April 2020, pp 1313-1314

Full URL: <https://doi.org/10.1001/jama.2020.2131>

This study characterizes the demographic, epidemiologic, and clinical characteristics of hospitalized infants diagnosed with coronavirus disease 2019 infection between December 8, 2019, and February 6, 2020, in China. (Author)

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#### 20200424-5\*

**Experience of Clinical Management for Pregnant Women and Newborns with Novel Coronavirus Pneumonia in Tongji Hospital, China..** Wang S, Zhou X, Lin X, et al (2020), Current Medical Science 26 March 2020, online

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**Full URL:** <https://link.springer.com/article/10.1007/s11596-020-2174-4>

Based on the New Diagnosis and Treatment Scheme for Novel Coronavirus Infected Pneumonia (Trial Edition 5), combined with our current clinical treatment experience, we recently proposed a revision of the first edition of 'Guidance for maternal and fetal management during pneumonia epidemics of novel coronavirus infection in the Wuhan Tongji Hospital'. This article focused on the issues of greatest concern of pregnant women including severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection diagnostic criteria, inspection precautions, drug treatment options, indications and methods of termination of pregnancy, postpartum fever, breastfeeding considerations, mode of mother-to-child transmission, neonatal isolation and advice on neonatal nursing, to provide valuable experience for better management of SARS-CoV-2 infection in pregnant women and newborns. (Author)

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#### 20200424-4\*

**International Perspectives Concerning Donor Milk Banking During the SARS-CoV-2 (COVID-19) Pandemic.** Marinelli KA (2020), Journal of Human Lactation vol 36, no 3, August 2020, pp 492-497

**Full URL:** <https://doi.org/10.1177/0890334420917661>

Reviews current information on donor milk banking during the current COVID-19 pandemic. (JSM)

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#### 20200424-3\*

**Safe Handling of Containers of Expressed Human Milk in all Settings During the SARS-CoV-2 (COVID-19) Pandemic.** Marinelli KA, Lawrence RM (2020), Journal of Human Lactation vol 36, no 3, August 2020, pp 498-501

**Full URL:** <https://doi.org/10.1177/0890334420919083>

##### Key Messages

With no evidence of virus in human milk, no guidance has been published concerning the disinfection of the outer surfaces of containers of expressed milk during the COVID-19 pandemic.

COVID-19 virus contaminates surfaces from respiratory droplet spread, persisting on some including plastic. Those expressing milk need to wear respiratory masks and practice effective pre-expression hand washing. Containers must be disinfected after milk expression with viricidal agents or appropriate bleach solutions before storage in milk banks, hospital wards, day care centers, or similar locations. (Author)

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#### 20200424-2\*

**Using the coronavirus pandemic as an opportunity to address the use of human milk and breastfeeding as lifesaving medical interventions.** Spatz DL (2020), JOGNN: Journal of Obstetric, Gynecologic and Neonatal Nursing vol 49, no 3, May 2020, pp 225-226

**Full URL:** [https://www.jognn.org/article/S0884-2175\(20\)30042-3/pdf](https://www.jognn.org/article/S0884-2175(20)30042-3/pdf)

Editorial aiming to provide guidance regarding breastfeeding and COVID-19 and stressing the importance of promoting and protecting the use of human milk and breastfeeding. (JSM)

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#### 20200424-1\*

**COVID-19 vaginal delivery - A case report.** Lowe B, Bopp B (2020), Australian and New Zealand Journal of Obstetrics and Gynaecology (ANZJOG) vol 60, no 3, June 2020, pp 465-466

The novel coronavirus termed SARS-CoV-2 is a major public health challenge. Many maternity units around the country are currently considering management protocols for these patients. We report a case from a tertiary Australian hospital describing an uncomplicated vaginal birth in a SARS-CoV-2 positive mother. To our knowledge this is also the first case described of a mother with COVID-19 not separated from her infant. Management provided supports the current Royal College of Obstetricians and Gynaecologists and World Health Organization guidelines suggesting that it is possible to consider rooming in post delivery for COVID-19 positive parents. Encouragement of breast feeding appears possible and safe when viral precautions are observed. (Author)

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#### 20200423-76\*

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**Baby Friendly Initiative Statement on infant feeding during the COVID-19 outbreak.** UNICEF UK Baby Friendly Initiative (2020), UNICEF UK Baby Friendly Initiative 17 March 2020. 2 pages

**Full URL:** <https://www.unicef.org.uk/babyfriendly/wp-content/uploads/sites/2/2020/03/Unicef-UK-Baby-Friendly-Initiative-statement-on-infant-feeding-during-the-Covid-19-outbreak-2.pdf>

The Unicef UK Baby Friendly Initiative has received a number of queries regarding best practice for infant feeding during the Covid-19 outbreak. We suggest that all practitioners follow latest updates from the UK governments and the World Health Organization (WHO) as these could change as more information becomes available. (Author)

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**20200423-75\***

**Milk for your baby during the coronavirus pandemic.** Joyce J (2020), Nottingham: La Leche League 26 March 2020

**Full URL:** <https://www.laleche.org.uk/milk-for-your-baby-during-the-coronavirus-pandemic/>

Gives information to parents on feeding their babies in the current COVID-19 pandemic using several different methods: exclusive formula feeding; partial breastfeeding; and exclusive breastfeeding. Addresses the issue of insufficient milk supply, which may be of concern. (JSM)

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**20200423-74\***

**Breastfeeding and Coronavirus Disease-2019. Ad interim indications of the Italian Society of Neonatology endorsed by the Union of European Neonatal & Perinatal Societies.** Davanzo R, Moro G, Sandri F, et al (2020), Maternal & Child Nutrition 3 April 2020

The recent COVID-19 pandemic has spread to Italy with heavy consequences on public health and economics. Besides the possible consequences of COVID-19 infection on a pregnant woman and the fetus, a major concern is related to the potential effect on neonatal outcome, the appropriate management of the mother-newborn dyad and finally the compatibility of maternal COVID-19 infection with breastfeeding. The Italian Society on Neonatology (SIN) after reviewing the limited scientific knowledge on the compatibility of breastfeeding in the COVID-19 mother and the available statements from Health Care Organizations, has issued the following indications that have been endorsed by the Union of European Neonatal & Perinatal Societies (UENPS). If a mother previously identified as COVID-19 positive or under investigation for COVID-19 is asymptomatic or paucisymptomatic at delivery, rooming-in is feasible and direct breastfeeding is advisable, under strict measures of infection control. On the contrary, when a mother with COVID-19 is too sick to care for the newborn, the neonate will be managed separately and fed fresh expressed breast milk, with no need to pasteurize it, as human milk is not believed to be a vehicle of COVID-19. We recognize that this guidance might be subject to change in the future when further knowledge will be acquired about the COVID-19 pandemic, the perinatal transmission of SARS-CoV-2 and clinical characteristics of cases of neonatal COVID-19. (Author)

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**20200423-73\***

**Update on coronavirus and breastfeeding.** The Breastfeeding Network (2020), The Breastfeeding Network 22 April 2020

**Full URL:** <https://www.breastfeedingnetwork.org.uk/coronavirus/>

The information about coronavirus and breastfeeding on this page is being checked regularly and will develop in response to guidelines and evidence. This page was last updated on 22nd April 2020.

Coronavirus 2019-nCoV or COVID-19 is a new respiratory illness that has not previously been seen in humans. The first coronavirus cases have been confirmed in the UK and the rising death toll worldwide is causing alarm and concern. This can be especially worrying for all parents with new babies and young children, including those who are worried about coronavirus and breastfeeding. (Author)

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**20200422-43\***

**SOGC Committee Opinion - COVID-19 in Pregnancy.** Elwood C, Boucoiran I, VanSchalkwyk J, et al (2020), JOGC [Journal of Obstetrics and Gynaecology Canada] 31 March 2020, online

**Full URL:** <https://doi.org/10.1016/j.jogc.2020.03.012>

Society of Obstetricians and Gynaecologists of Canada (SOGC) guidelines on COVID-19 in pregnancy. Includes

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recommendations on the antepartum, intrapartum and postpartum periods. Discusses appointments, protective equipment, fetal monitoring, caesarean delivery, skin-to-skin contact and breastfeeding. (LDO)

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#### 20200422-38\*

**In-Hospital Telehealth Supports Care for Neonatal Patients in Strict Isolation.** Umoren RA, Gray MM, Handley S, et al (2020), American Journal of Perinatology vol 37, no 8, June 2020, pp 857-860

**Full URL:** <https://doi.org/10.1055/s-0040-1709687>

The aim of this study is to determine the feasibility of 'in-hospital' inpatient telemedicine within a children's referral hospital to facilitate inpatient care activities such as interprofessional rounding and the provision of supportive services such as lactation consultations to pediatric patients in strict isolation. To test the feasibility of in-hospital video telemedicine, a dedicated telemedicine device was set up in the patient's room. This device and the accompanying Bluetooth stethoscope were used by the health care team located just outside the room for inpatient rounding and consultations from supportive services. Video telemedicine facilitated inpatient care and interactions with support services, reducing the number of health care providers with potential exposure to infection and decreasing personal protective equipment use. In the setting of strict isolation for highly infectious viral illness, telemedicine can be used for inpatient care activities such as interprofessional rounding and provision of supportive services. (Author)

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#### 20200422-37\*

**Neonatal Resuscitation and Postresuscitation Care of Infants Born to Mothers with Suspected or Confirmed SARS-CoV-2 Infection.** Chandrasekharan P, Vento M, Trevisanuto D, et al (2020), American Journal of Perinatology vol 37, no 8, June 2020, pp 813-824

**Full URL:** <https://doi.org/10.1055/s-0040-1709688>

The first case of novel coronavirus disease of 2019 (COVID-19) caused by severe acute respiratory syndrome-coronavirus 2 (SARS-CoV-2) was reported in November 2019. The rapid progression to a global pandemic of COVID-19 has had profound medical, social, and economic consequences. Pregnant women and newborns represent a vulnerable population. However, the precise impact of this novel virus on the fetus and neonate remains uncertain. Appropriate protection of health care workers and newly born infants during and after delivery by a COVID-19 mother is essential. There is some disagreement among expert organizations on an optimal approach based on resource availability, surge volume, and potential risk of transmission. The manuscript outlines the precautions and steps to be taken before, during, and after resuscitation of a newborn born to a COVID-19 mother, including three optional variations of current standards involving shared-decision making with parents for perinatal management, resuscitation of the newborn, disposition, nutrition, and postdischarge care. The availability of resources may also drive the application of these guidelines. More evidence and research are needed to assess the risk of vertical and horizontal transmission of SARS-CoV-2 and its impact on fetal and neonatal outcomes. (Author)

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#### 20200421-8\*

**Vitamin D, Covid-19 and Children.** Molloy EJ, Murphy N (2020), Irish Medical Journal vol 113, no 4, April 2020, P59

**Full URL:** <http://imj.ie/wp-content/uploads/2020/04/Vitamin-D-Covid-19-and-Children.pdf>

Discusses the link between vitamin D deficiency and respiratory infections in children. The authors make particular reference to the benefits of vitamin D supplementation in preterm infants. (LDO)

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#### 20200421-5\*

**COVID-19: How is Congress Addressing the Needs of Babies and Families?.** Zero to Three (2020), Zero to Three 30 March 2020

**Full URL:** <https://www.zerotothree.org/resources/3357-covid-19-how-is-congress-addressing-the-needs-of-babies-and-families>

In the past two weeks, United States Congress has considered two major funding packages to begin to address the spreading economic impact of COVID-19. H.R. 6201 the Families First Coronavirus Response Act (FFCRA) was signed

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into law on March 18, 2020 and H.R. 748 the Coronavirus Aid, Relief, and Economic Security Act (CARES) was signed by the president on March 27, 2020. This analysis from Zero to Three highlights components of the two packages that affect early care and learning, family economic needs, basic family needs, and community supports for families under stress. (Author, edited)

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#### 20200421-4\*

**Coronavirus (COVID-19) information.** Bliss (2020), London: Bliss 20 April 2020

**Full URL:** <https://www.bliss.org.uk/parents/support/coronavirus-covid-19-information>

The latest evidence and guidance from Bliss for parents of sick or premature babies, about how changes during the coronavirus (COVID-19) pandemic may affect their baby and their stay in neonatal care. (JSM)

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#### 20200421-28\*

**The profile of peripheral blood lymphocyte subsets and serum cytokines in children with 2019 novel coronavirus pneumonia.** Li H, Chen K, Liu M, et al (2020), Journal of Infection 20 April 2020, online

**Full URL:** <https://doi.org/10.1016/j.jinf.2020.04.001>

##### Objectives

The study was aimed at investigating the characteristics of peripheral blood lymphocyte subsets and serum cytokines in children with 2019 novel coronavirus (2019-nCoV) pneumonia.

##### Methods

Children with 2019-nCoV pneumonia or with respiratory syncytial virus (RSV) pneumonia were included. Data including lymphocyte subsets and serum cytokines were collected and analyzed.

##### Results

: 56 patients were included in the study, 40 children with 2019-nCoV pneumonia and 16 children with RSV pneumonia. Compared with children with RSV pneumonia, patients with 2019-nCoV pneumonia had higher count of CD3+8+ lymphocyte, higher percentages of CD3+, CD3+8+ lymphocytes and a lower percentage of CD19+ lymphocyte. The serum IL-10 level was significantly higher in children with RSV pneumonia. One 2019-nCoV pneumonia child who was with an obvious increase of IL-10 developed severe pneumonia.

##### Conclusions

Immune response played a very important role in the development of 2019-nCoV pneumonia. The effective CD8+ T cell response might influence the severity of 2019-nCoV pneumonia. The adaptable change in IL-10 level might contribute to the relatively mild pneumonia symptoms in children with 2019-nCoV pneumonia and bacterial co-infection might be a risk factor of severe 2019-nCoV pneumonia. (Author)

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#### 20200421-21\*

**COVID-19 - guidance for neonatal settings [Last updated 12 May 2020].** Royal College of Paediatrics and Child Health (2020), London: RCPCH 9 April 2020

**Full URL:** <https://www.rcpch.ac.uk/resources/covid-19-guidance-neonatal-settings#postnatal-contact-on-nnu-with-confirmed-covid-19-case>

Provides guidance for neonatal settings during the coronavirus (COVID-19) outbreak. It has been produced with the British Association of Perinatal Medicine (BAPM). (Author, edited)

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#### 20200421-20\*

**The tiny premature baby who fought off coronavirus.** Anon (2020), BBC News 21 April 2020

**Full URL:** <https://www.bbc.co.uk/news/uk-scotland-glasgow-west-52369708>

Reports on the case of Peyton Maguire who was born prematurely at 3lbs 5oz and was diagnosed with Covid-19 at three weeks old. (LDO)

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**Breast feeding at the time of COVID-19: do not forget expressed mother's milk, please.** Davanzo R (2020), Archives of Disease in Childhood: Fetal and Neonatal Edition vol 105, no 4, July 2020, p 455

**Full URL:** <http://dx.doi.org/10.1136/archdischild-2020-319149>

This letter discusses mother to child transmission of COVID-19 and the safety of expressed mother's milk. The author recommends that breastfeeding should be promoted where possible, with basic preventive measures such as face masks and hand washing. In cases where breastfeeding is not recommended, it is suggested that expressed mother's milk should be considered due to its nutritional benefits. (LDO)

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#### 20200417-9\*

**Novel corona virus disease (COVID-19) in pregnancy: What clinical recommendations to follow?.** Liang H, Acharya G (2020), Acta Obstetrica et Gynecologica Scandinavica vol 99, no 4, April 2020, pp 439-442

This editorial discusses the prevention, diagnosis and management of COVID-19 in pregnancy. The authors also highlight the importance of mode of delivery and care of the newborn. (LDO)

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#### 20200417-8

**That pesky nucleic acid molecule in a protein coat.** Hanley J (2020), Journal of Health Visiting vol 8, no 4, April 2020

In March it seemed not only surreal but impossible to comprehend that the coronavirus would ever venture near our shores - and yet here it is. Jane Hanley looks at the effects of the pandemic on the emotional wellbeing of parents and professionals alike. (Author)

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#### 20200417-60\*

**Why is COVID-19 so mild in children?.** Brodin P (2020), Acta Paediatrica 25 March 2020, online

This editorial highlights the reasons for mild COVID-19 symptoms in children and infants. The author discusses immune systems, expression of enzyme receptors and the likelihood respiratory tract infections in children. (LDO)

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#### 20200417-6

**A new normal for health visiting.** Forbes L (2020), Journal of Health Visiting vol 8, no 4, April 2020

In this time of focus on public health, what role will community based workers play? How will we carry on our professional duties in a time of social distancing? (Author)

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#### 20200417-55\*

**Systematic review of COVID-19 in children shows milder cases and a better prognosis than adults.** Ludvigsson JF (2020), Acta Paediatrica vol 109, no 6, June 2020, pp 1088-1095

##### Aim

The coronavirus disease 2019 (COVID-19) pandemic has affected hundreds of thousands of people. Data on symptoms and prognosis in children are rare.

##### Methods

A systematic literature review was carried out to identify papers on COVID-19, which is caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), using the MEDLINE and Embase databases between January 1 and March 18, 2020.

##### Results

The search identified 45 relevant scientific papers and letters. The review showed that children have so far accounted for 1%-5% of diagnosed COVID-19 cases, they often have milder disease than adults and deaths have been extremely rare. Diagnostic findings have been similar to adults, with fever and respiratory symptoms being prevalent, but fewer children seem to have developed severe pneumonia. Elevated inflammatory markers were less common in children, and lymphocytopenia seemed rare. Newborn infants have developed symptomatic COVID-19, but evidence of vertical intrauterine transmission was scarce. Suggested treatment included providing oxygen, inhalations, nutritional support

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and maintaining fluids and electrolyte balances.

#### Conclusions

The coronavirus disease 2019 has occurred in children, but they seemed to have a milder disease course and better prognosis than adults. Deaths were extremely rare. (Author)

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#### 20200417-5

**Newly qualified health visitor: COVID-19 - a public health crisis.** Boddy B (2020), Journal of Health Visiting vol 8, no 4, April 2020

Bethany Boddy explores the fast-changing public health emergency of COVID-19 and the health visitor response. (Author)

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#### 20200416-9\*

**The first case of COVID-19 infection in a 75-day-old infant in Jahrom City, south of Iran.** Mogharab V, Pasha AMK, Javdani F, et al (2020), Journal of the Formosan Medical Association vol 119, no 5, May 2020, pp 995-997

Full URL: <https://doi.org/10.1016/j.jfma.2020.03.015>

Correspondence reporting the case of a 75-day-old baby referred to a pediatric emergency department with severe dry cough, noisy breathing sounds (audible through stethoscope) and had displayed a high fever seven days previously, but this was responding well to treatment. This is the first known case of COVID-19 infection in an infant in Jahrom City. Fars Province, Iran. (JSM)

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#### 20200416-3\*

**Keeping children emotionally healthy during the covid-19 pandemic.** Rider EK (2020), BMJ Opinion 14 April 2020, online

Full URL: <https://blogs.bmj.com/bmj/2020/04/14/elizabeth-rider-keeping-children-emotionally-healthy-covid-19-pandemic/>

We must not lose sight of children and adolescents during and after the covid-19 pandemic, says Elizabeth A Rider. (Author)

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#### 20200416-13\*

**Pre-labor anorectal swab for SARS-CoV-2 in COVID-19 patients: is it time to think about it?.** Carosso A, Cosma S, Borella F, et al (2020), European Journal of Obstetrics & Gynecology and Reproductive Biology vol 249, June 2020, pp 98-99

Full URL: <https://doi.org/10.1016/j.ejogrb.2020.04.023>

The authors report the first case of potential vertical transmission of SARS-CoV-2 from a pregnant woman to a newborn. Maternal and rectal stool swabs tested positive for SARS-CoV-2 which suggests the virus may enter the neonatal nasopharynx during vaginal delivery. It is suggested that pre-labour anorectal swabs should be taken from pregnant patients with COVID-19 in order to identify newborns at risk of perinatal infection. (LDO)

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#### 20200416-10\*

**Specialty guides for patient management during the coronavirus pandemic: Safeguarding infants during the coronavirus pandemic: the ICON programme.** NHS England, NHS Improvement (2020), London: NHS England 2 April 2020. 2 pages

Full URL: [https://www.england.nhs.uk/coronavirus/wp-content/uploads/sites/52/2020/04/C0097-Specialty-guides-and-coronavirus-Final-ICON-letter-for-midwives\\_v1-27-March.pdf](https://www.england.nhs.uk/coronavirus/wp-content/uploads/sites/52/2020/04/C0097-Specialty-guides-and-coronavirus-Final-ICON-letter-for-midwives_v1-27-March.pdf)

Joint correspondence from NHS England and NHS Improvement, to all maternity units and neonatal operational delivery networks, produced with the aim of preventing non-accidental injuries to infants during the COVID-19 pandemic. (JSM)

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#### 20200415-34\*

**Guidance for virtual infant feeding support and coronavirus (COVID-19). Guidance sheet 3: Postnatal conversations.**

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UNICEF UK Baby Friendly Initiative (2020), Baby Friendly Initiative April 2020. 2 pages

**Full URL:** [https://www.unicef.org.uk/babyfriendly/wp-content/uploads/sites/2/2020/04/Unicef-UK-Baby-Friendly-Initiative-Guidance-document-3-Postnatal-conversations.pdf?utm\\_source=Unicef\\_UK&utm\\_medium=Email&utm\\_campaign=bfi\\_AprilCovid19\\_uukloyalty](https://www.unicef.org.uk/babyfriendly/wp-content/uploads/sites/2/2020/04/Unicef-UK-Baby-Friendly-Initiative-Guidance-document-3-Postnatal-conversations.pdf?utm_source=Unicef_UK&utm_medium=Email&utm_campaign=bfi_AprilCovid19_uukloyalty)

Guidance from the Unicef UK Baby Friendly Initiative on holding conversations in the postnatal period, for healthcare professionals delivering Baby Friendly services during the COVID-19 pandemic. (JSM)

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#### 20200415-33\*

**Guidance for virtual infant feeding support during the COVID-19 outbreak. Guidance sheet 2: Antenatal conversations.**

UNICEF UK Baby Friendly Initiative (2020), Baby Friendly Initiative April 2020. 1 page

**Full URL:** [https://www.unicef.org.uk/babyfriendly/wp-content/uploads/sites/2/2020/03/Unicef-UK-Baby-Friendly-Initiative-Guidance-Sheet-2-Antenatal-Conversations.pdf?utm\\_source=Unicef\\_UK&utm\\_medium=Email&utm\\_campaign=bfi\\_AprilCovid19\\_uukloyalty](https://www.unicef.org.uk/babyfriendly/wp-content/uploads/sites/2/2020/03/Unicef-UK-Baby-Friendly-Initiative-Guidance-Sheet-2-Antenatal-Conversations.pdf?utm_source=Unicef_UK&utm_medium=Email&utm_campaign=bfi_AprilCovid19_uukloyalty)

Guidance from the Unicef UK Baby Friendly Initiative on holding antenatal conversations, for healthcare professionals delivering Baby Friendly services during the COVID-19 pandemic. (JSM)

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#### 20200415-32\*

**Guidance for virtual infant feeding support during the COVID-19 outbreak. Guidance sheet 1: Planning a virtual conversation.**

UNICEF UK Baby Friendly Initiative (2020), Baby Friendly Initiative April 2020. 1 page

**Full URL:** [https://www.unicef.org.uk/babyfriendly/wp-content/uploads/sites/2/2020/03/Unicef-UK-Baby-Friendly-Initiative-Guidance-Sheet-1-Planning-A-Virtual-Conversation.pdf?utm\\_source=Unicef\\_UK&utm\\_medium=Email&utm\\_campaign=bfi\\_AprilCovid19\\_uukloyalty](https://www.unicef.org.uk/babyfriendly/wp-content/uploads/sites/2/2020/03/Unicef-UK-Baby-Friendly-Initiative-Guidance-Sheet-1-Planning-A-Virtual-Conversation.pdf?utm_source=Unicef_UK&utm_medium=Email&utm_campaign=bfi_AprilCovid19_uukloyalty)

Guidance from the Unicef UK Baby Friendly Initiative on planning a virtual conversation, for healthcare professionals delivering Baby Friendly services during the COVID-19 pandemic. (JSM)

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#### 20200415-26\*

**Care of the Pregnant Woman with COVID-19 in Labor and Delivery: Anesthesia, Emergency cesarean delivery, Differential diagnosis in the acutely ill parturient, Care of the newborn, and Protection of the healthcare personnel.**

Ashokka B, Loh M-H, Tan CH, et al (2020), American Journal of Obstetrics & Gynecology (AJOG) vol 223, no 1, July 2020, pp 66-74.e3

**Full URL:** <https://doi.org/10.1016/j.ajog.2020.04.005>

Coronavirus disease 2019, caused by the severe acute respiratory syndrome coronavirus 2, has been declared a pandemic by the World Health Organization. As the pandemic evolves rapidly, there are data emerging to suggest that pregnant women diagnosed as having coronavirus disease 2019 can have severe morbidities (up to 9%). This is in contrast to earlier data that showed good maternal and neonatal outcomes. Clinical manifestations of coronavirus disease 2019 include features of acute respiratory illnesses. Typical radiologic findings consists of patchy infiltrates on chest radiograph and ground glass opacities on computed tomography scan of the chest. Patients who are pregnant may present with atypical features such as the absence of fever as well as leukocytosis. Confirmation of coronavirus disease 2019 is by reverse transcriptase-polymerized chain reaction from upper airway swabs. When the reverse transcriptase-polymerized chain reaction test result is negative in suspect cases, chest imaging should be considered. A pregnant woman with coronavirus disease 2019 is at the greatest risk when she is in labor, especially if she is acutely ill. We present an algorithm of care for the acutely ill parturient and guidelines for the protection of the healthcare team who is caring for the patient. Key decisions are made based on the presence of maternal and/or fetal compromise, adequacy of maternal oxygenation (SpO<sub>2</sub> >93%) and stability of maternal blood pressure. Although vertical transmission is unlikely, there must be measures in place to prevent neonatal infections. Routine birth processes such as delayed cord clamping and skin-to-skin bonding between mother and newborn need to be revised. Considerations can be made to allow the use of screened donated breast milk from mothers who are free of coronavirus disease 2019. We present management strategies derived from best available evidence to provide guidance in caring for the high-risk and acutely ill parturient. These include protection of the healthcare workers caring for the coronavirus disease 2019 gravida, establishing a diagnosis in symptomatic cases, deciding between reverse transcriptase-polymerized chain reaction and chest imaging, and management of the unwell parturient.

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#### 20200415-24\*

**Baby friendly assessments during the COVID-19 outbreak.** UNICEF UK Baby Friendly Initiative (2020), The Baby Friendly Initiative 30 March 2020. 2 pages

**Full URL:** [https://www.unicef.org.uk/babyfriendly/wp-content/uploads/sites/2/2020/03/Baby-Friendly-assessments-during-the-Covid-19-outbreak.pdf?utm\\_source=Unicef\\_UK&utm\\_medium=Email&utm\\_campaign=bfi\\_AprilCovid19\\_uukloyalty](https://www.unicef.org.uk/babyfriendly/wp-content/uploads/sites/2/2020/03/Baby-Friendly-assessments-during-the-Covid-19-outbreak.pdf?utm_source=Unicef_UK&utm_medium=Email&utm_campaign=bfi_AprilCovid19_uukloyalty)

This document is intended to support Infant Feeding Leads/teams and senior staff to plan work related to Baby Friendly accreditation during the Covid-19 outbreak. (Author)

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#### 20200415-23\*

**Statement on infant feeding on neonatal units during the coronavirus (COVID-19) outbreak [Last updated: 14 May 2020].**

UNICEF UK Baby Friendly Initiative (2020), The Baby Friendly Initiative 2 April 2020. 3 pages

**Full URL:** <https://www.unicef.org.uk/babyfriendly/wp-content/uploads/sites/2/2020/04/Unicef-UK-Baby-Friendly-Initiative-statement-on-infant-feeding-on-neonatal-units-during-the-Covid-19-outbreak.pdf>

Position statement from the Unicef UK Baby Friendly Initiative on breastfeeding and bottle feeding in neonatal intensive care units, for healthcare professionals looking after mothers and their babies during the coronavirus (COVID-19) outbreak. (JSM)

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#### 20200415-22\*

**Statement on infant feeding during the coronavirus (COVID-19) outbreak [Last updated 14 May 2020].** UNICEF UK Baby Friendly Initiative (2020), The Baby Friendly Initiative 2 April 2020. 3 pages

**Full URL:** <https://www.unicef.org.uk/babyfriendly/wp-content/uploads/sites/2/2020/04/Unicef-UK-Baby-Friendly-Initiative-statement-on-infant-feeding-during-the-Covid-19-outbreak.pdf>

Position statement from the Unicef UK Baby Friendly Initiative on breastfeeding and bottle feeding, for health professionals caring for mothers and their babies during the current coronavirus (COVID-19) outbreak. (JSM)

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#### 20200414-2\*

**Should Infants Be Separated from Mothers with COVID-19? First, Do No Harm.** Stuebe A (2020), Breastfeeding Medicine vol 15, no 5, May 2020, pp 351-352

**Full URL:** <https://doi.org/10.1089/bfm.2020.29153.ams>

Discusses the implications for breastfeeding of temporarily separating infants from mothers with suspected or confirmed COVID-19 in order to reduce the risk of transmission from mother to baby. (MB)

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#### 20200413-1\*

**Coronavirus while pregnant or giving birth: here's what you need to know.** Dahlen H, Ellwood D (2020), The Conversation 16 March 2020

**Full URL:** <https://theconversation.com/coronavirus-while-pregnant-or-giving-birth-heres-what-you-need-to-know-133619>

Summarises the key messages for pregnant women in the current coronavirus (COVID-19) pandemic, from trusted health sources such as the World Health Organization, the Royal College of Obstetricians and Gynaecologists etc. (JSM)

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#### 20200409-10\*

**Epidemiology of COVID-19 Among Children in China.** Dong Y, Mo X, Hu Y, et al (2020), Pediatrics 8 April 2020, online

**OBJECTIVE:** To identify the epidemiological characteristics and transmission patterns of pediatric patients with the 2019 novel coronavirus disease (COVID-19) in China.

**METHODS:** Nationwide case series of 2135 pediatric patients with COVID-19 reported to the Chinese Center for Disease Control and Prevention from January 16, 2020, to February 8, 2020, were included. The epidemic curves were constructed by key dates of disease onset and case diagnosis. Onset-to-diagnosis curves were constructed by fitting a

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log-normal distribution to data on both onset and diagnosis dates.

**RESULTS:** There were 728 (34.1%) laboratory-confirmed cases and 1407 (65.9%) suspected cases. The median age of all patients was 7 years (interquartile range: 2-13 years), and 1208 case patients (56.6%) were boys. More than 90% of all patients had asymptomatic, mild, or moderate cases. The median time from illness onset to diagnoses was 2 days (range: 0-42 days). There was a rapid increase of disease at the early stage of the epidemic, and then there was a gradual and steady decrease. The disease rapidly spread from Hubei province to surrounding provinces over time. More children were infected in Hubei province than any other province.

**CONCLUSIONS:** Children of all ages appeared susceptible to COVID-19, and there was no significant sex difference. Although clinical manifestations of children's COVID-19 cases were generally less severe than those of adult patients, young children, particularly infants, were vulnerable to infection. The distribution of children's COVID-19 cases varied with time and space, and most of the cases were concentrated in Hubei province and surrounding areas. Furthermore, this study provides strong evidence of human-to-human transmission. (Author)

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#### 20200407-14\*

**Coronavirus Disease 2019 (COVID-19) Pandemic and Pregnancy.** Dashraath P, Wong JIJ, Lim MXK, et al (2020), American Journal of Obstetrics & Gynecology (AJOG) vol 222, no 6, June 2020, pp 521-531

**Full URL:** <https://doi.org/10.1016/j.ajog.2020.03.021>

The current coronavirus disease 2019 (COVID-19) pneumonia pandemic, caused by the severe acute respiratory syndrome 2 (SARS-CoV-2) virus, is spreading globally at an accelerated rate, with a basic reproduction number ( $R_0$ ) of 2 - 2.5, indicating that 2 - 3 persons will be infected from an index patient. A serious public health emergency, it is particularly deadly in vulnerable populations and communities in which healthcare providers are insufficiently prepared to manage the infection. As of March 16, 2020, there are more than 180,000 confirmed cases of COVID-19 worldwide, with over 7,000 related deaths. The SARS-CoV-2 virus has been isolated from asymptomatic individuals, and affected patients continue to be infectious two weeks after cessation of symptoms. The substantial morbidity and socioeconomic impact have necessitated drastic measures across all continents, including nationwide lockdowns and border closures.

Pregnant women and their fetuses represent a high-risk population during infectious disease outbreaks. To date, the outcomes of 55 pregnant women infected with COVID-19 and 46 neonates have been reported in the literature, with no definite evidence of vertical transmission. Physiological and mechanical changes in pregnancy increase susceptibility to infections in general, particularly when the cardiorespiratory system is affected, and encourage rapid progression to respiratory failure in the gravida. Furthermore, the pregnancy bias towards T-helper 2 (Th2) system dominance which protects the fetus, leaves the mother vulnerable to viral infections, which are more effectively contained by the Th1 system. These unique challenges mandate an integrated approach to pregnancies affected by SARS-CoV-2.

Here we present a review of COVID-19 in pregnancy, bringing together the various factors integral to the understanding of pathophysiology and susceptibility, diagnostic challenges with real-time reverse transcriptase polymerase chain reaction (RT-PCR) assays, therapeutic controversies, intrauterine transmission and maternal-fetal complications. We discuss the latest options in antiviral therapy and vaccine development, including the novel use of chloroquine in the management of COVID-19. Fetal surveillance, in view of the predisposition to growth restriction and special considerations during labor and delivery are addressed. Additionally, we focus on keeping frontline obstetric care providers safe while continuing to provide essential services. Our clinical service model is built around the principles of workplace segregation, responsible social distancing, containment of cross-infection to healthcare providers, judicious use of personal protective equipment and telemedicine. Our aim is to share a framework which can be adopted by tertiary maternity units managing pregnant women in the flux of a pandemic while maintaining the safety of the patient and healthcare provider at its core. (Author)

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#### 20200406-5\*

**Neonatal Early-Onset Infection With SARS-CoV-2 in 33 Neonates Born to Mothers With COVID-19 in Wuhan, China.** Zeng L, Xia S, Yuan W, et al (2020), JAMA Pediatrics 26 March 2020, online

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The coronavirus disease 2019 (COVID-19) has spread rapidly across the world. With the sharp increase in the number of infections, the number of pregnant women and children with COVID-19 is also on the rise. However, only 19 neonates born to affected mothers have been investigated, and to our knowledge, no information on early-onset infection in newborns has been published in previous studies.

#### Methods

In this cohort study, all neonates born to mothers with COVID-19 were recruited from Wuhan Children's Hospital, in Wuhan, Hubei Province, China. This study was approved by the local medical ethics committee. Written informed consent was obtained from the neonates' parents. The diagnosis and management of newborns with or at risk of COVID-19 were in accordance with guidelines provided by the National Health Commission and the Chinese Perinatal-Neonatal SARS-CoV-2 Committee.

Data regarding demographic, epidemiologic, and clinical features were obtained from the medical records system. In addition, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) real-time reverse transcriptase-polymerase chain reaction tests (Novel Coronavirus PCR Fluorescence Diagnostic Kit [BGI]) were conducted using nasopharyngeal and anal swab samples. Data were collected from January 2020 to February 2020. All statistical analyses were performed in Stata version 15.0 (StataCorp).

#### Results

Thirty-three neonates born to mothers with COVID-19, including 3 neonates with COVID-19, were identified (Table). The most common symptom was shortness of breath (4 of 33 neonates). Radiographic findings were nonspecific. No deaths were reported.

We provide details of the 3 infected neonates (Figure). Patient 1 was born at 40 weeks' gestation. The delivery was by cesarean delivery because of meconium-stained amniotic fluid and confirmed maternal COVID-19 pneumonia. On day 2 of life, the infant experienced lethargy and fever, with unremarkable physical examination results, and was moved to the neonatal intensive care unit. A chest radiographic image showed pneumonia, but other laboratory tests (except procalcitonin) were normal.

Nasopharyngeal and anal swabs were positive for SARS-CoV-2 on days 2 and 4 of life and negative on day 6.

Patient 2 was born at 40 weeks' and 4 days' gestation by cesarean delivery because of confirmed maternal COVID-19 pneumonia. He presented with lethargy, vomiting, and fever. A physical examination was unremarkable. Laboratory tests showed leukocytosis, lymphocytopenia, and an elevated creatine kinase-MB fraction. A chest radiographic image showed pneumonia. Nasopharyngeal and anal swabs were positive for SARS-CoV-2 on days 2 and 4 of life and negative on day 6.

Patient 3 was born at 31 weeks' and 2 days' gestation by cesarean delivery because of fetal distress and confirmed maternal COVID-19 pneumonia. Resuscitation was required. The infant's Apgar scores were 3, 4, and 5 at 1, 5, and 10 minutes after birth. Neonatal respiratory distress syndrome and pneumonia confirmed by chest radiographic image on admission resolved on day 14 of life after treatment with noninvasive ventilation, caffeine, and antibiotics. He also had suspected sepsis, with an *Enterobacter agglomerans*-positive blood culture, leukocytosis, thrombocytopenia ( $11 \text{ cells} \times 10^3/\mu\text{L}$ ; to convert to cells  $\times 10^9/\text{L}$ , multiply by 1.0), and coagulopathy (prothrombin time, 21 seconds; activated partial thromboplastin time, 81.9 seconds), which improved with antibiotic treatment. Nasopharyngeal and anal swabs were positive for SARS-CoV-2 on days 2 and 4 of life and negative on day 7.

#### Discussion

Consistent with previous studies, the clinical symptoms from 33 neonates with or at risk of COVID-19 were mild and outcomes were favorable. Of the 3 neonates with symptomatic COVID-19, the most seriously ill neonate may have been symptomatic from prematurity, asphyxia, and sepsis, rather than SARS-CoV-2 infection.

In this cohort, 3 of 33 infants (9%) presented with early-onset SARS-CoV-2 infection. Because strict infection control and prevention procedures were implemented during the delivery, it is likely that the sources of SARS-CoV-2 in the neonates' upper respiratory tracts or anuses were maternal in origin. Although 2 recent studies have shown that there were no clinical findings or investigations suggestive of COVID-19 in neonates born to affected mothers, and all samples, including amniotic fluid, cord blood, and breast milk, were negative for SARS-CoV-2, the vertical maternal-fetal transmission cannot be ruled out in the current cohort. Therefore, it is crucial to screen pregnant women and implement strict infection control measures, quarantine of infected mothers, and close monitoring of neonates at risk of COVID-19. (Author, edited)

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20200403-5\*

**'I just had a baby - now I'm going to the frontline'.** Kwon T (2020), BBC News 3 April 2020

**Full URL:** <https://www.bbc.co.uk/news/av/world-us-canada-52137166/i-just-had-a-baby-now-i-m-going-to-the-frontline>

Presents the personal experience of Tre Kwon, a nurse fighting to save lives in New York, the epicenter of the US' fight against COVID-19. She tells how, as coronavirus overwhelmed hospitals, she ended her maternity leave early and has had to forgo her plans to breastfeed her daughter for as long as she intended, in order to return to work and join her co-workers in the fight against this disease. She expresses concern about the lack of personal protective equipment (PPE) and describes her working conditions. Includes audio-visual footage. (JSM)

20200402-32\*

**Pregnancy and coronavirus: information for pregnant women and new mums.** Anon (2020), Tommy's Pregnancy Hub 1 April 2020

**Full URL:** <https://www.tommys.org/pregnancy-information/im-pregnant/pregnancy-and-coronavirus-information-pregnant-women-and-new-mums>

Consumer information from Tommy's presented in a question and answer format, aimed at pregnant women and new mothers, based on the latest guidance on coronavirus (COVID-19), from the Royal College of Obstetricians and Gynaecologists (RCOG). (JSM)

20200331-21\*

**The first infant case of COVID-19 acquired from a secondary transmission in Vietnam.** Le HT, Nguyen LV, Tran DM, et al (2020),

The Lancet Child & Adolescent Health vol 4, no 5, May 2020, pp 405-406

**Full URL:** [https://doi.org/10.1016/S2352-4642\(20\)30091-2](https://doi.org/10.1016/S2352-4642(20)30091-2)

Reports the first infant case of COVID-19 acquired from a secondary transmission in Vietnam. (MB)

20200326-3\*

**Clinical and epidemiological features of 36 children with coronavirus disease 2019 (COVID-19) in Zhejiang, China: an observational cohort study.** Qiu H, Wu J, Long L, et al (2020), The Lancet Infectious Diseases 25 March 2020, online

**Full URL:** [https://doi.org/10.1016/S1473-3099\(20\)30198-5](https://doi.org/10.1016/S1473-3099(20)30198-5)

Background

Since December, 2019, an outbreak of coronavirus disease 2019 (COVID-19) has spread globally. Little is known about the epidemiological and clinical features of paediatric patients with COVID-19.

Methods

We retrospectively retrieved data for paediatric patients (aged 0-16 years) with confirmed COVID-19 from electronic medical records in three hospitals in Zhejiang, China. We recorded patients' epidemiological and clinical features.

Findings

From Jan 17 to March 1, 2020, 36 children (mean age 8.3 [SD 3.5] years) were identified to be infected with severe acute respiratory syndrome coronavirus 2. The route of transmission was by close contact with family members (32 [89%]) or a history of exposure to the epidemic area (12 [33%]); eight (22%) patients had both exposures. 19 (53%) patients had moderate clinical type with pneumonia; 17 (47%) had mild clinical type and either were asymptomatic (ten [28%]) or had acute upper respiratory symptoms (seven [19%]). Common symptoms on admission were fever (13 [36%]) and dry cough (seven [19%]). Of those with fever, four (11%) had a body temperature of 38.5°C or higher, and nine (25%) had a body temperature of 37.5-38.5°C. Typical abnormal laboratory findings were elevated creatine kinase MB (11 [31%]), decreased lymphocytes (11 [31%]), leucopenia (seven [19%]), and elevated procalcitonin (six [17%]). Besides radiographic presentations, variables that were associated significantly with severity of COVID-19 were decreased lymphocytes, elevated body temperature, and high levels of procalcitonin, D-dimer, and creatine kinase MB. All children received interferon alfa by aerosolisation twice a day, 14 (39%) received lopinavir-ritonavir syrup twice a day, and six (17%) needed oxygen inhalation. Mean time in hospital was 14 (SD 3) days. By Feb 28, 2020, all

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patients were cured.

#### Interpretation

Although all paediatric patients in our cohort had mild or moderate type of COVID-19, the large proportion of asymptomatic children indicates the difficulty in identifying paediatric patients who do not have clear epidemiological information, leading to a dangerous situation in community-acquired infections.

#### Funding

Ningbo Clinical Research Center for Children's Health and Diseases, Ningbo Reproductive Medicine Centre, and Key Scientific and Technological Innovation Projects of Wenzhou. (Author)

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#### 20200325-3\*

**Clinical features and obstetric and neonatal outcomes of pregnant patients with COVID-19 in Wuhan, China: a retrospective, single-centre, descriptive study.** Yu N, Li W, Kang Q, et al (2020), The Lancet Infectious Diseases vol 20, no 5, May 2020, pp 559-564

**Full URL:** [https://doi.org/10.1016/S1473-3099\(20\)30176-6](https://doi.org/10.1016/S1473-3099(20)30176-6)

#### Background

In December, 2019, coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) emerged in Wuhan, China. The number of affected pregnant women is increasing, but scarce information is available about the clinical features of COVID-19 in pregnancy. This study aimed to clarify the clinical features and obstetric and neonatal outcomes of pregnant patients with COVID-19.

#### Methods

In this retrospective, single-centre study, we included all pregnant women with COVID-19 who were admitted to Tongji Hospital in Wuhan, China. Clinical features, treatments, and maternal and fetal outcomes were assessed.

#### Findings

Seven patients, admitted to Tongji Hospital from Jan 1, to Feb 8, 2020, were included in our study. The mean age of the patients was 32 years (range 29-34 years) and the mean gestational age was 39 weeks plus 1 day (range 37 weeks to 41 weeks plus 2 days). Clinical manifestations were fever (six [86%] patients), cough (one [14%] patient), shortness of breath (one [14%] patient), and diarrhoea (one [14%] patient). All the patients had caesarean section within 3 days of clinical presentation with an average gestational age of 39 weeks plus 2 days. The final date of follow-up was Feb 12, 2020. The outcomes of the pregnant women and neonates were good. Three neonates were tested for SARS-CoV-2 and one neonate was infected with SARS-CoV-2 36 h after birth.

#### Interpretation

The maternal, fetal, and neonatal outcomes of patients who were infected in late pregnancy appeared very good, and these outcomes were achieved with intensive, active management that might be the best practice in the absence of more robust data. The clinical characteristics of these patients with COVID-19 during pregnancy were similar to those of non-pregnant adults with COVID-19 that have been reported in the literature.

#### Funding

National Natural Science Foundation of China, Hubei Provincial Natural Science Foundation of China. (Author)

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#### 20200324-26\*

**Understanding the coronavirus.** Duncan D, Lyall G (2020), British Journal of Midwifery vol 28, no 3, March 2020

The death of a baby is one of the most profoundly traumatic experiences a family can experience. Chris Binnie from Beyond Bea Charity discusses why accepting support is better than being silent (Author)

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#### 20200318-5\*

**Infants Born to Mothers With a New Coronavirus (COVID-19).** Chen Y, Peng H, Wang L, et al (2020), Frontiers in Pediatrics 16 March 2020, online

A novel viral respiratory disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), is responsible for an epidemic of the coronavirus disease 2019 (COVID-19) in cases in China and worldwide. Four full-term, singleton infants were born to pregnant women who tested positive for COVID-19 in the city of Wuhan, the

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capital of Hubei province, China, where the disease was first identified. Of the three infants, for who consent to be diagnostically tested was provided, none tested positive for the virus. None of the infants developed serious clinical symptoms such as fever, cough, diarrhea, or abnormal radiologic or hematologic evidence, and all four infants were alive at the time of hospital discharge. Two infants had rashes of unknown etiology at birth, and one had facial ulcerations. One infant had tachypnea and was supported by non-invasive mechanical ventilation for 3 days. One had rashes at birth but was discharged without parental consent for a diagnostic test. This case report describes the clinical course of four live born infants, born to pregnant women with the COVID-19 infection. (13 references) (Author)

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#### 20200309-71\*

**Breastfeeding and Respiratory Antivirals: Coronavirus and Influenza.** Anderson PO (2020), Breastfeeding Medicine vol 15, no 3, March 2020, p 128

**Full URL:** <https://doi.org/10.1089/bfm.2020.29149.poa>

Provides an overview of the options for antiviral drugs to treat influenza and coronavirus and their safety for use in women who are breastfeeding. (MB)

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#### 20200305-163\*

**'No evidence' coronavirus can be passed to child late in pregnancy.** Ford S (2020), Nursing Times 17 February 2020

There is currently no evidence that the novel coronavirus disease causes severe adverse outcomes in neonates or that it can pass to the child while in the womb, according to preliminary studies. (Author)

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#### 20200210-29\*

**A contingency plan for the management of the 2019 novel coronavirus outbreak in neonatal intensive care units.** Wang J, Qi H, Bao L, et al (2020), The Lancet Child & Adolescent Health 7 February 2020, online

**Full URL:** [https://doi.org/10.1016/S2352-4642\(20\)30040-7](https://doi.org/10.1016/S2352-4642(20)30040-7)

The authors present a contingency plan for the 2019-nCoV outbreak in NICUs, focussing mainly on diagnostic and discharge criteria, treatment, prevention, and control strategies. (MB)

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#### 20200206-32\*

**Coronavirus: Newborn becomes youngest person diagnosed with virus.** Anon (2020), BBC News 6 February 2020

**Full URL:** <https://www.bbc.co.uk/news/world-asia-china-51395655>

Reports that a 30-hour-old baby in China has been diagnosed with coronavirus, the youngest case recorded so far. States that the baby's mother had tested positive for the illness while still pregnant. It is not known if the baby became infected in the womb or after birth. (JSM)

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