

## Maternal weight gain and body mass index (BMI)

The BMI is calculated as weight divided by the square of height as shown below.

$$\frac{\text{Weight [kg]}}{\text{Height [m]}^2}$$

Weight gain during pregnancy, where there are no medical complications, varies for each pregnant woman. Total weight gain for healthy pregnant women who give birth to babies weighing between 3 and 4 kg, is between 7 and 18 kg (Institute of Medicine Subcommittee on Nutritional Status and Weight Gain during Pregnancy 1990).

A prospective observational study of 7589 women in their first pregnancy examined the differences in pattern of weight gain according to trimester for women who delivered at term versus preterm (Siega-Riz *et al* 1996). This study identified that the pattern of weight gain for the mothers who gave birth prematurely, was similar to women who went to term. However, women who were underweight (BMI < 19.8 kg/m<sup>2</sup>) before pregnancy had almost a twofold increase in the likelihood of delivering prematurely (adjusted OR 1.98, 95% CI 1.33 to 2.98).

Dawes & Grudzinskas (1991) undertook a retrospective study of 1092 pregnant women and found that weekly weight gain and maternal weight at booking were the only factors that had an association with infant birth weight after taking account of maternal gestation, age and smoking habits. Low maternal booking weight (< 51 kg) was found to be of clinical significance in predicting small for gestational age infants (positive predictive value 20%). Where there was a low average weekly maternal weight gain (< 0.20 kg), this had a positive predictive value of 13% for detecting small for gestational age infants (lower than the PPV of 16% for maternal smoking). Weight loss or failure to gain weight over a two-week interval in the third trimester was observed in 46% of all women studied.

Where there is inadequate weight gain in the third trimester this also has implications for small for gestational age infants. Lower than expected weight gain is defined as < 0.34, 0.35, 0.30 and 0.30 kg/week for underweight, normal weight,

overweight and obese women, respectively (Siega-Riz *et al* 1996).

A longitudinal study of 156 healthy pregnant women investigated whether BMI was related to energy intake during pregnancy and whether BMI, energy intake and other factors were related to net weight gain (Bergmann *et al* 1997). Women at the highest level of BMI were significantly less often in the high-energy intake category than women at the medium or low level of BMI. Net weight gain during pregnancy was independently influenced by BMI status and energy intake. Women at the highest level of BMI gained significantly less weight from first to third trimester compared with women at the medium or low levels of BMI. The mean birth weight in the three BMI groups did not differ and was not influenced by age, marital status, education, parity or smoking.

This information is taken from MIDIRS Informed Choice leaflet, *Diet and nutrition during pregnancy*. For further information and references visit: [www.infochoice.org](http://www.infochoice.org)

### References

Bergmann MM, Flagg EW, Miracle-McMahill HL *et al* (1997). Energy intake and net weight gain in pregnant women according to body mass index (BMI) status. *Int J Obes Relat Metab Disord* 21(11):1010-7.

Dawes MG, Grudzinskas JG (1991). Repeated measurement of maternal weight during pregnancy: is this a useful practice? *Br J Obstet Gynaecol* 98(2):189-94.

Institute of Medicine Subcommittee on Nutritional Status and Weight Gain during Pregnancy (1990). *Nutrition during pregnancy: part I: weight gain; part II: nutrient supplements*. Washington: National Academy Press.

Siega-Riz AM, Adair LS, Hobel CJ (1996). Maternal underweight status and inadequate rate of weight gain during the third trimester of pregnancy increases the risk of preterm delivery. *J Nutr* 126(1):146-53.

# Body Mass Index (Metric)

Weight in kilos / Height in metres



Weight

Height	45	48	50	52	54	57	59	61	63	66	68	70	73	75	77	79	82	84	86	88	91	93	95	98
5' 1.53m	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
5.1" 1.55m	18	19	20	21	22	23	24	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
5.2" 1.58m	18	19	20	21	22	22	23	24	25	26	27	28	29	30	31	32	33	33	34	35	36	37	38	39
5.3" 1.60m	17	18	19	20	21	22	23	24	24	25	26	27	28	29	30	31	32	32	33	34	35	36	37	38
5.4" 1.63m	17	18	18	19	20	21	22	23	24	24	25	26	27	28	29	30	31	31	32	33	34	35	36	37
5.5" 1.65m	16	17	18	19	20	20	21	22	23	24	25	25	26	27	28	29	30	30	31	32	33	34	35	35
5.6" 1.68m	16	17	17	18	19	20	21	21	22	23	24	25	25	26	27	28	29	29	30	31	32	33	34	34
5.7" 1.70m	15	16	17	18	18	19	20	21	22	22	23	24	25	25	26	27	28	29	29	30	31	32	33	33
5.8" 1.73m	15	16	16	17	18	19	19	20	21	22	22	23	24	25	25	26	27	28	28	29	30	31	32	32
5.9" 1.75m	14	15	16	17	17	18	19	20	20	21	22	22	23	24	25	25	26	27	28	28	29	30	31	31
5.10" 1.78m	14	15	15	16	17	18	18	19	20	20	21	22	23	23	24	25	25	26	27	28	28	29	30	30
5.11" 1.80m	14	14	15	16	16	17	18	18	19	20	21	21	22	23	23	24	25	25	26	27	28	28	29	30
6' 1.83m	13	14	14	15	16	17	17	18	19	19	20	21	21	22	23	23	24	25	25	26	27	27	28	29
6.1" 1.86m	13	13	14	15	15	16	17	17	18	19	19	20	21	21	22	23	23	24	25	25	26	27	27	28
6.2" 1.88m	12	13	14	14	15	16	16	17	18	18	19	19	20	21	21	22	23	23	24	25	25	26	27	27