

Arizona WIC Program Nutrition Risk Criteria

Definitions, Justifications, and Clarifications
(Includes **ALL** Memo 98-9 Rev. 10 updates)



Effective October 1, 2011

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Underweight (Women)

**Definition/
cut-off value**

Pregnant Women

- prepregnancy Body Mass Index (BMI) <18.5

Non-Breastfeeding Women

- prepregnancy or current Body Mass Index (BMI) <18.5

Breastfeeding Women less than 6 months postpartum

- prepregnancy or current Body Mass Index (BMI) <18.5

Breastfeeding Women 6 months postpartum or more

- current Body Mass Index (BMI) <18.5

Note: A BMI table is attached to assist in determining weight classification. Also, until research supports the use of different BMI cut-offs to determine weight status categories for adolescent pregnancies, the same BMI cut-offs will be used for all women, regardless of age, when determining WIC eligibility (1). (See Justification for a more detailed explanation.)

**Participant
category and
priority level**

Category

Priority

Pregnant Women

I

Breastfeeding Women

I

Non-Breastfeeding Women

III, IV, V or VI

Justification

Underweight women who become pregnant are at a higher risk for delivery of low birth weight (LBW) infants, retarded fetal growth, and perinatal mortality.

Prepregnancy underweight is also associated with a higher incidence of various pregnancy complications, such as antepartum hemorrhage, premature rupture of membranes, anemia, endometriosis, and cesarean delivery (2).

The goal in prenatal nutritional counseling provided by WIC is to achieve recommended weight gain by emphasizing food choices of high nutritional quality; and for the underweight woman, by encouraging increased consumption and/or the inclusion of some calorically dense foods.

The 2009 Institute of Medicine (IOM) report: *Weight Gain During Pregnancy: Reexamining the Guidelines* (1) updated the pregnancy weight categories to conform to the categories developed by the World Health Organization and adopted by the National Heart, Lung and Blood Institute in 1998 (3). The reexamination of the guidelines consisted of a review of the determinants of a wide range of short-and long-term consequences of variation in weight gain during pregnancy for both the mother

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and her infant. The IOM prenatal weight gain recommendations based on prepregnancy weight status categories are associated with improved maternal and child health outcomes (1).

Included in the 2009 IOM 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 both the IOM 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 IOM 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 these applicants' anthropometric status and tailor nutrition counseling accordingly.

Weight during the early postpartum period, when most WIC certifications occur, is very unstable. During the first 4-6 weeks fluid shifts and tissue changes cause fluctuations in weight. After 6 weeks, weight loss varies among women. Prepregnancy weight, amount of weight gain during pregnancy, race, age, parity and lactation all influence the rate of postpartum weight loss. By 6 months postpartum, body weight is more stable and should be close to the prepregnancy weight. In most cases therefore, prepregnancy weight is a better indicator of weight status than postpartum weight in the first 6 months after delivery. The one exception is the woman with a BMI of <18.5 during the immediate 6 months after delivery. Underweight at this stage may indicate inadequate weight gain during pregnancy, depression, an eating disorder or disease, any or all of which need to be addressed. (4)

While being on the lean side of normal weight is generally considered healthy, being underweight can be indicative of poor nutritional status, inadequate food consumption, and/or an underlying medical condition. Underweight women who are breastfeeding may be further impacting their own nutritional status. Should she become pregnant again, an underweight woman is at a higher risk for delivery of low birth weight (LBW) infant(s), retarded fetal growth, and perinatal mortality. The role of the WIC Program is to assist underweight women in the achievement of a healthy dietary intake and body mass index.

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Underweight (Women)

References

1. Institute of Medicine. Weight gain during pregnancy: reexamining the guidelines (Prepublication Copy). National Academy Press, Washington, D.C.;2009. www.nap.edu. Accessed June 2009.
2. Institute of Medicine. WIC nutrition risk criteria: a scientific assessment. National Academy Press, Washington, D.C.;1996.
3. 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. www.nih.gov. Accessed June 2009.
4. Crowel DT. Weight changes in the postpartum period: a review of the literature. *Journal of Nurse-Midwifery*. Vol. 40, No. 5, September/October 1995; pgs 418-423.

Additional Related References

1. 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.
 2. 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.
 3. 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.
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Underweight (Women)

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.

Underweight or At Risk of Becoming Underweight (Infants and Children)

Definition/ cut-off value

Underweight

Birth to 2 years: Less than or equal to 5th percentile weight-for-length*.

2 – 5 years: Less than or equal to 5th percentile Body Mass Index (BMI)-for-age*.

At Risk of Underweight

Birth to 2 years: 6th through 10th percentile weight-for-length*.

2 – 5 years: 6th through 10th percentile Body Mass Index (BMI)-for-age*.

*Based on National Center for Health Statistics/Centers for Disease Control and Prevention age/sex specific growth charts (2000).

Participant category and priority level

Category

Priority

Infants

I

Children

III

Justification

The Centers for Disease Control and Prevention (CDC) uses the 5th percentile as the cut-off to define underweight in its Pediatric Nutrition Surveillance System. However, CDC does not have a position regarding the cut-off percentile, which should be used to determine underweight as a nutritional risk in WIC.

A survey of articles and texts addressing weight for length or stature cut-off percentiles reveals that: a) many children less than the 5th percentile are in need of nutritional intervention, and b) many authors also view a child at less than or equal to the 10th percentile as at nutritional risk and in need of preventive nutritional intervention, or at least further evaluation (1). The 10th percentile cut-off is **included in this criterion** to reflect the preventive emphasis of the program.

Weight-for-length/stature describes body proportionality and is sensitive to acute undernutrition, but can also reflect long-term status (2). Physical growth delay is used as a proxy for the deleterious effects undernutrition can have on immune function, organ development, hormonal function and brain development (3).

Participation in WIC has been associated with improved growth in both weight and height in children (4).

References

1. Food and Nutrition Information Center, National Agriculture Library. Update of analysis of literature regarding cut-off percentiles for low weight for length in infants. Washington, D.C.; February 5, 1991.
 2. **Sherry B. Epidemiology of inadequate growth. In: Kessler DB, Dawson P, editors. Failure to thrive and pediatric undernutrition: A transdisciplinary approach. Baltimore: Paul H. Brooks Publishing Company, Inc.; 1999. p. 21.**
 3. **Metallinos-Katsaras E, Gorman KS. Effects of undernutrition on growth and development. In: Kessler DB, Dawson P, editors. Failure to thrive and pediatric undernutrition: A transdisciplinary approach. Baltimore: Paul H. Brooks Publishing Company, Inc.; 1999. p. 38.**
 4. Disbrow DD. The costs and benefits of nutrition services: a literature review. J Am Diet Assoc. 1989;89:S3-66.
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Overweight (Women)

**Definition/
cut-off value**

Pregnant Women

- pre-pregnancy Body Mass Index (BMI) ≥ 25

Non-Breastfeeding Women

- pre-pregnancy Body Mass Index (BMI) ≥ 25

Breastfeeding Women less than 6 months postpartum

- pre-pregnancy Body Mass Index (BMI) ≥ 25

Breastfeeding Women 6 months postpartum or more

- current Body Mass Index (BMI) ≥ 25

Note: A BMI table is attached to assist in determining weight classifications. Also, until research supports the use of different BMI cut-offs for adolescent pregnancies, the same BMI cut-offs will be used for all women, regardless of age, when determining WIC eligibility (1). (See Justification for a more detailed explanation.)

**Participant
category and
priority level**

Category

Priority

Pregnant Women

I

Breastfeeding Women

I

Non-Breastfeeding Women

III, IV, V, VI

Justification

Maternal overweight and obesity are associated with higher rates of cesarean delivery, gestational diabetes mellitus, preeclampsia and other pregnancy-induced hypertensive disorders, as well as postpartum anemia (2). Several studies have established an association between obesity and an increased risk for hypertension, dyslipidemia, diabetes mellitus, cholelithiasis, coronary heart disease, osteoarthritis, sleep apnea, stroke and certain cancers (1).

One goal of prenatal nutritional counseling is to achieve recommended weight gain during pregnancy. For the overweight woman, emphasis should be on selecting food choices of high nutritional quality and avoiding calorie-rich foods, thereby minimizing further risks associated with increased overweight and obesity.

The 2009 Institute of Medicine (IOM) report: *Weight Gain During Pregnancy: Reexamining the Guidelines* (1) updated the pregnancy weight categories to conform to the categories developed by the World Health Organization and adopted by the National Heart, Lung and Blood Institute in 1998 (3). The reexamination of the guidelines consisted of a review of the determinants of a wide range of short- and long-term consequences of variation in weight gain during pregnancy for both the mother

111 Overweight (Women)

and her infant. The IOM prenatal weight gain recommendations based on prepregnancy weight status categories are associated with improved maternal and child health outcomes (1).

Included in the 2009 IOM 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 IOM 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 IOM 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 these applicants' anthropometric status and tailor nutrition counseling accordingly.

Weight during the early postpartum period, when most WIC certifications occur, is very unstable. During the first 4-6 weeks fluid shifts and tissue changes cause fluctuations in weight. After 6 weeks, weight loss varies among women. Prepregnancy weight, amount of weight gain during pregnancy, race, age, parity and lactation all influence the rate of postpartum weight loss. By 6 months postpartum, body weight is more stable and should be close to the prepregnancy weight. In most cases, therefore, prepregnancy weight is a better indicator of weight status than postpartum weight in the first 6 months after delivery. (4)

The percentage of adolescents who are overweight has increased rapidly and more than 60% of adults in the US are overweight. Due to the significant impact that overweight and obesity have on morbidity and mortality, it is imperative that every effort be made to identify individuals who are overweight and to assist them in achieving a more healthful weight. The WIC Program is in a position to play an important role in helping to reduce the prevalence of overweight not only by working with postpartum women on improving their own weight status, but also by helping them to see their role in assisting their children to learn healthful eating and physical activity behaviors.

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Overweight (Women)

References

1. Institute of Medicine. Weight gain during pregnancy: reexamining the guidelines (Prepublication Copy). National Academy Press; Washington D.C.; 2009. www.nap.edu. Accessed June 2009.
2. Bodnar LM, Catov JM, Klibanoff MA, Ness RB, Roberts JM. Prepregnancy body mass index and the occurrence of severe hypertensive disorders of pregnancy. *Epidemiology* 2007;18(2):234-239.
3. 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. www.nhlbi.nih.gov. Accessed June 2009.
4. Crowell DT. Weight changes in the postpartum period: a review of the literature. *Journal of Nurse-Midwifery*. Vol. 40, No. 5, September/October 1995; pgs 418-423.

Additional Related References

1. Naye, R.L.: Maternal body weight and pregnancy outcome. *American Journal Clin. Nutr.*; 1990; 52:273-279.
 2. 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.
 3. 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.
 4. Suitor 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.
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Overweight (Women)

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
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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.

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Overweight (Children 2-5 years of Age)

**Definition/
cut-off value**

≥24 months to 5 years of age and ≥95th percentile Body Mass Index (BMI)* or ≥95th percentile weight-for-stature*

* Based on National Center for Health Statistics/Centers for Disease Control and Prevention (2000) age/sex specific growth charts.

Note: For children 24-36 months of age with a recumbent length, use ≥95th percentile based on the weight-for-length growth grid.

**Participant
category and
priority level**

Category	Priority
Children (≥24 months of age)	III

Justification

Use of the 95th percentile to define overweight identifies those children with a greater likelihood of being overweight as adolescents and adults, with increased risk of obesity-related disease and mortality. It is recommended that an overweight child (≥95th percentile) undergo an in-depth medical assessment and careful evaluation to identify any underlying syndromes or secondary complications. Overweight can result from excessive energy intake, decreased energy expenditure, or impaired regulation of energy metabolism. In addition, overweight in early childhood may signify problematic feeding practices or evolving family behaviors that, if continued, may contribute to health risks in adulthood related to diet and inactivity.

Overweight children and their families often feel embarrassed and ashamed. Therefore, it is extremely important for WIC staff to treat these families with sensitivity, compassion, and a conviction that overweight is an important chronic medical problem that can be treated. The goal in nutritional counseling provided by WIC is to help the child achieve recommended rates of growth and development by emphasizing food choices of high nutritional quality while avoiding unnecessary or excessive amounts of calorie rich foods and beverages.

Also, the importance of reducing inactivity (for example, decreasing sedentary TV viewing) and increasing age appropriate physical activity should be emphasized for children, with information provided to the parent/caretaker. Suggestions for increasing physical activity could include increased outdoor time as well as increased gross motor play (e.g., play-along videos or cassettes that promote physical activity).

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Overweight (Children 2-5 years of Age)

In addition to nutrition counseling, the referral services WIC provides can greatly assist families in identifying medical providers and other services (if available) that provide the recommended medical assessments and treatment when necessary.

References

1. Barlow SE, Dietz WH. Obesity Evaluation and Treatment: Expert Committee Recommendations. *Pediatrics* 1998;102:3.
 2. Hamill PV, Drizd TA, Johnson CL, Reed RB, Roche AF, Moore WM. Physical growth: National Center for Health Statistics percentiles. *Am.J.Clin.Nutr.* 1979;32:607-29.
 3. Institute of Medicine. WIC nutrition risk criteria a scientific assessment. National Academy Press, Washington, D.C.; 1996.
 4. Kuczmariski RJ, Ogden CL, Grummer-Strawn LM, et al. CDC growth charts: United States. Advance data from vital and health statistics; no. 314. Hyattsville, Maryland: National Center for Health Statistics. 2000.
 5. Whitaker Robert C, Wright JA, Pepe MS, Seidel KD, Dietz WH. Predicting Obesity in Young Adulthood from Childhood and Parental Obesity. *NEJM*, September 25, 1997; Vol 337, No 13, pages 869-873.
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Clarification

Current data suggests that there is no increased risk of adult obesity based on BMI or weight-for-length during the first two years of life, independent of parental obesity. Therefore, only children ≥ 24 months of age are included in this criterion. Please refer to risk #114, "At Risk of Becoming Overweight" to assess factors that place infants and children under 2 years of age at risk of becoming overweight.

Short Stature or At Risk of Short Stature (Infants and Children)

Definition/ cut-off value **Short Stature**
Birth to 2 years: Less than or equal to 5th percentile length-for-age*.
2 – 5 years: Less than or equal to 5th percentile stature-for-age*.

At Risk of Short Stature
Birth to 2 years: 6th through 10th percentile length-for-age*.
2 - 5 years: 6th through 10th percentile stature-for-age*.

*Based on National Center for Health Statistics/Centers for Disease Control and Prevention age/sex specific growth charts (2000).

Note: For premature infants and children (with a history of prematurity) up to 2 years of age, assignment of this risk criterion will be based on adjusted gestational age. For information about adjusting for gestational age see: “Guidelines for Growth Charts and Gestational Age Adjustment for Low Birth Weight and Very Low Birth Weight Infants” (FNS Policy Memorandum 98-9, Revision 7, April 2004).

Participant category and priority level	Category	Priority
	Infants	I
	Children	III

Justification **The Centers for Disease Control and Prevention (CDC) uses the 5th percentile as the cut-off to define short stature in its Pediatric Nutrition Surveillance System. Due to the health risk prevention emphasis in the WIC Program, the 10th percentile cut-off is also used.**

Abnormal short stature in infants and children is widely recognized as a response to a limited nutrient supply at the cellular level. The maintenance of basic metabolic functions takes precedence, and thus resources are diverted from linear growth. Short stature is related to a lack of total dietary energy and to poor dietary quality that provides inadequate protein, particularly animal protein, and inadequate amounts of such micronutrients as zinc, vitamin A, iron, copper, iodine, calcium, and phosphorus. (1)

Demonstrable differences in stature exist among children of different ethnic and racial groups. However, racial and ethnic differences are relatively minor compared with environmental factors (1).

Short Stature or At Risk of Short Stature (Infants and Children)

Growth patterns of children of racial groups whose short stature has traditionally been attributed to genetics have been observed to increase in rate and in final height under conditions of improved nutrition (2,3).

Short stature may also result from disease conditions such as endocrine disturbances, inborn errors of metabolism, intrinsic bone diseases, chromosomal defects, fetal alcohol syndrome, and chronic systemic diseases.

Participation in WIC has been associated with improved growth in both weight and height in children (4)

References

1. Institute of Medicine. WIC nutrition risk criteria a scientific assessment. Washington (DC): National Academy Press; 1996. p. 104-109.
 2. Pipes PL, Trahms CM. Nutrition in infancy and childhood, 6th edition. Seattle (WA): WCB/McGraw-Hill; 1997. p. 2.
 3. **Berhane R, Dietz WH. Clinical assessment of growth. In: Kessler DB, Dawson P., editors. Failure to thrive and pediatric undernutrition: A transdisciplinary approach. Baltimore (MD): Paul H. Brooks Publishing Company, Inc.; 1999. p. 199.**
 4. Disbrow DD. The costs and benefits of nutrition services: a literature review. J Am Diet Assoc. 1989;89:S3-66.
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Low Maternal Weight Gain

**Definition/
cut-off value**

Low maternal weight gain is defined as:

1. A low rate of weight gain, such that in the 2nd and 3rd trimesters, for singleton pregnancies (1):
 - Underweight women gain less than 1 pound per week
 - Normal weight women gain less than .8 pounds per week
 - Overweight women gain less than .5 pounds per week
 - Obese women gain less than .4 pounds per week

OR

2. Low weight gain at any point in pregnancy, such that using an Institute of Medicine (IOM)-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 (1), as follows:

<u>Prepregnancy Weight Groups</u>	<u>Definition (BMI)</u>	<u>Total Weight Gain Range (lbs)</u>
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 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

Low Maternal Weight Gain

Justification Maternal weight gain during the 2nd and 3rd trimesters is an important determinant of fetal growth. Low maternal weight gain is associated with an increased risk of small for gestational age (SGA) infants, especially in underweight and normal-weight women (1). In addition, low maternal weight gain is associated with failure to initiate breastfeeding and preterm birth among underweight and to a lesser extent normal weight women (1).

The 2009 Institute of Medicine (IOM) report: *Weight Gain During Pregnancy: Reexamining the Guidelines* (1) updated the pregnancy weight categories to conform to the categories developed by the World Health Organization and adopted by the National Heart, Lung and Blood Institute in 1998 (2). The reexamination of the guidelines consisted of a review of the determinants of a wide range of short-and long-term consequences of variation in weight gain during pregnancy for both the mother and her infant. The IOM prenatal weight gain recommendations based on prepregnancy weight status categories are associated with improved maternal and child health outcomes (1).

Included in the 2009 IOM 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 IOM 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 IOM 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 these applicants' anthropometric status and tailor nutrition counseling accordingly.

For twin gestations, the 2009 IOM recommendations provide provisional guidelines: 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 IOM committee to develop even provisional guidelines for underweight women with multiple fetuses (1). 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 (3). 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 (3). For WIC eligibility determinations, multi-fetal pregnancies are considered a nutrition risk in and of themselves (Risk #335, Multi-Fetal Gestation), aside from the weight gain issue.

The supplemental foods, nutrition education, and counseling related to the weight gain guidelines provided by the WIC Program may improve maternal weight status and infant outcomes (4).

Low Maternal Weight Gain

References

1. Institute of Medicine. Weight gain during pregnancy: reexamining the guidelines (Prepublication Copy). National Academy Press, Washington, D.C.; 2009. www.nap.edu. Accessed June 2009.
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. www.nhlbi.nih.gov. Accessed June 2009.
3. Brown JE and Carlson M. Nutrition and multifetal pregnancy. J Am Diet Assoc. 2000;100:343-348.
4. Institute of Medicine. WIC nutrition risk criteria: a scientific assessment. National Academy Press, Washington, D.C.; 1996.

Additional Related References

1. 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.
 2. 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.
 3. 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.
 4. 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.
 5. 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.
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Low Maternal Weight Gain

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 Classifications 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
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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.

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Maternal Weight Loss During Pregnancy

**Definition/
cut-off value**

- Any weight loss below pregravid weight during 1st trimester, or
 - Weight loss of ≥ 2 pounds (≥ 1 kg) in the 2nd or 3rd trimesters (14-40 weeks gestation).
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**Participant
category and
priority level**

Category	Priority
Pregnant Women	I

Justification

Weight loss during pregnancy may indicate underlying dietary or health practices or health or social conditions associated with poor pregnancy outcomes. These outcomes could be improved by the supplemental food, nutrition education, and referrals provided by the WIC Program.

References

1. Brown JE. Prenatal weight gain considerations for WIC. Final report. Commissioned by the Risk Identification and Selection Collaborative. 1998.
 2. Centers for Disease Control and Prevention. Prenatal Nutrition Surveillance System User's Manual. Atlanta: CDC, 1994.
 3. Institute of Medicine. WIC nutrition risk criteria a scientific assessment. National Academy Press, Washington, D.C.; 1996.
 4. Metropolitan Life Insurance Company. New weight standards for men and women. Stat.Bull.Metrop.Life Insur.Co., 1959.
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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.

High Maternal Weight Gain

**Definition/
cut-off value**

Pregnant Women:

1. A high rate of weight gain, such that in the 2nd and 3rd trimesters, for singleton pregnancies (1):
 - Underweight women gain more than 1.3 pounds per week
 - Normal weight women gain more than 1 pound per week
 - Overweight women gain more than .7 pounds per week
 - Obese women gain more than .6 pounds per week

OR

2. High weight gain at any point in pregnancy, such that using an Institute of Medicine (IOM)-based weight gain grid, a pregnant woman's weight plots at any point above the top line of the appropriate weight gain range for her respective prepregnancy weight category (see below).

Breastfeeding or Non-Breastfeeding Women (most recent pregnancy only): total gestational weight gain exceeding the upper limit of the IOM's recommended range (2) based on Body Mass Index (BMI) for singleton pregnancies, as follows (1):

<u>Prepregnancy Weight Groups</u>	<u>Definition (BMI)</u>	<u>Cut-off Value</u>
Underweight	<18.5	>40 lbs
Normal Weight	18.5 to 24.9	>35 lbs
Overweight	25.0 to 29.9	>25 lbs
Obese	≥30.0	>20 lbs

Multi-fetal Pregnancies: See Justification for information.

Note: A BMI table is attached to assist in determining weight classification. 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 Women	I
Breastfeeding Women	I
Non-Breastfeeding Women	III, IV, V, or VI

High Maternal Weight Gain

Justification Women with excessive gestational weight gains are at increased risk for cesarean delivery and delivering large for gestational age infants that can secondarily lead to complications during labor and delivery. There is a strong association between higher maternal weight gain and both postpartum weight retention and subsequent maternal obesity. High maternal weight gain may be associated with glucose abnormalities and gestational hypertension disorders, but the evidence is inconclusive. (1)

Childhood obesity is one of the most important long-term health outcomes related to high maternal weight gain. A number of epidemiologic studies show that high maternal weight gain is associated with childhood obesity as measured by BMI. (1)

The 2009 Institute of Medicine (IOM) report: *Weight Gain During Pregnancy: Reexamining the Guidelines* (1) updated the pregnancy weight categories to conform to the categories developed by the World Health Organization and adopted by the National Heart, Lung and Blood Institute in 1998 (2). The reexamination of the guidelines consisted of a review of the determinants of a wide range of short-and long-term consequences of variation in weight gain during pregnancy for both the mother and her infant. The IOM prenatal weight gain recommendations based on prepregnancy weight status categories are associated with improved maternal and child health outcomes (1).

Included in the 2009 IOM 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 IOM 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 IOM 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 these applicants' anthropometric status and tailor nutrition counseling accordingly.

For twin gestations, the 2009 IOM recommendations provide provisional guidelines: 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 IOM 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 (3). 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 (3). Education by the WIC nutritionist should address a steady rate of weight gain that is higher than for singleton pregnancies. For WIC eligibility determinations, multi-fetal pregnancies are considered a nutrition risk in and of themselves (Risk #335, Multi-Fetal Gestation), aside from the weight gain issue.

High Maternal Weight Gain

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 Classifications 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.

High Maternal Weight Gain

The supplemental foods, nutrition education, and counseling related to the weight gain guidelines provided by the WIC Program may improve maternal weight status and infant outcomes (4). In addition, WIC nutritionists can play an important role, through nutrition education and physical activity promotion, in assisting postpartum women achieve and maintain a healthy weight.

References

1. Institute of Medicine. Weight gain during pregnancy: reexamining the guidelines (Prepublication Copy). National Academy Press, Washington, D.C.; 2009. Accessed June 2009.
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. Accessed June 2009.
3. Brown JE and Carlson M. Nutrition and multifetal pregnancy. *J Am Diet Assoc.* 2000;100:343-348.
4. Institute of Medicine. WIC nutrition risk criteria: a scientific assessment. National Academy Press, Washington, D.C.; 1996.

Additional Related References

1. Carmichael S, Abrams B, Selvin S. The pattern of maternal weight gain in women with good pregnancy outcomes. *Am.J.Pub.Hlth.* 1997;87;12:1984-1988.
 2. 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.
 3. 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.
 4. 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.
 5. Suitor 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.
 6. Waller K. Why neural tube defects are increased in obese women. *Contemporary OB/GYN* 1997; p. 25-32.
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134 Failure to Thrive

Definition/ cut-off value

Presence of failure to thrive (FTT) diagnosed by a physician as self reported by applicant/participant/caregiver; or as reported or documented by a physician, or someone working under physician's orders.

Note: For premature infants with a diagnosis of FTT also see: “Guidelines for Growth Charts and Gestational Age Adjustment for Low Birth Weight and Very Low Birth Weight Infants” (FNS Policy Memorandum 98-9, Revision 7, April 2004).

Participant category and priority level

Category	Priority
Infants	I
Children	III

Justification

Failure to thrive (FTT) is a serious growth problem with an often complex etiology. Some of the indicators that a physician might use to diagnose FTT include:

- weight consistently below the 3rd percentile for age;
- weight less than 80% of ideal weight for height/age;
- progressive fall-off in weight to below the 3rd percentile; or
- a decrease in expected rate of growth along the child’s previously defined growth curve irrespective of its relationship to the 3rd percentile (1).

FTT may be a mild form of Protein Energy Malnutrition (PEM) that is manifested by a reduction in rate of somatic growth. Regardless of the etiology of FTT, there is inadequate nutrition to support weight gain (2).

References

1. Berkow R, Fletcher AJ. The Merck manual of diagnosis and therapy. Rahway (NJ): Merck Sharp & Dohme Research Laboratories; 1992.
 2. Institute of Medicine. WIC nutrition risk criteria a scientific assessment. Washington (DC): National Academy Press; 1996. p. 100.
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Clarification

Self-reporting of a diagnosis by a medical professional should not be confused with self-diagnosis, where a person simply claims to have or to have had a medical condition without any reference to professional diagnosis. A self-reported medical diagnosis (“My doctor says that I have/my son or daughter has...”) should prompt the CPA to validate the presence of the condition by asking more pointed questions related to that diagnosis.

Low Birth Weight and Very Low Birth Weight

**Definition/
cut-off value**
Low Birth Weight (LBW)

Birth weight defined as less than or equal to 5 pounds 8 ounces (less than or equal to 2500 g), for infants and children less than 24 months old.

Very Low Birth Weight (VLBW)

Birth weight defined as less than or equal to 3 pounds 5 ounces (less than or equal to 1500 g), for infants and children less than 24 months old.

Note: See “Guidelines for Growth Charts and Gestational Age Adjustment for Low Birth Weight and Very Low Birth Weight Infants” (FNS Policy Memorandum 98-9, Revision 7, April 2004) for more information about the anthropometric assessment and nutritional care of LBW and VLBW infants.

**Participant
category and
priority level**
Category
Priority

Infants	I
Children less than 24 months old	III

Justification

Low birth weight is one of the most important biologic predictors of infant death and deficiencies in physical and mental development during childhood among those babies who survive and continues to be a strong predictor of growth in early childhood. Infants and children born with LBW/VLBW, particularly if caused by fetal growth restriction, need an optimal nutrient intake to survive, meet the needs of an extended period of relatively rapid postnatal growth, and complete their growth and development. (1)

References
Cited Reference

1. Institute of Medicine. WIC nutrition risk criteria a scientific assessment. Washington (DC): National Academy Press; 1996. p. 97.

Additional Reference

1. Anderson DM. Nutritional implications of premature birth, birth weight, and gestational age classification. In: Groh-Wargo S, Thompson M, Cox J, editors. Nutritional care for high-risk newborns. Rev. 3rd ed. Chicago: Precept Press, Inc.; 2000.
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Prematurity

**Definition/
cut-off value**

Birth at less than or equal to 37 weeks gestation (**infants and children less than 24 months old**).

Note: See “**Guidelines for Growth Charts and Gestational Age Adjustment for Low Birth Weight and Very Low Birth Weight Infants**” (FNS Policy Memorandum 98-9, Revision 7, April 2004) for more information on the anthropometric assessment and nutritional care of premature infants.

**Participant
category and
priority level**

Category	Priority
Infants	I
Children less than 24 months old	III

Justification

Premature infants may have physical problems that have nutritional implications, including immature sucking, swallowing and immature digestion and absorption of carbohydrates and lipids. Premature infants have increased nutrient and caloric needs for rapid growth. Premature infants grow well on breast milk. WIC promotes breastfeeding and provides nutrition education about infant feeding.(1)

References

1. Institute of Medicine. WIC nutrition risk criteria a scientific assessment. Washington (DC): National Academy Press; 1996. p. 215.
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Small for Gestational Age

**Definition/
cut-off value**

For infants and children less than 24 **months old**:

Presence of small for gestational age diagnosed by a physician as self reported by applicant/participant/caregiver; or as reported or documented by a physician, or someone working under physician's orders.

Note: See “Guidelines for Growth Charts and Gestational Age Adjustment for Low Birth Weight and Very Low Birth Weight Infants” (FNS Policy Memorandum 98-9, Revision 7, April 2004) for more discussion on the anthropometric assessment and nutritional care of SGA infants.

**Participant
category and
priority level**

Category	Priority
Infants	I
Children < 24 months old	III

Justification

Impairment of fetal growth can have adverse effects on the nutrition and health of children during infancy and childhood, including higher mortality and morbidity, slower physical growth, and possibly slower mental development. Infants who are small for gestational age (SGA) are also more likely to have congenital abnormalities. Severely growth-retarded infants are at markedly increased risk for fetal and neonatal death, hypoglycemia, hypocalcemia, polycythemia, and neurocognitive complications of pre- and intrapartum hypoxia. Over the long term, growth-retarded infants may have permanent mild deficits in growth and neurocognitive development. (1)

WIC staff should routinely complete anthropometric assessments and follow-up (to include coordination with and referral to, other health care providers and services) for infants/children with a diagnosis/history of SGA who have not yet demonstrated normal growth patterns.

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Small for Gestational Age

References

Cited References

1. Institute of Medicine. WIC nutrition risk criteria a scientific assessment. Washington (DC): National Academy Press; 1996. p. 100.

Additional References

1. Behrman RE, Kliegman R, Jenson HB. Nelson textbook of pediatrics. Philadelphia (PA): Saunders; 2000.
2. Groh-Wargo S, Thompson M, Cox J, editors. Nutritional care for high-risk newborns. Rev. 3rd edition. Chicago (IL): Precept Press, Inc.; 2000.
3. Kessler DB, Dawson, P, editors. Failure to thrive and pediatric undernutrition, a transdisciplinary approach. Baltimore (MD): Paul H. Brooks Publishing Company, Inc.; 1999.

Clarification

Self-reporting of a diagnosis by a medical professional should not be confused with self-diagnosis, where a person simply claims to have or to have had a medical condition without any reference to professional diagnosis. A self-reported medical diagnosis (“My doctor says that I have/my son or daughter has...”) should prompt the CPA to validate the presence of the condition by asking more pointed questions related to that diagnosis.

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Large for Gestational Age

**Definition/
cut-off value**

Birth weight greater than or equal to 9 pounds (greater than or equal to 4000 g); or

Presence of large for gestational age diagnosed by a physician as self reported by applicant/participant/caregiver; or as reported or documented by a physician, or someone working under physician's orders.

**Participant
category and
priority level**

Category

Priority

Infants

I

Justification

Infant mortality rates are higher among full-term infants who weigh greater than 4,000 g (greater than 9 lbs) than for infants weighing between 3,000 and 4,000 g (6.6 and 8.8 lbs). Oversized infants are usually born at term; however, preterm infants with weights high for gestational age also have significantly higher mortality rates than infants with comparable weights born at term. When large for gestational occurs with pre-term birth, the mortality risk is higher than when either condition exists alone (1). Very large infants regardless of their gestational age, have a higher incidence of birth injuries and congenital anomalies (especially congenital heart disease) and developmental and intellectual retardation (2).

Large for Gestational Age may be a result of maternal diabetes (which may or may not have been diagnosed before or during pregnancy) and may result in obesity in childhood that may extend into adult life (1).

References

1. Institute of Medicine. WIC nutrition risk criteria a scientific assessment. Washington (DC): National Academy Press; 1996. p. 117.
 2. Behrman RE, Kliegman R, Jenson HB. Nelson textbook of pediatrics. Philadelphia (PA): Saunders; 2000. p. 384.
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Clarification

Self-reporting of a diagnosis by a medical professional should not be confused with self-diagnosis, where a person simply claims to have or to have had a medical condition without any reference to professional diagnosis. A self-reported medical diagnosis (“My doctor says that I have/my son or daughter has...”) should prompt the CPA to validate the presence of the condition by asking more pointed questions related to that diagnosis.

Low Hematocrit/Low Hemoglobin

**Definition/
cut-off value**

Hemoglobin or hematocrit concentration below the 95 percent confidence interval (i.e., below the .025 percentile) for healthy, well-nourished individuals of the same age, sex, and stage of pregnancy.

Cut-off values are provided on Tables 201-A and 201-B in the Reference Materials Section, based on the levels established by the Centers for Disease Control and Prevention (CDC). Adjustments for smoking and/or altitude are optional for State agencies as long as the cut-off values used are those indicated on the CDC tables. Table 201-C includes a table of rounded hematocrit values adapted from CDC for those WIC agencies that obtain hematocrits only in whole numeric values.

**Participant
category and
priority level**

Category	Priority
Pregnant Women	I
Breastfeeding Women	I
Non-Breastfeeding Women	III, IV, V, or VI
Infants	I
Children	III

Justification

Hemoglobin (Hb) and hematocrit (Hct) are the most commonly used tests to screen for iron deficiency anemia. Measurements of Hb and Hct reflect the amount of functional iron in the body. Changes in Hb concentration and Hct occur at the late stages of iron deficiency. While neither an Hb or Hct test are direct measures of iron status and do not distinguish among different types of anemia, these tests are useful indicators of iron deficiency anemia.

Iron deficiency is by far the most common cause of anemia in children and women of childbearing age. It may be caused by a diet low in iron, insufficient assimilation of iron from the diet, increased iron requirements due to growth or pregnancy, or blood loss. Anemia can impair energy metabolism, temperature regulation, immune function, and work performance. Anemia during pregnancy may increase the risk of prematurity, poor maternal weight gain, low birth weight, and infant mortality. In infants and children, even mild anemia may delay mental and motor development. The risk increases with the duration and severity of anemia, and early damages are unlikely to be reversed through later therapy.

Low Hematocrit/Low Hemoglobin

References

1. Centers for Disease Control and Prevention. Criteria for anemia in children and childbearing-aged women. MMWR 1998;47:RR-3.
 2. Centers for Disease Control and Prevention. Prenatal Nutrition Surveillance System User's Manual. Atlanta: CDC, 1994.
 3. Institute of Medicine. Iron deficiency anemia: recommended guidelines for the prevention, detection, and management among U.S. children and women of childbearing age. National Academy Press, Washington, D.C.; 1993.
 4. Institute of Medicine. Nutrition during pregnancy. National Academy Press, Washington, D.C.; 1990.
 5. Institute of Medicine. WIC nutrition risk criteria a scientific assessment. National Academy Press, Washington, D.C.; 1996.
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Clarification

1. **Basis for bloodwork assessment:** For pregnant women being assessed for iron deficiency anemia, bloodwork must be evaluated using trimester values established by CDC. Thus, a pregnant women would be certified, based on the trimester in which her bloodwork was taken.
2. **Definition of Trimester:** 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.

3. **Adjustments for smoking:** A State agency may elect to use only one cutoff for all smokers rather than making specific adjustments based on the individual applicant's smoking frequency. If the State chooses to use only one category for this issue, the "up to <1 pack/day" cutoff values category as shown on Tables 201-A and 201-B is the only one that may be used.
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Elevated Blood Lead Levels

**Definition/
cut-off value**

Blood lead level of ≥ 10 $\mu\text{g}/\text{deciliter}$ within the past 12 months.

Cut off value is the current published guidance from the Centers for Disease Control and Prevention (CDC).

**Participant
category and
priority level**

Category	Priority
Pregnant Women	I
Breastfeeding Women	I
Non-Breastfeeding Women	III, IV, V, or VI
Infants	I
Children	III

Justification

Venous blood measurement levels at or above the level identified in CDC published guidelines are associated with harmful effects on health, nutritional status, learning or behavior for everyone. Because published guidelines are currently available only for children, similar thresholds should be used for other participant categories until category-specific guidelines are available from CDC.

Lead poisoning is a persistent, but entirely preventable public health problem in the United States. It is most common in children, but can occur in other groups as well. Blood lead levels have been declining in the U.S. population as a whole in recent years, but children remain at risk. Children absorb lead more readily than adults and children's developing nervous systems are particularly vulnerable to lead's effects.

In pregnant women lead crosses the placenta and can have a detrimental impact on a developing fetus. Adequate intake of calories, calcium, magnesium, iron, zinc, and various vitamins (e.g. thiamin, ascorbic acid, and vitamin E) decreases the absorption of lead in adults and the susceptibility of children to the toxic effects of lead.

Individuals exposed to lead who participate in WIC may benefit from referrals to lead treatment programs, guidance on how to reduce exposure to lead, supplemental food, and the importance of diet in minimizing absorption.

Measurement of blood lead levels replaces the Erythrocyte Protoporphyrin (EP) test as the recommended screening tool because EP is not sensitive enough at blood lead levels below 25 $\mu\text{g}/\text{dl}$. Venous blood samples are preferable, but capillary samples may be more feasible at some sites. Elevated blood lead levels obtained using capillary samples should be confirmed using venous blood. If EP is used, elevated results should be followed by a blood lead test using a venous blood sample. Iron deficiency can also cause elevated EP concentrations. Iron deficiency and lead poisoning often coexist.

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Elevated Blood Lead Levels

Although follow-up screening within less than 12 months is recommended for children with an elevated blood lead level (BLL), CDC recommends blood lead screening for potentially at-risk children at 1 and 2 years of age and between 36 and 72 months of age. The WIC Program can refer children to a health care provider if they had an elevated BLL 12 months ago and no interim follow-up BLL screening.

References

1. Centers for Disease Control and Prevention. Update: blood lead levels-United States, 1991-1994. MMWR 1997;46:RR-7.
 2. Institute of Medicine. WIC nutrition risk criteria a scientific assessment. National Academy Press, Washington, D.C.; 1996.
 3. National Center for Environmental Health. Screening young children for lead poisoning guidance for state and local public health officials. Atlanta, Ga.: Centers for Disease Control and Prevention, National Center for Environmental Health, U.S. Dept. of Health and Human Services, Public Health Service, 1997.
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301 Hyperemesis Gravidarum

**Definition/
cut-off value**

Severe nausea and vomiting to the extent that the pregnant woman becomes dehydrated and acidotic. Presence of Hyperemesis Gravidarum diagnosed by a physician as self reported by applicant/participant/caregiver, or as reported or documented by a physician, or someone working under physician's orders.

**Participant
category and
priority level**

Category	Priority
Pregnant Women	I

Justification

Nausea and vomiting are common early in gestation; 50% or more of normal pregnant women experience some vomiting. However, pregnant women with severe vomiting during pregnancy are at risk of weight loss, dehydration, and metabolic imbalances. Nutrition risk is based on chronic conditions, not single episodes.

References

1. Institute of Medicine. WIC nutrition risk criteria a scientific assessment. National Academy Press, Washington, D.C.; 1996.
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Clarification

Self-reporting of a diagnosis by a medical professional should not be confused with self-diagnosis, where a person simply claims to have or to have had a medical condition without any reference to professional diagnosis. A self-reported medical diagnosis (“My doctor says that I have/my son or daughter has...”) should prompt the CPA to validate the presence of the condition by asking more pointed questions related to that diagnosis.

302 Gestational Diabetes

**Definition/
cut-off value**

Gestational diabetes mellitus (GDM) is defined as any degree of glucose/carbohydrate intolerance with onset or first recognition during pregnancy (1, 2).

Presence of gestational diabetes diagnosed by a physician as self-reported by applicant/participant/caregiver; or as reported or documented by a physician, or someone working under physician's orders.

**Participant
category and
priority level**

Category

Priority

Pregnant Women

I

Justification

The definition of GDM applies regardless of whether insulin or only diet modification is used for treatment, or whether the condition persists after pregnancy. Included in this classification are women who may have had undiagnosed diabetes prior to pregnancy but who are first diagnosed during pregnancy (1, 2). Pregnant women requiring the use of exogenous steroids, tocolytics, or other medications, or who have medical conditions that alter glucose tolerance, may develop GDM (2). GDM represents nearly 90% of all pregnancies complicated by diabetes (1). The criteria for the diagnosis of GDM (3) are shown in Table 1 (see Clarification).

Pregnancy is an insulin-resistant and diabetogenic state (2). Deterioration of glucose tolerance occurs normally during pregnancy, particularly in the 3rd trimester (1, 2). Untreated or poorly treated GDM results in a higher risk of morbidity and mortality for both the mother and the fetus (2).

Established risk factors for GDM are advanced maternal age, obesity, and family history of diabetes (4). Risk assessment for GDM should be undertaken at the first prenatal visit. Women with clinical characteristics consistent with a high risk for GDM (e.g., those with marked obesity, personal history of GDM or delivery of a previous large-for-gestation-age infant, glycosuria, polycystic ovary syndrome, or a strong family history of diabetes) should undergo glucose testing as soon as possible (5). Unquestionably, there are also ethnic differences in the prevalence of GDM. In the U.S., Native Americans, Asians, Hispanics, and African American women are at a higher risk for GDM than non-Hispanic White women. Besides obesity, there is a suggestion that physical inactivity, diets high in saturated fat and smoking are associated with increasing risk for GDM or recurrent GDM (4).

Infants of women with GDM are at an increased risk of developing obesity, impaired glucose tolerance or diabetes as children or young adults (4). GDM is associated with a higher incidence of maternal and fetal complications. Maternal complications

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Gestational Diabetes

include polycythemia, respiratory distress syndrome, and increased rate of stillbirth (6). Although rarely seen in GDM, congenital anomalies, neural tube defects, cardiac abnormalities and/or caudal regression may occur if a woman has GDM in the early first trimester (6, 7).

Since GDM is a risk factor for subsequent type 2 diabetes after delivery, lifestyle modifications aimed at reducing weight and increasing physical activity are recommended (8). The National Diabetes Education Program (NDEP) is currently promoting a GDM Prevention Initiative, targeting both providers and women with a GDM history (9). Key messages are illustrated in Table 2 (see Clarification).

Medical Nutrition Therapy (MNT) is the primary treatment for the management of GDM (7). MNT for GDM primarily involves a carbohydrate-controlled meal plan that promotes optimal nutrition for maternal and fetal health with adequate energy for appropriate gestational weight gain, achievement and maintenance of normoglycemia, and absence of ketosis (7, 8). Breastfeeding should be strongly encouraged as it is associated with maternal weight loss and reduced insulin resistance for both mother and offspring (10). WIC nutrition services can reinforce and support the medical and diet therapies (such as MNT) that participants with GDM receive from their health care providers.

References

1. American Diabetes Association: Diagnosis and classification of diabetes mellitus. *Diabetes Care*. Jan 2008; 31 Suppl 1:S55-60.
 2. Franz MJ, Biastre SA, Slocum J. Diabetes in the life cycle and research. In: *Gestational Diabetes – A core curriculum for diabetes education*, American Association of Diabetes Educators. 5th ed. 2003.
 3. American Diabetes Association. Gestational diabetes mellitus (position statement). *Diabetes Care*. 2003; 26 Suppl 1:S103-105.
 4. Ferrara, A. Increasing prevalence of gestational diabetes mellitus: a public health perspective. *Proceedings of the fifth international workshop – conference on Gestational Diabetes Mellitus*. *Diabetes Care*. Jul 2007; 30 Suppl 2:S141-46.
 5. American Diabetes Association. Standards of medical care in diabetes (position statement). *Diabetes Care*. Jan 2007; 30 Suppl 2:S4-41.
 6. Thomas AM, Gutierrez YM. American Dietetic Association guide to gestational diabetes mellitus in postpartum considerations. Eds. American Dietetic Association; 2005:101-113.
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Gestational Diabetes

7. Brian SR, Nickless N, Thung SF, Inzucchio SE. Gestational diabetes update.: screening, medical management and follow-up. *Practical Diabetology*. Mar 2007;10-18.
 8. American Diabetes Association. Diagnosis and classification of diabetes mellitus. *Diabetes Care*. 2008 Jan; 31 Suppl 1:S55-60.
 9. Ratner, RE. Prevention of type 2 diabetes in women with previous gestational diabetes. Proceedings of the fifth international workshop – conference on gestational diabetes mellitus. *Diabetes Care*. Jul 2007; 30 Suppl 2 :S242-245.
 10. Evert AG, Vande Hei K. Gestational diabetes education and diabetes prevention strategies. *Diabetes Spectrum*. 2006; 19(3):135-139.
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Clarification

Self-reporting of a diagnosis by a medical professional should not be confused with self-diagnosis, where a person simply claims to have or to have had a medical condition without any reference to professional diagnosis. A self-reported medical diagnosis (“My doctor says that I have/my son or daughter has...”) should prompt the CPA to validate the presence of the condition by asking more pointed questions related to that diagnosis.

Women at high risk for GDM who have tested negative at the initial screening, and women at average risk for GDM should be tested by a licensed medical provider, between 24 and 28 weeks of gestation. Women of average risk should be tested at 24-28 weeks of gestation. Testing should follow one of two approaches:

- **One-step approach:** perform a diagnostic 100-g OGTT (Oral Glucose Tolerance Test)
- **Two-step approach:**
 1. A screening test (glucose challenge test) that measures plasma or serum glucose is done 1 hour after a 50-g oral glucose load without regard for time of day or time of last meal. If a plasma or serum glucose level meets or exceeds the threshold (≥ 130 mg/dl [7.2 mmol/L] or ≥ 140 mg/dl [7.8 mmol/L], respectively), an OGTT is performed (3).
 2. A diagnosis of GDM is made with a 100-g oral glucose load after an overnight fast. Using a 3-hour test, if two or more plasma or serum glucose levels meet or exceed the threshold, a diagnosis of GDM is made. Alternatively, the diagnosis can be made using a 75-g oral glucose load. The glucose threshold values for both tests are listed in Table 1 (10). The 75-g glucose load test is not as well validated as the 100-g OGTT.

With either the 75-g OGTT or the 100-g OGTT, it is recommended that the test be

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performed after an overnight fast of at least 8 hours but no longer than 14 hours. For 3 days prior to the test the woman should consume an unrestricted diet (≥ 150 g carbohydrate per day) and maintain unrestricted physical activity. Women need to remain seated and not smoke during the test. (1, 2).

Table 1. Diagnosis of Gestational Diabetes Mellitus with a 100-g or 75-g Oral Glucose Load

Time (h)	100-g Oral Glucose Load	75-g Oral Glucose Load
Fasting	95 mg/dL (5.3 mmol/L)	95 mg/dL (5.3 mmol/L)
1	180 mg/dL (10.0 mmol/L)	180 mg/dL (10.0 mmol/L)
2	155 mg/dL (8.6 mmol/L)	155 mg/dL (8.6 mmol/L)
3	140 mg/dL (7.8 mmol/L)	

Two or more of the venous plasma concentrations must be met or exceeded for a positive diagnosis.

Source: American Diabetes Association (3).

Table 2. Gestational Diabetes Mellitus (GDM) Prevention Initiative from the National Diabetes Education Program

- GDM imparts lifelong risk for diabetes, mostly type 2
- Modest weight loss and physical activity can delay or prevent type 2 diabetes.
- Offspring can lower risk of diabetes by eating healthy foods, being active, and not becoming overweight.

Conservative recommendations to patients include:

- Let health care practitioners know of any history of GDM.
 - Get glucose testing at 6 to 12 weeks postpartum, then every 1-2 years.
 - Reach pre-pregnancy weight 6 to 12 months postpartum.
 - If still overweight, lose at least 5 to 7% of weight slowly, over time, and keep it off.
-

Adapted from the National Diabetes Education Program (9).

History of Gestational Diabetes

**Definition/
cut-off value**

History of diagnosed gestational diabetes mellitus (GDM).

Presence of condition diagnosed by a physician as self-reported by applicant/participant/caregiver; or as reported or documented by a physician, or someone working under a physician's orders.

**Participant
category and
priority level**

Category	Priority
Pregnant Women	I
Breastfeeding Women	I
Non-Breastfeeding Women	III, IV, V, or VI

Justification

Women who have had a pregnancy complicated by GDM are 40-60% more likely to develop diabetes within 15-20 years (1), usually type 2 (2). This risk of subsequent diabetes is greatest in women with GDM who are diagnosed early in the pregnancy, exhibit the highest rates of hyperglycemia during the pregnancy, and are obese.

Approximately 30-50% of the women with a history of GDM will develop GDM in a subsequent pregnancy. Studies have found that the risk factors for subsequent GDM include insulin use in the index pregnancy, obesity, diet composition*, physical inactivity, failure to maintain a healthy BMI and weight gain between pregnancies (2, 3). In addition, if a woman's lipid levels are elevated, a history of GDM is also a risk factor for cardiovascular disorders (3).

There is evidence to suggest that some women with a history of GDM show relative beta-cell dysfunction during and after pregnancy (3). Most women with a history of GDM are insulin resistant. Changes in lifestyle (dietary and physical activity) may improve postpartum insulin sensitivity and could possibly preserve B-cell function to slow the progression to type 2 diabetes (2, 3).

During WIC nutrition education and counseling, obese women with a history of GDM should be encouraged to lose weight before a subsequent pregnancy. Breastfeeding has been shown to lower the blood glucose level and to decrease the incidence of type 2 diabetes in women with a history of GDM (2, 3). Exercise also has a beneficial effect on insulin action by enhancing peripheral tissue glucose uptake (3). Medical Nutrition Therapy (MNT) is an essential component in the care of women with a history of GDM.

Women with a history of GDM but without immediate subsequent postpartum diagnosis of diabetes should be advised to discuss with their medical provider the importance of having a Glucose Tolerance Testing (GTT) at 6 to 12 weeks postpartum (see Clarification, Table 1); to have a pre-pregnancy consultation before the next

History of Gestational Diabetes

pregnancy, and to request early glucose screening in the next pregnancy (4). The National Diabetes Education Program (NDEP) is currently promoting a GDM Diabetes Prevention Initiative, targeting both providers and women with a history of GDM (5). Key messages are illustrated in Table 2. (See Clarification).

WIC nutrition services can support and reinforce the MNT and physical activity recommendations that participants receive from the health care providers. In addition, WIC nutritionists can play an important role in providing women with counseling to help manage their weight after delivery. Also, children of women with a history of GDM should be encouraged to establish and maintain healthy dietary and lifestyle behaviors to avoid excess weight gain and reduce their risk for type 2 diabetes (1).

* Diet Composition

Carbohydrate is the main nutrient that affects postprandial glucose elevations. During pregnancy complicated with GDM, carbohydrate intake can be manipulated by controlling the total amount of carbohydrate, the distribution of carbohydrate over several meals and snacks, and the type of carbohydrate. These modifications need not affect the total caloric intake level/prescription (6).

Because there is wide inter-individual variability in the glycemic index each women needs to determine, with the guidance of the dietitian, which foods to avoid or use in smaller portions at all meals or during specific times of the day, for the duration of her pregnancy. Practice guidelines have avoided labeling foods as “good” or “bad” (6).

Meal plans should be culturally appropriate and individualized to take into account the patient’s body habitus, weight gain and physical activity; and should be modified as needed throughout pregnancy to achieve treatment goals (6).

References

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Clarification

Self-reporting of “History of...” conditions should be treated in the same manner as self-reporting of current conditions requiring a physician’s diagnosis, i.e., the applicant may report to the CPA that s/he was diagnosed by a physician with a given condition at some point in the past. As with current conditions, self-diagnosis of a past condition should never be confused with self-reporting.

Table 1. Reasons for Delayed Postpartum Glucose Testing of Women with Prior Gestational Diabetes Mellitus (GDM)

- 1 . The substantial prevalence of glucose abnormalities detected by 3 months postpartum.
- 2 . Abnormal test results identify women at high risk of developing diabetes over the next 5 to 10 years.
- 3 . Ample clinical trial evidence in women with glucose intolerance that type 2 diabetes can be delayed or prevented by lifestyle interventions or modest and perhaps intermittent drug therapy.
- 4 . Women with prior GDM and impaired glucose tolerance (IGT) have cardiovascular disease (CVD) risk factors. Interventions may reduce subsequent CVD, which is the leading cause of death in both types of diabetes.
- 5 . Identification, treatment, and planning of pregnancy in women developing diabetes after GDM should reduce subsequent early fetal loss and major congenital malformations.

Kitzmiller JL, Dang-Kilduff L, Taslimi MM

History of Gestational Diabetes

Table 2. Gestational Diabetes Mellitus (GDM) Prevention Initiative from the National Diabetes Education Program

- GDM imparts lifelong risk for diabetes, mostly type 2.
- Modest weight loss and physical activity can delay or prevent type 2 diabetes.
- Offspring can lower risk by eating healthy foods, being active, and not becoming overweight.

Conservative recommendations to patients include:

- Let health care practitioners know of any history of GDM.
 - Get glucose testing at 6 to 12 weeks postpartum, then every 1-2 years.
 - Reach prepregnancy weight 6 to 12 months postpartum.
 - If still overweight, lose at least 5 to 7% of weight slowly, over time, and keep it off.
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Adapted from the National Diabetes Education Program.

304 History of Preeclampsia

**Definition/
cut-off value**

History of diagnosed preeclampsia.

Presence of condition diagnosed by a physician as self-reported by applicant/participant/caregiver; or as reported or documented by a physician, or someone working under a physician's orders.

**Participant
category and
priority level**

Category	Priority
Pregnant Women	I
Breastfeeding Women	I
Non-Breastfeeding Women	III, IV, V, or VI

Justification

Preeclampsia is defined as pregnancy-induced hypertension (>140mm Hg systolic or 90mm Hg diastolic) with proteinuria developing usually after the twentieth week of gestation (1, 2). Clinical symptoms of preeclampsia may include: edema, renal failure, and the HELLP (Hemolysis, Elevated Liver enzymes and Low Platelets) syndrome.

Preeclampsia is a leading cause of maternal death and a major contributor to maternal and perinatal morbidity (3). Women who have had preeclampsia in a prior pregnancy have an increased risk of recurrence (about 20% overall) (4). The risk is greater in women who have had preeclampsia occurring early in pregnancy or who have had preeclampsia in more than one pregnancy. Additionally, maternal pre-pregnancy obesity with BMI ≥ 30 is the most prevalent risk factor for preeclampsia (4).

Risk factors for preeclampsia include (2,4,5):

- Pre-pregnancy obesity BMI ≥ 30
- Preeclampsia in a prior pregnancy
- Nulliparity (no prior delivery)
- Maternal age >35 years
- Endocrine disorders (e.g., diabetes); autoimmune disorders (e.g., lupus); renal disorders
- Multi-fetal gestation
- Genetics
- Black race

There are few established nutrient recommendations for the prevention of preeclampsia. However, vitamin D may be important because it influences vascular structure and function, and regulates blood pressure (4). Also, calcium may prevent preeclampsia among women with very low baseline calcium intake (4).

There is no treatment for preeclampsia. The condition resolves itself only when the pregnancy terminates or a placenta is delivered (4). Early prenatal care, therefore, is

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History of Preeclampsia

vital to the prevention of the onset of the disease.

WIC is well poised to provide crucial strategies during the critical inter-conceptual period to help reduce the risk of recurrence of preeclampsia in a subsequent pregnancy.

WIC nutrition education encourages practices shown by research to have a protective effect against developing preeclampsia (2,4,5). These include:

- Gaining recommended weight based on pre-pregnancy BMI, in order to help return to a healthy post partum weight
- Scheduling early prenatal care visits
- Consuming a diet adequate in calcium and vitamin D
- Taking prenatal vitamins
- Engaging in regular physical activity
- Discontinuing smoking and alcohol consumption

Post-Partum Women:

Women who have had preeclampsia should be advised that they are at risk for recurrence of the disease and development of cardiovascular disease (CVD) later in life (4,7). WIC nutrition education can emphasize measures that support the prevention of preeclampsia in a future pregnancy such as reaching or maintaining a healthy BMI and lifestyle between pregnancies, consuming a nutritionally adequate diet consistent with the Dietary Guidelines for Americans, and engaging in regular physical activity.

Pregnant Women: The WIC Program provides supplemental foods rich in nutrients, especially calcium and Vitamin D, which research has shown to have a protective effect on preeclampsia (4). During nutrition education, WIC can encourage actions or behaviors that also have been shown to have a protective effect against preeclampsia: early prenatal care, taking a prenatal vitamin, and engaging in physical activity (6). WIC can also discourage smoking and alcohol consumption (2) and counsel pregnant women to gain recommended weight based on pre-pregnancy BMI (8) and to return to pre-pregnancy weight or a healthy BMI of <25 for the benefit of future pregnancies.

References

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Clarification

Self-reporting for “History of...” conditions should be treated in the same manner as self-reporting for current conditions requiring a physician’s diagnosis, i.e., the applicant may report to the CPA that s/he was diagnosed by a physician with a given condition at some point in the past. As with current conditions, self-diagnosis of a past condition should never be confused with self-reporting.

311 History of Preterm Delivery

**Definition/
cut-off value**

Birth of an infant at ≤ 37 weeks gestation

Pregnant Women: any history of preterm delivery

Breastfeeding/Non-Breastfeeding: most recent pregnancy

**Participant
category and
priority level**

Category

Priority

Pregnant Women

I

Breastfeeding Women

I

Non-Breastfeeding Women

III, IV, V, or VI

Justification

Preterm birth causes at least 75% of neonatal deaths not due to congenital malformations (1). In most cases of preterm labor, the cause is unknown. Epidemiologic studies have consistently reported low socioeconomic status, nonwhite race, maternal age of ≤ 18 years or ≥ 40 years, and low prepregnancy underweight as risk factors. A history of one previous preterm birth is associated with a recurrent risk of 17-37% (2, 3); the risk increases with the number of prior preterm births and decreases with the number of term deliveries.

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History of Low Birth Weight

**Definition/
cut-off value**

Birth of an infant weighing ≤ 5 lb. 8 oz (≤ 2500 grams)

Pregnant Women: any history of low birth weight

Breastfeeding/Non-Breastfeeding: most recent pregnancy

**Participant
category and
priority level**

Category

Priority

Pregnant Women

I

Breastfeeding Women

I

Non-Breastfeeding Women

III, IV, V, or VI

Justification

A woman's history of a delivery of a low birth weight (LBW) baby is the most reliable predictor for LBW in her subsequent pregnancy (1). The risk for LBW is 2-5 times higher than average among women who have had previous LBW deliveries and increases with the number of previous LBW deliveries (1). This is true for histories in which the LBW was due to premature birth, fetal growth restriction (FGR) or a combination of these factors. The extent to which nutritional interventions (dietary supplementation and counsel) can decrease risk for repeat LBW, depends upon the relative degree to which poor nutrition was implicated in each woman's previous poor pregnancy outcome. Nutritional deficiencies and excesses have been shown to result in LBW and pregnancy loss. The pregnant woman's weight gain is one of the most important correlates of birth weight and of FGR (2, 3).

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History of Spontaneous Abortion, Fetal or Neonatal Loss

**Definition/
Cut-off value**

A spontaneous abortion (SAB) is the spontaneous termination of a gestation at < 20 weeks gestation or < 500 grams.

Fetal death is the spontaneous termination of a gestation at ≥ 20 weeks.

Neonatal death is the death of an infant within 0-28 days of life.

Pregnant women: any history of fetal or neonatal death or 2 or more spontaneous abortions.

Breastfeeding women: most recent pregnancy in which there was a multifetal gestation with one or more fetal or neonatal deaths but with one or more infants still living

Non-Breastfeeding: most recent pregnancy

Presence of condition diagnosed by a physician as self reported by applicant/participant/caregiver; or as reported or documented by a physician, or someone working under physician's orders.

Participant category and priority level

Category

Priority

Pregnant Women

I

Breastfeeding Women

I

Non-Breastfeeding Women

III, IV, V, or VI

Justification

Pregnancy:

Previous fetal and neonatal deaths are strongly associated with preterm low birth weight (LBW) and small for gestational age (SGA) and the risk increases as the number of previous poor fetal outcomes goes up.

Spinnillo et al found that the risk for future small for gestational age outcomes increased two fold if a woman had 2 or more SAB. Adverse outcomes related to history of SAB include recurrent SAB, low birth weight (including preterm and small for gestational age infants), premature rupture of membranes, neural tube defects and major congenital malformations. Nutrients implicated in human and animal studies include energy, protein, folate, zinc, and vitamin A.

Postpartum women:

A SAB has been implicated as an indicator of a possible neural tube defect in a subsequent pregnancy. Women who have just had a SAB or a fetal or neonatal death should be counseled to increase their folic acid intake and delay a subsequent pregnancy until nutrient stores can be replenished.

The extent to which nutritional interventions (dietary supplementation and counseling) can decrease the risk for repeat poor pregnancy outcomes, depends upon the relative degree to which poor nutrition was implicated in each woman's previous poor pregnancy outcome. WIC Program clients receive foods and services that are relevant and related to ameliorating adverse pregnancy outcomes. Specifically, WIC food packages include good sources of implicated nutrients. Research confirms that dietary intake of nutrients provided by WIC foods improve indicators of nutrient status and/or fetal survival in humans and/or animals.

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History of Spontaneous Abortion, Fetal or Neonatal Loss

Clarification NOTE: A woman who becomes pregnant within 16 months after a SAB (her first) would qualify for risk #332, Closely Spaced Pregnancies.

Self-reporting for “History of...” conditions should be treated in the same manner as self-reporting for current conditions requiring a physicians diagnosis, i.e., the applicant may report to the CPA that s/he was diagnosed by a physician with a given condition at some point in the past. As with current conditions, self-diagnosis of a past condition should never be confused with self-reporting.

331
Pregnancy at a Young Age

**Definition/
cut-off value**

Conception ≤ 17 years of age.

Pregnant Women: current pregnancy

Breastfeeding/Non-Breastfeeding: most recent pregnancy

**Participant
category and
priority level**

Category

Priority

Pregnant Women

I

Breastfeeding Women

I

Non-Breastfeeding Women

III, IV, V, or VI

Justification

Pregnancy before growth is complete, is a nutritional risk because of the potential for competition for nutrients for the pregnancy needs and the woman's growth.

The pregnant teenager is confronted with many special stresses that are superimposed on the nutritional needs associated with continued growth and maturation.

Younger pregnant women of low socioeconomic status tend to consume less than recommended amounts of protein, iron, and calcium, and are more likely to come into pregnancy already underweight. Pregnant teens who participate in WIC have been shown to have an associated increase in mean birth weight and a decrease in LBW outcomes.

Adolescent mothers frequently come into pregnancy underweight, have extra growth related nutritional needs, and because they often have concerns about weight and body image, are in need of realistic, health promoting nutrition advice and support during lactation. Diets of adolescents with low family incomes typically contain less iron, and less vitamin A than are recommended during lactation.

The adolescent mother is also confronted with many special stresses superimposed on the normal nutritional needs associated with continued growth. Nutrition status and risk during the postpartum period follow from the nutritional stresses of the past pregnancy, and in turn have an impact on nutrition related risks in subsequent pregnancies.

Poor weight gain and low intakes of a variety of nutrients are more common in pregnant adolescents. Therefore, participation in the WIC Program should be of substantial benefit.

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Pregnancy at a Young Age

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332

Closely Spaced Pregnancies

**Definition/
cut-off value**

Conception before 16 months postpartum.

Pregnant Women: current pregnancy

Breastfeeding/Non-Breastfeeding: most recent pregnancy

**Participant
category and
priority level**

Category

Priority

Pregnant Women

I

Breastfeeding Women

I

Non-Breastfeeding Women

III, IV, V, or VI

Justification

Pregnancy stimulates an adjustment of the mother to a new physiological state which results in rapid depletion of maternal stores of certain nutrients. Mothers with closely spaced pregnancies do not have sufficient time to replenish the nutritional deprivations of the previous pregnancy. Breastfeeding places further nutritional demands on the mother and may increase risks to the pregnancy. After birth, readjustments take place. It is undesirable for another pregnancy to occur before the readjustment is complete since a short interconceptional time period may leave the woman in a compromised nutritional state and at risk for a poor pregnancy outcome. Among low income, inner-city, multiparous women, inter-pregnancy intervals of less than 12 months have been associated with lower folate levels in the postpartum period.

There is a sharply elevated relative risk for low birth weight (LBW) when the interconception interval is less than 6 months. An increased risk persists for inter-pregnancy intervals of up to 18 months and holds when adjusted for potential confounders. The increased risk is for small gestational age term births rather than for LBW due to prematurity.

In one study, postpartum women who received WIC supplements for 5-7 months, delivered higher mean birth weights and lengths and had a lower risk of low birth weight than women who received supplements for two months or less. Women who were supplemented longer had higher mean hemoglobin values and a lower risk of maternal obesity at the subsequent pregnancy.

Recognizing the potential problems associated with closely spaced pregnancies, WIC Program Regulations specifically include this condition.

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Closely Spaced Pregnancies

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High Parity and Young Age

**Definition/
cut-off value** Women under age 20 at date of conception who have had 3 or more previous pregnancies of at least 20 weeks duration, regardless of birth outcome.

Pregnant Women: current pregnancy

Breastfeeding/Non-Breastfeeding: most recent pregnancy

Participant category and priority level	Category	Priority
	Pregnant Women	I
	Breastfeeding Women	I
	Non-Breastfeeding Women	III, IV, V, or VI

Justification The IOM Report (p. 204) states, “empirical evidence on the interactions of high parity with both age and short interpregnancy interval does suggest significant [nutritional] risks associated with high parity at young ages and high parity with short interpregnancy intervals (1).”

Since factors such as adolescent pregnancy (<18 years of age) and short interpregnancy interval are used independently as risk criteria, women with such risks would be eligible for participation in WIC. Studies by Kramer (1987) and MacLeod & Kiely (1988) (pg. 202) show that “multiparity increases the risk of low birth weight (LBW) for women under age 20.” Kramer further reports “multiparity has little effect for women age 20-34 years and decreases for women over age 35.” These studies demonstrate the risk of delivering LBW babies for women under the age of 20 years. Thus, low birth weight increases the likelihood of physical and mental developmental deficiencies among surviving infants, and even a higher incidence of infant death.

- References**
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Lack of or Inadequate Prenatal Care

**Definition/
cut-off value**

Prenatal care beginning after the 1st trimester (after 13th week), or based on an Inadequate Prenatal Care Index published in a peer reviewed article such as the one by Kessner et al. (4):

First prenatal visit in the third trimester (7-9 months) or:

Weeks of gestation	Number of prenatal visits (2)
14-21	0 or unknown
22-29	1 or less
30-31	2 or less
32-33	3 or less
34 or more	4 or less

Participant category and priority level

Category	Priority
Pregnant Women	I

Justification

Women who do not receive early and adequate prenatal care are more likely to deliver premature, growth retarded, or low birth weight infants (3). The Kessner Index can be used to assess the adequacy of prenatal care for a woman with an uncomplicated pregnancy. Women with medical or obstetric problems, as well as younger adolescents, may need closer management; the frequency of prenatal visits should be determined by the severity of identified problems (1). Several studies have reported significant health and nutrition benefits for pregnant women enrolled in the WIC Program (3).

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Lack of or Inadequate Prenatal Care

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.

335 Multi-fetal Gestation

**Definition/
cut-off value** More than one (>1) fetus in a current pregnancy (Pregnant Women) or the most recent pregnancy (Breastfeeding and Non-Breastfeeding Women).

Participant category and priority level	Category	Priority
	Pregnant Women	I
	Breastfeeding Women	I
	Non-Breastfeeding Women	III, IV, V, or VI

Justification Multi-fetal gestations are associated with low birth weight, fetal growth restriction, placental and cord abnormalities, preeclampsia, anemia, shorter gestation and an increased risk of infant mortality. Twin births account for 16% of all low birth weight infants. The risk of pregnancy complications is greater in women carrying twins and increases markedly as the number of fetuses increases. (1, 2)

For twin gestations, the 2009 IOM recommendations provide provisional guidelines: normal weight women should gain 37-54 pounds; overweight women, 31-50 pounds; and obese women, 25-42 pounds (3). There was insufficient information for the IOM committee to develop even provisional guidelines for underweight women with multiple fetuses. 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 (2). 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 (2). Education by the WIC nutritionist should address a steady rate of weight gain that is higher than for singleton pregnancies.

Pregnant or breastfeeding women with twins have greater requirements for all nutrients than women with only one infant. Postpartum, non-breastfeeding women delivering twins are at greater nutritional risk than similar women delivering only one infant. All three groups of women would benefit greatly from the nutritional supplementation provided by the WIC Program.

- References**
1. Brown JE and Carlson M. Nutrition and multifetal pregnancy. *J Am Diet Assoc.* 2000;100:343-348.
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335 Multi-fetal Gestation

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Fetal Growth Restriction

**Definition/
cut-off value**

Fetal Growth Restriction (FGR) (replaces the term Intrauterine Growth Retardation (IUGR)), may be diagnosed by a physician with serial measurements of fundal height, abdominal girth and can be confirmed with ultrasonography. FGR is usually defined as a fetal weight < 10th percentile for gestational age.

Presence of condition diagnosed by a physician as self reported by applicant/participant/caregiver; or as reported or documented by a physician, or someone working under physician's orders.

**Participant
category and
priority level**

Category

Priority

Pregnant Women

I

Justification

Fetal Growth Restriction (FGR) usually leads to low birth weight (LBW) which is the strongest possible indicator of perinatal mortality risk. Severely growth restricted infants are at increased risk of fetal and neonatal death, hypoglycemia, polycythemia, cerebral palsy, anemia, bone disease, birth asphyxia, and long term neurocognitive complications. FGR may also lead to increased risk of ischemic heart disease, hypertension, obstructive lung disease, diabetes mellitus, and death from cardiovascular disease in adulthood. FGR may be caused by conditions affecting the fetus such as infections and chromosomal and congenital anomalies. Restricted growth is also associated with maternal height, prepregnancy weight, birth interval, and maternal smoking. WIC's emphasis on preventive strategies to combat smoking, improve nutrition, and increase birth interval, may provide the guidance needed to improve fetal growth.

References

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Clarification

Self-reporting of a diagnosis by a medical professional should not be confused with self-diagnosis, where a person simply claims to have or to have had a medical condition without any reference to professional diagnosis. A self-reported medical diagnosis (“My doctor says that I have/my son or daughter has...”) should prompt the CPA to validate the presence of the condition by asking more pointed questions related to that diagnosis.

History of Birth of a Large for Gestational Age Infant

**Definition/
cut-off value**

Pregant Women: Any history of giving birth to an infant weighing greater than or equal to 9 lbs. (4000 grams).

Breastfeeding/Non-Breastfeeding Women: Most recent pregnancy, or history of giving birth to an infant weighing greater than or equal to 9 lbs. (4000 grams).

Presence of condition diagnosed by a physician as self reported by applicant/participant/caregiver; or as reported or documented by a physician, or someone working under physician's orders.

**Participant
category and
priority level**

Category

Priority

Pregnant Women

I

Breastfeeding Women

I

Non-Breastfeeding Women

III, IV, V, or VI

Justification

Women with a previous delivery of an infant weighing greater than 9 lbs. (4000 grams) are at an increased risk of giving birth to a large for gestational age infant (1). Macrosomia may be an indicator of maternal diabetes (current or gestational) or a predictor of future diabetes (2).

The incidence of maternal, fetal, and neonatal complications is high with neonates weighing greater than 9 lbs. (4000 grams). Risks for the infant include dystocia, meconium aspiration, clavicular fracture, brachia plexus injury, and asphyxia (3).

References

1. Boyd ME, Usher RH, McLean FH. Fetal macrosomia: prediction, risks, proposed management. *Obstet.Gynecol.* 1983;61:715-22.
 2. Institute of Medicine. WIC nutrition risk criteria a scientific assessment. Washington (DC): National Academy Press;1996. p. 117.
 3. Institute of Medicine. Nutrition during pregnancy. Washington, (DC): National Academy Press;1990. p. 190.
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Clarification

Self-reporting for “History of...” conditions should be treated in the same manner as self-reporting for current conditions requiring a physicians diagnosis, i.e., the applicant may report to the CPA that s/he was diagnosed by a physician with a given condition at some point in the past. As with current conditions, self-diagnosis of a past condition should never be confused with self-reporting.

Pregnant Woman Currently Breastfeeding

**Definition/
cut-off value** Breastfeeding woman now pregnant.

Participant category and priority level	Category	Priority
	Pregnant Women	I

Justification Breastfeeding during pregnancy can influence the mother's ability to meet the nutrient needs of her growing fetus and nursing baby. Generally, pregnancy hormones cause the expectant mother's milk supply to drastically decline (until after delivery). If the mother conceived while her nursing baby was still solely or predominantly breastfeeding, the baby could fail to receive adequate nutrition. In addition to changes in milk volume and composition, mothers who breastfeed throughout a pregnancy usually report that their nipples, previously accustomed to nursing, become extremely sensitive (presumably due to pregnancy hormones). When women nurse through a pregnancy it is possible that oxytocin released during breastfeeding could trigger uterine contractions and premature labor. When a mother chooses to nurse through a pregnancy, she needs breastfeeding counseling.

References

1. Mohrbacher N, Stock J, La LL, I. The breastfeeding answer book. Schaumburg, Ill: La Leche League International, 1997.

History of Birth with Nutrition Related Congenital or Birth Defect**Definition/
cut-off value**

A woman who has given birth to an infant who has a congenital or birth defect linked to inappropriate nutritional intake, e.g., inadequate zinc, folic acid, excess vitamin A.

Pregnant Women: any history of birth with nutrition-related congenital or birth defect
Breastfeeding/Non-Breastfeeding: most recent pregnancy

Presence of condition diagnosed by a physician as self reported by applicant/participant/caregiver; or as reported or documented by a physician, or someone working under physician's orders.

**Participant
category and
priority level****Category****Priority**

Pregnant Women

I

Breastfeeding Women

I

Non-Breastfeeding Women

III, IV, V, or VI

Justification

The single greatest risk factor for a pregnancy with a neural tube defect is a personal or family history of such a defect. More than 50% of recurrences can be prevented by taking folic acid before conception. Recent studies suggest that intake of folic acid may also be inversely related to the occurrence of cleft lip and palate. The WIC Program provides nutrition education and folic acid-rich foods to women to help prevent future birth defects.

Recurrent birth defects can also be linked to other inappropriate nutritional intake prior to conception or during pregnancy, such as inadequate zinc (LBW) or excess vitamin A (cleft palate or lip). The food package and nutrition education provided to WIC participants help women at risk make food choices that provide appropriate nutrient levels.

References

1. Federal Register, Part III, DHHS, FDA, 21 CFR Part 101, Food Labeling: Health Claims and Label Statements, Folate and Neural Tube Defects. Proposed and Final Rule. March 5, 1996;61;44:8752-8781.
2. Institute of Medicine. WIC nutrition risk criteria a scientific assessment. National Academy Press, Washington, D.C.; 1996.

Clarification

Self-reporting for "History of..." conditions should be treated in the same manner as self-reporting for current conditions requiring a physicians diagnosis, i.e., the applicant may report to the CPA that s/he was diagnosed by a physician with a given condition at some point in the past. As with current conditions, self-diagnosis of a past condition should never be confused with self-reporting.

341 Nutrient Deficiency Diseases

**Definition/
cut-off value**

Diagnosis of nutritional deficiencies or a disease caused by insufficient dietary intake of macro and micronutrients. Diseases include, but are not limited to, Protein Energy Malnutrition, Scurvy, Rickets, Beri Beri, Hypocalcemia, Osteomalacia, Vitamin K Deficiency, Pellagra, Cheilosis, Menkes Disease, Xerophthalmia.

Presence of nutrient deficiency diseases diagnosed by a physician as self reported by applicant/participant/caregiver; or as reported or documented by a physician, or someone working under physician's orders.

**Participant
category and
priority level**

Category	Priority
Pregnant Women	I
Breastfeeding Women	I
Non-Breastfeeding Women	III, IV, V, or VI
Infants	I
Children	III

Justification

The presence of macro- and micro-nutrient deficiencies indicates current nutrition health risks.

Persistent malnutrition may lead to elevated morbidity and mortality rates. Important functional disturbances may occur as a result of single or multiple nutrient deficiencies. Examples include impaired cognitive function, impaired function of the immune system, and impaired function of skeletal muscle. Participation in the WIC Program provides key nutrients and education to help restore nutrition status and promote full rehabilitation of those with an overt nutrient deficiency.

References

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2. Worthington-Roberts BS, Williams SR. Nutrition throughout the life cycle, **4th edition**. Boston: McGraw-Hill, **2001**.

Clarification

Self-reporting of a diagnosis by a medical professional should not be confused with self-diagnosis, where a person simply claims to have or to have had a medical condition without any reference to professional diagnosis. A self-reported medical diagnosis (“My doctor says that I have/my son or daughter has...”) should prompt the CPA to validate the presence of the condition by asking more pointed questions related to that diagnosis.

342 Gastrointestinal Disorders

**Definition/
cut-off value**

Diseases and/or conditions that interfere with the intake, digestion, and/or absorption of nutrients. The diseases and/or conditions include, but are not limited to:

- gastroesophageal reflux disease (GERD)
- peptic ulcer
- post-bariatric surgery
- short bowel syndrome
- inflammatory bowel disease, including ulcerative colitis or Crohn's disease
- liver disease
- pancreatitis
- biliary tract diseases

Presence of gastrointestinal disorders diagnosed by a physician, as self-reported by applicant/participant/caregiver; or as reported or documented by a physician, or someone working under physician's orders.

**Participant
category and
priority level**

Category	Priority
Pregnant Women	I
Breastfeeding Women	I
Non-Breastfeeding Women	III, IV, V, or VI
Infants	I
Children	III

Justification

Gastrointestinal disorders increase nutritional risk in a number of ways, including restricted food intake, abnormal deglutition, impaired digestion of food in the intestinal lumen, generalized or specific nutrient malabsorption, or excessive gastrointestinal losses of endogenous fluids and nutrients. Frequent loss of nutrients through vomiting, diarrhea, malabsorption, or infections can result in malnourishment and lowered disease resistance (1, 2). Nutrition management plays a prominent role in the treatment of gastrointestinal disorders.

Gastroesophageal Reflux Disease (GERD)

GERD is irritation and inflammation of the esophagus due to reflux of gastric acid into the esophagus (3). Nutritional care of GERD includes avoiding eating within 3 hours before going to bed; avoiding fatty foods, chocolate, peppermint, and spearmint, which may relax the lower esophageal sphincter; and coffee and alcoholic beverages, which may increase gastric secretion (4). Consumption of these items may need to be limited depending on individual tolerance.

Peptic Ulcer

Peptic ulcer normally involves the gastric and duodenal regions of the gastrointestinal

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Gastrointestinal Disorders

tract (4). Because the primary cause of peptic ulcers is *Helicobacter pylori* infection, the focus of treatment is the elimination of the bacteria with antibiotic and proton pump inhibitor therapy. Dietary advice for persons with peptic ulcers is to avoid alcohol, coffee (with and without caffeine), chocolate, and specific spices, such as black pepper (4, 5).

Post-bariatric Surgery

Many types of surgical procedures are used for the intervention of morbid obesity. These procedures promote weight loss by restricting dietary intakes, e.g., adjustable gastric banding (AGB), and/or bypassing some portion of intestine to cause incomplete digestion and/or malabsorption of nutrients, e.g., Roux-y gastric bypass (RYGB). Therefore, the risks for developing nutritional deficiencies after bariatric surgery are greatly increased. Since gastric bypass individuals have both a decreased availability of gastric acid and intrinsic factor, vitamin B₁₂ deficiency can develop without supplementation. Taking daily nutritional supplements and eating foods high in vitamins and minerals are important aspects of the nutritional management for the individuals who have had bariatric surgery (6).

Short Bowel Syndrome (SBS)

SBS is the result of extensive small bowel resection. SBS in infants is mostly the result of small bowel resection for the treatment of congenital anomalies, necrotizing enterocolitis, and congenital vascular. In adults, Crohn's disease, radiation enteritis, mesenteric vascular accidents, trauma, and recurrent intestinal obstruction are the most common conditions treated by small bowel resection and resulting in SBS (4). The loss of a large segment of the small bowel causes malabsorption syndrome. Total parenteral nutrition usually is started within the first few days after intestinal resection. Gradual supplementation with enteral feeding promotes intestinal adaptation in order to wean from parenteral nutrition therapy. Supplementation with fat soluble vitamins and vitamin B₁₂ may be needed (7). The pediatric client's nutritional status must be assessed and growth closely monitored (8).

Inflammatory Bowel Disease (IBD)

Inflammatory bowel disease includes Crohn's disease and ulcerative colitis. Weight loss, growth impairment, and malnutrition are the most prevalent nutritional problems observed in IBD. Nutritional support is essential. Exclusive elemental nutrition has been used in attaining the remission of Crohn's disease. However, symptoms tend to recur promptly after resuming the conventional diet (9).

Liver Disease

Since the liver plays an essential role in the metabolic processes of nutrients, liver disorders have far-reaching effects on nutritional status. Acute liver injury is often associated with anorexia, nausea and vomiting. Therefore, inadequate nutritional intakes are common. Decreased bile salt secretion is associated with the maldigestion and impaired absorption of fat and fat-soluble vitamins. Defects in protein metabolism

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Gastrointestinal Disorders

associated with chronic liver failure include decreased hepatic synthesis of albumin, coagulation factors, urea synthesis and metabolism of aromatic amino acids. For nutritional therapy, an important consideration should be the balance between preventing muscle wasting and promoting liver regeneration without causing hepatic encephalopathy. It is recommended that persons with chronic liver disease consume the same amount of dietary protein as that required by normal individuals (0.74g/kg) (10).

Pancreatic Disease

In chronic pancreatitis, there is a reduced secretion of pancreatic enzymes leading to malabsorption. In severe cases, tissue necrosis can occur. It is suggested that for patients with pancreatitis, a high carbohydrate, low-fat, low protein diet may be helpful (11).

Biliary Tract Diseases

Common diseases of the biliary tract are:

- cholelithiasis (gallstones, without infection)
- choledocholithiasis (gallstone in the bile duct causing obstruction, pain and cramps)
- cholecystitis (inflammation of gallbladder caused by bile duct obstruction).

Obesity or severe fasting may increase risk for these disorders. Since lipids stimulate gallbladder contractions, a low fat diet with 25% to 30% of total calories as fat is recommended. Greater fat limitation is undesirable as some fat is required for stimulation and drainage of the biliary tract. Supplementation with fat-soluble vitamins may be needed for persons with fat malabsorption or a chronic gall bladder condition (12).

WIC nutritionists can provide counseling to support the medical nutrition therapy given by clinical dietitians, and monitor compliance with therapeutic dietary regimens. They can also review and provide WIC-approved medical foods or formulas prescribed by the health care providers. In certain circumstances, WIC staff may recommend an appropriate medical food or formula to the health care provider. They should also make referrals to an appropriate health care provider for medical nutrition therapy by a clinical dietitian when indicated.

References

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Clarification

Self-reporting of a diagnosis by a medical professional should not be confused with self-diagnosis, where a person simply claims to have or to have had a medical condition without any reference to professional diagnosis. A self-reported medical diagnosis (“My doctor says that I have/my son or daughter has...”) should prompt the CPA to validate the presence of the condition by asking more pointed questions related to that diagnosis.

343 Diabetes Mellitus

**Definition/
cut-off value**

Diabetes mellitus consists of a group of metabolic diseases characterized by inappropriate hyperglycemia resulting from defects in insulin secretion, insulin action or both (1).

Presence of diabetes mellitus diagnosed by a physician, as self-reported by applicant/participant/caregiver; or as reported or documented by a physician, or someone working under a physician's orders.

**Participant
category and
priority level**

Category	Priority
Pregnant Women	I
Breastfeeding Women	I
Non-Breastfeeding Women	III, IV, V, or VI
Infants	I
Children	III

Justification

Diabetes mellitus may be broadly described as a chronic, systemic disease characterized by:

- Abnormalities in the metabolism of carbohydrates, proteins, fats, and insulin; and
- Abnormalities in the structure and function of blood vessels and nerves (2).

The chronic hyperglycemia of diabetes is associated with long-term damage, dysfunction, and failure of various organs, especially the eyes, kidneys, nerves, heart, and blood vessels (1, 2) and includes type 1 diabetes mellitus, type 2 diabetes mellitus, and Maturity Onset Diabetes of the Young (MODY). MODY is a series of familial disorders characterized by early onset and mild hyperglycemia. Specific genetic defects have been identified on chromosomes 7, 12, and 20 (2). MODY is often diagnosed before the age of 25 years. It is caused by dominantly inherited defect of insulin secretion. Persons with MODY are often non-obese and without metabolic syndrome (3).

The two major classifications of diabetes are type 1 diabetes (beta-cell destruction, usually leading to absolute insulin deficiency); and type 2 diabetes (ranging from predominantly insulin resistance with relative insulin deficiency to a predominantly insulin secretory defect with insulin resistance) (1). The Expert Committee on Diagnosis and Classification of Diabetes Mellitus, working under the sponsorship of the American Diabetes Association, has identified the criteria for the diagnosis of diabetes mellitus (1, 2) (see clarification).

Long-term complications of diabetes include retinopathy with potential loss of vision, nephropathy leading to renal failure; peripheral neuropathy with risk of foot ulcers, amputations, and Charcot joints; and, autonomic neuropathy causing gastrointestinal,

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genitourinary, cardiovascular symptoms and sexual dysfunction. Patients with diabetes have an increased incidence of atherosclerotic cardiovascular, peripheral arterial and cerebrovascular diseases. Hypertension and abnormalities of lipoprotein metabolism are often found in people with diabetes (1).

WIC nutrition services can reinforce and support the medical and dietary therapies (such as Medical Nutrition Therapy) that participants with diabetes receive from their health care providers (4).

References

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 4. American Diabetes Association. Nutrition recommendations and interventions for diabetes: a position statement of the American Diabetes Association. *Diabetes Care*. 2006; 29: 2140-2157:S48-S65.
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Clarification

Self-reporting of a diagnosis by a medical professional should not be confused with self-diagnosis, where a person simply claims to have or to have had a medical condition without any reference to professional diagnosis. A self-reported medical diagnosis (“My doctor says that I have/my son or daughter has...”) should prompt the CPA to validate the presence of the condition by asking more pointed questions related to that diagnosis.

Diabetes mellitus is sometimes described by both patients and health professionals as “a little bit of sugar” or “high sugar.” In reality, “sugar” is only one component of the pathology and clinical manifestations of the multifaceted syndrome of diabetes mellitus (2).

Diabetes mellitus is diagnosed by a licensed medical provider using any one of the following three methods:

1. Fasting plasma glucose \geq 126 mg/dL (7.0 mmol/l). Fasting is defined as no caloric intake for at least 8 hours.
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2. Symptoms of hyperglycemia plus casual plasma glucose concentration ≥ 200 mg/dl (11.1 mmol/L).
 - Casual implies any time of day without regard to time since last meal.
 - The classic symptoms of hyperglycemia include polyuria, polydipsia, and unexplained weight loss.
3. Two-hour plasma glucose ≥ 200 mg/dL (11.1 mmol/L) during a 75-g oral glucose tolerance test (OGTT) (1).

In the absence of unequivocal hyperglycemia, these criteria should be confirmed by repeat testing on a different day. The third measure (OGTT) is not recommended for routine clinical use.

344 Thyroid Disorders

**Definition/
cut-off value**

Hypothyroidism (insufficient levels of thyroid hormone produced or defect in receptor) or hyperthyroidism (high levels of thyroid hormone secreted).

Presence of thyroid disorders diagnosed by a physician as self reported by applicant/participant/caregiver; or as reported or documented by a physician, or someone working under physician's orders.

**Participant
category and
priority level**

Category	Priority
Pregnant Women	I
Breastfeeding Women	I
Non-Breastfeeding Women	III, IV, V, or VI
Infants	I
Children	III

Justification

Individuals with hyperthyroidism can benefit from WIC foods and nutrition education due to the increased caloric needs of hypermetabolism. Nutrition education and low-fat WIC food packages can assist individuals with hypothyroidism in weight management and promotion of normal growth and development.

References

1. Institute of Medicine. WIC nutrition risk criteria a scientific assessment. National Academy Press, Washington, D.C.; 1996.
 2. Berkow, et al.: Merck Manual Section 8.87; 1992;16th edition.
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Clarification

Self-reporting of a diagnosis by a medical professional should not be confused with self-diagnosis, where a person simply claims to have or to have had a medical condition without any reference to professional diagnosis. A self-reported medical diagnosis ("My doctor says that I have/my son or daughter has...") should prompt the CPA to validate the presence of the condition by asking more pointed questions related to that diagnosis.

Hypertension and Prehypertension

**Definition/
cut-off value**

Presence of hypertension or prehypertension diagnosed by a physician as self reported by applicant/participant/caregiver; or as reported or documented by a physician, or someone working under physician's orders.

**Participant
category and
priority level**

Category	Priority
Pregnant Women	I
Breastfeeding Women	I
Non-Breastfeeding Women	III, IV, V, or VI
Infants	I
Children	III

Justification

Hypertension, commonly referred to as high blood pressure, is defined as persistently high arterial blood pressure with systolic blood pressure above 140 mm Hg or diastolic blood pressure above 90 mm Hg (1). People with high blood pressure can be asymptomatic for years (2). Untreated hypertension leads to many degenerative diseases, including congestive heart failure, end-stage renal disease, and peripheral vascular disease.

There is a large segment of the population that falls under the classification of prehypertension, with blood pressure readings between 130/80 to 139/89 mm Hg (3). People with prehypertension are twice as likely to develop hypertension (3).

There is no cure for hypertension (2); however lifestyle modifications can prevent high blood pressure and are critical in the management of hypertension and prehypertension (3).

Risk factors for hypertension include (4):

- Age (increases with age)
- Race/ethnicity (occurs more often and earlier in African Americans)
- Overweight or obesity
- Male gender
- Unhealthy nutrient consumption and lifestyle habits (e.g. high sodium intake, excessive alcohol consumption, low potassium intake, physical inactivity, and smoking)
- Family history
- Chronic stress

Management of hypertension includes lifestyle modifications and medication. In prehypertensive individuals, implementing lifestyle changes can prevent or delay the onset of hypertension (3, 5). In hypertensive individuals, dietary intervention is not only effective in reducing blood pressure but also in delaying drug treatment (6).

Hypertension and Prehypertension

Lifestyle changes to manage hypertension and prehypertension include:

- Consuming a diet consistent with the Dietary Guidelines for Americans or following the DASH (Dietary Approaches to Stop Hypertension) eating plan, if recommended by a physician
- Limiting dietary sodium
- Engaging in regular physical activity
- Achieving and maintaining a healthy weight
- Smoking cessation

The WIC Program provides fruits, vegetables, low fat milk and cheese, which are important components of the DASH eating plan. WIC nutritionists provide nutrition education and counseling to reduce sodium intakes, achieve/maintain proper weight status, promote physical activity, and make referrals to smoking cessation programs, which are the lifestyle interventions critical to the management of hypertension/prehypertension.

Pregnant Women: Hypertension is the most common medical complication of pregnancy, occurring in 7% of all pregnancies. Hypertension during pregnancy may lead to low birth weight, fetal growth restriction, and premature delivery, as well as maternal, fetal, and neonatal morbidity (7). Hypertensive disorders of pregnancy are categorized as (8, 9):

- Chronic Hypertension: Hypertension that was present before pregnancy. It increases perinatal mortality and morbidity through an increased risk of SGA (small for gestational age) infants. Women with chronic hypertension are at risk for complications of pregnancy such as preeclampsia. There is a 25% risk of superimposed preeclampsia and an increased risk for preterm delivery, fetal growth restriction, congestive heart failure and renal failure.
- Preeclampsia: A pregnancy-specific syndrome observed after the 20th week of pregnancy with elevated blood pressure accompanied by significant proteinuria.
- Eclampsia: The occurrence of seizures, in a woman with preeclampsia, that cannot be attributed to other causes.
- Preeclampsia superimposed upon chronic hypertension: Preeclampsia occurring in a woman with chronic hypertension. It is the major leading factor of maternal and infant mortality and morbidity.
- Gestational Hypertension: Blood pressure elevation detected for the first time after midpregnancy without proteinuria. It presents minimal risks to mother and baby, when it does not progress to preeclampsia.

The term “pregnancy-induced hypertension” includes gestational hypertension, preeclampsia and eclampsia. For more information about preeclampsia, please see risk #304, History of Preeclampsia.

Hypertension and Prehypertension

The following conditions are associated with an increased incidence of pregnancy-induced hypertension (4):

- Inadequate diet
- Nutritional deficiencies, including low protein, essential fatty acid, or magnesium intake
- Inadequate calcium intake in early pregnancy (7)
- Obesity
- Primigravidity
- Age (pregnancy before age 20 or after age 40)
- Multi-fetal gestation
- Genetic disease factors
- Familial predisposition

The impact of hypertension continues after delivery. Special consideration must be given to lactating women with high blood pressure, especially if their care plan includes medication. It is important that the hypertensive lactating woman inform her physician of her breastfeeding status if she is also taking medication to determine whether they pose any risks to the infant. However, hypertension is not a contraindication for lactation. Lactation, as suggested in research, is thought to present some therapeutic advantages in the management of the disease in women (10, 11, 12).

Children: Hypertension during childhood is age-specific, and is defined as blood pressure readings greater than the 95th percentile for age, gender, and height on at least three separate occasions. Blood pressure reading between the 90th and 95th percentile is considered prehypertension (13). Children with high blood pressure are more likely to become hypertensive adults (15). Therefore, they should have their blood pressure checked regularly beginning at the age of three (14, 15).

Epidemiologic data suggests an association between childhood obesity and high blood pressure (16). Blood pressure and overweight status have been suggested as criteria to identify hypertensive children. Weight control decreases blood pressure, sensitivity to salt and other cardiovascular risk factors (13).

Nutrition-related prevention efforts in overweight hypertensive children should aim at achieving a moderate weight loss or preventing further weight gain. Additionally, a decrease in time spent in sedentary activities with subsequent increase in physical activity should be emphasized.

Dietary changes conducive to weight management in children include:

- Portion control
- Decreased consumption of sugar-containing beverages and energy-dense snacks
- Increased consumption of fresh fruits and vegetables
- Regular meals, especially breakfast

Hypertension and Prehypertension

The WIC Program provides nutritious supplemental foods and nutrition education compatible with changes needed to promote a healthy weight and decrease the impact of hypertension in children.

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 16. Committee on Nutrition, American Academy of Pediatrics. Pediatric nutrition handbook. 6th ed. Elk Grove, Ill: American Academy of Pediatrics; 2009.
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Clarification

Self-reporting of a diagnosis by a medical professional should not be confused with self-diagnosis, where a person simply claims to have or to have had a medical condition without any reference to professional diagnosis. A self-reported medical diagnosis (“My doctor says that I have/my son or daughter has...”) should prompt the CPA to validate the presence of the condition by asking more pointed questions related to that diagnosis.

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Renal Disease

**Definition/
cut-off value**

Any renal disease including pyelonephritis and persistent proteinuria, but excluding urinary tract infections (UTI) involving the bladder. Presence of renal disease diagnosed by a physician as self reported by applicant/participant/caregiver; or as reported or documented by a physician, or someone working under physician's orders.

**Participant
category and
priority level**

Category	Priority
Pregnant Women	I
Breastfeeding Women	I
Non-Breastfeeding Women	III, IV, V, or VI
Infants	I
Children	III

Justification

Renal disease can result in growth failure in children and infants. In pregnant women, fetal growth is often limited and there is a high risk of developing a preeclampsia-like syndrome. Women with chronic renal disease often have proteinuria, with risk of azotemia if protein intake becomes too high.

References

1. Institute of Medicine. WIC nutrition risk criteria a scientific assessment. National Academy Press, Washington, D.C.; 1996.
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Clarification

Self-reporting of a diagnosis by a medical professional should not be confused with self-diagnosis, where a person simply claims to have or to have had a medical condition without any reference to professional diagnosis. A self-reported medical diagnosis ("My doctor says that I have/my son or daughter has...") should prompt the CPA to validate the presence of the condition by asking more pointed questions related to that diagnosis.

347 Cancer

**Definition/
cut-off value**

A chronic disease whereby populations of cells have acquired the ability to multiply and spread without the usual biologic restraints. The current condition, or the treatment for the condition, must be severe enough to affect nutritional status.

Presence of cancer diagnosed by a physician as self reported by applicant/participant/caregiver; or as reported or documented by a physician, or someone working under physician's orders.

**Participant
category and
priority level**

Category	Priority
Pregnant Women	I
Breastfeeding Women*	I
Non-Breastfeeding Women	III, IV, V, or VI
Infants	I
Children	III

* Some cancer treatments may contraindicate breastfeeding.

Justification

An individual's nutritional status at the time of diagnosis of cancer is associated with the outcome of treatment. The type of cancer and stage of disease progression determines the type of medical treatment, and if indicated, nutrition management. Individuals with a diagnosis of cancer are at significant health risk and under specific circumstances may be at increased nutrition risk, depending upon the stage of disease progression or type of ongoing cancer treatment.

References

1. Institute of Medicine. WIC nutrition risk criteria a scientific assessment. National Academy Press, Washington, D.C.; 1996.
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Clarification

Self-reporting of a diagnosis by a medical professional should not be confused with self-diagnosis, where a person simply claims to have or to have had a medical condition without any reference to professional diagnosis. A self-reported medical diagnosis ("My doctor says that I have/my son or daughter has...") should prompt the CPA to validate the presence of the condition by asking more pointed questions related to that diagnosis.

Central Nervous System Disorders

**Definition/
cut-off value**

Conditions which affect energy requirements, ability to feed self, or alter nutritional status metabolically, mechanically, or both. These include, but are not limited to:

- epilepsy
- cerebral palsy (CP)
- neural tube defects (NTDs), such as spina bifida
- Parkinson's disease
- multiple sclerosis (MS)

Presence of central nervous system disorders diagnosed by a physician as self reported by applicant/participant/caregiver; or as reported or documented by a physician, or someone working under physician's orders.

**Participant
category and
priority level**

Category	Priority
Pregnant Women	I
Breastfeeding Women	I
Non-Breastfeeding Women	III, IV, V, or VI
Infants	I
Children	III

Justification

Epileptics are at nutrition risk due to alterations in nutritional status from prolonged anti-convulsion therapy, inadequate growth, and physical injuries from seizures (1). The ketogenic diet has been used for the treatment of refractory epilepsy in children (2). However, children on a ketogenic diet for six months or more have been observed to have slower gain in weight and height (3,4). Growth monitoring and nutrition counseling to increase energy and protein intakes while maintaining the ketogenic status are recommended (4). In some cases, formula specifically prepared for children on a ketogenic diet is necessary. Women on antiepileptic drugs (AEDs) present a special challenge. Most AEDs have been associated with the risk of neural tube defects on the developing fetus. Although it is unclear whether folic acid supplementation protects against the embryotoxic and teratogenic effects of AEDs, folic acid is recommended for women with epilepsy as it is for other women of childbearing age (5-7).

Oral motor dysfunction is associated with infants and children with cerebral palsy (CP). These infants and children often have poor growth due to eating impairment, such as difficulty in spoon feeding, biting, chewing, sucking, drinking from a cup and swallowing. Rejection of solid foods, choking, coughing, and spillage during eating are common among these children (8,9). Growth monitoring and nutrition counseling to modify food consistency and increase energy and nutrient intakes are recommended. Some children may require tube feeding and referral to feeding clinics, where available.

Limited mobility or paralysis, hydrocephalus, limited feeding skills, and genitourinary problems, put children with neural tube defects (NTDs) at increased risk of abnormal growth and development. Ambulatory disability, atrophy of the lower extremities, and short stature place NTDs affected children at high risk for increased body mass index (10). Growth monitoring and nutrition counseling for appropriate feeding practices are suggested.

In some cases, participants with Parkinson's disease require protein redistribution diets to increase the efficacy of the medication used to treat the disease (11). Participants treated with levodopa-carbidopa may also need to increase the intake of B vitamins (12). Participants with Parkinson's disease will benefit from nutrition education/counseling on dietary protein modification, which emphasizes adequate nutrition and meeting minimum protein requirements. Additionally, since people with Parkinson's often experience unintended weight loss (13), it is important to monitor for adequate maternal weight gain.

Individuals with multiple sclerosis (MS) may experience difficulties with chewing and swallowing that require changes in food texture in order to achieve a nutritionally adequate diet (14). Obesity and malnutrition are frequent nutrition problems observed in individuals with MS. Immobility and the use of steroids and anti-depressants are contributing factors for obesity. Dysphagia, adynamia, and drug therapy potentially contribute to malnutrition. Both obesity and malnutrition have detrimental effects on the course of the disease. Adequate intakes of polyunsaturated fatty acids, vitamin D, vitamin B₁₂ and a diet low in animal fat have been suggested to have beneficial effects in relapsing-remitting MS (15-17). Breastfeeding advice to mothers with MS has been controversial. However, there is no evidence to indicate that breastfeeding has any deleterious effect on women with MS. In fact, breastfeeding should be encouraged for the health benefits to the infant (18). In addition, mothers who choose to breastfeed should receive the necessary support to enhance breastfeeding duration.

As a public health nutrition program, WIC plays a key role in health promotion and disease prevention. As such, the nutrition intervention for participants with medical conditions should focus on supporting, to the extent possible, the medical treatment and/or medical/nutrition therapy a participant may be receiving. Such support may include: investigating potential drug-nutrient interactions; inquiring about the participant's understanding of a prescribed special diet; encouraging the participant to keep medical appointments; tailoring the food package to accommodate the medical condition; and referring the participant to other health and social services.

References

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Clarification

Self-reporting of a diagnosis by a medical professional should not be confused with self-diagnosis, where a person simply claims to have or to have had a medical condition without any reference to professional diagnosis. A self-reported medical diagnosis (“My doctor says that I have/my son or daughter has...”) should prompt the CPA to validate the presence of the condition by asking more pointed questions related to that diagnosis.

Genetic and Congenital Disorders

**Definition/
cut-off value**

Hereditary or congenital condition at birth that causes physical or metabolic abnormality. The current condition must alter nutrition status metabolically, mechanically, or both. May include, but is not limited to, cleft lip or palate, Down’s syndrome, thalassemia major, sickle cell anemia (not sickle cell trait), and muscular dystrophy.

Presence of genetic and congenital disorders diagnosed by a physician as self reported by applicant/participant/caregiver; or as reported or documented by a physician, or someone working under physician’s orders.

**Participant
category and
priority level**

Category	Priority
Pregnant Women	I
Breastfeeding Women	I
Non-Breastfeeding Women	III, IV, V, or VI
Infants	I
Children	III

Justification

For women, infants, and children with these disorders, special attention to nutrition may be required to achieve adequate growth and development and/or to maintain health.

Severe cleft lip and palate anomalies commonly cause difficulty with chewing, sucking and swallowing, even after extensive repair efforts (5). Surgery is required for many gastrointestinal congenital anomalies. (Examples are trachea-esophageal fistula, esophageal atresia, gastroschisis, omphalocele, diaphragmatic hernia, intestinal atresia, and Hirschsprung's Disease.)

Impaired esophageal atresia and trachea-esophageal fistula can lead to feeding problems during infancy. The metabolic consequences of impaired absorption in short bowel-syndrome, depend on the extent and site of the resection or the loss of competence. Clinical manifestations of short bowel syndrome, include diarrhea, dehydration, edema, general malnutrition, anemia, dermatitis, bleeding tendencies, impaired taste, anorexia, and renal calculi. Total parenteral feedings are frequently necessary initially, followed by gradual and individualized transition to oral feedings. After intestinal resection a period of adaptation by the residual intestine begins and may last as long as 12-18 months (3). Even after oral feedings are stabilized, close follow-up and frequent assessment of the nutritional status of infants with repaired congenital gastro-intestinal anomalies is recommended (5).

Genetic and Congenital Disorders

Sickle-cell anemia is an inherited disorder in which the person inherits a sickle gene from each parent. Persons with sickle-cell trait carry the sickle gene, but under normal circumstances are completely asymptomatic. Good nutritional status is important to individuals with sickle-cell anemia to help assume adequate growth (which can be compromised) and to help minimize complications of the disease since virtually every organ of the body can be affected by sickle-cell anemia (i.e., liver, kidneys, gall bladder, and immune system). Special attention should be given to assuring adequate caloric, iron, folate, vitamin E and vitamin C intakes as well as adequate hydration.

Muscular dystrophy is a familial disease characterized by progressive atrophy and wasting of muscles. Changes in functionality and mobility can occur rapidly and as a result children may gain weight quickly (up to 20 pounds in a 6 month period). Early nutrition education that focuses on foods to include in a balanced diet, limiting foods high in simple sugars and fat and increasing fiber intake can be effective in minimizing the deleterious effects of the disease.

References

1. American Dietetic Association, Pediatric Nutrition Practice Group. Pediatric manual of clinical dietetics. Chicago: Pediatric Nutrition Dietetic Practice Group, American Dietetic Association, 1998.
2. Ekvall S. Pediatric nutrition in chronic diseases and developmental disorders prevention, assessment, and treatment. New York: Oxford University Press 1993. p. 289-292.
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4. Institute of Medicine. WIC nutrition risk criteria a scientific assessment. National Academy Press, Washington, D.C.; 1996.
5. Ohio Neonatal Nutritionists. Nutritional care for high risk newborns. Philadelphia, PA: G.F. Stickley Publishers, 1985.

Clarification

Self-reporting of a diagnosis by a medical professional should not be confused with self-diagnosis, where a person simply claims to have or to have had a medical condition without any reference to professional diagnosis. A self-reported medical diagnosis (“My doctor says that I have/my son or daughter has...”) should prompt the CPA to validate the presence of the condition by asking more pointed questions related to that diagnosis.

Inborn Errors of Metabolism

**Definition/
cut-off value**

Presence of inborn error(s) of metabolism diagnosed by a physician as self reported by applicant/participant/caregiver; or as reported or documented by a physician, or someone working under physician’s orders.

Generally refers to gene mutations or gene deletions that alter metabolism in the body, including, but not limited to:

- phenylketonuria (PKU)
 - maple syrup urine disease
 - galactosemia
 - hyperlipoproteinemia
 - homocystinuria
 - tyrosinemia
 - histidinemia
 - urea cycle disorders
 - glutaric aciduria
 - methylmalonic acidemia
 - glycogen storage disease
 - galactokinase deficiency
 - fructoaldolase deficiency
 - propionic acidemia
 - hypermethioninemia.
 - medium-chain acyl-CoA dehydrogenase (MCAD)
-

**Participant
category and
priority level**

Category

Priority

Pregnant Women	I
Breastfeeding Women	I
Non-Breastfeeding Women	III, IV, V, or VI
Infants	I
Children	III

Justification

Appropriate dietary management, which may include the use of special formulas, can minimize the medical risk to individuals with inborn errors of metabolism.

Inborn Errors of Metabolism

References

1. Institute of Medicine: WIC Nutrition Risk Criteria: A Scientific Assessment; 1996; pp. 181-183.
 2. Queen, PM and Land, CE: Handbook of Pediatric Nutrition; Aspen Publishers, Inc.; 1993; p. 342.
 3. The American Dietetic Association: Pediatric Manual of Clinical Dietetics; Table 2-Metabolic Disorders Amenable to Nutrition Therapy; 1998; p. 288.
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Clarification

If a participant has a physician's diagnosis of a condition not listed in the definition, but included in the table, they may be eligible. If after assessment by a CPA, it is determined that the inborn error of metabolism impacts nutritional health and the condition can be ameliorated by WIC participation, the participant can be certified using this risk code. Such case by case determinations of nutrition risk do not require Federal approval. However, if a specific condition, not listed in the definition, is frequently used as a certifying nutritional risk, than a request for approval to RISC must be submitted by the State agency.

Self-reporting of a diagnosis by a medical professional should not be confused with self-diagnosis, where a person simply claims to have or to have had a medical condition without any reference to professional diagnosis. A self-reported medical diagnosis ("My doctor says that I have/my son or daughter has...") should prompt the CPA to validate the presence of the condition by asking more pointed questions related to that diagnosis.

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Infectious Diseases

**Definition/
cut-off value**

A disease caused by growth of pathogenic microorganisms in the body severe enough to affect nutritional status. Includes, but is not limited to:

- tuberculosis
- pneumonia
- meningitis
- parasitic infections
- hepatitis
- bronchiolitis (3 episodes in last 6 months)
- HIV (Human Immunodeficiency Virus infection)*
- AIDS (Acquired Immunodeficiency Syndrome)*

The infectious disease must be present within the past 6 months, and diagnosed by a physician as self reported by applicant/participant/caregiver; or as reported or documented by a physician, or someone working under physician's orders.

**Participant
category and
priority level**

Category	Priority
Pregnant Women	I
Breastfeeding Women*	I
Non-Breastfeeding Women	III, IV, V, or VI
Infants	I
Children	III

*Breastfeeding is contraindicated for women with HIV or AIDS. Breastfeeding may be permitted for women with hepatitis (see Clarification for guidelines.)

Justification

Chronic, prolonged, or repeated infections adversely affect nutritional status through increased nutrient requirements as well as through decreased ability to take in or utilize nutrients.

Catabolic response to infection increases energy and nutrient requirements and may increase the severity of medical conditions associated with infection.

Bronchiolitis is a lower respiratory tract infection that affects young children, usually under 24 months of age. It is often diagnosed in winter and early spring, and is caused by the respiratory syncytial virus (RSV). Recurring episodes of bronchiolitis may

352 Infectious Diseases

affect nutritional status during a critical growth period and lead to the development of asthma and other pulmonary diseases.

HIV is a member of the retrovirus family. HIV enters the cell and causes cell dysfunction or death. Since the virus primarily affects cells of the immune system, immunodeficiency results (AIDS). Recent evidence suggests that monocytes and macrophages may be the most important target cells and indicates that HIV can infect bone marrow stem cells. HIV infection is associated with the risk of malnutrition at all stages of infection.

References

1. Institute of Medicine: WIC Nutrition Risk Criteria: A Scientific Assessment; 1996; pp. 184-186.
 2. Berkow, et al.: Merck Manual; 1992; 16th Edition.
 3. Grand, Stupen, and Dietz: Pediatric Nutrition: Theory and Practice; Butterworths; 1987; pp. 549-570, 571-578, 651-664.
 4. Lawrence, Ruth A: Maternal and Child Health Technical Information Bulletin: A Review of Medical Benefits and Contraindications to Breastfeeding in the United States; 1997; pp. 14-17.
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Clarification

Developments in the management and prevention of hepatitis have changed the management of infected women during pregnancy and have made breastfeeding safe. The following are guidelines for breastfeeding women with hepatitis, as found in the Technical Information Bulletin (10/97) "A Review of the Medical Benefits and Contraindications to Breastfeeding in the United States":

Hepatitis A: Breastfeeding is permitted as soon as the mother receives gamma globulin.

Hepatitis B: Breastfeeding is permitted after the infant receives HBIG (Hepatitis B specific immunoglobulin) and the first dose of the series of Hepatitis B vaccine.

Hepatitis C: Breastfeeding is permitted for mothers without co-infection (e.g. HIV).

Self-reporting of a diagnosis by a medical professional should not be confused with self-diagnosis, where a person simply claims to have or to have had a medical condition without any reference to professional diagnosis. A self-reported medical diagnosis ("My doctor says that I have/my son or daughter has...") should prompt the

CPA to validate the presence of the condition by asking more pointed questions related to that diagnosis.

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Infectious Diseases

353 Food Allergies

**Definition/
cut-off value**

An adverse immune response to a food or a hypersensitivity that causes adverse immunologic reaction.

Presence of food allergies diagnosed by a physician as self reported by applicant/participant/caregiver; or as reported or documented by a physician, or someone working under physician's orders.

**Participant
category and
priority level**

Category	Priority
Pregnant Women	I
Breastfeeding Women	I
Non-Breastfeeding Women	III, IV, V, or VI
Infants	I
Children	III

Justification

The only way to avoid a food allergy reaction is to eliminate the food. This requires the assistance of a nutritionist to help individuals obtain nutrients from other food sources (1).

The goal is to remove from the diet as many potential food allergens as possible while also providing optimal nutrition. Treatment of food allergies by a registered dietitian or competent professional authority not only improves compliance by ensuring strict dietary avoidance through education and appropriate substitution, but also is essential for ensuring the nutritional adequacy of the diet (2).

References

1. Zeman FJ. Clinical nutrition and dietetics. New York: Macmillan Pub. Co, 1991. p.149-185.
 2. Queen PM, Helm KK, Lang CE. Handbook of pediatric nutrition. Gaithersburg, Md: Aspen Publishers, 1999.
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Clarification

Self-reporting of a diagnosis by a medical professional should not be confused with self-diagnosis, where a person simply claims to have or to have had a medical condition without any reference to professional diagnosis. A self-reported medical diagnosis (“My doctor says that I have/my son or daughter has...”) should prompt the CPA to validate the presence of the condition by asking more pointed questions related to that diagnosis.

354 Celiac Disease

**Definition/
cut-off value**

Also known as:

- Celiac Sprue
- Gluten Enteropathy
- Non-tropical Sprue

Inflammatory condition of the small intestine precipitated by the ingestion of wheat in individuals with certain genetic make-up.

Presence of Celiac Disease diagnosed by a physician as self reported by applicant/participant/caregiver; or as reported or documented by a physician or someone working under physician's orders.

**Participant
category and
priority level**

Category	Priority
Pregnant Women	I
Breastfeeding Women	I
Non-Breastfeeding Women	III, IV, V, or
Infants	VI
Children	I
	III

Justification

Individuals need to eliminate all wheat from their diets. Wheat in the diet can cause diarrhea, weight loss, failure to thrive and possibly malabsorption of protein, carbohydrates, and fat (1,2). Nutrition counseling can help individuals meet nutrient needs on a wheat-free diet.

References

1. Clinical Nutrition and Dietetics: The intestinal tract and accessory organs. New York; 1991. p. 219-258.
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 3. Institute of Medicine. WIC nutrition risk criteria a scientific assessment. National Academy Press, Washington, D.C.;1996. p. 192-193
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354 Celiac Disease

Clarification

Self-reporting of a diagnosis by a medical professional should not be confused with self-diagnosis, where a person simply claims to have or to have had a medical condition without any reference to professional diagnosis. A self-reported medical diagnosis (“My doctor says that I have/my son or daughter has...”) should prompt the CPA to validate the presence of the condition by asking more pointed questions related to that diagnosis.

355 Lactose Intolerance

**Definition/
cut-off value**

Lactose intolerance occurs when there is an insufficient production of the enzyme lactase. Lactase is needed to digest lactose. Lactose in dairy products that is not digested or absorbed is fermented in the small intestine producing any or all of the following GI disturbances: nausea, diarrhea, abdominal bloating, cramps. Lactose intolerance varies among and within individuals and ranges from mild to severe.

Presence of lactose intolerance diagnosed by a physician as self reported by applicant/participant/caregiver; or as reported or documented by a physician, or someone working under physician's orders; or symptoms must be well documented by the competent professional authority. Documentation should indicate that the ingestion of dairy products causes the above symptoms and the avoidance of such dairy products eliminates them.

**Participant
category and
priority level**

Category	Priority
Pregnant Women	I
Breastfeeding Women	I
Non-Breastfeeding Women	III, IV, V, or VI
Infants	I
Children	III

Justification

Lactose is found primarily in milk, milk-based formula and other dairy products. Dairy products provide a variety of nutrients essential to the WIC population (calcium, vitamin D, protein). Lactose intolerance varies according to individuals. Some individuals may tolerate up to one cup of milk without discomfort, although many avoid dairy products all together. WIC can provide counseling on how to incorporate small amounts of lactose-containing foods and/or other dietary sources of above nutrients into the client's diet.

References

1. Duyff, Roberta Larson: The American Dietetic Association's Complete Food and Nutrition Guide; Chapter 9 Sensitive About Food; 1996; pp. 189-203.
 2. Institute of Medicine: WIC Nutrition Risk Criteria: A Scientific Assessment, 1996; pp.194-195.
 3. American Dietetic Association: Lactose Intolerance Resource Including Recipes; Chicago; 1985.
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356 Hypoglycemia

**Definition/
cut-off value** Presence of hypoglycemia diagnosed by a physician as self reported by applicant/participant/caregiver; or as reported or documented by a physician, or someone working under physician’s orders.

Participant category and priority level	Category	Priority
	Pregnant Women	I
	Breastfeeding Women	I
	Non-Breastfeeding Women	III, IV, V, or VI
	Infants	I
	Children	III

Justification Hypoglycemia can occur as a complication of diabetes, as a condition in itself, in association with other disorders, or under certain conditions such as early pregnancy, prolonged fasting, or long periods of strenuous exercise (1).

Symptomatic hypoglycemia is a risk observed in a substantial proportion of newborns who are small for gestational age (SGA), but it is uncommon and of shorter duration in newborns who are of the appropriate size for gestational age (2).

WIC can provide nutrition management that concentrates on frequent feedings to support adequate growth for infants and children (2). WIC can also provide nutrition education to help manage hypoglycemia in women that includes consuming a balanced diet, low carbohydrate snacks and exercise (1).

- References**
1. National Institute of Diabetes, Digestive and Kidney Diseases. Hypoglycemia. National Diabetes Information Clearinghouse, 1999. Available at: <http://www.niddk.nih.gov/health/diabetes/pubs/hypo/hypo.htm>
 2. Institute of Medicine. WIC nutrition risk criteria a scientific assessment. National Academy Press, Washington D.C.; 1996. p.217-218
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Clarification Self-reporting of a diagnosis by a medical professional should not be confused with self-diagnosis, where a person simply claims to have or to have had a medical condition without any reference to professional diagnosis. A self-reported medical diagnosis (“My doctor says that I have/my son or daughter has...”) should prompt the CPA to validate the presence of the condition by asking more pointed questions related to that diagnosis.

358 Eating Disorders

**Definition/
cut-off value**

Eating disorders (anorexia nervosa and bulimia), are characterized by a disturbed sense of body image and morbid fear of becoming fat. Symptoms are manifested by abnormal eating patterns including, but not limited to:

- self-induced vomiting
- purgative abuse
- alternating periods of starvation
- use of drugs such as appetite suppressants, thyroid preparations or diuretics
- self-induced marked weight loss

Presence of eating disorder(s) diagnosed by a physician as self reported by applicant/participant/caregiver; or as reported or documented by a physician, or someone working under physician's orders or evidence of such disorders documented by the CPA.

**Participant
category and
priority level**

Category	Priority
Pregnant Women	I
Breastfeeding Women	I
Non-Breastfeeding Women	III, IV, V, or VI

Justification

Anorexia nervosa and bulimia are serious eating disorders that affect women in the childbearing years. These disorders result in general malnutrition and may cause life-threatening fluid and electrolyte imbalances. Women with eating disorders may begin pregnancy in a poor nutritional state. They are at risk of developing chemical and nutritional imbalances, deficiencies, or weight gain abnormalities during pregnancy if aberrant eating behaviors are not controlled. These eating disorders can seriously complicate any pregnancy since the nutritional status of the pregnant woman is an important factor in perinatal outcome.

Maternal undernutrition is associated with increased perinatal mortality and an increased risk of congenital malformation. While the majority of pregnant women studied reported a significant reduction in their eating disorder symptoms during pregnancy, a high percentage of these women regressed in the postpartum period. This regression in postpartum women is a serious concern for breastfeeding and non-breastfeeding postpartum women who are extremely preoccupied with rapid weight loss after delivery.

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 3. Institute of Medicine: Nutrition Services in Perinatal Care; 1992, p. 20.
 4. Clinical Issues Perinatal Womens Health Nursing; 1992; 3(4); pp. 695-700.
 5. Krummel DA, and Kris-Etherton, PM: Nutrition in Women's Health, Aspen Pub; Gaithersburg, MD; pp. 58-102.
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Clarification

Self-reporting of a diagnosis by a medical professional should not be confused with self-diagnosis, where a person simply claims to have or to have had a medical condition without any reference to professional diagnosis. A self-reported medical diagnosis (“My doctor says that I have/my son or daughter has...”) should prompt the CPA to validate the presence of the condition by asking more pointed questions related to that diagnosis.

Recent Major Surgery, Trauma, Burns

Definition/ cut-off value

Major surgery (including C-sections), trauma or burns severe enough to compromise nutritional status.

Any occurrence:

- within the past two (≤ 2) months may be self reported
 - more than two (> 2) months previous must have the continued need for nutritional support diagnosed by a physician or a health care provider working under the orders of a physician.
-

Participant category and priority level

Category	Priority
Pregnant Women	I
Breastfeeding Women	I
Non-Breastfeeding Women	III, IV, V, or VI
Infants	I
Children	III

Justification

The body's response to recent major surgery, trauma or burns may affect nutrient requirements needed for recovery and lead to malnutrition. There is a catabolic response to surgery; severe trauma or burns cause a hypermetabolic state. Injury causes alterations in glucose, protein and fat metabolism.

Metabolic and physiological responses vary according to the individual's age, previous state of health, preexisting disease, previous stress, and specific pathogens. Once individuals are discharged from a medical facility, a continued high nutrient intake may be needed to promote the completion of healing and return to optimal weight and nutrition status.

References

1. Institute of Medicine. WIC nutrition risk criteria a scientific assessment. National Academy Press, Washington, D.C.; 1996. p. 188-9.
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360 Other Medical Conditions

**Definition/
cut-off value**

Diseases or conditions with nutritional implications that are not included in any of the other medical conditions. The current condition, or treatment for the condition, must be severe enough to affect nutritional status.

Includes, but is not limited to:

- juvenile rheumatoid arthritis (JRA)
- lupus erythematosus
- cardiorespiratory diseases
- heart disease
- cystic fibrosis
- persistent asthma (moderate or severe) requiring daily medication

Presence of medical condition(s) diagnosed by a physician as self reported by applicant/participant/caregiver; or as reported or documented by a physician, or someone working under physician's orders.

**Participant
category and
priority level**

Category	Priority
Pregnant Women	I
Breastfeeding Women	I
Non-Breastfeeding Women	III, IV, V, or VI
Infants	I
Children	III

Justification

Juvenile rheumatoid arthritis (JRA) is the most common pediatric rheumatic disease and most common cause of chronic arthritis among children. JRA puts individuals at risk of anorexia, weight loss, failure to grow, and protein energy malnutrition.

Lupus erythematosus is an autoimmune disorder that affects multiple organ systems. Lupus erythematosus increases the risk of infections, malaise, anorexia, and weight loss. In pregnant women, there is increased risk of spontaneous abortion and late pregnancy losses (after 28 weeks gestation).

Cardiorespiratory diseases affect normal physiological processes and can be accompanied by failure to thrive and malnutrition. Cardiorespiratory diseases put individuals at risk for growth failure and malnutrition due to low calorie intake and hypermetabolism.

Cystic fibrosis (CF), a genetic disorder of children, adolescents, and young adults characterized by widespread dysfunction of the exocrine glands, is the most common lethal hereditary disease of the Caucasian race.

360 Other Medical Conditions

Many aspects of the disease of CF stress the nutritional status of the patient directly or indirectly by affecting the patient's appetite and subsequent intake. Gastrointestinal losses occur in spite of pancreatic enzyme replacement therapy. Also, catch-up growth requires additional calories. All of these factors contribute to a chronic energy deficit, which can lead to a marasmic type of malnutrition. The primary goal of nutritional therapy is to overcome this energy deficit.

Studies have shown variable intakes in the CF population, but the intakes are usually less than adequate and are associated with a less than normal growth pattern.

Asthma is a chronic inflammatory disorder of the airways, which can cause recurrent episodes of wheezing, breathlessness, chest tightness, and coughing of variable severity. Persistent asthma requires daily use of medication, preferably inhaled anti-inflammatory agents. Severe forms of asthma may require long-term use of oral corticosteroids which can result in growth suppression in children, poor bone mineralization, high weight gain, and, in pregnancy, decreased birthweight of the infant. High doses of inhaled corticosteroids can result in growth suppression in children and poor bone mineralization. Untreated asthma is also associated with poor growth and bone mineralization and, in pregnant women, adverse birth outcomes such as low birth weight, prematurity, and cerebral palsy. Repeated asthma exacerbations ("attacks") can, in the short-term, interfere with eating, and in the long-term, cause irreversible lung damage that contributes to chronic pulmonary disease. Compliance with prescribed medications is considered to be poor. Elimination of environmental factors that can trigger asthma exacerbations (such as cockroach allergen or environmental tobacco smoke) is a major component of asthma treatment. WIC can help by providing foods high in calcium and vitamin D, in educating participants to consume appropriate foods and to reduce environmental triggers, and in supporting and encouraging compliance with the therapeutic regimen prescribed by the health care provider.

NOTE: This criterion will usually not be applicable to infants for the medical condition of asthma. In infants, asthma-like symptoms are usually diagnosed as bronchiolitis with wheezing which is covered under Criterion #352, Infectious Diseases.

References

1. Institute of Medicine: WIC Nutrition Risk Criteria: A Scientific Assessment; 1996; pp. 185-187, 190-191
 2. Queen, Patricia and Lang, Carol: Handbook of Pediatric Nutrition; 1993; pp. 422-425.
 3. National Heart, Lung, and Blood Institute: Expert Panel Report 2: Guidelines for the Diagnosis and Management of Asthma; 1997; pp. 3, 20, 67-73.
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Other Medical Conditions

4. National Heart, Lung, and Blood Institute: Management of Asthma During Pregnancy; 1992; pp. 7, 36-37.
 5. JAMA: Asthma Information Center: Asthma Medications Misused, Underused in Inner City Residents; 1998, pp.1-2
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Clarification

Self-reporting of a diagnosis by a medical professional should not be confused with self-diagnosis, where a person simply claims to have or to have had a medical condition without any reference to professional diagnosis. A self-reported medical diagnosis (“My doctor says that I have/my son or daughter has...”) should prompt the CPA to validate the presence of the condition by asking more pointed questions related to that diagnosis.

361 Depression

**Definition/
cut-off value**

Presence of clinical depression diagnosed by a physician or psychologist as self reported by applicant/participant/caregiver; or as reported or documented by a physician, psychologist or someone working under physician's orders.

**Participant
category and
priority level**

Category	Priority
Pregnant Women	I
Breastfeeding Women	I
Non-Breastfeeding Women	III, IV, V, or VI
Children	III

Justification

Appetite changes are a distinguishing feature of depression. Severe depression is often associated with anorexia, bulimia, and weight loss. Maternal depressive symptoms are associated with pre-term birth among low-income urban African-American women. Depressed pregnant women are more likely to smoke during pregnancy, attend prenatal care less frequently, have a higher incidence of low birth weight infants, and experience higher perinatal mortality rates. WIC can provide much needed nutrition education and counseling that encourages clinically depressed women to continue healthy eating habits as well as referrals to other health care and social service programs that may be of more direct assistance to the clinically depressed WIC participant.

References

1. Institute of Medicine. WIC nutrition risk criteria a scientific assessment. National Academy Press, Washington, D.C.; 1996.
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Clarification

Self-reporting of a diagnosis by a medical professional should not be confused with self-diagnosis, where a person simply claims to have or to have had a medical condition without any reference to professional diagnosis. A self-reported medical diagnosis ("My doctor says that I have/my son or daughter has...") Should prompt the CPA to validate the presence of the condition by asking more pointed questions related to that diagnosis.

Developmental, Sensory or Motor Disabilities Interfering with the Ability to Eat

Definition/
cut-off value

Developmental, sensory or motor disabilities that restrict the ability to intake, chew or swallow food or require tube feeding to meet nutritional needs. Disabilities include but are not limited to:

- minimal brain function
- feeding problems due to a developmental disability such as pervasive development disorder (PDD) which includes autism
- birth injury
- head trauma
- brain damage
- other disabilities

Participant
category and
priority level

Category	Priority
Pregnant Women	I
Breastfeeding Women	I
Non-Breastfeeding Women	III, IV, V, or VI
Infants	I
Children	III

Justification

Infants and children with developmental disabilities are at increased risk for nutritional problems. Education, referrals, and service coordination with WIC will aid in early intervention of these disabilities. Prenatal, lactating and non-lactating women with developmental, sensory or motor disabilities may: 1) have feeding problems associated with muscle coordination involving chewing or swallowing, thus restricting or limiting the ability to consume food and increasing the potential for malnutrition; or 2) require enteral feedings to supply complete nutritional needs which may potentially increase the risk for specific nutrient deficiencies.

Pervasive Developmental Disorder (PDD) is a category of developmental disorders with autism being the most severe. Young children may initially have a diagnosis of PDD with a more specific diagnosis of autism usually occurring at 2 1/2 to 3 years of age or older. Children with PDD have very selective eating habits that go beyond the usual "picky eating" behavior and that may become increasingly selective over time, i.e., foods they used to eat will be refused. This picky behavior can be related to the color, shape, texture or temperature of a food. Common feeding concerns include:

- difficulty with transition to textures, especially during infancy;
- increased sensory sensitivity; restricted intake due to color, texture, and/or temperature of foods;

Developmental, Sensory or Motor Disabilities Interfering with the Ability to Eat

- decreased selection of foods over time;
- difficulty accepting new foods; difficulty with administration of multivitamin/mineral supplementation and difficulty with changes in mealtime environment.

Nutrition education, referrals, and service coordination with WIC will assist the participant, parent or caregiver in making dietary changes/adaptations and finding assistance to assure she or her infant or child is consuming a nutritionally adequate diet.

References

1. Quinn, Heidi Puelzl; "Nutrition Concerns for Children With Pervasive Developmental Disorder/Autism" published in Nutrition Focus by the Center on Human Development and Disability; University of Washington, Seattle, Washington; September/October 1995.
 2. Paper submitted by Betty Lucas, MPH, RD, CD to the Risk Identification and Selection Collaborative (RISC); November, 1999.
 3. Zeman. Frances J.; Clinical Nutrition and Dietetics, 2nd Edition; 1991; pp.713-14, 721-22, 729-730.
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363 Pre-Diabetes

**Definition/
cut-off value**

Impaired fasting glucose (IFG) and/or impaired glucose tolerance (IGT) are referred to as pre-diabetes. These conditions are characterized by hyperglycemia that does not meet the diagnostic criteria for diabetes mellitus (1). (See Clarification for more information.)

Presence of pre-diabetes diagnosed by a physician as self-reported by applicant/participant/caregiver; or as reported or documented by a physician, or someone working under physician's orders.

**Participant
category and
priority level**

Category	Priority
Breastfeeding Women	I
Non-Breastfeeding	III, IV, V, or VI

Justification

An individual who is identified as having pre-diabetes is at relatively high risk for the development of type 2 diabetes and cardiovascular disease (CVD).

The Expert Committee on the Diagnosis and Clarification of Diabetes Mellitus (2, 3) recognized a group of individuals whose glucose levels, although not meeting criteria for diabetes, are nevertheless too high to be considered normal. The blood tests used to measure plasma glucose and to diagnose pre-diabetes include a fasting plasma glucose test and a glucose tolerance test (see Clarification for more information). Individuals with a fasting plasma glucose level between 100-125 mg/dl are referred to as having impaired fasting glucose (IFG). Individuals with plasma glucose levels of 140-199 mg/dl after a 2-hour oral glucose tolerance test are referred to as having impaired glucose tolerance (IGT).

Many individuals with IGT are euglycemic and, along with those with IFG, may have normal or near normal glycosylated hemoglobin (HbA1c) levels. Often times, individuals with IGT manifest hyperglycemia only when challenged with the oral glucose load used in standardized oral glucose tolerance test.

The prevalence of IFG and IGT increases greatly between the ages of 20-49 years. In people who are >45 years of age and overweight (BMI \geq 25), the prevalence of IFG is 9.3%, and for IGT, it is 12.8% (4).

Screening for pre-diabetes is critically important in the prevention of type 2 diabetes. The American Diabetes Association recommends (5) that testing to detect pre-diabetes should be considered in all asymptomatic adults who are overweight (BMI \geq 25) or obese (BMI \geq 30) and who have one or more additional risk factors (see Table 1 in Clarification).

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IFG and IGT are not clinical entities in their own right but, rather, risk factors for future diabetes as well as CVD. (Note: During pregnancy, IFG and IGT are diagnosed as gestational diabetes.) They can be observed as intermediate stages in many of the disease processes. IFG and IGT are associated with the metabolic syndrome, which includes obesity (especially abdominal or visceral obesity), dyslipidemia (the high-triglyceride and/or low HDL type), and hypertension. Dietary recommendations include monitoring of calories, reduced carbohydrate intake and high fiber consumption. Medical nutrition therapy (MNT) aimed at producing 5-10% loss of body weight and increased exercise have been variably demonstrated to prevent or delay the development of diabetes in people with IGT. However, the potential impact of such interventions to reduce cardiovascular risk has not been examined to date (2, 3).

WIC nutrition services can support and reinforce the MNT and physical activity recommendations that participants receive from their health care providers. In addition, WIC nutritionists can play an important role in providing women with counseling to help them achieve or maintain a healthy weight after delivery.

The WIC food package provides high fiber, low fat foods emphasizing consumption of whole grains, fruits, vegetables and dairy products. This will further assist WIC families in reducing their risk for diabetes.

References

1. American Diabetes Association. Clinical practice recommendations: standards of medical care in diabetes. *Diabetes Care*. 2008 Jan; 31 Suppl 1:S12-54.
 2. The Expert Committee on the Diagnosis and Classification of Diabetes Mellitus. Report of the expert committee on the diagnosis and classification of diabetes mellitus. *Diabetes Care*. 1997; 20:1183-1197.
 3. The Expert Committee on the Diagnosis and Classification of Diabetes Mellitus. Follow-up report on the diagnosis of the diabetes mellitus. *Diabetes Care*. 2003; 26:3160-3167.
 4. American Diabetes Association National Institute of Diabetes and Digestive and Kidney Diseases. Position statement on prevention or delay of type 2 diabetes. *Diabetes Care*. 2004; 27:S47.
 5. American Diabetes Association. Executive summary: standards of medical care in diabetes. *Diabetes Care*. 2008 Jan; 31 Suppl 1:S5-11.
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Additional Related Reference

Garber A-J, et al. Diagnosis and management of pre-diabetes in the continuum of Hyperglycemia: When do the risks of diabetes begin? A consensus statement from the American College of Endocrinology and the American Association of Clinical Endocrinologists. ACE/AACE Consensus Statement Endocrine Practice 2008 Oct; 14(7):933-946.

Clarification

Self-reporting of a diagnosis by a medical professional should not be confused with self-diagnosis, where a person simply claims to have or to have had a medical condition without any reference to professional diagnosis. A self-reported medical diagnosis (“My doctor says that I have/my son or daughter has...”) should prompt the CPA to validate the presence of the condition by asking more pointed questions related to that diagnosis.

Hyperglycemia is identified through a fasting blood glucose or an oral glucose tolerance test (1).

Impaired fasting glucose (IFG) is defined as fasting plasma glucose (FPG) ≥ 100 or ≥ 125 mg/dl (≥ 5.6 or ≥ 6.1 mmol/l), depending on study and guidelines (2).

Impaired glucose tolerance (IGT) is defined as a 75-g oral glucose tolerance test (OGTT) with 2-h plasma glucose values of 140-199 mg/dl (7.8-11.0 mmol/l).

The cumulative incidence of diabetes over 5-6 years was low (4-5%) in those individuals with normal fasting and normal 2-h OGTT values, intermediate (20-34%) in those with IFG and normal 2-h OGTT or IGT and a normal FPG, and highest (38-65%) in those with combined IFG and IGT (4).

Recommendations for testing for pre-diabetes and diabetes in asymptomatic, undiagnosed adults are listed in Table 1 below.

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Table 1. Criteria and Methods for Testing for Pre-Diabetes and Diabetes in Asymptomatic Adults

1. Testing should be considered in all adults who are overweight (BMI $\geq 25^*$) and have additional risk factors:
 - physical inactivity
 - first-degree relative with diabetes
 - members of a high-risk ethnic population (e.g., African American, Latino, Native American, Asian American, Pacific Islander)
 - women who delivered a baby weighing >9 lb or were diagnosed with gestational diabetes mellitus
 - hypertension (blood pressure $\geq 140/90$ mmHg or on therapy for hypertension)
 - HDL cholesterol level <35 mg/dl and/or a triglyceride level >250 mg/dl
 - women with polycystic ovarian syndrome (PCOS)
 - IGT or IFG on previous testing
 - other clinical conditions associated with insulin resistance (e.g., severe obesity and acanthosis nigricans)
 - history of CVD
2. In the absence of the above criteria, testing for pre-diabetes and diabetes should begin at age 45 years.
3. If results are normal, testing should be repeated at least at 3-year intervals, with consideration of more frequent testing depending on initial results and risk status.
4. To test for pre-diabetes or diabetes, either an FPG test or 2-hour oral glucose tolerance (OGTT; 75-g glucose load), or both, is appropriate.
5. An OGTT may be considered in patients with impaired fasting glucose (IFG) to better define the risk of diabetes.
6. In those identified with pre-diabetes, identify and if appropriate, treat other CVD risk factors.

*At-risk BMI may be lower in some ethnic groups.

371 Maternal Smoking

**Definition/
cut-off value** Any smoking of tobacco products, i.e., cigarettes, pipes, or cigars.

Participant category and priority level	Category	Priority
	Pregnant Women	I
	Breastfeeding Women	I
	Postpartum Women	III, IV,V, VI,VII

Justification Research has shown that smoking during pregnancy causes health problems and other adverse consequences for the mother, the unborn fetus and the newborn infant such as: pregnancy complications, premature birth, low-birth-weight, stillbirth, infant death, and risk for Sudden Infant Death Syndrome (SIDS) (1). Women who smoke are at risk for chronic and degenerative diseases such as: cancer, cardiovascular disease and chronic obstructive pulmonary disease. They are also at risk for other physiological effects such as loss of bone density (2).

Maternal smoking exposes the infant to nicotine and other compounds, including cyanide and carbon monoxide, in-utero and via breastmilk (3). In-utero exposure to maternal smoking is associated with reduced lung function among infants (4). In addition, maternal smoking exposes infants and children to environmental tobacco smoke (ETS). (See #904, Environmental Tobacco Smoke).

Because smoking increases oxidative stress and metabolic turnover of vitamin C, the requirement for this vitamin is higher for women who smoke (5). The WIC food package provides a good source of vitamin C. Women who participate in WIC may also benefit from counseling and referral to smoking cessation programs.

- References**
1. Manual of Clinical Dietetics 6th ed., American Dietetic Association. 2000.
 2. Women and Smoking: A Report of the Surgeon General – 2001.
http://www.cdc.gov/tobacco/data_statistics/sgr/sgr_2001/sgr_women_chapters.htm
 3. Breastfeeding Handbook for Physicians, American Academy of Pediatrics and American College of Obstetrics and Gynecologists. 2006.
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4. U.S. Department of Health and Human Services. *The Health Consequences of Smoking: A Report of the Surgeon General--Executive Summary*. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, Coordinating Center for Health Promotion, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2004.
 5. *Dietary Reference Intakes for Vitamin C, Vitamin E, Selenium and Carotenoids* (2000) Institute of Medicine, the National Academy of Science.

06/07

Alcohol and Illegal Drug Use

**Definition/
cut-off value**

For Pregnant Women:

- Any alcohol use
- Any illegal drug use

For Breastfeeding and Non-Breastfeeding Postpartum Women:

- Routine current use of ≥ 2 drinks per day (6). A serving or standard sized drink is: 1 can of beer (12 fluid oz.); 5 oz. Wine; and 1 ½ fluid ounces liquor (1 jigger gin, rum, vodka, whiskey (86-proof), vermouth, cordials or liqueurs), or
- Binge Drinking, i.e., drinks 5 or more (≥ 5) drinks on the same occasion on at least one day in the past 30 days; or
- Heavy Drinking, i.e., drinks 5 or more (≥ 5) drinks on the same occasion on five or more days in the previous 30 days; or
- Any illegal drug use

**Participant
category and
priority level**

Category	Priority
Pregnant Women	I
Breastfeeding Women*	I
Non-Breastfeeding Women	III, IV, V, or VI

* Breastfeeding is contraindicated for women with these conditions.

Justification

Drinking alcoholic beverages during pregnancy can damage the developing fetus. Excessive alcohol consumption may result in low birth weight, reduced growth rate, birth defects, and mental retardation. WIC can provide supplemental foods, nutrition education and referral to medical and social services which can monitor and provide assistance to the family.

“Fetal Alcohol Syndrome” is a name given to a condition sometimes seen in children of mothers who drank heavily during pregnancy. The child has a specific pattern of physical, mental, and behavioral abnormalities. Since there is no cure, prevention is the only answer.

The exact amount of alcoholic beverages pregnant women may drink without risk to the developing fetus is not known as well as the risk from periodic bouts of moderate or heavy drinking. Alcohol has the potential to damage **the fetus** at every stage of the pregnancy. Therefore, the recommendation is not to drink any alcoholic beverages during pregnancy.

Alcohol and Illegal Drug Use

Studies show that the more alcoholic beverages the mother drinks, the greater the risks are for her baby. In addition, studies indicate that factors such as cigarette smoking and poor dietary practices may also be involved. Studies show that the reduction of heavy drinking during pregnancy has benefits for both mother and newborns. Pregnancy is a special time in a woman's life and the majority of heavy drinkers will respond to supportive counseling.

Heavy drinkers, themselves, may develop nutritional deficiencies and more serious diseases, such as cirrhosis of the liver and certain types of cancer, particularly if they also smoke cigarettes. WIC can provide education and referral to medical and social services, including addiction treatment, which can help improve pregnancy outcome.

Pregnant women who smoke marijuana are frequently at higher risk of still birth, miscarriage, low birth weight babies and fetal abnormalities, especially of the nervous system. Heavy cocaine use has been associated with higher rates of miscarriage, premature onset of labor, IUGR, congenital anomalies, and developmental/behavioral abnormalities in the preschool years. Infants born to cocaine users often exhibit symptoms of cocaine intoxication at birth. Infants of women addicted to heroin, methadone, or other narcotics are more likely to be stillborn or to have low birth weights. These babies frequently must go through withdrawal soon after birth. Increased rates of congenital defects, growth retardation, and preterm delivery, have been observed in infants of women addicted to amphetamines.

Pregnant addicts often forget their own health care, adding to their unborn babies' risk. One study found that substance abusing women had lower hematocrit levels at the time of prenatal care registration, lower pregravid weights and gained less weight during the pregnancy. Since nutritional deficiencies can be expected among drug abusers, diet counseling and other efforts to improve food intake are recommended.

Heroin and cocaine are known to appear in human milk. Marijuana also appears in a poorly absorbed form but in quantities sufficient to cause lethargy, and decreased feeding after prolonged exposure.

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 2. Lawrence Ruth: Maternal & Child Health Technical Information Bulletin: A Review of Medical Benefits and Contraindications to Breastfeeding in the United States; October 1997.
 3. Weiner, L., Morse, B.A., and Garrido, P.: FAS/FAE Focusing Prevention on Women at Risk; International Journal of the Addictions; 1989; 24:385-395.
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Alcohol and Illegal Drug Use

4. National Clearinghouse for Alcohol and Drug Information; Office for Substance Abuse Prevention; The fact is ...alcohol and other drugs can harm an unborn baby; Rockville; 1989.
 5. Institute of Medicine. Nutrition during pregnancy. National Academy Press, Washington, D.C.; 1990.
 6. Jones, C. and Lopez, R.: Drug Abuse and Pregnancy; New Perspectives in Prenatal Care; 1990; pp. 273-318.
 7. National Household Survey on Drug Abuse, Main Findings 1996; Office of Applied Studies, Substance Abuse and Mental Health services Administration. DHHS.
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Dental Problems

Definition and cut-off value Diagnosis of dental problems by a physician or a health care provider working under the orders of a physician or adequate documentation by the competent professional authority, include, but not limited to:

- Presence of nursing or baby bottle caries, smooth surface decay of the maxillary anterior and the primary molars (infants and children);
 - Tooth decay, periodontal disease, tooth loss and or ineffectively replaced teeth which impair the ability to ingest food in adequate quantity or quality (children and all categories of women); and
 - Gingivitis of pregnancy (pregnant women).
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Participant category and priority level

Category	Priority
Pregnant Women	I
Breastfeeding Women	I
Non-Breastfeeding Women	III, IV, V, or VI
Infants	I
Children	III

Justification Early childhood caries results from inappropriate feeding practices. Nutrition counseling can prevent primary tooth loss, damage to the permanent teeth, and potential speech problems.

Missing more than 7 teeth in adults seriously affects chewing ability. This leads to eating only certain foods which in turn affects nutritional intake.

Periodontal disease is a significant risk factor for pre-term low birth weight resulting from pre-term labor or premature rupture of the membranes. There is evidence that gingivitis of pregnancy results from “end tissue deficiency” of folic acid and will respond to folic acid supplementation as well as plaque removal.

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 2. Offenbacher, S. et al.: Periodontal infection as a possible risk factor for pre-term low birth weight; *J. Periodontol*; October 1996; 67(10 Suppl.):1103-1113.
 3. *J. Dent. Child*29:245.
 4. Rugg-Gunn AJ, Hackett AF. Nutrition and dental health. Oxford: Oxford University Press, 1993.
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Fetal Alcohol Syndrome

**Definition/
cut-off value**

Fetal Alcohol Syndrome (FAS) is based on the presence of retarded growth, a pattern of facial abnormalities, and abnormalities of the central nervous system, including mental retardation.

Presence of FAS diagnosed by a physician as self reported by applicant/participant/caregiver; or as reported or documented by a physician, or someone working under physician’s orders.

**Participant
category and
priority level**

Category	Priority
Infants	I
Children	III

Justification

FAS is a combination of permanent, irreversible birth defects attributable solely to alcohol consumption by the mother during pregnancy. There is no known cure; it can only be prevented. Symptoms of FAS may include failure to thrive, a pattern of poor growth throughout childhood and poor ability to suck (for infants). Babies with FAS are often irritable and have difficulty feeding and sleeping.

Lower levels of alcohol use may produce Fetal Alcohol Effects (FAE) or Alcohol Related Birth Defects (ARBD) that can include mental deficit, behavioral problems, and milder abnormal physiological manifestations. FAE and ARBD are generally less severe than FAS and their effects are widely variable. Therefore, FAE and ARBD in and of themselves are not considered risks, whereas the risk of FAS is unquestionable.

Identification of FAS is an opportunity to anticipate and act upon the nutritional and educational needs of the child. WIC can provide nutritional foods to help counter the continuing poor growth and undifferentiated malabsorption that appears to be present with FAS. WIC can help caregivers acknowledge that children with FAS often grow steadily but slower than their peers. WIC can also educate the caregiver on feeding, increased calorie needs and maintaining optimal nutritional status of the child.

Alcohol abuse is highly concentrated in some families. Drinking, particularly abusive drinking, is often found in families that suffer from a multitude of other social problems. A substantial number of FAS children come from families, either immediate or extended, where alcohol abuse is common, even normative. This frequently results in changes of caregivers or foster placements. New caregivers need to be educated on the special and continuing nutritional needs of the child.

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Fetal Alcohol Syndrome

The physical, social, and psychological stresses and the birth of a new baby, particularly one with special needs, places an extra burden upon the recovering woman. This puts the child at risk for poor nutrition and neglect (e.g., the caregiver may forget to prepare food or be unable to adequately provide all the foods necessary for the optimal growth and development of the infant or child.) WIC can provide supplemental foods, nutrition education and referral to medical and social services which can monitor and provide assistance to the family.

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Clarification

Self-reporting of a diagnosis by a medical professional should not be confused with self-diagnosis, where a person simply claims to have or to have had a medical condition without any reference to professional diagnosis. A self-reported medical diagnosis (“My doctor says that I have/my son or daughter has...”) should prompt the CPA to validate the presence of the condition by asking more pointed questions related to that diagnosis.

Failure to Meet Dietary Guidelines for Americans

Definition/ cut-off value

Women and children two years of age and older who meet the eligibility requirements of income, categorical, and residency status may be presumed to be at nutrition risk based on *failure to meet Dietary Guidelines for Americans [Dietary Guidelines]* (1). For this criterion, *failure to meet Dietary Guidelines* is defined as consuming fewer than the recommended number of servings from one or more of the basic food groups (grains, fruits, vegetables, milk products, and meat or beans) based on an individual's estimated energy needs.

This risk may be assigned only to individuals (2 years and older) for whom a complete nutrition assessment (to include an assessment for risk #425, Inappropriate Nutrition Practices for Children, or #427, Inappropriate Nutrition Practices for Women) has been performed and for whom no other risk(s) are identified.

Participant category and priority level

Category	Priority
Pregnant Women	IV
Breastfeeding Women	IV
Non-Breastfeeding Women	VI
Children \geq 2 years of age	V

Justification

The 1996 Institute of Medicine (IOM) report, *WIC Nutrition Risk Criteria: A Scientific Assessment* (2) raised questions about the quality of traditional dietary assessment methods (e.g., 24-hour recall and food frequency questionnaires) and recommended further research in the development and validation of diet assessment methodologies. In response to the 1996 IOM report, the Food and Nutrition Service (FNS) commissioned the IOM to review the use of various dietary assessment tools and to make recommendations for assessing inadequate diet or inappropriate dietary patterns, especially in the category of *failure to meet Dietary Guidelines* (3). The review resulted in the publication of the 2002 IOM report, *Dietary Risk Assessment in the WIC Program* (4). The report contains a recommendation (paraphrased in the definition above) and five key findings. The findings of the IOM committee related to dietary risk and a summary of the evidence that supports its recommendation are provided below.

Failure to Meet Dietary Guidelines for Americans

IOM Committee Findings Related to Dietary Risk and Supporting Research

(Note: The findings related to dietary risk and a summary of the supporting research listed below can be found in the 2002 IOM report: *Dietary Risk Assessment in the WIC Program*, on the pages indicated.)

Findings:

- A dietary risk criterion that uses the WIC applicant's usual intake of the five basic Pyramid food groups as the indicator and the recommended number of servings based on energy needs as the cut-off points is consistent with *failure to meet Dietary Guidelines*. (page 130)
- Nearly all U.S. women and children usually consume fewer than the recommended number of servings specified by the Food Guide Pyramid and, therefore, would be at dietary risk based on the criterion *failure to meet Dietary Guidelines*. (page 130)
- Even research-quality dietary assessment methods are not sufficiently accurate or precise to distinguish an **individual's** eligibility status using criteria based on the Food Guide Pyramid or on nutrient intake. (page 131)

Supporting Research:

- Less than 1 percent of all women meet recommendations for all five Pyramid groups. (page 127)
- Less than 1 percent of children ages 2 to 5 years meet recommendations for all five Pyramid groups. (page 127)
- The percentage of women consuming fruit during 3 days of intake increases with increasing income level. (page 127)
- Members of low-income households are less likely to meet recommendations than are more affluent households. (page 127)
- Food-insecure mothers are less likely to meet recommendations for fruit and vegetable intake than are food-secure mothers. (page 127)
- The percentage of children meeting recommendations for fat and saturated fat as a percentage of food energy increases with increasing income level. (page 127)
- Low-income individuals and African Americans have lower mean Healthy Eating Index scores than do other income and racial/ethnic groups. (page 127)
- 24-hour diet recalls and food records are not good measures of an individual's usual intake unless a number of independent days are observed. (page 61)
- On average, 24-hour diet recalls and food records tend to underestimate usual intake—energy intake in particular. (page 61)
- Food Frequency Questionnaires and diet histories tend to overestimate mean energy intakes. (page 61)

IOM Committee Concluding Remark

Failure to Meet Dietary Guidelines for Americans

“In summary, evidence exists to conclude that nearly all low-income women in the childbearing years and children ages 2 to 5 years are at dietary risk, are vulnerable to nutrition insults, and may benefit from WIC’s services. Further, due to the complex nature of dietary patterns, it is unlikely that a tool will be developed to fulfill its intended purpose with WIC: to classify individuals accurately with respect to their true dietary risk. Thus, any tools adopted would result in misclassification of the eligibility status of some, potentially many, individuals. By presuming that all who meet the categorical and income eligibility requirements are at dietary risk, WIC retains its potential for preventing and correcting nutrition-related problems while avoiding serious misclassification errors that could lead to denial of services to eligible individuals.” (page 135)

References

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Clarification

The recommendation and findings of the IOM Committee were developed using the 2000 *Dietary Guidelines* as the standard for a healthy diet. Subsequent to the 2002 IOM report, the *Dietary Guidelines* have been updated with the release of the 2005 *Dietary Guidelines*. Although the 2005 edition of the *Dietary Guidelines* is different from the 2000 edition, there is no evidence to suggest that the 2002 IOM recommendation and findings are invalid or inaccurate. The fact remains that diet assessment methodologies are insufficiently accurate to determine an individual’s eligibility status. In addition, future research will be necessary to determine if there is a change in the IOM finding that nearly all Americans fail to consume the number of servings from the basic food groups as recommended in the *Dietary Guidelines*.

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Inappropriate Nutrition Practices for Infants

**Definition/
cut-off value**

Routine use of feeding practices that may result in impaired nutrient status, disease, or health problems. These practices, with examples, are outlined below. Refer to “Attachment to 411-Justification and References” for this criterion.

**Participant
category and
priority level**

Category

Priority

Infants

IV

Inappropriate Nutrition Practices for Infants	Examples of Inappropriate Nutrition Practices (including but not limited to)
<p>411.1 Routinely using a substitute(s) for breast milk or for FDA approved iron-fortified formula as the primary nutrient source during the first year of life.</p>	<p>Examples of substitutes:</p> <ul style="list-style-type: none"> ▪ Low iron formula without iron supplementation; ▪ Cow’s milk, goat’s milk, or sheep’s milk (whole, reduced fat, low-fat, skim), canned evaporated or sweetened condensed milk; and ▪ Imitation or substitute milks (such as rice- or soy-based beverages, non-dairy creamer), or other “homemade concoctions.”
<p>411.2 Routinely using nursing bottles or cups improperly.</p>	<ul style="list-style-type: none"> ▪ Using a bottle to feed fruit juice. ▪ Feeding any sugar-containing fluids, such as soda/soft drinks, gelatin water, corn syrup solutions, sweetened tea. ▪ Allowing the infant to fall asleep or be put to bed with a bottle at naps or bedtime. ▪ Allowing the infant to use the bottle without restriction (e.g., walking around with a bottle) or as a pacifier. ▪ Propping the bottle when feeding. ▪ Allowing an infant to carry around and drink throughout the day from a covered or training cup. ▪ Adding any food (cereal or other solid foods) to the infant’s bottle.
<p>411.3 Routinely offering complementary foods* or other substances that are inappropriate in type or timing.</p> <p><i>* Complementary foods are any foods or beverages other than breast milk or infant formula.</i></p>	<p>Examples of inappropriate complementary foods:</p> <ul style="list-style-type: none"> ▪ Adding sweet agents such as sugar, honey, or syrups to any beverage (including water) or prepared food, or used on a pacifier; and ▪ Any food other than breast milk or iron-fortified infant formula before 4 months of age.

Inappropriate Nutrition Practices for Infants

<p>411.4 Routinely using feeding practices that disregard the developmental needs or stage of the infant.</p>	<ul style="list-style-type: none"> ▪ Inability to recognize, insensitivity to, or disregarding the infant’s cues for hunger and satiety (e.g., forcing an infant to eat a certain type and/or amount of food or beverage or ignoring an infant’s hunger cues). ▪ Feeding foods of inappropriate consistency, size, or shape that put infants at risk of choking. ▪ Not supporting an infant’s need for growing independence with self-feeding (e.g., solely spoon-feeding an infant who is able and ready to finger-feed and/or try self-feeding with appropriate utensils). ▪ Feeding an infant foods with inappropriate textures based on his/her developmental stage (e.g., feeding primarily pureed or liquid foods when the infant is ready and capable of eating mashed, chopped or appropriate finger foods).
<p>411.5 Feeding foods to an infant that could be contaminated with harmful microorganisms or toxins.</p>	<p>Examples of potentially harmful foods:</p> <ul style="list-style-type: none"> ▪ Unpasteurized fruit or vegetable juice; ▪ Unpasteurized dairy products or soft cheeses such as feta, Brie, Camembert, blue-veined, and Mexican-style cheese; ▪ Honey (added to liquids or solid foods, used in cooking, as part of processed foods, on a pacifier, etc.); ▪ Raw or undercooked meat, fish, poultry, or eggs; ▪ Raw vegetable sprouts (alfalfa, clover, bean, and radish); and ▪ Deli meats, hot dogs, and processed meats (avoid unless heated until steaming hot).
<p>411.6 Routinely feeding inappropriately diluted formula.</p>	<ul style="list-style-type: none"> ▪ Failure to follow manufacturer’s dilution instructions (to include stretching formula for household economic reasons). ▪ Failure to follow specific instructions accompanying a prescription.
<p>411.7 Routinely limiting the frequency of nursing of the exclusively breastfed infant when breast milk is the sole source of nutrients.</p>	<p>Examples of inappropriate frequency of nursing:</p> <ul style="list-style-type: none"> ▪ Scheduled feedings instead of demand feedings; ▪ Less than 8 feedings in 24 hours if less than 2 months of age; and ▪ Less than 6 feedings in 24 hours if between 2 and 6 months of age.
<p>411.8 Routinely feeding a diet very low in calories and/or essential nutrients.</p>	<p>Examples:</p> <ul style="list-style-type: none"> ▪ Vegan diet; ▪ Macrobiotic diet; and ▪ Other diets very low in calories and/or essential nutrients.

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Inappropriate Nutrition Practices for Infants

411.9 Routinely using inappropriate sanitation in preparation, handling, and storage of expressed breastmilk or formula.	Examples of inappropriate sanitation: <ul style="list-style-type: none">▪ Limited or no access to a:<ul style="list-style-type: none">– Safe water supply (documented by appropriate officials),– Heat source for sterilization, and/or– Refrigerator or freezer for storage.▪ Failure to properly prepare, handle, and store bottles or storage containers of expressed breastmilk or formula.
411.10 Feeding dietary supplements with potentially harmful consequences.	Examples of dietary supplements, which when fed in excess of recommended dosage, may be toxic or have harmful consequences: <ul style="list-style-type: none">▪ Single or multi-vitamins;▪ Mineral supplements; and▪ Herbal or botanical supplements/remedies/teas.
411.11 Routinely not providing dietary supplements recognized as essential by national public health policy when an infant’s diet alone cannot meet nutrient requirements.	<ul style="list-style-type: none">▪ Infants who are 6 months of age or older who are ingesting less than 0.25 mg of fluoride daily when the water supply contains less than 0.3 ppm fluoride.▪ Infants who are exclusively breastfed, or are ingesting less than 1 liter (or 1 quart) per day of vitamin D-fortified formula, and are not taking a supplement of 400 IU of vitamin D.

Attachment to 411 Justification and References

Inappropriate Nutrition Practices for Infants

Justification

411.1 Routinely using a substitute(s) for breast milk or for FDA approved iron-fortified formula as the primary nutrient source during the first year of life.

During the first year of life, breastfeeding is the preferred method of infant feeding. The American Academy of Pediatrics (AAP) recommends breast milk for the first 12 months of life because of its acknowledged benefits to infant nutrition, gastrointestinal function, host defense, and psychological well-being (1). For infants fed infant formula, iron-fortified formula is generally recommended as a substitute for breastfeeding (1- 4). Rapid growth and increased physical activity significantly increase the need for iron and utilizes iron stores (1). Body stores are insufficient to meet the increased iron needs making it necessary for the infant to receive a dependable source of iron to prevent iron deficiency anemia (1). Iron deficiency anemia is associated with cognitive and psychomotor impairments that may be irreversible, and with decreased immune function, apathy, short attention span, and irritability (1, 5). Feeding of low-iron infant formula can compromise an infant's iron stores and lead to iron deficiency anemia. Cow's milk has insufficient and inappropriate amounts of nutrients and can cause occult blood loss that can lead to iron deficiency, stress on the kidneys from a high renal solute load, and allergic reactions (1, 3, 5-8). Sweetened condensed milk has an abundance of sugar that displaces other nutrients or causes over consumption of calories (9). Homemade formulas prepared with canned evaporated milk do not contain optimal kinds and amounts of nutrients infants need (1, 5, 8, 9). Goat's milk, sheep's milk, imitation milks, and substitute milks do not contain nutrients in amounts appropriate for infants (1, 3, 5, 10, 11).

411.2 Routinely using nursing bottles or cups improperly.

Dental caries is a major health problem in U.S. preschool children, especially in low-income populations (12). Eating and feeding habits that affect tooth decay and are started during infancy may continue into early childhood. Most implicated in this rampant disease process is prolonged use of baby bottles during the day or night, containing fermentable sugars, (e.g., fruit juice, soda, and other sweetened drinks), pacifiers dipped in sweet agents such as sugar, honey or syrups, or other high frequency sugar exposures (13). The AAP and the American Academy of Pedodontics recommend that juice should be offered to infants in a cup, not a bottle, and that infants not be put to bed with a bottle in their mouth (14, 15). While sleeping with a bottle in his or her mouth, an infant's swallowing and salivary flow decreases, thus creating a pooling of liquid around the teeth (16). The practice of allowing infants to carry or drink from a bottle or training cup of juice for periods throughout the day leads to excessive exposure of the teeth to carbohydrate, which promotes the development of dental caries (14).

Allowing infants to sleep with a nursing bottle containing fermentable carbohydrates or to use it unsupervised during waking hours provides an almost constant supply of carbohydrates and sugars (1). This leads to rapid demineralization of tooth enamel and an increase in the risk of dental caries due to prolonged contact between cariogenic bacteria on the susceptible tooth surface and the sugars in the consumed liquid (1, 17). The sugars in the liquid pool around the infant's teeth and gums feed the bacteria there and decay is the result (18). The process may start before the teeth are even fully

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Inappropriate Nutrition Practices for Infants

erupted. Upper incisors (upper front teeth) are particularly vulnerable; the lower incisors are generally protected by the tongue (18). The damage begins as white lesions and progresses to brown or black discoloration typical of caries (18). When early childhood caries is severe, the decayed crowns may break off and the permanent teeth developing below may be damaged (18). Undiagnosed dental caries and other oral pain may contribute to feeding problems and failure to thrive in young children (18).

Unrestricted use of a bottle, containing fermentable carbohydrates, is a risk because the more times a child consumes solid or liquid food, the higher the caries risk (1). Cariogenic snacks eaten between meals place the toddler most at risk for caries development; this includes the habit of continually sipping from cups (or bottles) containing cariogenic liquids (juice, milk, soda, or sweetened liquid) (18). If inappropriate use of the bottle persists, the child is at risk of toothaches, costly dental treatment, loss of primary teeth, and developmental lags on eating and chewing. If this continues beyond the usual weaning period, there is a risk of decay to permanent teeth.

Propping the bottle deprives infants of vital human contact and nurturing which makes them feel secure. It can cause: ear infections because of fluid entering the middle ear and not draining properly; choking from liquid flowing into the lungs; and tooth decay from prolonged exposure to carbohydrate-containing liquids (19).

Adding solid food to a nursing bottle results in force-feeding, inappropriately increases the energy and nutrient composition of the formula, deprives the infant of experiences important in the development of feeding behavior, and could cause an infant to choke (1, 10, 20, 21).

411.3 Routinely offering complementary foods or other substances that are inappropriate in type or timing.

Infants, especially those living in poverty, are at high risk for developing early childhood caries (12). Most implicated in this rampant disease process is prolonged use of baby bottles during the day or night, containing fermentable sugars, (e.g., fruit juice, soda, and other sweetened drinks), pacifiers dipped in sweet agents such as sugar, honey or syrups, or other high frequency sugar exposures (13).

Feeding solid foods too early (i.e., before 4-6 months of age) by, for example, adding diluted cereal or other solid foods to bottles deprives infants of the opportunity to learn to feed themselves (3, 10, 20, 22). The major objection to the introduction of beikost before age 4 months of age is based on the possibility that it may interfere with establishing sound eating habits and may contribute to overfeeding (5, 23). Before 4 months of age, the infant possesses an extrusion reflex that enables him/her to swallow only liquid foods (1, 12, 24). The extrusion reflex is toned down at four months (20). Breast milk or iron-fortified infant formula is all the infant needs. Gastric secretions, digestive capacity, renal capacity and enzymatic secretions are low, which makes digestion of solids inefficient and potentially harmful (5, 20, 23, 24). Furthermore, there is the potential for antigens to be developed against solid foods, due to the undigested proteins that may permeate the gut, however, the potential for developing allergic reactions may primarily be in infants with a strong family history of atopy (5, 23). If solid foods are introduced before the infant is developmentally ready, breastmilk or iron-fortified formula necessary for optimum growth is displaced (1, 20, 24). Around 4 months of age, the infant is

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developmentally ready for solid foods when (1, 5, 20, 23, 24): the infant is better able to express certain feeding cues such as turning head to indicate satiation; oral and gross motor skills begin to develop that help the infant to take solid foods; the extrusion reflex disappears; and the infant begins to sit upright and maintain balance.

Offering juice before solid foods are introduced into the diet could risk having juice replace breastmilk or infant formula in the diet (14). This can result in reduced intake of protein, fat, vitamins, and minerals such as iron, calcium, and zinc (25). It is prudent to give juice only to infants who can drink from a cup (14).

411.4 Routinely using feeding practices that disregard the developmental needs or stage of the infant.

Infants held to rigid feeding schedules are often underfed or overfed. Caregivers insensitive to signs of hunger and satiety, or who over manage feeding may inappropriately restrict or encourage excessive intake. Findings show that these practices may promote negative or unpleasant associations with eating that may continue into later life, and may also contribute to obesity. Infrequent breastfeeding can result in lactation insufficiency and infant failure-to-thrive. Infants should be fed foods with a texture appropriate to their developmental level. (3, 5, 10, 12, 20, 22)

411.5 Feeding foods to an infant that could be contaminated with harmful microorganisms or toxins.

Only pasteurized juice is safe for infants, children, and adolescents (14). Pasteurized fruit juices are free of microorganisms (14). Unpasteurized juice may contain pathogens, such as *Escherichia coli*, *Salmonella*, and *Cryptosporidium* organisms (14, 26). These organisms can cause serious disease, such as hemolytic-uremic syndrome, and should never be fed to infants and children (14).

Unpasteurized juice must contain a warning on the label that the product may contain harmful bacteria (14, 27). Infants or young children should not eat raw or unpasteurized milk or cheeses (1)—unpasteurized dairy products could contain harmful bacteria, such as *Brucella* species, that could cause young children to contract a dangerous food borne illness. The AAP also recommends that young children should not eat soft cheeses such as feta, Brie, Camembert, blue-veined, and Mexican-style cheese—these foods could contain *Listeria* bacteria (hard cheeses, processed cheeses, cream cheese, cottage cheese, and yogurt need not be avoided) (1).

Honey has been implicated as the primary food source of *Clostridium botulinum* during infancy. These spores are extremely resistant to heat, including pasteurization, and are not destroyed by present methods of processing honey. Botulism in infancy is caused by ingestion of the spores, which germinate into the toxin in the lumen of the bowel (9, 10, 20, 28, 29).

Infants or young children should not eat raw or undercooked meat or poultry, raw fish or shellfish, including oysters, clams, mussels, and scallops (1)—these foods may contain harmful bacteria or parasites that could cause children to contract a dangerous food borne illness.

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Inappropriate Nutrition Practices for Infants

According to the AAP, to prevent food-borne illness, the foods listed below should not be fed to infants or young children. (1) All of the foods have been implicated in selected outbreaks of food-borne illness, including in children. Background information regarding foods that could be contaminated with harmful microorganisms is also included below:

- Raw vegetable sprouts (alfalfa, clover, bean, and radish)--Sprouts can cause potentially dangerous Salmonella and E. coli O157 infection. Sprouts grown under clean conditions in the home also present a risk because bacteria may be present in seed. Cook sprouts to significantly reduce the risk of illness (30).
- Deli meats, hot dogs, and processed meats (avoid unless heated until steaming hot) --These foods have been found to be contaminated with *Listeria monocytogenes*; if adequately cooked, this bacteria is destroyed.

411.6 Routinely feeding inappropriately diluted formula.

Over-dilution can result in water intoxication resulting in hyponatremia; irritability; coma; inadequate nutrient intake; failure to thrive; poor growth (1, 3, 5, 10, 20, 31). Underdilution of formula increases calories, protein, and solutes presented to the kidney for excretion, and can result in hypernatremia, tetany, and obesity (3, 5, 10, 20, 31).

Dehydration and metabolic acidosis can occur with under-dilution of formula (3, 5, 10, 31). Powdered formulas vary in density so manufacturer's scoops are formula specific to assure correct dilution (5, 20). One clue for staff to identify incorrect formula preparation is to determine if the parent/caregiver is using the correct manufacturer's scoop to prepare the formula.

411.7 Routinely limiting the frequency of nursing of the exclusively breastfed infant when breast milk is the sole source of nutrients.

Exclusive breastfeeding provides ideal nutrition to an infant and is sufficient to support optimal growth and development in the first 6 months of life (4). Frequent breastfeeding is critical to the establishment and maintenance of an adequate milk supply for the infant (4, 32-36). Inadequate frequency of breastfeeding may lead to lactation failure in the mother and dehydration, poor weight gain, diarrhea, and vomiting, illness, and malnourishment in the infant (4, 34, 37-42). Exclusive breastfeeding protects infants from early exposure to contaminated foods and liquids (40). In addition, infants, who receive breastmilk more than infant formulas, have a lower risk of being overweight in childhood and adolescence (43, 44).

411.8 Routinely feeding a diet very low in calories and/or essential nutrients.

Highly restrictive diets prevent adequate intake of nutrients, interfere with growth and development, and may lead to other adverse physiological effects (3). Infants older than 6 months are potentially at the greatest risk for overt deficiency states related to inappropriate restrictions of the diet, although deficiencies of vitamins B12 and essential fatty acids may appear earlier (1, 45, 46). Infants are particularly vulnerable during the weaning period if fed a macrobiotic diet and may experience psychomotor delay in some instances (1, 47, 48). Well-balanced vegetarian diets with dairy products

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and eggs are generally associated with good health. However, strict vegan diets may be inadequate in calories, vitamin B12, vitamin D, calcium, iron, protein and essential amino acids needed for growth and development (49). The more limited the diet, the greater the health risk. Given the health and nutrition risks associated with highly restrictive diets, WIC can help the parent to assure that the infant consumes an adequate diet to optimize health during critical periods of growth as well as for the long term.

411.9 Routinely using inappropriate sanitation in preparation, handling, and storage of expressed breastmilk or formula.

Infant formula must be properly prepared in a sanitary manner in order to be safe for consumption. Further, prepared infant formula and expressed breastmilk are perishable foods, which must be handled and stored properly in order to be safe for consumption. (3, 9, 20, 50)

Published guidelines on the handling and storage of infant formula indicate that it is unsafe to feed an infant prepared formula which, for example:

- has been held at room temperature longer than 1 hour or longer than recommended by the manufacturer;
- has been held in the refrigerator longer than 48 hours for concentrated or ready-to-feed formula, or 24 hours for powdered formula;
- remains in a bottle one hour after the start of feeding; and/or
- remains in a bottle from an earlier feeding (9, 20).

Lack of sanitation may cause gastrointestinal infection. Most babies who are hospitalized for vomiting and diarrhea are bottle fed. This has often been attributed to the improper handling of formula rather than sensitivities to the formula. Manufacturers' instructions vary in the length of time it is considered to be safe to hold prepared infant formula without refrigeration before bacterial growth accelerates to an extent that the infant is placed at risk (9, 20). Published guidelines on the handling and storage of breastmilk may differ among pediatric nutrition authorities (9, 50-52). However, the following breastmilk feeding, handling, and storage practices, for example, are considered inappropriate and unsafe:

- feeding fresh breastmilk held in the refrigerator for more than 48 hours (50); or held in the freezer for greater than 6 months (1).
- thawing frozen breastmilk in the microwave oven;
- refreezing breastmilk;
- adding freshly expressed unrefrigerated breastmilk to already frozen breastmilk in a storage container** (53, 54);
- feeding previously frozen breastmilk thawed in the refrigerator that has been refrigerated for more than 24 hours (50), and/or
- saving breastmilk from a used bottle for another use at another feeding (50).

** The appropriate and safe practice is to add chilled freshly expressed breastmilk, in an amount that is smaller than the milk that has been frozen for no longer than 24 hours.

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Although there are variations in the recommended lengths for breastmilk to be held at room temperature or stored in the refrigerator or freezer, safety is more likely to be assured by using the more conservative guidelines.

The water used to prepare concentrated or powdered infant formula and prepare bottles and nipples must be safe for consumption. Water used for formula preparation which is contaminated with toxic substances (such as nitrate at a concentration above 10 milligrams per liter, lead, or pesticides) poses a hazard to an infant's health and should NOT be used (9).

411.10 Feeding dietary supplements with potentially harmful consequences.

An infant consuming inappropriate or excessive amounts of single or multivitamin or mineral or herbal remedy not prescribed by a physician is at risk for a variety of adverse effects including harmful nutrient interactions, toxicity, and teratogenicity (1, 55). While some herbal teas may be safe, some have undesirable effects, particularly on infants who are fed herbal teas or who receive breast milk from mothers who have ingested herbal teas (56). Examples of teas with potentially harmful effects to children include: licorice, comfrey leaves, sassafras, senna, buckhorn bark, cinnamon, wormwood, woodruff, valerian, foxglove, pokeroor or pokeweed, periwinkle, nutmeg, catnip, hydrangea, juniper, Mormon tea, thorn apple, yohimbe bark, lobelia, oleander, Mat  , kola nut or gotu cola, and chamomile (56-58). Like drugs, herbal or botanical preparations have chemical and biological activity, may have side effects, and may interact with certain medications--these interactions can cause problems and can even be dangerous (59). Botanical supplements are not necessarily safe because the safety of a botanical depends on many things, such as its chemical makeup, how it works in the body, how it is prepared, and the dose used (59).

411.11 Routinely not providing dietary supplements recognized as essential by national public health policy when an infant's diet alone cannot meet nutrient requirements.

Depending on an infant's specific needs and environmental circumstances, certain dietary supplements may be recommended by the infant's health care provider to ensure health. For example, fluoride supplements may be of benefit in reducing dental decay for children living in fluoride-deficient areas (1, 60). Further, to prevent rickets and vitamin D deficiency in healthy infants and children, the AAP recommends a supplement of 400 IU per day for the following (4, 61):

1. All breastfed and partially breastfed infants unless they are weaned to at least 1 liter (or 1 quart) per day of vitamin D-fortified formula.
2. All nonbreastfed infants who are ingesting less than 1 liter (or 1 quart) per day of vitamin D-fortified formula.

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Inappropriate Nutrition Practices for Infants

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Inappropriate Nutrition Practices for Children

**Definition/
cut-off value**

Routine use of feeding practices that may result in impaired nutrient status, disease, or health problems. These practices, with examples, are outlined below. Refer to “Attachment to 425-Justification and References” for this criterion.

**Participant
category and
priority level**

Category

Children

Priority

V

Inappropriate Nutrition Practices for Children	Examples of Inappropriate Nutrition Practices (including but not limited to)
425.1 Routinely feeding inappropriate beverages as the primary milk source.	<p>Examples of inappropriate beverages as primary milk source:</p> <ul style="list-style-type: none"> • Non-fat or reduced-fat milks (between 12 and 24 months of age only) or sweetened condensed milk; and • Imitation or substitute milks (such as inadequately or unfortified rice- or soy-based beverages, non-dairy creamer), or other “homemade concoctions.”
425.2 Routinely feeding a child any sugar-containing fluids.	<p>Examples of sugar-containing fluids:</p> <ul style="list-style-type: none"> • Soda/soft drinks; • Gelatin water; • Corn syrup solutions; and • Sweetened tea.
425.3 Routinely using nursing bottles, cups, or pacifiers improperly.	<ul style="list-style-type: none"> • Using a bottle to feed: <ul style="list-style-type: none"> ➢ Fruit juice, or ➢ Diluted cereal or other solid foods. • Allowing the child to fall asleep or be put to bed with a bottle at naps or bedtime. • Allowing the child to use the bottle without restriction (e.g., walking around with a bottle) or as a pacifier. • Using a bottle for feeding or drinking beyond 14 months of age. • Using a pacifier dipped in sweet agents such as sugar, honey, or syrups. • Allowing a child to carry around and drink throughout the day from a covered or training cup.

Inappropriate Nutrition Practices for Children

<p>425.4 Routinely using feeding practices that disregard the developmental needs or stages of the child.</p>	<ul style="list-style-type: none"> ● Inability to recognize, insensitivity to, or disregarding the child’s cues for hunger and satiety (e.g., forcing a child to eat a certain type and/or amount of food or beverage or ignoring a hungry child’s requests for appropriate foods). ● Feeding foods of inappropriate consistency, size, or shape that put children at risk of choking. ● Not supporting a child’s need for growing independence with self-feeding (e.g., solely spoon-feeding a child who is able and ready to finger-feed and/or try self-feeding with appropriate utensils). ● Feeding a child food with an inappropriate texture based on his/her developmental stage (e.g., feeding primarily pureed or liquid food when the child is ready and capable of eating mashed, chopped or appropriate finger foods).
<p>425.5 Feeding foods to a child that could be contaminated with harmful microorganisms.</p>	<p>Examples of potentially harmful foods for a child:</p> <ul style="list-style-type: none"> ● Unpasteurized fruit or vegetable juice; ● Unpasteurized dairy products or soft cheeses such as feta, Brie, Camembert, blue-veined, and Mexican-style cheese; ● Raw or undercooked meat, fish, poultry, or eggs; ● Raw vegetable sprouts (alfalfa, clover, bean, and radish); ● Deli meats, hot dogs, and processed meats (avoid unless heated until steaming hot).
<p>425.6 Routinely feeding a diet very low in calories and/or essential nutrients.</p>	<p>Examples:</p> <ul style="list-style-type: none"> ● Vegan diet; ● Macrobiotic diet; and ● Other diets very low in calories and/or essential nutrients.
<p>425.7 Feeding dietary supplements with potentially harmful consequences.</p>	<p>Examples of dietary supplements which when fed in excess of recommended dosage may be toxic or have harmful consequences:</p> <ul style="list-style-type: none"> ● Single or multi-vitamins; ● Mineral supplements; and ● Herbal or botanical supplements/remedies/teas.
<p>425.8 Routinely not providing dietary supplements recognized as essential by national public health policy when a child’s diet alone cannot meet nutrient requirements.</p>	<ul style="list-style-type: none"> ● Providing children under 36 months of age less than 0.25 mg of fluoride daily when the water supply contains less than 0.3 ppm fluoride. ● Providing children 36-60 months of age less than 0.50 mg of fluoride daily when the water supply contains less than 0.3 ppm fluoride. ● Not providing 400 IU of vitamin D if a child consumes less than 1 liter (or 1 quart) of vitamin D fortified milk or formula.

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425.9 Routine ingestion of nonfood items (pica).	Examples of inappropriate nonfood items: <ul style="list-style-type: none">• Ashes;• Carpet fibers;• Cigarettes or cigarette butts;• Clay;• Dust;• Foam rubber;• Paint chips;• Soil; and• Starch (laundry and cornstarch).
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Attachment to 425 Justification and References

Inappropriate Nutrition Practices for Children

Justification:

425.1 Routinely feeding inappropriate beverages as the primary milk source.

Goat's milk, sheep's milk, imitation and substitute milks (that are unfortified or inadequately fortified) do not contain nutrients in amounts appropriate as a primary milk source for children (1-4). Non-fat and reduced-fat milks are not recommended for use with children from 1 to 2 years of age because of the lower calorie density compared with whole-fat products (1, 5). The low-calorie, low-fat content of these milks requires that increased volume be consumed to satisfy caloric needs. Infants and children under two using reduced fat milks gain at a slower growth rate, lose body fat as evidenced by skinfold thickness, lose energy reserves, and are at risk of inadequate intake of essential fatty acids.

425.2 Routinely feeding a child any sugar-containing fluids.

Abundant epidemiologic evidence from groups who have consumed low quantities of sugar as well as from those who have consumed high quantities shows that sugar—especially sucrose—is the major dietary factor affecting dental caries prevalence and progression (6). Consumption of foods and beverages high in fermentable carbohydrates, such as sucrose, increases the risk of early childhood caries and tooth decay (6,7).

425.3 Routinely using nursing bottles, cups, or pacifiers improperly.

Dental caries is a major health problem in U.S. preschool children, especially in low-income populations (8). Most implicated in this rampant disease process is prolonged use of baby bottles during the day or night, containing fermentable sugars, (e.g., fruit juice, soda, and other sweetened drinks), pacifiers dipped in sweet agents such as sugar, honey or syrups, or other high frequency sugar exposures (6). Solid foods such as cereal should not be put into a bottle for feeding; this is a form of forcefeeding (9) and does not encourage the child to eat the cereal in a more developmentally-appropriate way.

Additional justification for the examples include:

- The American Academy of Pediatrics (AAP) and the American Academy of Pedodontics recommend that children not be put to bed with a bottle in their mouth (10, 11). While sleeping with a bottle in his or her mouth, a child's swallowing and salivary flow decreases, thus creating a pooling of liquid around the teeth (12). Propping the bottle can cause: ear infections because of fluid entering the middle ear and not draining properly; choking from liquid flowing into the lungs; and tooth decay from prolonged exposure to carbohydrate-containing liquids (13).
- Pediatric dentists recommend that parents be encouraged to have infants drink from a cup as they approach their first birthday, and that infants are weaned from the bottle by 12-14 months of age (14).
- The practice of allowing children to carry or drink from a bottle or cup of juice for periods throughout the day leads to excessive exposure of the teeth to carbohydrate, which promotes the development of dental caries (10). Allowing toddlers to use a bottle or cup containing fermentable carbohydrates unsupervised during waking hours provides an almost constant supply of carbohydrates and sugars (1). This leads to rapid demineralization of tooth enamel and an increase in the risk of dental caries due to prolonged contact between cariogenic bacteria on the susceptible

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tooth surface and the sugars in the consumed liquid (1, 14). The sugars in the liquid pool around the child's teeth and gums feed the bacteria there and decay is the result (15). The process may start before the teeth are even fully erupted. Upper incisors (upper front teeth) are particularly vulnerable; the lower incisors are generally protected by the tongue (15). The damage begins as white lesions and progresses to brown or black discoloration typical of caries (15). When early childhood caries are severe, the decayed crowns may break off and the permanent teeth developing below may be damaged (15). Undiagnosed dental caries and other oral pain may contribute to feeding problems and failure to thrive in young children (15). Use of a bottle or cup, containing fermentable carbohydrates, without restriction is a risk because the more times a child consumes solid or liquid food, the higher the caries risk (1). Cariogenic snacks eaten between meals place the toddler most at risk for caries development; this includes the habit of continually sipping from cups (or bottles) containing cariogenic liquids (juice, milk, soda, or sweetened liquid) (15). If inappropriate use of the bottle persists, the child is at risk of toothaches, costly dental treatment, loss of primary teeth, and developmental lags on eating and chewing. If this continues beyond the usual weaning period, there is a risk of decay to permanent teeth.

425.4 Routinely using feeding practices that disregard the developmental needs or stages of the child.

The interactions and communication between a caregiver and child during feeding and eating influence a child's ability to progress in eating skills and consume a nutritionally adequate diet. These interactions comprise the "feeding relationship" (9). A dysfunctional feeding relationship, which could be characterized by a caregiver misinterpreting, ignoring, or overruling a young child's innate capability to regulate food intake based on hunger, appetite and satiety, can result in poor dietary intake and impaired growth (16, 17). Parents who consistently attempt to control their children's food intake may give children few opportunities to learn to control their own food intake (18). This could result in inadequate or excessive food intake, future problems with food regulation, and problems with growth and nutritional status. Instead of using approaches such as bribery, rigid control, struggles, or short-order cooking to manage eating, a healthier approach is for parents to provide nutritious, safe foods at regular meals and snacks, allowing children to decide how much, if any, they eat (1, 17). Young children should be able to eat in a matter-of-fact way sufficient quantities of the foods that are given to them, just as they take care of other daily needs (3). Research indicates that restricting access to foods (i.e., high fat foods) may enhance the interest of 3- to 5-year old children in those foods and increase their desire to obtain and consume those foods. Stringent parental controls on child eating has been found to potentiate children's preference for high-fat energy dense foods, limit children's acceptance of a variety of foods, and disrupt children's regulation of energy intake (19, 20). Forcing a child to clean his or her plate may lead to overeating or development of an aversion to certain foods (7). The toddler and preschooler are striving to be independent (7). Self-feeding is important even though physically they may not be able to handle feeding utensils or have good eye-hand coordination (7). Children should be able to manage the feeding process independently and with dispatch, without either unnecessary dawdling or hurried eating (3, 12). Self-feeding milestones include (1): During infancy, older infants progress from semisolid foods to thicker and lumpier foods to soft pieces to finger-feeding table food (9). By 15 months, children can manage a cup, although not without some spilling. At 16 to 17 months of age, well-defined wrist rotation develops, permitting the transfer of feed from the bowl to the child's mouth with less

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spilling. The ability to lift the elbow as the spoon is raised and to flex the wrist as the spoon reaches the mouth follows. At 18 to 24 months, they learn to tilt a cup by manipulation with the fingers. Despite these new skills, 2-year-old children often prefer using their fingers to using the spoon. Preschool children learn to eat a wider variety of textures and kinds of food (3, 7). However, the foods offered should be modified so that the child can chew and swallow the food without difficulty (3).

425.5 Feeding foods to a child that could be contaminated with harmful microorganisms.

According to the AAP, to prevent food-borne illness, the foods listed below should not be fed to young children or infants (1). All of the foods have been implicated in selected outbreaks of food-borne illness, including in children.

Background information regarding foods that could be contaminated with harmful microorganisms is also included below:

- Unpasteurized fruit or vegetable juice--Only pasteurized juice is safe for infants, children, and adolescents (10). Pasteurized fruit juices are free of microorganisms (10). Unpasteurized juice may contain pathogens, such as *Escherichia coli*, *Salmonella*, and *Cryptosporidium* organisms (10, 21). These organisms can cause serious disease, such as hemolytic-uremic syndrome, and should never be fed to infants and children (10). Unpasteurized juice must contain a warning on the label that the product may contain harmful bacteria (10, 22).
- Unpasteurized dairy products or soft cheeses such as feta, Brie, Camembert, blue-veined, and Mexican-style cheese--Young children or infants should not eat raw or unpasteurized milk or cheeses (1)—unpasteurized dairy products could contain harmful bacteria, such as *Brucella* species, that could cause young children to contract a dangerous food borne illness. The American Academy of Pediatrics also recommends that young children should not eat soft cheeses such as feta, Brie, Camembert, blue-veined, and Mexican-style cheese—these foods could contain *Listeria* bacteria (hard cheeses, processed cheeses, cream cheese, cottage cheese, and yogurt need not be avoided) (1).
- Raw or undercooked meat, fish, poultry, or eggs--Young children or infants should not eat raw or undercooked meat or poultry, raw fish or shellfish, including oysters, clams, mussels, and scallops (1)—these foods may contain harmful bacteria or parasites that could cause children to contract a dangerous food borne illness.
- Raw vegetable sprouts (alfalfa, clover, bean, and radish)--Sprouts can cause potentially dangerous *Salmonella* and *E. coli* O157 infection. Sprouts grown under clean conditions in the home also present a risk because bacteria may be present in seed. Cook sprouts to significantly reduce the risk of illness (23).
- Deli meats, hot dogs, and processed meats (avoid unless heated until steaming hot)--These foods have been found to be contaminated with *Listeria monocytogenes*; if adequately cooked, this bacteria is destroyed.

425.6 Routinely feeding a diet very low in calories and/or essential nutrients.

Highly restrictive diets prevent adequate intake of nutrients, interfere with growth and development, and may lead to other adverse physiological effects (24). Well-balanced vegetarian diets with dairy products and eggs are generally associated with good health. However, strict vegan diets may be inadequate in

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calories, vitamin B12, vitamin D, calcium, iron, protein and essential amino acids needed for growth and development (25). The more limited the diet, the greater the health risk. Given the health and nutrition risks associated with highly restrictive diets, WIC can help the parent to assure that the child consumes an adequate diet to optimize health during critical periods of growth as well as for the long term.

425.7 Feeding dietary supplements with potentially harmful consequences.

A child consuming inappropriate or excessive amounts of single or multivitamin or mineral or herbal remedy not prescribed by a physician is at risk for a variety of adverse effects including harmful nutrient interactions, toxicity, and teratogenicity (1, 26). Like drugs, herbal or botanical preparations have chemical and biological activity, may have side effects, and may interact with certain medications--these interactions can cause problems and can even be dangerous (27). Botanical supplements are not necessarily safe because the safety of a botanical depends on many things, such as its chemical makeup, how it works in the body, how it is prepared, and the dose used (27). While some herbal teas may be safe, some have undesirable effects, particularly on young children who are fed herbal teas or who receive breast milk from mothers who have ingested herbal teas (28). Examples of teas with potentially harmful effects to children include: licorice, comfrey leaves, sassafras, senna, buckhorn bark, cinnamon, wormwood, woodruff, valerian, foxglove, pokeweed, periwinkle, nutmeg, catnip, hydrangea, juniper, Mormon tea, thorn apple, yohimbe bark, lobelia, oleander, Mat e, kola nut or gotu cola, and chamomile (28-30).

425.8 Routinely not providing dietary supplements recognized as essential by national public health policy when a child's diet alone cannot meet nutrient requirements.

Depending on a child's specific needs and environmental circumstances, certain dietary supplements may be recommended by the child's health care provider to ensure health. For example, fluoride supplements may be of benefit in reducing dental decay for children living in fluoride-deficient areas (1, 31). In addition, the AAP recommends that children who are ingesting less than 1 liter (1 quart) per day of vitamin D-fortified formula or milk, should receive a vitamin D supplement of 400 IU/day (32). Since 1 quart of milk is in excess of the recommended 2 cups of milk per day for pre-school children (33), most children will require a vitamin D supplement.

425.9 Routine ingestion by child of nonfood items (Pica).

Pica is the compulsive eating of nonnutritive substances and can have serious medical implications (33). Pica is observed most commonly in areas of low socioeconomic status and is more common in women (especially pregnant women) and in children (30). Pica has also been seen in children with obsessive-compulsive disorders, mental retardation, sickle cell disease (34-36). Complications of this disorder include: iron-deficiency anemia, lead poisoning, intestinal obstruction, acute toxicity from soil contaminants, and helminthic infestations (34, 37, 38).

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Additional Related References:

Food Safety and Inspection Service. Food Safety Focus: Molds On Food: Are They Dangerous? Electronic Consumer Education and Information. April 2002 (see: <http://www.nutrition.gov/framesets/search.php3?mw=moldy+food&Submit=Go&url=Select+A+Topic&db=www&mt=all>)

Food Safety and Inspection Service. FOCUS ON: Food Product Dating. Electronic Consumer Education and Information. Updated June 2001 (see: <http://www.nutrition.gov/framesets/search.php3?mw=moldy+food&Submit=Go&url=Select+A+Topic&db=www&mt=all>)

Inappropriate Nutrition Practices for Women

**Definition/
cut-off value**

Routine nutrition practices that may result in impaired nutrient status, disease, or health problems. These practices with examples are outlined below. Refer to “Attachment to 427 - Justification and References” for this criterion.

**Participant
category and
priority level**

Category

Priority

Pregnant Women

IV

Breastfeeding Women

IV

Non-Breastfeeding Women

VI

Inappropriate Nutrition Practices for Women	Examples of Inappropriate Nutrition Practices (including but not limited to)
427.1 Consuming dietary supplements with potentially harmful consequences.	<p>Examples of dietary supplements which when ingested in excess of recommended dosages, may be toxic or have harmful consequences:</p> <ul style="list-style-type: none"> ● Single or multiple vitamins; ● Mineral supplements; and ● Herbal or botanical supplements/remedies/teas.
427.2 Consuming a diet very low in calories and/or essential nutrients; or impaired caloric intake or absorption of essential nutrients following bariatric surgery.	<ul style="list-style-type: none"> ● Strict vegan diet; ● Low-carbohydrate, high-protein diet; ● Macrobiotic diet; and ● Any other diet restricting calories and/or essential nutrients.
427.3 Compulsively ingesting non-food items (pica).	<p>Non-food items:</p> <ul style="list-style-type: none"> ● Ashes; ● Baking soda; ● Burnt matches; ● Carpet fibers; ● Chalk; ● Cigarettes; ● Clay; ● Dust; ● Large quantities of ice and/or freezer frost; ● Paint chips; ● Soil; and ● Starch (laundry and cornstarch).

Inappropriate Nutrition Practices for Women

<p>427.4 Inadequate vitamin/mineral supplementation recognized as essential by national public health policy.</p>	<ul style="list-style-type: none"> • Consumption of less than 27 mg of supplemental iron per day by pregnant woman. • Consumption of less than 150 μg of supplemental iodine per day by pregnant and breastfeeding women. • Consumption of less than 400 mcg of folic acid from fortified foods and/or supplements daily by non-pregnant woman.
<p>427.5 Pregnant woman ingesting foods that could be contaminated with pathogenic microorganisms.</p>	<p>Potentially harmful foods:</p> <ul style="list-style-type: none"> • Raw fish or shellfish, including oysters, clams, mussels, and scallops; • Refrigerated smoked seafood, unless it is an ingredient in a cooked dish, such as a casserole; • Raw or undercooked meat or poultry; • Hot dogs, luncheon meats (cold cuts), fermented and dry sausage and other deli-style meat or poultry products unless reheated until steaming hot; • Refrigerated pâté or meat spreads; • Unpasteurized milk or foods containing unpasteurized milk; • Soft cheeses such as feta, Brie, Camembert, blue-veined cheeses and Mexican style cheese such as queso blanco, queso fresco, or Panela unless labeled as made with pasteurized milk; • Raw or undercooked eggs or foods containing raw or lightly cooked eggs including certain salad dressings, cookie and cake batters, sauces, and beverages such as unpasteurized eggnog; • Raw sprouts (alfalfa, clover, and radish); or • Unpasteurized fruit or vegetable juices.

Attachment to 427 Justification and References

Inappropriate Nutrition Practices for Women

Justification

427.1 Consuming dietary supplements with potentially harmful consequences.

Women taking inappropriate or excessive amounts of dietary supplements such as, single or multivitamins or minerals, or botanical (including herbal) remedies or teas, are at risk for adverse effects such as harmful nutrient interactions, toxicity and teratogenicity (1, 2). Pregnant and lactating women are at higher risk secondary to the potential transference of harmful substances to their infant.

Most nutrient toxicities occur through excessive supplementation of particular nutrients, such as, vitamins A, B-6 and niacin, iron and selenium (3). Large doses of vitamin A may be teratogenic (4). Because of this risk, the Institute of Medicine recommends avoiding preformed vitamin A supplementation during the first trimester of pregnancy (4). Besides nutrient toxicities, nutrient-nutrient and drug-nutrient interactions may adversely affect health.

Many herbal and botanical remedies have cultural implications and are related to beliefs about pregnancy and breastfeeding. The incidence of herbal use in pregnancy ranges from 7-55 % with echinacea and ginger being the most common (1). Some botanical (including herbal) teas may be safe; however, others have undesirable effects during pregnancy and breastfeeding. Herbal supplements such as, blue cohosh and pennyroyal stimulate uterine contractions, which may increase the risk of miscarriage or premature labor (1, 5). The March of Dimes and the American Academy of Pediatrics recommend cautious use of tea mixtures because of the lack of safety testing in pregnant women (6).

427.2 Consuming a diet very low in calories and/or essential nutrients; or impaired caloric intake or absorption of essential nutrients following bariatric surgery.

Women consuming highly restrictive diets are at risk for primary nutrient deficiencies, especially during critical developmental periods such as pregnancy. Pregnant women who restrict their diets may increase the risk of birth defects, suboptimal fetal development and chronic health problems in their children. Examples of nutrients associated with negative health outcomes are:

- Low iron intake and maternal anemia and increased risk of preterm birth or low birth weight (7, 8).
- Low maternal vitamin D status and depressed infant vitamin D status (9).
- Low folic acid and NTD (10, 11, 12).

Low calorie intake during pregnancy may lead to inadequate prenatal weight gain, which is associated with infant intrauterine growth restriction (IUGR) (13) and birth defects (10, 11, 14). The pregnant adolescent who restricts her diet is of particular concern since her additional growth needs compete with the developing fetus and the physiological changes of pregnancy (14).

Strict vegan diets may be highly restrictive and result in nutrient deficiencies. Nutrients of potential concern that may require supplementation are:

- Riboflavin (15, 16)

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Inappropriate Nutrition Practices for Women

- Iron (15)
- Zinc (15, 17)
- Vitamin B12 (15, 16, 18)
- Vitamin D (15, 16, 18)
- Calcium (15, 16, 18, 19,)
- Selenium (16)

The pregnant adolescent who consumes a vegan diet is at even greater risk due to her higher nutritional needs (16, 18). The breastfeeding woman who chooses a vegan or macrobiotic diet increases her risk and her baby's risk for vitamin B12 deficiency (18). Severe vitamin B12 deficiency resulting in neurological damage has been reported in infants of vegetarian mothers (18).

With the epidemic of obesity, treatment by gastric bypass surgery has increased more than 600% in the last ten years and has created nutritional deficiencies not typically seen in obstetric or pediatric medical practices (20). Gastrointestinal surgery promotes weight loss by restricting food intake and, in some operations, interrupting the digestive process. Operations that only reduce stomach size are known as "restrictive operations" because they restrict the amount of food the stomach can hold. Examples of restrictive operations are adjustable gastric banding and vertical banded gastroplasty. These types of operations do not interfere with the normal digestive process (21).

Some operations combine stomach restriction with a partial bypass of the small intestine; these are known as malabsorptive operations. Examples of malabsorptive operations are Roux-en-y gastric bypass (RGB) and Biliopancreatic diversion (BPD). Malabsorptive operations carry a greater risk for nutritional deficiencies because the procedure causes food to bypass the duodenum and jejunum, where most of the iron and calcium are absorbed. Menstruating women may develop anemia because not enough iron and vitamin B12 are absorbed. Decreased absorption of calcium may also contribute to osteoporosis and metabolic bone disease (21). A breastfeeding woman who has had gastric bypass surgery is at risk of vitamin B12 deficiency for herself and her infant (22).

427.3 Compulsively ingesting non-food items (pica).

Pica, the compulsive ingestion of non-food substances over a sustained period of time, is linked to lead poisoning and exposure to other toxicants, anemia, excess calories or displacement of nutrients, gastric and small bowel obstruction, as well as, parasitic infection (23). It may also contribute to nutrient deficiencies by either inhibiting absorption or displacing nutrient dense foods in the diet.

Poor pregnancy outcomes associated with pica-induced lead poisoning, include lower maternal hemoglobin level at delivery (24) and a smaller head circumference in the infant (25). Maternal transfer of lead via breastfeeding has been documented in infants and can result in a neuro-developmental insult depending on the blood lead level and the compounded exposure for the infant during pregnancy and breastfeeding (26, 27, 28).

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Inappropriate Nutrition Practices for Women

427.4 Inadequate vitamin/mineral supplementation recognized as essential by national public health policy.

The Recommended Dietary Allowance (RDA) for pregnant women is 27mg of iron per day (29). The Centers for Disease Control and Prevention recommends iron supplementation for all pregnant women to prevent iron deficiency (30); however, pregnant women should seek guidance from a qualified health care provider before taking dietary supplements (31).

During pregnancy and lactation the iodine requirement is sharply elevated. The RDA for iodine during pregnancy is 220 μg and 290 μg during lactation (29). Severe iodine deficiency during pregnancy can cause cretinism and adversely affect cognitive development in children (32). Even mild iodine deficiency may have adverse affects on the cognitive function of children (33). Since the 1970s, according to the 2001-2002 National Health and Nutrition Examination Surveys (NHANES), there has been a decrease of approximately 50% in adult urinary iodine values. For women of child bearing age, the median urinary iodine value decreased from 294 to 128 μg per liter (34). The American Thyroid Association recommends that women receive prenatal vitamins containing 150 μg of iodine daily during pregnancy and lactation (35). The iodine content of prenatal vitamins in the Unites States is not mandated, thus not all prenatal vitamins contain iodine (36). Pregnant and breastfeeding women should be advised to review the iodine content of their vitamins and discuss the adequacy of the iodine with their health care provider.

Non-pregnant women of childbearing age who do not consume adequate amounts of folic acid are at greater risk for functional folate deficiency, which has been proven to cause neural tube defects (NTDs), such as spina bifida and anencephaly (37-40).

Folic acid consumed from fortified foods and/or a vitamin supplement in addition to folate found naturally in food reduces this risk (12). The terms “folic acid” and “folate” are used interchangeably, yet they have different meanings. Folic acid is the synthetic form used in vitamin supplements and fortified foods (12, 38, 39). Folate occurs naturally and is found in foods, such as dark green leafy vegetables, strawberries, and orange juice (12).

Studies show that consuming 400 mcg of folic acid daily interconceptionally can prevent 50 percent of neural tube defects (12). Because NTDs develop early in pregnancy (between the 17th and 30th day) and many pregnancies are not planned, it is important to have adequate intakes before pregnancy and throughout the childbearing years (14). NTDs often occur before women know they are pregnant. It is recommended that all women capable of becoming pregnant consume a multivitamin containing 400 mcg of folic acid daily (39-41). It is important that breastfeeding and non-breastfeeding women participating in the WIC Program know about folic acid and foods that contain folate to encourage preconceptional preventive practices (38).

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Inappropriate Nutrition Practices for Women

427.5 Pregnant woman ingesting foods that could be contaminated with pathogenic microorganisms.

Food-borne illness is a serious public health problem (42). The causes include pathogenic microorganisms (bacteria, viruses, and parasites) and their toxins and chemical contamination. The symptoms are usually gastrointestinal in nature (vomiting, diarrhea, and abdominal pain), but neurological and “non-specific” symptoms may occur as well. Over the last 20 years, certain foods have been linked to outbreaks of food-borne illness. These foods include: milk (Campylobacter); shellfish (Norwalk-like viruses); unpasteurized apple cider (Escherichia coli O 157:H7); eggs (Salmonella); fish (ciguatera poisoning); raspberries (Cyclospora); strawberries (Hepatitis A virus); and ready-to-eat meats (Listeria monocytogenes).

Listeria monocytogenes can cause an illness called listeriosis. Listeriosis during pregnancy can result in premature delivery, miscarriage, fetal death, and severe illness or death of a newborn from the infection (43). Listeriosis can be transmitted to the fetus through the placenta even if the mother is not showing signs of illness.

Pregnant women are especially at risk for food-borne illness. For this reason, government agencies such as the Centers for Disease Control and Prevention, the USDA Food Safety and Inspection Service, and the Food and Drug Administration advise pregnant women and other high risk individuals not to eat foods as identified in the definition for this criterion (42, 43).

The CDC encourages health care professionals to provide anticipatory guidance, including the “four simple steps to food safety” of the Fight BAC campaign, to help reduce the incidence of food-borne illnesses.

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WEBSITES FOR ADDITIONAL INFORMATION:

427.1 References - Supplements/Herbs

<http://www.marchofdimes.com>

<http://www.dietary-supplements.info.nih.gov/>

<http://www.vm.cfsan.fda.gov/>

<http://www.herbalgram.org>

427.2 References - Highly Restrictive Eating/ Nutrient Malabsorption

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<http://www.eatright.org>
<http://www.nimh.nih.gov>
<http://www.eatright.org/>
<http://www.llu.edu/llu/vegetarian/>
<http://www.nal.usda.gov/fnic/pubs/bibs/gen/vegetarian.htm>
<http://www.gastric-bypass-treatment.com/long-term-weight-loss-surgery-complications.aspx>

427.3 References - Non-Food Ingestion

<http://www.nieh.nih.gov/>
<http://www.epa.gov/>

427.4 References - Folic Acid

<http://www.cdc.gov/>
<http://www.aap.org/>
<http://www.iom.edu/>

427.5 References - Listeriosis

<http://www.cdc.gov/foodsafety>
http://www.cdc.gov/ncidod/dbmd/diseaseinfo/listeriosis_g.htm
<http://www.cfsan.fda.gov>
<http://www.foodsafety.gov>
<http://www.fightbac.org>
<http://www.ific.org>

Dietary Risk Associated with Complementary Feeding Practices

**Definition/
cut-off value**

An infant or child who has begun to or is expected to begin to 1) consume complementary foods and beverages, 2) eat independently, 3) be weaned from breast milk or infant formula, or 4) transition from a diet based on infant/toddler foods to one based on the *Dietary Guidelines for Americans*, is at risk of inappropriate complementary feeding.

A complete nutrition assessment, including for risk #411, Inappropriate Nutrition Practices for Infants, or #425, Inappropriate Nutrition Practices for Children, must be completed prior to assigning this risk.

**Participant
category and
priority level**

Category	Priority
Infants 4 to 12 months	IV
Children 12 through 23 months	V

Justification

Overview

Complementary feeding is the gradual addition of foods and beverages to the diet of the infant and young child. (1, 2) The process of adding complementary foods should reflect the physical, intellectual, and behavioral stages as well as the nutrient needs of the infant or child. Inappropriate complementary feeding practices are common and well documented in the literature. Caregivers often do not recognize signs of developmental readiness and, therefore, offer foods and beverages that may be inappropriate in type, amount, consistency, or texture. Furthermore, a lack of nationally accepted feeding guidelines for children under the age of two might lead caregivers to assume that all foods are suitable for this age range.

The 2000 WIC Participant and Program Characteristics study (PC 2000) shows greater percentages of anthropometric and biochemical risk factors in children ages 6 to 24 months than in children 24 to 60 months of age. (3) These differences could reflect physical manifestations of inappropriate complementary feeding practices. Although PC 2000 shows a lower dietary risk in the 6 to 24 month age group, this risk is probably under-reported due to the high incidence of other higher priority nutrition risks.

AGE	ANTHROPOMETRIC RISK (%)	BIOCHEMICAL RISK (%)	DIETARY RISK (%)
6-11M	40	16	55
1 YEAR	41	14	76
2 YEAR	37	12	80
3 YEAR	32	9	80
4 YEAR	35	7	79

Dietary Risk Associated with Complementary Feeding Practices

The Institute of Medicine (IOM), in their report, *Summary of Proposed Criteria for Selecting the WIC Food Packages* identified specific nutrients with potential for inadequacy or excess for WIC participants. For breast-fed infants 6 through 11 months, the nutrients of concern for potential inadequacy are iron and zinc while those for children 12 through 23 months are iron, vitamin E, fiber and potassium. The nutrients of concern for excessive intake in children 12 through 23 months are zinc, preformed vitamin A, sodium and energy. (4)

To manage complementary feeding successfully, caregivers must make decisions about what, when, where, and how to offer foods according to the infant's or child's:

- Requirement for energy and nutrients;
- Fine, gross, and oral motor skills;
- Emerging independence and desire to learn to self-feed; and
- Need to learn healthy eating habits through exposure to a variety of nutritious foods. (1, 2, 5, 6, 7)

How WIC Can Help

The WIC Program plays a key role not only in the **prevention** of nutrition-related health problems, but also in the **promotion** of lifelong healthy eating behaviors. The process of introducing complementary foods provides a unique opportunity for WIC staff to assist caregivers in making appropriate feeding decisions for young children that may have lifelong implications.

Prevention of Nutrition-Related Health Problems

- Zinc deficiency: Zinc is critical for growth and immunity, as well as brain development and function. The concentration of zinc in breast milk declines to a level considered inadequate to meet the needs of infants 7 to 12 months of age. (8, 9) Complementary food sources of zinc, such as meats or zinc-fortified infant cereals, should be introduced to exclusively breastfed infants by 7 months.
 - Iron deficiency: Hallberg states, "The weaning period in infants is especially critical because of the especially high iron requirements and the importance of adequate iron nutrition during this crucial period of development." (10) According to the Centers for Disease Control and Prevention (CDC), children less than 24 months of age, especially those between 9 and 18 months, have the highest rate of iron deficiency of any age group. (11) In the third National Health and Nutrition Examination Survey (NHANES III), children ages 1 to 2, along with adolescent girls, had the highest rates of overt anemia, while 9 % were iron deficient. (12) Meanwhile, the Pediatric Nutrition Surveillance 2003 Report noted anemia rates of 16.2 % in 6 to 11 month-old infants, 15.0 % in 12 to 17 month-olds, and 13.5 % in 18-23 month old children. (13)
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Dietary Risk Associated with Complementary Feeding Practices

Picciano et al. reported that the intake of iron decreased from 98% of the recommended amount at 12 months to 76% at 18 months of age. (14) In WIC clinics, Kahn et al. found that the incidence of anemia was significantly more common in 6 to 23 month old children than in 23 to 59 month-olds. The 6 to 23 month-old was also more likely than the older child to develop anemia despite a normal hemoglobin test at WIC certification. (15)

Feeding practices that may prevent iron deficiency include:

- Breastfeeding infants exclusively until 4 to 6 months of age;
 - Feeding only iron-fortified infant formula as a substitute for or supplement to breast milk until age 1;
 - Offering a supplemental food source of iron to infants, between 4 to 6 months or when developmentally ready;
 - Avoiding cow's milk until age 12 months; and
 - Limiting milk consumption to no more than 24 ounces per day for children aged 1 to 5 years. (11)
- Obesity: Much of the literature on obesity indicates that learned behaviors and attitudes toward food consumption are major contributing factors. Proskitt states, "The main long term effect of weaning on nutritional status could be through attitudes toward food and meals learned by infants through the weaning process. This may be a truly critical area for the impact of feeding on later obesity." (16)

Birch and Fisher state, "An enormous amount of learning about food and eating occurs during the transition from the exclusive milk diet of infancy to the omnivore's diet consumed by early childhood." The authors believe that parents have the greatest influence on assuring eating behaviors that help to prevent future overweight and obesity. (17)

The American Academy of Pediatrics (AAP) states, "...prevention of overweight is critical, because long-term outcome data for successful treatment approaches are limited..." and, "Families should be educated and empowered through anticipatory guidance to recognize the impact they have on their children's development through lifelong habits of physical activity and nutritious eating." (1) Parents can be reminded that they are role models and teachers who help their children adopt healthful eating and lifestyle practices.

- Tooth decay: Children under the age of 2 are particularly susceptible to Early Childhood Caries (ECC), a serious public health problem. (18) In some communities, the incidence of ECC can range from 20% to 50%. (19) Children with ECC appear to be more susceptible to caries in permanent teeth at a later

Dietary Risk Associated with Complementary Feeding Practices

age. (1, 20) Dental caries can be caused by many factors, including prolonged use of a bottle and extensive use of sweet and sticky foods. (21)

The Avon Longitudinal Study of Pregnancy and Childhood examined 1,026 children aged 18 months and found that baby bottles were used exclusively for drinking by 10 % of the children and for at least one feeding by 64% of the children. Lower income families were found to use the bottle more frequently for carbonated beverages than higher income families. (22)

Complementary feeding practices that caregivers can use to prevent oral health problems include:

- Avoiding concentrated sweet foods like lollipops, candy and sweetened cereals.
- Avoiding sweetened beverages. Introducing fruit juice after 6 months of age (1) and only feeding it in a cup; and limiting fruit juice to 4-6 ounces/day.
- Weaning from a bottle to a cup by 12 to 14 months. (23)

Promotion of Lifelong Healthy Eating Behaviors

- Timing of introduction of complementary foods:
The AAP, Committee on Nutrition (CON) states that, "... complementary foods may be introduced between ages 4 and 6 months..." but cautions that actual timing of introduction of complementary foods for an individual infant may differ from this (population based) recommendation. Furthermore, the AAP-CON acknowledges a difference of opinion with the AAP, Section on Breastfeeding, which recommends exclusive breastfeeding for at least 6 months. (1)

Early introduction of complementary foods before the infant is developmentally ready (i.e., before 4-6 months of age) is associated with increased respiratory illness, allergy in high-risk infants, and decreased breast milk production (7).

Infants with a strong family history of food allergy should be breastfed for as long as possible and should not receive complementary foods until 6 months of age. The introduction of the major food allergens such as eggs, milk, wheat, soy, peanuts, tree nuts, fish and shellfish should be delayed until well after the first year of life as guided by the health care provider. (7, 24)

Delayed introduction of complementary foods, on the other hand, is also associated with feeding difficulties. Northstone et al found that introduction of textured foods after 10 months of age resulted in more feeding difficulties later on, such as picky eating and/or refusal of many foods. To avoid these and other

Dietary Risk Associated with Complementary Feeding Practices

developmental problems, solid foods should be introduced no later than 7 months, and finger foods between 7 and 9 months of age. (25)

- Choosing Appropriate Complementary Foods and Beverages: Complementary foods should supply essential nutrients and be developmentally appropriate. (7) The WIC Infant Feeding Practices Study (WIC-IFPS) found that by 6 months of age, greater than 80% of mothers introduced inappropriate dairy foods (i.e., yogurt, cheese, ice cream and pudding), 60% introduced sweets/snack foods (defined as chips, pretzels, candy, cookies, jam and honey), and 90% introduced high protein foods (beans, eggs and peanut butter) to their infants. This study also found that, among the infants who received supplemental drinks by 5 months of age, three-quarters had never used a cup, concluding that most infants received supplemental drinks from the bottle. By one year of age, almost 90% of WIC infants received sweetened beverages and over 90% received sweet/snack foods. (26)

The Feeding Infants and Toddlers Study (FITS) found that WIC infants and toddlers consumed excess energy but inadequate amounts of fruits and vegetables. In addition, WIC toddlers consumed more sweets, desserts and sweetened beverages than non-WIC toddlers. (27)

Sixty-five percent of all food-related choking deaths occur in children under the age of 2. Children in this age group have not fully developed their oral-motor skills for chewing and swallowing. For this reason, they should be fed foods of an appropriate consistency, size, and shape. Foods commonly implicated in choking include hot dogs, hard, gooey or sticky candy, nuts and seeds, chewing gum, grapes, raisins, popcorn, peanut butter and hard pieces of raw fruits and vegetables and chunks of meat or cheese. (1, 28, 29)

- Introducing a Cup: Teaching an infant to drink from a cup is part of the process of acquiring independent eating skills. A delay in the initiation of cup drinking prolongs the use of the nursing bottle that can lead to excess milk and juice intake and possible Early Childhood Caries (ECC). Weaning from a bottle to a cup should occur by 12 to 14 months of age. (23)
- Helping The Child Establish Lifelong Healthy Eating Patterns: Lifelong eating practices may have their roots in the early years. Birch and Fisher state that food exposure and accessibility, the modeling behavior of parents and siblings, and the level of parental control over food consumption influence a child's food preferences. Inappropriate feeding practices may result in under- or over-feeding and may promote negative associations with eating that continue into later life.

Normal eating behaviors such as spitting out or gagging on unfamiliar food or

Dietary Risk Associated with Complementary Feeding Practices

food with texture are often misinterpreted as dislikes or intolerances leading to a diminished variety of foods offered. Infants have an innate preference for sweet and salty tastes. Without guidance, an infant may develop a lifelong preference for highly sweetened or salty foods rather than for a varied diet. (17)

A young child gradually moves from the limited infant/toddler diet to daily multiple servings from each of the basic food groups as described in the Dietary Guidelines. (30) The toddler stage (ages 1-2 years) may frustrate caregivers since many toddlers have constantly changing food preferences and erratic appetites. In addition, toddlers become skeptical about new foods and may need to experience a food 15-20 times before accepting it. (31)

Caregivers can be guided and supported in managing common toddler feeding problems. Feeding practices that caregivers can use to facilitate a successful transition to a food group-based diet include:

- Offering a variety of developmentally appropriate nutritious foods;
- Reducing exposure to foods and beverages containing high levels of salt and sugar;
- Preparing meals that are pleasing to the eye and include a variety of colors and textures; setting a good example by eating a variety of foods;
- Offering only whole milk from age 1-2; (Lower fat milk can be introduced after that age.)
- Providing structure by scheduling regular meal and snack times;
- Allowing the child to decide how much or whether to eat;
- Allowing the child to develop eating/self-feeding skills; and
- Eating with the child in a pleasant mealtime environment without coercion.

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501
Possibility of Regression

**Definition/
cut-off value**

A participant who has previously been certified eligible for the Program may be considered to be at nutritional risk in the next certification period if the competent professional authority determines there is a possibility of regression in nutritional status without the benefits that the WIC Program provides. The State may limit the number of times and circumstances under which a participant may be certified due to the possibility of regression.

**Participant
category and
priority level**

Category	Priority
Breastfeeding Women	I, IV, or VII
Non-Breastfeeding Women	III, IV, V, VI, or VII
Infants	I, IV, or VII
Children	III, V, or VII

Justification

On occasion, a participant's nutritional status may be improved, to the point that s/he rises slightly above the cutoff of the initial risk condition by the end of the certification period. This occurs most frequently with those conditions that contain specific cutoffs or thresholds, such as anemia or inappropriate growth. Removal of such individuals from the Program can result in a "revolving-door" situation where the individual's recently improved nutritional status deteriorates quickly, so that s/he then re-enters the Program at equal or greater nutrition risk status than before. Therefore, WIC Program regulations permit State agencies to certify previously certified individuals who do not demonstrate a current nutrition risk condition against the possibility of their reverting to the prior existing risk condition if they do not continue to receive WIC benefits. This policy is consistent with the preventive nature of the WIC Program, and enables State and local agencies to ensure that their previous efforts to improve a participant's nutrition status, as well as to provide referrals to other health care, social service, and/or public assistance programs are not wasted.

Competent Professional Authorities and other certifying staff should keep in mind that every nutrition risk condition does not necessarily lead itself to the possibility of regression. For example, gestational diabetes or gingivitis of pregnancy are not conditions to which a new mother could regress, since they are directly associated with pregnancy, and the breastfeeding or non-breastfeeding women cannot regress to being pregnant if she is no longer receiving WIC benefits.

References

1. WIC Program Regulations, Sect. 246.7(e)(1)(iii).
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501 Possibility of Regression

Clarification

After April 1, 1999, any certification for regression must be based on the new set of risk criteria. For example, a person deemed anemic under a State's more inclusive criteria prior to April 1, 1999, may only be certified for regression after April 1, 1999, if his/her blood values would have met the revised CDC criteria for anemia published in the April 1998 MMWR tables.

Further, regression may only be used as a certifying nutrition risk when it complies with the policies established by the State agency for its use, as set forth in the WIC Nutrition Services Standards issued by FNS in 1988. Such policies must include:

1. A requirement for a nutritional assessment to rule out the existence of another current risk factor before using eligibility on regression.
 2. A requirement for written identification of the risk factor to which the participant may regress.
 3. A list of risk factors and priority levels for which eligibility based regression may be applied; and
 4. A limit on the number of times regression for a given risk factor may be consecutively applied.
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502
Transfer of Certification

**Definition/
cut-off value**

Person with current valid Verification of Certification (VOC) document from another State or local agency. The VOC is valid until the certification period expires, and shall be accepted as proof of eligibility for program benefits. If the receiving local agency has waiting lists for participation, the transferring participant shall be placed on the list ahead of all other waiting applicants.

This criterion would be used primarily when the VOC card/document does not reflect another (more specific) nutrition risk condition at the time of transfer or if the participant was initially certified based on a nutrition risk condition not in use by the receiving State agency.

**Participant
category and
priority level**

Category	Priority
Pregnant Women	N/A
Breastfeeding Women	N/A
Non-Breastfeeding Women	N/A
Infants	N/A
Children	N/A

Justification

Local agencies must accept Verification of Certification (VOC) documents from participants. A person with a valid VOC document shall not be denied participation in the receiving State because the person does not meet that State’s particular eligibility criteria. Once a WIC participant has been certified by a local agency, the service delivery area into which s/he moves is obligated to honor that commitment.

References

1. FNS Instruction 803-11, Rev.1.
 2. WIC Program Regulations; Section 246.7(k).
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Presumptive Eligibility for Pregnant Women

**Definition/
cut-off value** A pregnant woman who meets WIC income eligibility standards but has not yet been evaluated for nutrition risk, for a period of up to 60 days.

Participant category and priority level	Category	Priority
	Pregnant Women*	IV
	* up to 60 days certification	

Justification In some cases, State or local agencies may not have the essential equipment or staff onsite to perform the necessary bloodwork assessment for pregnant women. There has been some concern that the bloodwork data requirement could be an impediment to the enrollment of eligible pregnant women early in pregnancy. Early enrollment is an important WIC Program objective, as well as a legislative requirement.

In response to these concerns, Congress amended the Child Nutrition Act in 1994 to allow State agencies to consider pregnant women who are income eligible for the WIC Program to be presumed to be nutritionally at risk and thus eligible to participate in the Program. These women may be certified immediately upon application without the results of a nutrition risk evaluation. However, the nutrition risk evaluation must be completed not later than 60 days from the date the pregnant woman is certified for participation. Ideally, States should complete the full nutrition risk assessment at certification or at the earliest possible date thereafter. This would allow the WIC staff to initiate appropriate counseling on nutrition and diet, as well as complete and appropriate health care referrals, at the earliest opportunity. This information is also invaluable in developing an appropriate food package for the pregnant woman.

- References**
1. Centers for Disease Control and Prevention. Prenatal Nutrition Surveillance System User's Manual. Atlanta: CDC, 1994.
 2. WIC Program Regulations; Sect. 246.7 (e)(1)(iii).
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Clarification The requirement to complete a nutritional assessment of a WIC applicant who has been certified based on this criterion within 60 days of the certification does not affect the 90-day windows that are allowed for an applicant to provide proof of pregnancy (See WIC Policy Memorandum #92-13, dated July 8, 1992) or for the use of previously taken blood tests (See WIC Policy Memorandum #96-4, dated December 29, 1995).

Presumptive Eligibility for Pregnant Women

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.

Breastfeeding Mother of Infant at Nutritional Risk

**Definition/
cut-off value**

A breastfeeding woman whose breastfed infant has been determined to be at nutritional risk.

**Participant
category and
priority level**
Category

Breastfeeding Women

Priority

I, II, or IV*

***Must be the same
priority as at-risk
infant.**

Justification

A breastfed infant is dependent on the mother's milk as the primary source of nutrition. Special attention should therefore be given to the health and nutritional status of the mother (5). Lactation requires an additional approximately 500 Kcal per day as increased protein, calcium, and other vitamins and minerals (3,1). Inadequate maternal nutrition may result in decreased nutrient content of the milk (1).

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Breastfeeding Complications or Potential Complications (Women)

**Definition/
cut-off value**

A breastfeeding woman with any of the following complications or potential complications for breastfeeding:

- a. severe breast engorgement
- b. recurrent plugged ducts
- c. mastitis (fever or flu-like symptoms with localized breast tenderness)
- d. flat or inverted nipples
- e. cracked, bleeding or severely sore nipples
- f. Age \geq 40 years
- g. Failure of milk to come in by 4 days postpartum
- h. Tandem nursing (breastfeeding two siblings who are not twins)

**Participant
category and
priority level**

Category

Priority

Breastfeeding Women

I

Justification

- a. Severe engorgement is often caused by infrequent nursing and/or ineffective removal of milk. This severe breast congestion causes the nipple-areola area to become flattened and tense, making it difficult for the baby to latch-on correctly. The result can be sore, damaged nipples and poor milk transfer during feeding attempts. This ultimately results in diminished milk supply. When the infant is unable to latch-on or nurse effectively, alternative methods of milk expression are necessary, such as using an electric breast pump.
- b. A clogged duct is a temporary back-up of milk that occurs when one or more of the lobes of the breast do not drain well. This usually results from incomplete emptying of milk. Counseling on feeding frequency or method or advising against wearing an overly tight bra or clothing can assist.
- c. Mastitis is a breast infection that causes a flu-like illness accompanied by an inflamed, painful area of the breast - putting both the health of the mother and successful breastfeeding at risk. The woman should be referred to her health care provider for antibiotic therapy.
- d. Infants may have difficulty latching-on correctly to nurse when nipples are flat or inverted. Appropriate interventions can improve nipple protractility and skilled help guiding a baby in proper breastfeeding technique can facilitate proper attachment.
- e. Severe nipple pain, discomfort lasting throughout feedings, or pain persisting beyond one week postpartum is atypical and suggests the baby is not positioned correctly at the breast. Improper infant latch-on not only causes sore nipples, but impairs milk flow and leads to diminished milk supply and inadequate infant intake. There are several other causes of severe or persistent nipple pain, including Candida or staph infection. Referrals for lactation counseling and/or examination by the woman's health care provider are indicated.

Breastfeeding Complications or Potential Complications (Women)

- f. Older women (over 40) are more likely to experience fertility problems and perinatal risk factors that could impact the initiation of breastfeeding. Because involutinal breast changes can begin in the late 30's, older mothers may have fewer functioning milk glands resulting in greater difficulty producing an abundant milk supply.
 - g. Failure of milk to come in by 4 days postpartum may be a result of maternal illness or perinatal complications. This may place the infant at nutritional and/or medical risk, making temporary supplementation necessary until a normal breast milk supply is established.
 - h. With tandem nursing the older baby may compete for nursing privileges, and care must be taken to assure that the younger baby has first access to the milk supply. The mother who chooses to tandem nurse will have increased nutritional requirements to assure her adequate milk production.
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Breastfeeding Complications or Potential Complications (Women)

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Breastfeeding Complications or Potential Complications (Infants)

**Definition/
cut-off value**

A breastfed infant with any of the following complications or potential complications for breastfeeding:

- a. jaundice
- b. weak or ineffective suck
- c. difficulty latching onto mother's breast
- d. inadequate stooling (for age, as determined by a physician or other health care professional), and/or less than 6 wet diapers per day

**Participant
category and
priority level**

Category

Priority

Infants

I

Justification

- a. Jaundice occurs when bilirubin accumulates in the blood because red blood cells break down too quickly, the liver does not process bilirubin as efficiently as it should, or intestinal excretion of bilirubin is impaired. The slight degree of jaundice observed in many healthy newborns is considered physiologic. Jaundice is considered pathologic if it appears before 24 hours, lasts longer than a week or two, reaches an abnormally high level, or results from a medical problem such as rapid destruction of red blood cells, excessive bruising, liver disease, or other illness. When jaundice occurs in an otherwise healthy breastfed infant, it is important to distinguish "breastmilk jaundice" from "breastfeeding jaundice" and determine the appropriate treatment.
 - In the condition known as "breastmilk jaundice," the onset of jaundice usually begins well after the infant has left the hospital, 5 to 10 days after birth, and can persist for weeks and even months. Early visits to the WIC clinic can help identify and refer these infants to their primary health care provider. Breastmilk jaundice is a normal physiologic phenomenon in the thriving breastfed baby and is due to a human milk factor that increases intestinal absorption of bilirubin. The stooling and voiding pattern is normal. If the bilirubin level approaches 18-20 mg%, the health care provider may choose to briefly interrupt breastfeeding for 24-36 hours which results in a dramatic decline in bilirubin level.
 - Resumption of breastfeeding usually results in cessation of the rapid fall in serum bilirubin concentration, and in many cases a small increase may be observed, followed by the usual gradual decline to normal.

Breastfeeding Complications or Potential Complications (Infants)

- "Breastfeeding jaundice", is an exaggeration of physiologic jaundice, which usually peaks between 3 and 5 days of life, though it can persist longer. This type of jaundice is a common marker for inadequate breastfeeding. An infant with breastfeeding jaundice is underfed and displays the following symptoms: infrequent or ineffective breastfeeding; failure to gain appropriate weight; infrequent stooling with delayed appearance of yellow stools (i.e., prolonged passage of meconium); and scant dark urine with urate crystals. Improved nutrition usually results in a rapid decline in serum bilirubin concentration.

- b. A weak or ineffective suck may cause a baby to obtain inadequate milk with breastfeeding and result in a diminished milk supply and an underweight baby. Weak or ineffective suckling can be due to prematurity, low birth weight, a sleepy baby, or physical/medical problems such as heart disease, respiratory illness, or infection. Newborns who receive bottle feedings before beginning breastfeeding or who frequently use a pacifier may have trouble learning the proper tongue and jaw motions required for effective breastfeeding.

- c. Difficulty latching onto the mother's breast may be due to flat or inverted nipples, breast engorgement, or incorrect positioning and breastfeeding technique. Early exposure to bottle feedings can predispose infants to "nipple confusion" or difficulty learning to attach to the breast correctly and effectively extract milk. A referral for lactation counseling should be made.

- d. Inadequate stooling or less than 6 wet diapers are probable indicators that the breastfed infant is not receiving adequate milk. Not only is the baby at risk for failure to thrive, but the mother's milk is at risk for rapidly diminishing due to ineffective removal of milk. The breastfed infant with inadequate caloric intake must be identified early and the situation remedied promptly to avoid long-term consequences of dehydration or nutritional deprivation. Although failure to thrive can have many etiologies, the most common cause in the breastfed infant is insufficient milk intake as a result of infrequent or ineffective nursing. Inadequate breastfeeding can be due to infant difficulties with latching on or sustaining suckling, use of a nipple shield over the mother's nipple, impaired let down of milk, a non-demanding infant, excessive use of a pacifier, or numerous other breastfeeding problems.

The literature regarding inadequate stooling varies widely in terms of quantification; this condition is best diagnosed by the pediatrician or other health care practitioner.

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Breastfeeding Complications or Potential Complications (Infants)

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Breastfeeding Complications or Potential Complications (Infants)

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Infant Up to 6 Months Old of WIC Mother or of a Woman Who Would Have Been Eligible During Pregnancy

**Definition/
cut-off value**

An infant < six months of age whose mother was a WIC Program participant during pregnancy or whose mother's medical records document that the woman was at nutritional risk during pregnancy because of detrimental or abnormal nutritional conditions detectable by biochemical or anthropometric measurements or other documented nutritionally related medical conditions.

**Participant
category and
priority level**

Category

Priority

Infants

II

Justification

Federal Regulations designate these conditions for WIC eligibility (3).

WIC participation during pregnancy is associated with improved pregnancy outcomes. An infant whose nutritional status has been adequately maintained through WIC services during gestation and early infancy may decline in nutritional status if without these services and return to a state of elevated risk for nutrition related health problems. Infants whose mother was at medical/nutritional risk during pregnancy, but did not receive those services, may also be thought of as a group at elevated risk for morbidity and mortality in the infant period (1, 2).

WIC participation in infancy is associated with lower infant mortality, decreased anemia for infants and improvements in growth (head circumference, height and weight). Infants on WIC are more likely to consume iron-fortified formula and cereal and less likely to consume cow's milk before one year, thus lowering the risk of developing iron deficiency anemia (1, 2).

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Breastfeeding Infant of Woman at Nutritional Risk

**Definition/
cut-off value** Breastfeeding infant of woman at nutritional risk

Participant category and priority level	Category	Priority
	Infants	I, II, or IV* * Must be the same priority as at-risk mother.

Justification A breastfed infant is dependent on the mother's milk as the primary source of nutrition. Lactation requires the mother to consume an additional 500 Kcal per day (approximately) as well as increased protein, calcium, and other vitamins and minerals (2, 1). Inadequate maternal nutrition may result in decreased nutrient content of the milk (1). Special attention should therefore be given to the health and nutritional status of breastfed infants whose mothers are at nutritional risk (4).

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Infant Born of Woman with Mental Retardation or Alcohol or Drug Abuse during Most Recent Pregnancy

**Definition/
cut-off value**

Infant born of a woman:

- diagnosed with mental retardation by a physician or psychologist as self- reported by applicant/participant/caregiver; or as reported or documented by a physician, psychologist, or someone working under physician's orders; or
- documentation or self-report of any use of alcohol or illegal drugs during most recent pregnancy

**Participant
category and
priority level**
Category
Priority

Infants

I

Justification

Cognitive limitation in a parent or primary caretaker has been recognized as a risk factor for failure to thrive (FTT) as well as for abuse and neglect. The retarded caretaker may not exhibit the necessary parenting skills to promote beneficial feeding interactions with the infant (1, 2). Maternal mental illnesses such as severe depression and maternal chemical dependency, also represent social risk factors for FTT. Chemical dependency is also strongly associated with abuse and neglect. In 22 States, 90% of caretakers reported for child abuse are active substance abusers (3). All of these maternal conditions may contribute to a lack of synchrony between the infant and mother during feeding and therefore interfere with the infant's growth process. Nutrient intake depends on the synchronization of maternal and infant behaviors involved in feeding interactions (2, 4).

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5. WIC Program Regulations; Sect. 246.7(e)(2)(ii).

Infant Born of Woman with Mental Retardation or Alcohol or Drug Abuse during Most Recent Pregnancy

Clarification Self-reporting of a diagnosis by a medical professional should not be confused with self-diagnosis, where a person simply claims to have or to have had a medical condition without any reference to professional diagnosis. A self-reported medical diagnosis (“My doctor says that I have/my son or daughter has...”) should prompt the CPA to validate the presence of the condition by asking more pointed questions related to that diagnosis.

801 Homelessness

**Definition/
cut-off value**

A woman, infant or child who lacks a fixed and regular nighttime residence; or whose primary nighttime residence is:

- a supervised publicly or privately operated shelter (including a welfare hotel, a congregate shelter, or a shelter for victims of domestic violence) designed to provide temporary living accommodations;
 - an institution that provides a temporary residence for individuals intended to be institutionalized;
 - a temporary accommodation of not more than 365 days in the residence of another individual; or
 - a public or private place not designed for, or ordinarily used as, a regular sleeping accommodation for human beings.
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**Participant
category and
priority level**

Category	Priority
Pregnant Women	IV or VII
Breastfeeding Women	IV or VII
Non-Breastfeeding Women	VI or VII
Infants	IV or VII
Children	V or VII

Justification

Homeless individuals comprise a very vulnerable population with many special needs. WIC Program regulations specify homelessness as a predisposing nutrition risk condition. Today's homeless population contains a sizeable number of women and children – over one-third of the total homeless population in the U.S. Studies show forty-three percent of today's homeless are families, and an increasing number of the "new homeless" include economically-displaced individuals who have lost their jobs, exhausted their resources, and recently entered into the ranks of the homeless and consider their condition to be temporary.

References

WIC Program Regulations; Sect. 246.7(e)(2)(iv).

802 Migrancy

**Definition/
cut-off value**

Categorically eligible women, infants and children who are members of families which contain at least one individual whose principal employment is in agriculture on a seasonal basis, who has been so employed within the last 24 months, and who establishes, for the purposes of such employment, a temporary abode.

**Participant
category and
priority level**

Category	Priority
Pregnant Women	IV or VII
Breastfeeding Women	IV or VII
Non-Breastfeeding Women	VI or VII
Infants	IV or VII
Children	V or VII

Justification

Data on the health and/or nutritional status of migrants indicate significantly higher rates or incidence of infant mortality, malnutrition, and parasitic disease (among migrant children) than among the general U.S. population. Therefore, migrancy has long been stipulated as a condition that predisposes persons to inadequate nutritional patterns or nutritionally related medical conditions.

References

WIC Program Regulations; Sect. 246.7(e)(2)(iv).

901 Recipient of Abuse

**Definition/
cut-off value**

Battering or child abuse/neglect within past 6 months as self-reported, or as documented by a social worker, health care provider or on other appropriate documents, or as reported through consultation with a social worker, health care provider, or other appropriate personnel.

"Battering" generally refers to violent physical assaults on women.

Child abuse/neglect: "Any recent act or failure to act resulting in imminent risk of serious harm, death, serious physical or emotional harm, sexual abuse, or exploitation of an infant or child by a parent or caretaker (1)."

If State law requires the reporting of known or suspected child abuse or neglect, WIC staff must release such information to appropriate State officials. WIC regulations pertaining to confidentiality do not take precedence over such State law.

**Participant
category and
priority level**

Category

Priority

Pregnant Women	IV or VII
Breastfeeding Women	IV or VII
Non-Breastfeeding Women	VI or VII
Infants	IV or VII
Children	V or VII

Justification

Battering during pregnancy is associated with increased risks of low birth weight, pre-term delivery, and chorioamnionitis, as well as poor nutrition and health behaviors. Battered women are more likely to have a low maternal weight gain, be anemic, consume an unhealthy diet, and abuse drugs, alcohol, and cigarettes.

Serious neglect and physical, emotional, or sexual abuse have short- and long-term physical, emotional, and functional consequences for children. Nutritional neglect is the most common cause of poor growth in infancy and may account for as much as half of all cases of non-organic failure to thrive.

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Woman or Infant/Child of Primary Caregiver with Limited Ability to Make Feeding Decisions and/or Prepare Food

**Definition/
cut-off value** Woman (**pregnant, breastfeeding, or non-breastfeeding**), or infant/child whose primary caregiver is assessed to have a limited ability to make appropriate feeding decisions and/or prepare food. Examples may include individuals who are:

- ≤ 17 years of age;
- mentally disabled/delayed and/or have a mental illness such as clinical depression (diagnosed by a physician or licensed psychologist);
- physically disabled to a degree which restricts or limits food preparation abilities; or
- currently using or having a history of abusing alcohol or other drugs.

Participant category and priority level	Category	Priority
	Pregnant Women	IV or VII
	Breastfeeding Women	IV or VII
	Non-Breastfeeding Women	VI or VII
	Infants	IV or VII
	Children	V or VII

Justification The mother or caregiver ≤ 17 years of age generally has limited exposure and application of skills necessary to care for and feed a total dependent. Cognitive limitation in a parent or primary caregiver has been recognized as a risk factor for failure to thrive, as well as for abuse and neglect. The mentally handicapped caregiver may not exhibit the necessary parenting skills to promote beneficial feeding interactions with the infant. Maternal mental illnesses such as severe depression and maternal chemical dependency are also strongly associated with abuse and neglect. In 22 states, 90% of caregivers reported for child abuse are active substance abusers. Certain physical handicaps such as blindness, para- or quadriplegia, or physical anomalies restrict/limit the caregiver's ability to prepare and offer a variety of foods. Education, referrals and service coordination with WIC will aid the mother/caregiver in developing skills, knowledge and/or assistance to properly care for a total dependent.

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 5. WIC Program regulations; Sect. 246.7(e)(2).
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Foster Care

**Definition/
cut-off value** Entering the foster care system during the previous six months or moving from one foster care home to another foster care home during the previous six months.

Participant category and priority level	Category	Priority
	Pregnant Women	IV or VII
	Breastfeeding Women	IV or VII
	Non-Breastfeeding Women	VI or VII
	Infants	IV or VII
	Children	V or VII

Justification "Foster children are among the most vulnerable individuals in the welfare system. As a group, they are sicker than homeless children and children living in the poorest sections of inner cities." This statement from a 1995 Government Accounting Office report on the health status of foster children confirms research findings that foster children have a high frequency of mental and physical problems, often the result of abuse and neglect suffered prior to entry into the foster care system. When compared to other Medicaid-eligible children, foster care children have higher rates of chronic conditions such as asthma, diabetes and seizure disorders. They are also more likely than children in the general population to have birth defects, inadequate nutrition and growth retardation including short stature.

Studies focusing on the health of foster children often point out the inadequacy of the foster care system in evaluating the health status and providing follow-up care for the children for whom the system is responsible. Because foster care children are wards of a system which lacks a comprehensive health component, the social and medical histories of foster children in transition, either entering the system or moving from one foster care home to another, are frequently unknown to the adults applying for WIC benefits for the children. For example, the adult accompanying a foster child to a WIC clinic for a first-time certification may have no knowledge of the child's eating patterns, special dietary needs, chronic illnesses or other factors which would qualify the child for WIC. Without any anthropometric history, failure to grow, often a problem for foster children, may not be diagnosed even by a single low cutoff percentile.

Since a high proportion of foster care children have suffered from neglect, abuse or abandonment and the health problems associated with these, entry into foster care or moving from one foster care home to another during the previous six months is a nutritional risk for certification in the WIC Program. Certifiers using this risk should be diligent in evaluating and documenting the health and nutritional status of the foster child to identify other risks as well as problems that may require follow-up or referral to other health care programs. This nutritional risk cannot be used for consecutive

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certifications while the child remains in the same foster home. It should be used as the sole risk criterion only if careful assessment of the applicant's nutritional status indicates that no other risks based on anthropometric, medical or nutritional risk criteria can be identified.

The nutrition education, referrals and service coordination provided by WIC will support the foster parent in developing the skills and knowledge to ensure that the foster child receives appropriate nutrition and health care. Since a foster parent frequently has inadequate information about a new foster child's health needs, the WIC nutritionist can alert the foster parent to the nutritional risks that many foster care children have and suggest ways to improve the child's nutritional status.

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Environmental Tobacco Smoke Exposure

(also known as passive, secondhand or involuntary smoke)

**Definition/
cut-off value** Environmental tobacco smoke (ETS) exposure is defined (for WIC eligibility purposes) as exposure to smoke from tobacco products inside the home. *(1,2,3)

* See Clarification for background information.

Participant category and priority level	Category	Priority
	Pregnant Women	I
	Breastfeeding Women	I
	Infants	I
	Children	III
	Non Breastfeeding Women	III, IV, V, VI

Justification ETS is a mixture of the smoke given off by a burning cigarette, pipe, or cigar (sidestream smoke), and the smoke exhaled by smokers (mainstream smoke). ETS is a mixture of about 85% sidestream and 15% mainstream smoke (4) made up of over 4,000 chemicals, including Polycyclic Aromatic Hydrocarbons (PAHs) and carbon monoxide (5). Sidestream smoke has a different chemical make-up than main-stream smoke. Sidestream smoke contains higher levels of virtually all carcinogens, compared to mainstream smoke (6). Mainstream smoke has been more extensively researched than sidestream smoke, but they are both produced by the same fundamental processes.

ETS is qualitatively similar to mainstream smoke inhaled by the smoker. The 1986 Surgeon General's report: *The Health Consequences of Involuntary Smoking. A Report of the Surgeon General* concluded that ETS has a toxic and carcinogenic potential similar to that of the mainstream smoke (7). The more recent 2006 Surgeon General's report, *The Health Consequences of Involuntary Exposure to Tobacco Smoke: A Report of the Surgeon General*, reaffirms and strengthens the findings of the 1986 report, and expands the list of diseases and adverse health effects caused by ETS (8).

ETS is a known human carcinogen (2). Women who are exposed to ETS are at risk for lung cancer and cardiovascular diseases (9). Prenatal or postnatal ETS exposure is related to numerous adverse health outcomes among infants and children, including sudden infant death syndrome (SIDS) (10, 11), upper respiratory infections (12), periodontal disease (13), increased severity of asthma/wheezing (12), metabolic syndrome (14), decreased cognitive function (15), lower birth weight and smaller head circumference (16). Infants born to women exposed to ETS during pregnancy have a small decrease in birth weight and a slightly increased risk of intrauterine growth retardation compared to infants of unexposed women (17).

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Studies suggest that the health effects of ETS exposure at a young age could last into adulthood. These include cancer (18), specifically lung cancer (19, 20), and cardiovascular diseases (14, 21, 22,). There is strong evidence that ETS exposure to the fetus and/or infant results in permanent lung damage (23, 24, 25, 26).

ETS exposure increases inflammation and oxidative stress (27, 28, 29). Inflammation is associated with asthma (30), cardiovascular diseases (31, 32), cancer (33), chronic obstructive pulmonary disease (34), and metabolic syndrome (14, 35). PAHs are the major class of compounds that contribute to the ETS-related adverse health outcomes. These compounds possess potent carcinogenic and immunotoxic properties that aggravate inflammation.

Oxidative stress is a general term used to describe the steady state of oxidative damage caused by highly reactive molecules known as free radicals. The free radicals can be generated both during the normal metabolic process and from ETS and other environmental pollutants. When free radicals are not neutralized by antioxidants, they can cause oxidative damage to the cells. This damage has been implicated in the cause of certain diseases. ETS provokes oxidant damage similar to that of active smoking (36).

Antioxidants may modulate oxidative stress-induced lung damage among both smokers and non-smokers (22, 27-29, 37-40). Fruits and vegetables are the major food sources of antioxidants that may protect the lung from oxidative stress (1). Research indicates that consuming fruits and vegetables is more beneficial than taking antioxidant supplements (1). This suggests that other components of fruits and vegetables may be more relevant in protecting the lung from oxidative stress. Dietary fiber is also thought to contribute to the beneficial health effects of fruits and vegetables (1).

The Institute of Medicine (IOM) reports that an increased turnover in vitamin C has been observed in nonsmokers who are regularly exposed to tobacco smoke (41). The increased turnover results in lowered vitamin C pools in the body.

Although there are insufficient data to estimate a special requirement for non-smokers regularly exposed to ETS, the IOM urges those individuals to ensure that they meet the Recommended Dietary Allowance for vitamin C (36, 41).

The WIC food package supplements the participant intake of vitamin C. In addition, many WIC State Agencies participate in the WIC Farmers' Market Nutrition Program, which provides coupons for participants to purchase fresh fruits and vegetables. WIC Program benefits also include counseling to increase fruit and vegetable consumption, and to promote a healthy lifestyle, such as

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protecting participants and their children from ETS exposure. WIC staff may also make appropriate referrals to participants, and/or their caregivers, to other health and social services, such as smoking cessation programs.

Clarification

In a comprehensive scientific report, the Surgeon General concluded that there is no risk-free level of exposure to secondhand smoke (8). However, for the purpose of risk identification, the definition used for this risk criterion is based on the Centers for Disease Control and Prevention (CDC) Pediatric Nutrition Surveillance System (PedNSS) and the Pregnancy Nutrition Surveillance System (PNSS) questions to determine Environmental Tobacco Smoke (ETS) exposure:

1. Does anyone living in your household smoke inside the home? (infants, children)
2. Does anyone else living in your household smoke inside the home? (women)

Because the definition used by other Federal agencies for ETS exposure is specific to “inside the home” and has been validated (3), the definition used for WIC eligibility must also be as specific. In addition, FNS encourages the use of the PedNSS and PNSS ETS exposure questions for WIC nutrition assessment.

There are other potential sources of ETS exposure, such as work and day care environments. However, no other validated questions/definitions could be found that were inclusive of other environments and applicable to WIC.

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