

## Nutrition During Pregnancy

### Background

Recommendations for weight gain and nutrient intake to achieve a healthy pregnancy have evolved during the past 30 years. Research has shown that maternal nutrition can profoundly influence the growth and development of a fetus. The Institute of Medicine of the National Academy of Sciences issued a report, *Nutrition During Pregnancy* (1990), summarizing scientific data on the issues of gestational weight gain, dietary intake and nutrient supplementation during pregnancy. In addition, the IOM panels responsible for the on-going updates of the Dietary Reference Intakes (DRIs) take special care to develop pregnancy-specific recommendations for each nutrient. Weight gain and nutrient intakes for pregnancy are summarized here, based on the *Nutrition During Pregnancy* report, its successor (Suitor 1997), as well as the pregnancy-specific DRI reports.

Low maternal weight gain is associated with infants at risk for low birth weight (LBW), developmental problems and mortality. Starting in the early 1970s, weight gains increased from the previously recommended 18-20 lbs to more than 24 lbs. The increase in average birth weight and decrease in incidence of LBW seen by 1980 may be in part attributed to this change in recommendations.

### Total Weight Gain

- Weight gain goals for pregnancy are individualized according to pre-pregnancy body mass index (BMI), and are based on the weight gains known to result in full-term babies weighing at least 6 ½ pounds:

Pre-pregnancy BMI (kg/m <sup>2</sup> )	Recommended Weight Gain Range	
	lbs	kg
< 19 (underweight)	28-40	12.5-18
19-24.9 (normal weight)	25-35	11.5-16
25-30 (overweight)	15-25	7-11.5
>30 (very overweight)	>15	>6

(to calculate BMI from inches and pounds, use this equation:  $BMI = 704.5 \times lb/in^2$ )

- Weight gain is best described as a range, rather than a specific number, to alleviate anxiety about the exact amount of weight to be gained.
- African American women and adolescents are at higher risk of giving birth to LBW infants. Previous recommendations suggested these women gain at the higher end of the specified range, however it was not clear that this resulted in increased birth weights. Because these two groups are at higher risk of post-partum weight retention, it is now recommended that they gain within the specified range for their BMI.
- Women of short stature (less than 5'2") should gain weight at the lower end of the range for their BMI.
- For women carrying twins, a maternal weight gain of 40-45 lbs is associated with optimal birth weight.

### Rate of Weight Gain

- In the 1<sup>st</sup> trimester, weight gain is usually low, averaging a total of 3-4 lbs.
- In the 2<sup>nd</sup> and 3<sup>rd</sup> trimesters, when the majority of fetal growth occurs, the typical pattern of weight gain is one of smooth, steady increments.

- For women of normal pre-pregnancy BMI, weight gains of approximately one pound per week are recommended during the 2<sup>nd</sup> trimester, and slightly lower, 0.9 lbs per week, in the 3<sup>rd</sup> trimester. Underweight women will need to gain at a slightly higher rate and overweight women will need to gain slightly less to achieve full-term weight goals.
- For women carrying twins, preliminary evidence suggests the following weight gain rates: BMI<19: gain 1.75 lbs/week; BMI 19-25: gain 1.5 lbs/week.

### Monitoring Weight Gain

- Smooth, progressive weight gain generally represents a normal gain of lean and fat tissue.
- Deviations from the expected weight gain pattern result from changes in physical activity, food intake and/or excess water retention.
- Erratically high weight gain is likely to reflect excessive water retention – one of the symptoms of pre-eclampsia or pregnancy-induced hypertension.
- Weight gain grids are useful in tracking weight gain by week of gestation and allow individualized monitoring for women of varying pre-pregnancy BMIs.
- If women are gaining too little weight or gaining too slowly, they should be encouraged to eat 5 or 6 small meals throughout the day instead of 3 larger meals.

### Dietary Assessment

- Dietary assessment early in pregnancy, using a food history or frequency questionnaire, is important to identify any food intolerances or dietary inadequacies.
- Dietary counseling preferably by a Registered Dietitian (R.D.) should be provided to ensure a well-balanced diet, particularly for women with a high risk pregnancy.
- Eating at least the daily minimum of three to four servings from milk and dairy foods, five servings of fruits and vegetables, six servings of breads and cereals, and two servings of meat and/or meat alternatives, will provide almost all the nutrients needed for pregnancy.
- Special attention should be given to adequate fluid and fiber intake to alleviate constipation. Adequate fluid is 8-12 glasses of beverages such as water, milk, fruit and vegetable juices and broth soups. A diet rich in whole grain breads and cereals, legumes (such as dried beans and lentils), fruits and vegetables should provide adequate fiber.

### Calorie Intake

- Current recommendations for pregnant women in the 2<sup>nd</sup> and 3<sup>rd</sup> trimesters are 200-300 calories more than pre-pregnancy intake.
- Energy (calorie) intakes to support appropriate weight gain will vary by body size and level of physical activity.
- Women should be encouraged to eat to appetite a diet based on the Food Guide Pyramid and to gain weight gradually within the appropriate specified ranges.
- Restricting calorie intake limits weight gain, while increasing intake too much may lead to excessive maternal fat storage.

### Important Nutrients

- Because **calcium** absorption is enhanced during pregnancy, there is no additional calcium requirement above a woman's non-pregnant needs. The calcium requirement is 1300mg/day for teenagers and 1000mg/day for adults, which can be met with three to four servings of milk and dairy foods daily. Dark green leafy vegetables (such as bok choy, Swiss chard and spinach), legumes, some canned fish and fortified foods also provide calcium. Special counseling is recommended for women with a low calcium intake.

- **Protein** - from milk, meat, fish, poultry and legumes - is generally abundant in the American diet. The RDA for protein during pregnancy is 60 grams, 10-15 grams a day more than the amount needed by non-pregnant women. Protein powders are unnecessary and potentially dangerous.
- Women who are pregnant or trying to conceive should consume 600 micrograms per day of **foliate** from foods, fortified foods, and supplements to prevent fetal neural tube defects. This is 200 micrograms more than the non-pregnant recommendation. Food sources of foliate include some fruits and vegetables (asparagus, broccoli, spinach, oranges, peas), legumes, whole grains and fortified breads and cereals.
- **Iron** recommendations double during pregnancy from 15 to 30 milligrams per day. Because the increased recommendation cannot be met by usual dietary intakes, daily supplements are generally recommended during the 2<sup>nd</sup> and 3<sup>rd</sup> trimesters. A low-dose iron supplement (30 mg) poses no threat to mother or baby, minimizes adverse nutrient-nutrient interaction, is efficiently absorbed and decreases the intestinal distress associated with higher dosages.

### Supplements

- Routine vitamin/mineral supplementation of all pregnant women is not commonplace as it was a few years ago. Iron and foliate are the only nutrients for which there is sufficient evidence to suggest routine supplementation during pregnancy.
- Prenatal supplements are recommended for women who consume an inadequate diet, are carrying multiple fetuses, smoke, or abuse alcohol or other substances.
- Herbal supplements or remedies are not recommended during pregnancy. Some herbal teas can even harm the fetus, induce premature labor, or keep other medicines, vitamins and minerals from working.
- Individual nutrient supplements should be avoided unless used to treat a diagnosed disorder. Excessive supplementation may result in harmful nutrient-nutrient interactions.
- Complete vegetarians (vegans) may require supplements of vitamins D and B12.

### Exercise

- A regular schedule of physical activity is not only healthy for mom and baby, it helps to prevent excessive weight gain and helps alleviate many of the discomforts of pregnancy such as constipation, water retention, and fatigue.
- A good goal for most pregnant women is to get 30 minutes of moderate intensity activity on most days of the week.
- Activities such as walking, swimming, low-impact aerobics, and stationary bicycling are considered safe and appropriate for the pregnant woman with an altered center of gravity. Contact sports and activities that result in sudden jerking or bouncing movements should be avoided.

*If you get questions from your patients such as "Am I really eating for two?" or "If pregnancy is so great why do I sometimes feel so bad?" order our pregnancy program for your patients by clicking <here>.*

### References

1. Nutrition During Pregnancy: Part I, Weight Gain: Part II, Nutrient Supplements. Food and Nutrition Board, Institute of Medicine, National Academy of Sciences, 1990.
2. Recommended Dietary Allowances, 10th Edition, Food and Nutrition Board, Commission on Life Sciences, National Research Council, 1989.
3. Dietary Reference Intakes for Thiamin, Riboflavin, Niacin, Vitamin B6, Folate, Vitamin B12, Pantothenic Acid, Biotin, and Choline. Institute of Medicine, National Academy Press, Washington, D.C., 1998.
4. Dietary Reference Intakes for Calcium, Phosphorus, Magnesium, Vitamin D, and Fluoride. Institute of Medicine, National Academy Press, Washington, D.C., 1997.
5. Sutor, CW. Maternal weight gain: a report of an expert work group. US Department of Health and Human Services. Public Health Service. Health Resources and Services Administration. Maternal and Children Health Bureau, 1997.