

Weight Gain: Issues and Management

.....
Irene Alton
.....

Promoting adequate weight gain during pregnancy is a vital component of prenatal care. Adolescents may experience inadequate weight gain if they lack social support, live in an environment that does not provide adequate food access, cooking or food storage facilities, live in poverty, or experience fear of weight gain during pregnancy. Pregnant adolescents may experience excessive weight gain if they lack family support, use food as a comfort or coping mechanism for stress, or live in an environment that does not allow access to healthy food choices.

WEIGHT GAIN AND PREGNANCY OUTCOME

Adequate weight gain is an important predictor of pregnancy outcome and infant birthweight. Both the total amount of weight gain and the rate at which it is gained affect pregnancy and infant outcomes.

- Gestational weight gain strongly influences fetal growth, infant birthweight and length of gestation.¹
- Prepregnant body weight modifies the relationship between gestational weight gain and infant birthweight. Although weight gain has the greatest impact on pregnancy outcome in underweight and normal weight women, it is also significant in women who begin pregnancy overweight. Obese women who gain

less than 15 lbs are at higher risk for delivering small-for-gestational-age-infants.²⁻⁴

- Inadequate weight gain in pregnancy, particularly in combination with low prepregnant weight, is associated with higher rates of prematurity and the delivery of low birthweight and small-for-gestational-age infants.¹
- Low birthweight and prematurity are major determinants of perinatal mortality and morbidity.¹
- Low birthweight and disproportionate fetal growth have also been associated with an increased risk of cardiovascular disease, hypertension, glucose intolerance and obesity in later life.⁵
- Early gestational weight gain reflects tissue stores, fluid accumulation and blood volume expansion while later gain is associated primarily with fetal growth.⁶
- The pattern of weight gain as well as the total amount of weight gained appear to influence fetal growth and length of gestation.⁷⁻¹⁰

Inadequate weight gain in early pregnancy (<9.5 lbs by 24 weeks) has been shown to almost double the risk for delivery of a small for gestational age infant, while gains less than 0.9 lb/week after 24 weeks gestation have been shown to increase the risk for preterm delivery despite adequate total weight gain.⁸

WEIGHT GAIN ISSUES

- Gestational weight gain appears to have a greater impact on fetal growth in young adolescents and they may require higher weight gains than non-growing adolescents or adult pregnant women to deliver an infant of optimal size (3000-4000 g).¹¹
- Continued growth has been detected (by measuring knee height) in 50% of young primiparous and multiparous pregnant adolescents studied.¹¹
- Most studies suggest that young adolescents who are still growing transfer less of their gestational weight gain to their developing fetuses than older adolescents or adults, despite adequate weight gain and fat accumulation.^{11, 12}
- Despite 1-2 kg higher weight gains and less smoking, growing adolescents have been found to deliver smaller infants than older adolescents or adults.^{8, 11} Maternal growth may decrease circulating nutrient levels and decrease nutrient transfer to the fetus.^{11, 12}
- Adolescents have been found to have a higher median weight gain and rate of gain throughout pregnancy compared to adults (30.8-33 lbs vs 27.5 lbs).¹³
- Excessive gestational weight gain in adolescent pregnancy (e.g., over 40 lbs) does not enhance fetal growth or length of gestation but appears to increase the risk for postpartum weight retention, higher body fat content and obesity.¹³ If injectable contraception (Depo-Provera®) is used immediately after delivery, gestational weight gain may be more difficult to lose.¹⁴
- Excessive gestational weight gain and abdominal deposition of fat is more common in growing pregnant adolescents, and may increase their risk for postpartum weight retention and long term chronic disease.¹³

WEIGHT GAIN RECOMMENDATIONS

Guidelines for weight gain in pregnant adolescents must balance optimal growth and development of the adolescent and her fetus with prevention of postpartum weight retention and obesity.

- In 1991 the Institute of Medicine recommended that adolescents less than two years post menarche gain at the higher end of the weight gain range recommended for adult pregnant women, based on prepregnant body mass index (BMI) (see Table 1).¹
- Other groups have questioned the need for young adolescents to gain weight at the higher end of the range, citing difficulty in clinically detecting the adolescent who is still growing and the interest in preventing obesity in this population.¹⁵
- In a twin pregnancy, a weight gain of 1.5 lb/week during the second half of pregnancy has been recommended for normal weight, and 1.75 lb/week for underweight women.¹⁵

TABLE 1
Weight Gain Recommendations
for Pregnant Adolescents*

Prepregnant BMI	Total (lb)	Trimester 1 (lb)	Trimesters 2 & 3 (lbs/week)
Underweight	28-40	5	1.0+
Normal weight	25-35	3	1.0+
Overweight	15-25	2	0.66+
Obese	≥ 15	1.5	0.5+

Source: Institute of Medicine. Nutrition during pregnancy: part I, weight gain: part II, nutrient supplements. Washington, DC: National Academy Press, 1990.

ASSESSMENT OF WEIGHT GAIN STATUS AND WEIGHT GAIN

- Determine the adolescent's height and weight as described in Chapter 8.
- Determine her weight at the time of conception (prepregnant weight) through medical records or self-report.¹⁶
- Determine prepregnant BMI by using the nomogram in Appendix E.
- Evaluate recent weight changes prior to pregnancy and in early pregnancy as well as contributing factors (e.g., dieting before pregnancy, disordered eating, nausea and vomiting, substance use or smoking cessation).
- Evaluate the adolescent's body image, and her attitude about gestational weight gain as well as that of her partner and family members.

WEIGHT MANAGEMENT DURING PREGNANCY

Some of the factors that should be assessed regarding weight gain during pregnancy are listed in Table 2.

- Adolescents may be reluctant to gain weight during pregnancy because of concern about body shape and size. However, one study of racially diverse pregnant adolescents indicated a positive attitude towards weight gain, except in those who were heavier or lacked family support.¹⁰
- Inadequate weight gain in pregnancy has been observed in adolescents who ate fewer than three snacks per day, were not enrolled in the WIC program until the third trimester, and in those who lost weight or gained minimal or no weight by the first prenatal visit.¹⁵
- Excessive gestational weight gain in adolescents has been associated with depression, consumption of alcohol and excessive weight gain before prenatal care began (>2 lbs/week).¹⁵
- Monitor the adolescent's weight gain throughout pregnancy by graphing it on a weight gain grid

TABLE 2

Factors to Assess for Weight Management

Age

Chronologic age
Gynecologic age

Anthropometric

Pregnancy BMI
Height
Pregpregnancy weight
Weight gain pattern

Psychosocial

Support from partner, family, friends
Acceptance of pregnancy
Emotional stress
Food resources
Weight gain attitudes

Activity

Activity level
Exercise habits

Health

Eating pattern
Use of alcohol, drugs, cigarettes
Nausea/vomiting
Heartburn or constipation
Pica
History of eating problems

Weight History

Weight and dieting history
Recent rapid growth period
Preferred body weight

(Figure 1) and provide the adolescent with a personal copy with her weight gain goal highlighted.

- Intervene when the adolescent's weight gain deviates from the expected pattern. See Tables 3 and 4 for information on the evaluation and management of inadequate and excessive weight gain.

FIGURE 1
Prenatal Weight Gain Grid

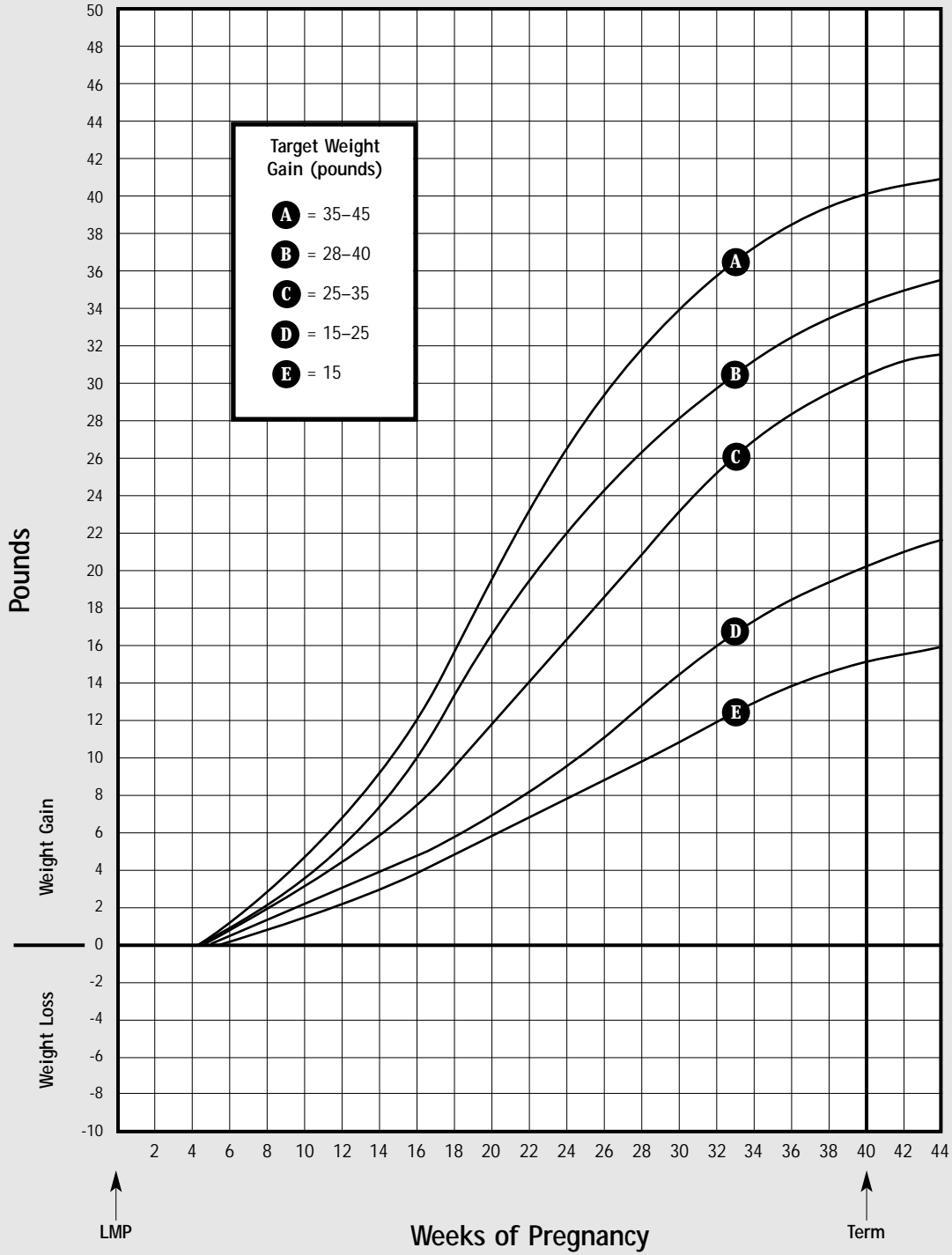


TABLE 3
Inadequate Gestational Weight Gain

Definition: < 2 lbs per month after the first trimester

Evaluation

- Measurement error
- Excessive gain at previous visit (e.g., edema)
- Disordered eating
- Restrictive eating/dieting/meal skipping
- Psychosocial stress
- Social isolation
- Lack of partner or family support
- Depression
- Denial/rejection of pregnancy
- Inadequate food access
- Homelessness
- Pica
- Substance use
- Nausea, vomiting or heartburn
- Inadequate sleep and rest
- High level of physical activity
- Physically demanding job
- Gestational diabetes
- Urinary ketones

Management

- 5-6 nutrient dense meals and snacks
- Adequate rest and sleep
- Decreased physical activity
- Stress management/relaxation techniques
- Manage physical discomforts
- Refer to food assistance programs
- Psychosocial counseling
- Food journal

Source: Institute of Medicine. Nutrition during pregnancy: part I, weight gain: part II, nutrient supplements. Washington, DC: National Academy Press, 1990.

TABLE 4
Excessive Gestational Weight Gain

Definition: > 6 lbs per month

Evaluation

- Measurement error
- Weight loss at previous visit
- Edema
- Smoking cessation
- Alcohol use
- Infrequent, large meals
- High fat and/or sugar intake
- Physical inactivity
- Twin or triplet pregnancy
- Depression
- Binge eating
- Psychosocial stress
- Social isolation
- Emotionally based eating
- Pica

Management

- Sensitive, supportive and non-shaming manner
- Moderate physical activity
- Positive reinforcement for smoking cessation
- Small, frequent meals (avoiding excess hunger and fullness)
- Decreased fat and sugar intakes
- Healthy snack and fast food choices
- Refer to food assistance programs
- Alternatives to emotionally-based eating
- Increased water and dietary fiber sources
- Limit portions to average serving size
- Psychosocial counseling
- Stress management/relaxation techniques
- Continue to gain weight at expected rate – avoid weight loss or stabilization
- Food journal

Source: Institute of Medicine. Nutrition during pregnancy: part I, weight gain: part II, nutrient supplements. Washington, DC: National Academy Press, 1990.

TABLE 5
Food Choices to Increase Weight Gain

- Waffles, pancakes, French toast
- Macaroni and cheese, pasta salads
- Baked potato with cheese, peas, corn, potato salad, coleslaw
- Fruit and yogurt shakes, smoothies, bananas, canned fruit
- Dried fruits
- Shakes and malts, ice cream, sundaes, flavored milks
- Instant breakfast drinks, supplements (e.g., Boost®, Ensure®)
- Pudding, custard, rice pudding, flan
- Peanut butter toast, nuts, sunflower or pumpkin seeds
- Grilled cheese, tuna or egg salad sandwiches
- Deviled eggs, cheese omelet
- Beans and rice, tacos, lasagna, pizza
- Split pea, lentil or cream soups
- Oatmeal or peanut butter cookies

TABLE 6
Food Choices to Slow Weight Gain

- Whole grain bread, low fat crackers, pocket bread, unsweetened cereals
- Fresh fruit, unsweetened fruit juice (limit to 1-2 cups per day), raw vegetables with salsa/low fat dip, salads with low fat dressing
- Baked "fries"
- Skim or 1% milk, low fat or fat free yogurt, low fat cheeses
- Baked, grilled, broiled, stewed or poached lean meats, fish, poultry
- Light margarine or butter; low fat or fat free salad dressings, mayonnaise, sour cream; cooking oil spray
- Baked chips, pretzels, frozen yogurt, low fat ice cream, snack size candy bars, juice bars
- Water, mineral water, diet carbonated beverages (in moderation)
- Angel food cake, graham crackers, frozen yogurt

EDUCATION AND COUNSELING

Encourage a total weight gain based on prepregnancy BMI as indicated in Table 1 and set a weight gain goal jointly with the adolescent.

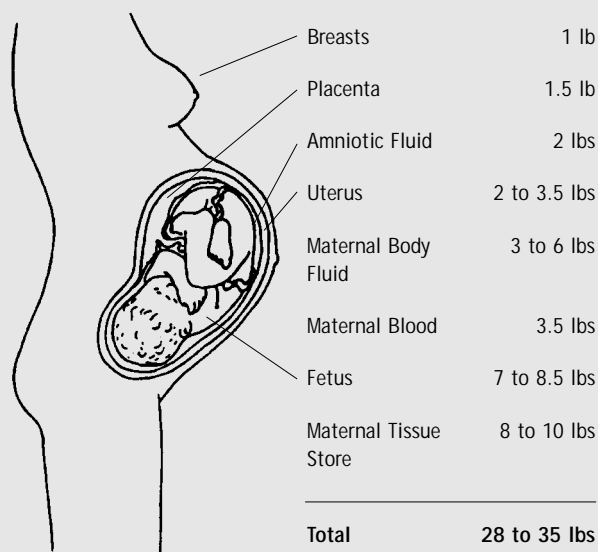
- Educate the adolescent, her partner and family members about the importance of weight gain for fetal growth and development and reassure her that the recommended weight gain is temporary and necessary for a healthy baby. Inform the adolescent that limiting weight gain will not result in an easier delivery.
- Discuss the components of gestational weight gain (see Figure 2) to help the adolescent understand the rationale for the total weight gain recommendation. Encourage an adequate energy intake through healthy meals and snacks (5-6 times per day) according to the Food Guide Pyramid for pregnant adolescents (see Appendix B).

- Dietary changes which can be made to increase or slow gestational weight gain patterns are listed in Tables 5 and 6. Suggestions should be individualized according to the adolescent's cultural background and food preferences.

REFERRAL

- Refer the adolescent for enrollment in the WIC Program at the first prenatal visit.
- Assess for depression and substance use, making appropriate referrals for treatment as indicated.
- Refer the adolescent to community education programs that offer prenatal and postnatal exercise classes to encourage appropriate amounts and types of physical activity during and after pregnancy.

FIGURE 2
Components of Average Weight Gain
During Normal Pregnancy



Source: Adapted from Worthington-Roberts, B.S. Nutritional issues related to pregnancy. In: Worthington-Roberts, B.S. Contemporary developments in nutrition. St. Louis: C.V. Mosby Co., 1981.

POST DELIVERY FOLLOW-UP

After delivery the adolescent may be at risk for using unhealthy weight loss strategies in an attempt to return to her prepregnant weight as quickly as possible.

- Evaluate practices such as restrictive eating, dieting, meal skipping, diet pills and products and excessive exercise.
- Discuss disadvantages and health risks of rapid weight loss and unhealthy weight loss practices.
- Encourage moderate physical activity such as walking, with a goal of being involved in some type of moderate exercise three to five times per week for a minimum of 20-30 minutes each time.
- Recommend five to six small meals/snacks per day, avoiding significant hunger or eating to excessive fullness.

- Eat according to the Food Guide Pyramid (Appendix B), making selections that are lower in energy and fat and high in fiber and micronutrients.

REFERENCES

1. Institute of Medicine. Nutrition during pregnancy: part I, weight gain; part II, nutrient supplements. Washington, DC: National Academy Press, 1990.
2. Abrams B. Weight gain and energy intake during pregnancy. *Clin Obstet Gynecol* 1994;37(3):515-527.
3. Edwards LE, Hellerstedt WL, Alton IR, Story M, Himes JH. Pregnancy complications and birth outcomes in obese and normal-weight women: effects of gestational weight change. *Obstet Gynecol* 1996;87(3):389-394.
4. Parker JD, Abrams B. Prenatal weight gain advice: an examination of the recent prenatal weight gain recommendations of the Institute of Medicine. *Obstet Gynecol* 1992;79(5 (Pt 1)):664-669.
5. Barker DJ. Fetal origins of coronary heart disease. *Br Med J* 1995;311(6998):171-174.
6. Hediger ML, Scholl TO, Belsky DH, Ances IG, Salmon RW. Patterns of weight gain in adolescent pregnancy: effects on birthweight and preterm delivery. *Obstet Gynecol* 1989;74(1):6-12.
7. Abrams B, Carmichael S, Selvin S. Factors associated with the pattern of maternal weight gain during pregnancy. *Obstet Gynecol* 1995;86(2):170-176.
8. Scholl TO, Hediger ML. A review of the epidemiology of nutrition and adolescent pregnancy: maternal growth during pregnancy and its effect on the fetus. *J Am Coll Nutr* 1993;12(2):101-107.
9. Hediger ML, Scholl TO, Ances IG, Belsky DH, Salmon RW. Rate and amount of weight gain during adolescent pregnancy: associations with maternal weight-for-height and birthweight. *Am J Clin Nutr* 1990;52(5):793-799.
10. Stevens-Simon C, Nakashima I, Andrews D. Weight gain attitudes among pregnant adolescents. *J Adolesc Health* 1993;14(5):369-372.
11. Scholl TO, Hediger ML, Cronk CE, Schall JI. Maternal growth during pregnancy and lactation. *Horm Res* 1993;39(Suppl 3):59-67.
12. Frisancho AR. Reduction of birthweight among infants born to adolescents: maternal-fetal growth competition. *Ann N Y Acad Sci* 1997;817:272-280.
13. Hediger ML, Scholl TO, Schall JI. Implications of the Camden Study of adolescent pregnancy: interactions among maternal growth, nutritional status, and body composition. *Ann N Y Acad Sci* 1997;817:281-291.
14. Hellerstedt WL, Story M. Adolescent satisfaction with postpartum contraception and body weight concerns. *J Adolesc Health* 1998;22(6):446-452.
15. Suito CW. Maternal weight gain: a report of an expert work group. Arlington, VA: National Center for Education in Maternal and Child Health, 1997.
16. Stevens-Simon C, McAnarney ER, Coulter MP. How accurately do pregnant adolescents estimate their weight prior to pregnancy? *J Adolesc Health Care* 1986;7(4):250-254.