

131 Low Maternal Weight Gain

Definition/Cut-off Value

Low maternal weight gain is defined as follows:

1. A low rate of weight gain, such that in the 2nd and 3rd trimesters, for singleton pregnancies (1,2):

Prepregnancy Weight Classification	BMI	Total Weight Gain (lbs.)/Week
Underweight	< 18.5	< 1
Normal Weight	18.5 to 24.9	< 0.8
Overweight	25.0 to 29.9	< 0.5
Obese	≥ 30.0	< 0.4
Multi-fetal Pregnancies	See Justification for more information.	

Note: A BMI table is attached to assist in determining weight classifications. Also, until research supports the use of different BMI cut-offs to determine weight categories for adolescent pregnancies, the same BMI cut-offs will be used for all women, regardless of age, when determining WIC eligibility. (See Justification for a more detailed explanation.)

2. Low weight gain at any point in pregnancy, such that using a National Academies of Sciences, Medicine, and Engineering (NASEM - formerly known as the Institute of Medicine)-based weight gain grid, a pregnant woman's weight plots at any point beneath the bottom line of the appropriate weight gain range for her respective prepregnancy weight category as follows (1,2):

Prepregnancy Weight Classification	BMI	Total Weight Gain Range (lbs.)
Underweight	< 18.5	28-40
Normal Weight	18.5 to 24.9	25-35
Overweight	25.0 to 29.9	15-25
Obese	≥ 30.0	11-20
Multi-fetal Pregnancies	See Justification for more information.	

Note: A BMI table is attached to assist in determining weight classifications. Also, until research supports the use of different BMI cut-offs to determine weight categories for adolescent pregnancies, the same BMI cut-offs will be used for all women, regardless of age, when determining WIC eligibility. (See Justification for a more detailed explanation.)

Participant Category and Priority Level

Category	Priority
Pregnant	I

Justification

The amount of weight gained during pregnancy has both immediate and long term implications for both mother and infant. In the short term, maternal weight gain during the 2nd and 3rd trimesters is an important determinant of fetal growth. In fact, low maternal weight gain is associated with an increased risk of small for gestational age (SGA) infants especially in underweight and normal-weight women. Moreover, it is associated with preterm birth among underweight women and, to a lesser extent, normal weight women. Low maternal weight gain is also associated with failure to initiate breastfeeding. (1)

In the long term, evidence shows that poor maternal nutrition during pregnancy can have permanent, detrimental effects on the child's health in later years. These effects include an increased risk for obesity, impaired glucose tolerance, and cardiovascular disease. Research suggests that early gestation may be a particularly sensitive period wherein inadequate weight gain can have long term impacts on the cardiometabolic health of the child later in life. This most likely results from suboptimal maternal nutrition that affects developing fetal organs thereby leading to permanent alterations. (3)

Nationally representative data indicates that inadequate gestational weight gain is most prevalent among Asian, Hispanic, and black mothers. Furthermore, a multivariable-adjusted analysis of >52,000 women who participated in the 2004–2005 Pregnancy Risk Assessment Monitoring System confirmed that Hispanic, black, and women who identified as “other” regarding race gain significantly less weight than white women after adjusting for pre-pregnancy BMI, age, parity, and education (4). Reports of multivariable-adjusted analyses of both national studies and smaller cohorts since 1980 confirm that black and Hispanic women compared to white women are more likely to have inadequate weight gain as opposed to excessive gestational weight gain (4). Research shows that black women in the U.S. are more likely to gain less than the recommended amount of weight during pregnancy and more likely to lose weight during pregnancy compared to white women (5). Contributing factors include the decreased access that socioeconomically disadvantaged neighborhoods have to vital resources that help ensure the good health of the mother prior to and during pregnancy. Additionally, place of work and exposure to other harmful environments are also factors (6).

The 2009 NASEM prenatal weight gain recommendations based on prepregnancy weight status categories are associated with improved maternal and child health outcomes (1). Included in these guidelines is the recommendation that the BMI weight categories used for adult women be used for pregnant adolescents as well. More research is needed to determine whether special categories are needed for adolescents. It is recognized that the NASEM cut-offs for defining weight categories will classify some adolescents differently than the CDC BMI-for-age charts. For the purpose of WIC eligibility determination, the NASEM cut-offs will be used for all women regardless of age. However, due to the lack of research on relevant BMI cut-offs for pregnant and postpartum adolescents, professionals should use all of the tools available to them to assess an individual's anthropometric status and tailor nutrition counseling accordingly.

Multi-fetal Pregnancies

For twin gestations, the NASEM recommendations provide provisional guidelines as follows: normal weight women should gain 37-54 pounds; overweight women, 31-50 pounds; and obese women, 25-42 pounds. There was insufficient information for the NASEM committee to develop even provisional guidelines for underweight women with multiple fetuses (1). However, a consistent rate of weight gain is advisable. A gain of 1.5 pounds per week during the second and third trimesters has been associated with a reduced risk of preterm and low-birth weight delivery in twin pregnancy (7). In triplet pregnancies, the overall gain should be around 50 pounds with a steady rate of gain of approximately 1.5 pounds per week throughout the pregnancy (7). Education by the WIC nutritionist should address a steady rate of weight gain that is higher than for singleton pregnancies. For WIC nutrition risk assignment, multi-fetal pregnancies are considered a nutrition risk in and of themselves (see Risk 335 - *Multi-Fetal Gestation*), aside from weight gain.

Weight Loss during Pregnancy

Weight loss during pregnancy can result in SGA infants, stillbirth, and neonatal death (8). In addition, surviving children are at risk for poor growth and infection during infancy. Weight loss during pregnancy may indicate underlying dietary or health practices. It may also indicate underlying health or social conditions associated with poor pregnancy outcomes. Common causes of unintended weight loss during pregnancy include food insecurity, substance misuse, housing insecurity, infection, food-borne illness, and symptoms associated with pregnancy such as hyperemesis gravidarum (9). Please refer to Risk 301 - *Hyperemesis Gravidarum* for additional information.

Weight Loss during Pregnancy in Obese Women

The recommended amount of weight gain in obese women during pregnancy remains controversial (10). Research demonstrates that it may be beneficial for the mother, and not harmful for the infant, to lose weight during pregnancy. The benefits of weight loss among obese pregnant women include decreased rates of caesarian delivery, large-for-gestational-age infants, and postpartum weight retention (11). As a result, some scientists are now suggesting that the NASEM recommendations for weight gain in obese pregnant women be re-evaluated (12).

Although controversy remains regarding weight loss during pregnancy among obese women, if a pregnant woman was obese prior to pregnancy, she should follow the advice of her health care provider regarding weight recommendations. For WIC nutrition risk assignments, WIC staff should follow the NASEM recommendations.

Implications for WIC Nutrition Services

WIC services can improve the birth outcomes for women who experience low maternal weight gain during pregnancy. These outcomes can be improved by the supplemental food, nutrition education, and referrals provided to participants by the WIC Program. The WIC food prescription helps provide pregnant women with foods that reflect their nutritional needs during pregnancy. The tailored nutrition education given to pregnant women helps ensure that they receive nutrition support that is relevant to their concerns and lifestyle factors. Staff can assist pregnant women in the following ways:

- Carefully assessing the health status, dietary intake, and concerns of the woman in a participant-centered manner to find out possible factors contributing to low weight gain.

- Encouraging women to eat smaller, more frequent meals with snacks if they are struggling with appetite or nausea.
- Discussing healthy, high calorie snack options, if appropriate. To include nutrition tailoring of the food package for higher caloric WIC foods, e.g., peanut butter instead of legumes.
- Educating pregnant women on the importance of appropriate weight gain during pregnancy.
- If allowable, providing pregnant women with medical foods as prescribed by their medical provider to support appropriate weight gain.
- Referring to the health care provider if the pregnant woman has been diagnosed with, or is suspected of having, hyperemesis gravidarum.
- Providing additional referrals to health care providers and/or other services based on interests and concerns of the woman.

References

1. Institute of Medicine. Weight gain during pregnancy: reexamining the guidelines. National Academy Press; 2009 [cited 2017 Dec 1]. Available from: <https://www.nap.edu/search/?term=Weight+Gain+During+Pregnancy%3A+Reexamining+the+Guidelines>.
2. National Heart, Lung, and Blood Institute (NHLBI), National Institutes of Health (NIH). Clinical guidelines on the identification, evaluation, and treatment of overweight and obesity in adults. NIH Publication No. 98-4083; 1998 [cited 2017 Dec 1]. Available from: www.nhlbi.nih.gov.
3. Van der Post JAM, Painter RC, Grooten IJ, Roseboom TJ, Pontesilli M, Mol BWJ, van Eijsden M, Vrijkotte Bodnar TGM. Weight loss in pregnancy and cardiometabolic profile in childhood: findings from a longitudinal birth cohort. *Maternal & Child Health Journal*. 2014.
4. Headen IE, Davis EM, Mujahid MS, Abrams B. Racial-ethnic differences in pregnancy-related weight. *Advances in Nutrition an International Review Journal*. 2012.
5. Mendez D, Doebler DA, Kim KH, Amutah NN, Fabio A, Lisa M. Neighborhood socioeconomic disadvantage and gestational weight gain and loss. *Maternal & Child Health Journal*. 2014.
6. Culhane, JF, Elo IT. Neighborhood context and reproductive health. *American Journal of Obstetrics and Gynecology*. 2005. 192(5 Suppl), S22-S29.
7. Brown JE and Carlson M. Nutrition and multifetal pregnancy. *J Am Diet Assoc*. 2000; 100:343-348.
8. Davis R, Edmond S, Hofferth S. Gestational weight gain and risk of infant death in the United States. *American Journal of Public Health*. 2014. 104 (1 Suppl), S90 – S95.
9. Institute of Medicine (IOM); Committee on Scientific Evaluation of WIC Nutrition Risk Criteria. WIC nutrition risk criteria: A scientific assessment. Washington, DC: National Academy Press; 1996.
10. Kapadia MZ, Park CK, Beyene J, Giglia L, Maxwell C, McDonald SD. Weight loss instead of weight gain within the guidelines in obese women during pregnancy: a systematic review and meta-analysis of maternal and infant outcomes. 2015. *PLoS ONE* 10(7): e0132650. Doi:10.1371/journal.pone.0132650.

11. Committee on Obstetric Practice. Weight gain during pregnancy. The American College of Obstetricians and Gynecologists. 2013.
12. Bauer Cox CM, Merrill DC, Bernhard KA, Greer DM. Maternal and neonatal outcomes in obese women who lose weight during pregnancy. *Journal of Perinatology*. 2016. 36, 278 – 283.

Additional References

- Brown JE, Schloesser PT. Pregnancy weight status, prenatal weight gain, and the outcome of term twin gestation. *Am. J. Obstet. Gynecol.* 1990; 162:182-6.
- 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; 79:664-9.
- Siega-Riz AM, Adair LS, Hobel CJ. Institute of Medicine maternal weight gain recommendations and pregnancy outcomes in a predominately Hispanic population. *Obstet Gynecol*, 1994; 84:565-73.
- Sutor CW, editor. Maternal weight gain: a report of an expert work group. Arlington, Virginia: National Center for Education in Maternal and Child Health; 1997. Sponsored by Maternal and Child Health Bureau, Health Resources and Services Administration, Public Health Service, U.S. Department of Health and Human Services.
- Williams RL, Creasy RK, Cunningham GC, Hawes WE, Norris FD, Tashiro M. Fetal growth and perinatal viability in California. *Obstet.Gynecol.* 1982; 59:624-32.

Clarification

The Centers for Disease Control and Prevention (CDC) defines a trimester as a term of three months in the prenatal gestation period with the specific trimesters defined as follows in weeks:

- First Trimester: 0-13 weeks
- Second Trimester: 14-26 weeks
- Third Trimester: 27-40 weeks

Further, CDC begins the calculation of weeks starting with the first day of the last menstrual period. If that date is not available, CDC estimates that date from the estimated date of confinement (EDC). This definition is used in interpreting CDC's Prenatal Nutrition Surveillance System data, comprised primarily of data on pregnant women participating in the WIC Program.

(BMI) Table for Determining Weight Classification for Women (1)

Height (Inches)	Underweight BMI < 18.5	Normal Weight BMI 18.5-24.9	Overweight BMI 25.0-29.9	Obese BMI ≥ 30.0
58"	< 89 lbs	89-118 lbs	119-142 lbs	> 142 lbs
59"	< 92 lbs	92-123 lbs	124-147 lbs	> 147 lbs
60"	< 95 lbs	95-127 lbs	128-152 lbs	> 152 lbs
61"	< 98 lbs	98-131 lbs	132-157 lbs	> 157 lbs
62"	< 101 lbs	101-135 lbs	136-163 lbs	> 163 lbs
63"	< 105 lbs	105-140 lbs	141-168 lbs	> 168 lbs
64"	< 108 lbs	108-144 lbs	145-173 lbs	> 173 lbs
65"	< 111 lbs	111-149 lbs	150-179 lbs	> 179 lbs
66"	< 115 lbs	115-154 lbs	155-185 lbs	> 185 lbs
67"	< 118 lbs	118-158 lbs	159-190 lbs	> 190 lbs
68"	< 122 lbs	122-163 lbs	164-196 lbs	> 196 lbs
69"	< 125 lbs	125-168 lbs	169-202 lbs	> 202 lbs
70"	< 129 lbs	129-173 lbs	174-208 lbs	> 208 lbs
71"	< 133 lbs	133-178 lbs	179-214 lbs	> 214 lbs
72"	< 137 lbs	137-183 lbs	184-220 lbs	> 220 lbs

(1) Adapted from the Clinical Guidelines on the Identification, Evaluation and Treatment of Overweight and Obesity in Adults. National Heart, Lung and Blood Institute (NHLBI), National Institutes of Health (NIH). NIH Publication No. 98-4083.