

Section D. Nutrition Risk Manual



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| Page Number | High Risk | NRF # | Description | Priority | | | | | Auto Assign | No Regression |
|---|------------------------------|-------|---|----------|---|---|---|---|-------------|---------------|
| | | | | P | B | N | I | C | | |
| ANTHROPOMETRIC RISK FACTORS | | | | | | | | | | |
| | BMI < 18.5 | 101* | Underweight Women | 1 | 1 | 6 | | | X | X |
| | | 103a | Underweight or At Risk | | | | 1 | 3 | X | |
| | <5 th %ile (auto) | 103b | Underweight | | | | 1 | 3 | X | |
| | | 111* | Overweight Women | 1 | 1 | 6 | | | X | X |
| | | 113 | Overweight (Children Age 2-5) | | | | | 3 | X | |
| | | 114 | At Risk of Overweight | | | | 1 | 3 | X | |
| | | 121a | Length/Age 6 th -10 th %ile | | | | | | X | |
| | | 121b | Length/Age ≤5 th %ile | | | | | | X | |
| | X (auto) | 131* | Low Maternal Weight Gain | 1 | | | | | | X |
| | X (auto) | 132 | Wt Loss During Pregnancy | 1 | | | | | X | X |
| | | | | 1 | | | | | | |
| | P (auto) | 133* | High Maternal Weight Gain | 1 | 1 | 6 | | | X* | X |
| | X (auto) | 134 | Failure to Thrive | | | | 1 | 3 | | |
| | X (auto) | 135 | Inadequate Growth | | | | 1 | | X* | |
| | | | | | | | | 3 | | |
| | X (auto— infant) | 141a | Low Birth Weight | | | | 1 | 3 | X | X |
| | I (auto) | 141b | Very Low Birth Weight | | | | 1 | 3 | X | X |
| | X (auto) | 142 | Prematurity | | | | 1 | 3 | X* | X |
| | | | | | | | | | | X |
| | I (auto) | 151 | Small for Gestational Age | | | | 1 | 3 | | X |
| | X (auto) | 152 | Head Circumference < 5th | | | | 1 | | X | |
| | | 153 | Large for Gestational Age | | | | 1 | | X* | X |
| BIOCHEMICAL RISK FACTORS | | | | | | | | | | |
| | 3% below | 201 | Low Hematocrit | 1 | 1 | 4 | 1 | 3 | X | |
| | | 211 | Elevated Blood Lead Level | 1 | 1 | 6 | 1 | 3 | X | |
| CLINICAL/HEALTH/MEDICAL RISK FACTORS | | | | | | | | | | |
| | X (auto) | 301 | Hyperemesis Gravidarum | 1 | | | | | | X |
| | X (auto) | 302 | Gestational Diabetes | 1 | | | | | | X |
| | | 303 | Hx Gestational Diabetes | 1 | 1 | 6 | | | | |
| | | 304 | Hx of Preeclampsia | 1 | 1 | 6 | | | | |
| | | 311 | Hx of Preterm Delivery | 1 | 1 | 6 | | | | |
| | | 312 | Hx of Low Birthweight | 1 | 1 | 6 | | | X* | |
| | | 321a | Hx of Fetal/Neonatal Loss | 1 | | | | | | |
| | | 321b | Hx of Fetal/Neonatal Loss | | 1 | | | | | |
| | | 321c | Hx of Fetal/Neonatal Loss | | | 6 | | | | |
| | X (auto) | 331a | Pregnancy < 16 yr. at conception | 1 | 1 | 6 | | | X | |
| | | 331b | Pregnancy < 18 yr. at conception | | | | | | X | |
| | | 332 | Close Spaced Pregnancies | 1 | 1 | 6 | | | X | |
| | | 333 | High Parity and Young Age | 1 | 1 | 6 | | | X | |
| | 3rd Trimester | 334 | Lack of Prenatal Care | 1 | | | | | X | X |
| | P/B (auto) | 335 | Multifetal Gestation | 1 | 1 | 6 | | | X | X |
| | | | | 1 | | | | | | X |
| | X (auto) | 336 | Fetal Growth Restriction | 1 | | | | | | |
| | | 337 | Hx of Birth of LGA Infant | 1 | 1 | 6 | | | X* | |

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|--|-------------|------------|--|---|---|---|---|---|--|--|
| | | 338 | Pregnant and Currently BF | 1 | | | | | | |
| | NEW! | 339 | Hx of Birth w/ Nutrition Related Congenital or Birth Defect | | | | | | | |
| | X (auto) | 341 | Nutrient Deficit Disease | 1 | 1 | 4 | 1 | 3 | | |
| | X (auto) | 342 | GI Disorders | 1 | 1 | 4 | 1 | 3 | | |
| | X (auto) | 343 | Diabetes Mellitus | 1 | 1 | 4 | 1 | 3 | | |
| | | 344 | Thyroid Disorders | 1 | 1 | 6 | 1 | 3 | | |
| | | 345 | Hypertension | 1 | 1 | 6 | 1 | 3 | | |
| | X (auto) | 346 | Renal Disease | 1 | 1 | 4 | 1 | 3 | | |
| | X (auto) | 347 | Cancer | 1 | 1 | 4 | 1 | 3 | | |
| | | 348 | CNS Disorder | 1 | 1 | 6 | 1 | 3 | | |
| | | 349 | Congenital Disorders | 1 | 1 | 6 | 1 | 3 | | |
| | X (auto) | 351 | Metabolic Inborn Errors | 1 | 1 | 4 | 1 | 3 | | |

| Page Number | High Risk | NRF # | Description | Priority | | | | | Auto Assign | No Regression |
|-------------|-------------|-------|---------------------------|----------|---|---|---|---|-------------|---------------------|
| | | | | P | B | N | I | C | | |
| | | 352 | Infectious Diseases | 1 | 1 | 6 | 1 | 3 | | |
| | | 353 | Food Allergies | 1 | 1 | 6 | 1 | 3 | | |
| | | 354 | Celiac Disease | 1 | 1 | 6 | 1 | 3 | | |
| | | 355 | Lactose Intolerance | 1 | 1 | 6 | 1 | 3 | | |
| | | 356 | Hypoglycemia | 1 | 1 | 6 | 1 | 3 | | |
| | | 357 | Drug Nutrient Interaction | 1 | 1 | 6 | 1 | 3 | | |
| | P, B (auto) | 358 | Eating Disorders | 1 | 1 | 6 | | | | |
| | | 359 | Surgery, Trauma, Burns | 1 | 1 | 6 | 1 | 3 | | |
| | | 360 | Other Medical Conditions | 1 | 1 | 6 | 1 | 3 | | |
| | | 361 | Depression | 1 | 1 | 6 | | 3 | | |
| | | 362 | Developmental Delays | 1 | 1 | 6 | 1 | 3 | | |
| | | 363 | Pre-diabetes | | 1 | 6 | | | | |
| | | 371 | Maternal Smoking | 1 | 1 | 6 | | | X* | |
| | P (auto) | 372a | Alcohol Use | 1 | 1 | 6 | | | X | |
| | P (auto) | 372b | Illegal Drug Use | 1 | 1 | 6 | | | | |
| | | 381 | Dental Problems | 1 | 1 | 6 | 1 | 3 | | gingivitis of Preg. |
| | X (auto) | 382 | Fetal Alcohol Syndrome | | | | 1 | 3 | | |

DIETARY RISK FACTORS

| | | | | | | | | | | |
|--|--|----------|---------------------------------|---|---|---|---|---|--|--|
| | | 401 | Failure to Meet Diet Guidelines | 4 | 4 | 6 | | 5 | | |
| | | 411(a-k) | Inappropriate Nutrition (I) | | | | 4 | | | |
| | | 425(a-j) | Inappropriate Nutrition (C) | | | | | 5 | | |
| | | 427(a-e) | Inappropriate Nutrition (W) | 4 | 4 | 6 | | | | |
| | | 428 | Diet Risk/Feeding Practices | | | | 4 | 5 | | |

OTHER RISK FACTORS

| | | | | | | | | | | |
|--|---|--------|---------------------------|---|---|---|---|---|----|---|
| | | 501 | Possibility of Regression | | 7 | 7 | 7 | 7 | | X |
| | | 502 | Transfer of Certification | 1 | 1 | 6 | 1 | 3 | X | X |
| | | 601a-f | BF Mom of Infant-Prior 1 | | 1 | | | | X* | X |
| | | 601b | BF Mom of Infant Prior 2 | | 2 | | | | | X |
| | | 601e | BF Mom of Infant Prior 4 | | 4 | | | | | X |
| | X | 602a-h | BF Complications - Women | | 1 | | | | | |

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|--|---|--------|---------------------------|---|---|---|---|---|----|---|
| | X | 603a-d | BF Complications - Infant | | | | 1 | | | |
| | | 701 | Mom on WIC/Not on WIC | | | | 2 | | X* | ✗ |
| | | 702a-f | BF Infant of Mom-Prior 1 | | | | 1 | | | ✗ |
| | | 702b | BF Infant of Mom-Prior 2 | | | | 2 | | | ✗ |
| | | 702e | BF Infant of Mom-Prior 4 | | | | 4 | | | ✗ |
| | | 703 | Mom w/Ment Prob/Sub Use-I | | | | 1 | | | |
| | | 801 | Homelessness | 4 | 4 | 6 | 4 | 5 | X* | |
| | | 802 | Migrancy | 4 | 4 | 6 | 4 | 5 | X* | |
| | | 901 | Environmental Risk | 4 | 4 | 6 | 4 | 5 | | |
| | | 902 | Guardian-Lmt'd Fdg Skills | 4 | 4 | 6 | 4 | 5 | | |
| | | 903 | Foster Care | 4 | 4 | 6 | 4 | 5 | X | |
| | | 904 | Environ Tobacco Smoke Ex | 1 | 1 | 6 | 1 | 3 | X | |

*Auto Assigns in some cases. See complete risk factor explanation for more details.

*Risk Factors 101, 111, 131 and 133 will be effective by 8/15/10 and no later than 10/1/10.

Appendix A: Not Allowed Nutrition Risk Criteria.....261

VENA

Introduction

Value Enhanced Nutrition Assessment (VENA) is a new initiative from the United States Department of Agriculture's (USDA) Food and Nutrition Service (FNS) to improve nutrition services in the WIC Program. VENA provides WIC nutrition assessment guidance to enhance and ensure the collection and interpretation of accurate and relevant nutrition/health information - the first step in providing targeted and relevant nutrition services to WIC participants.

VENA is the bridge that connects WIC nutrition assessment to effective and appropriate nutrition intervention that best meets each participant's needs. It provides information and guidance to enable WIC staff to perform a quality WIC nutrition assessment that screens for nutrition risk criteria (anthropometric, biochemical, and dietary) as well as other health indicators (clinical/health/medical and predisposing risks). The collection of comprehensive, relevant nutrition assessment information is necessary to deliver meaningful nutrition services to WIC participants

A quality WIC nutrition assessment is a blending of art and science. It requires staff well-trained in communication, critical thinking skills, and fundamentals of assessment using a systematic approach to collect accurate and essential nutrition assessment information.

VENA is incorporated into the VISION computer system with starters and prompts at the bottom of each nutrition interview screen. Scroll through these to find the appropriate open-ended questions for the applicable nutrition interview section. It is necessary to complete all bolded questions and items in each nutrition interview screen to ensure accurate data reporting. Risk assignment between certification appointments is not required. If nutrition risks or other factors that impact nutritional

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status are identified after the initial certification visit, these may be documented in the certification file according to local agency policy.

The process of a quality WIC nutrition assessment includes:

1. Collecting accurate and essential information
2. Applying communication skills to foster openness and rapport with the participant
3. Organizing, synthesizing and evaluating the collected information
4. Drawing appropriate conclusions and relationships from the information collected
5. Identifying solutions, prioritizing the issues discovered, developing a plan of care
6. Documenting the information and conclusions concisely and accurately
7. Referring to other needed resources
8. Closing the loop – providing follow-up as necessary

Refer to the VENA Module(s) for further details.

General Counseling Guidelines

Introduction

The following general guidelines are outlined to assist you in counseling WIC participants. For counseling recommendations specific to a certain risk factor please refer to the risk factor section of this manual.

Remember to implement the goal setting process at every certification visit. The goal should be tailored to the needs of the individual or family.

| Anthropometric Assessment | |
|----------------------------------|--|
| Pregnant Women | <ul style="list-style-type: none">• Explain participant's BMI in relation to normal BMI• Explain amount and pattern for recommended weight gain (show Prenatal Weight Gain Grid)• Inform participant of benefits of appropriate prenatal weight gain, such as:<ul style="list-style-type: none">▪ better birth weight▪ lower overall risks (due to higher birth weight)▪ adequate energy and nutrient intake by mom provides for baby's healthy development• When appropriate, inform participant of consequences of poor prenatal weight gain, such as:<ul style="list-style-type: none">▪ fetal growth restrictions |

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| | <ul style="list-style-type: none"> ▪ smaller average birth weight ▪ poor neurobehavioral development ▪ possible increased risk of preterm delivery and shorter gestational duration <ul style="list-style-type: none"> • Encourage moderate physical activity with MD approval • Remember to check participant's weight at each visit |
| Breastfeeding & Postpartum Women | <ul style="list-style-type: none"> • Explain participant's BMI in relation to normal BMI • Explain benefits of achieving and maintaining a healthy body weight • Discuss with participant the importance of maintaining her own health and nutritional status • Encourage slow weight loss • If participant is overweight, discuss healthy weight loss strategies • Explain benefits of physical activity • Encourage moderate physical activity with MD approval |
| Infants & Children | <ul style="list-style-type: none"> • If necessary, adjust for prematurity on growth grid <ul style="list-style-type: none"> ▪ Corrected age = chronological age in weeks minus the number weeks premature at birth • Explain participant's weight for length (infants) or BMI (children) in relation to other infants/children of the same age and gender • Explain pattern for expected growth (following normal growth curve) <ul style="list-style-type: none"> ▪ Infants and children should follow an individually appropriate growth curve. • If weight is lower or higher than normal, discuss issues which may affect participant's weight status, such as: <ul style="list-style-type: none"> ▪ parental body composition ▪ recent illnesses ▪ developmental delays ▪ family eating patterns and eating habits ▪ cultural practices and values ▪ social/emotional issues related to food ▪ force feeding ▪ snacking habits ▪ time spent watching television ▪ excessive intake of high calorie beverages • If participant's weight is lower than normal, provide ideas for increasing calories and nutrients <ul style="list-style-type: none"> ▪ If appropriate, schedule follow-up to check weight • If participant's weight is higher than normal, explain to caregiver that the goal is to help the child achieve a recommended rate of growth, not to "put the child on a diet" |

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- Provide ideas to help parents choose nutritious foods and avoid high calorie/low nutrient foods
- Encourage regular family exercise
- Encourage participant's caregiver to limit amount of sedentary activities participant engages in (i.e. watching TV, playing videogames, etc.)

Laboratory Assessment

All Participants

- Explain participant's hematocrit/hemoglobin level in relation to expected level
- If participant's hematocrit/hemoglobin is low, explain that the test does not measure the iron level directly and does not distinguish between different types of anemia. However, since iron deficiency anemia is common among women and children, we would like to help improve their iron status and see if it helps improve their hematocrit/hemoglobin level.
- Review current dietary intake, including quality and quantity of high iron foods
- If level is low, ask if participant has been ill (upper respiratory tract infections, otitis media, and diarrhea can decrease hematocrit/hemoglobin levels)
- Recommend consumption of high iron foods
- Emphasize consumption of WIC foods high in iron (cereal, dry beans, peanut butter)
- Recommend consumption of good source of vitamin C with iron (example: WIC juice with cereal)
- If dietary intake is unlikely to meet iron needs, recommend that participant talk to her MD about taking an iron supplement
- If appropriate, schedule follow-up to check hematocrit/hemoglobin

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| Clinical/Health/Medical | |
| Pregnant Women | <ul style="list-style-type: none"> • Encourage regular prenatal care • Screen for any medical conditions • If a medical condition exists, recommend that participant seek appropriate medical care and/or follow recommendations of health care provider • Discuss benefits of breastfeeding • Inform participant of the breastfeeding resources that WIC provides • Refer to lactation counselor/educator and/or breastfeeding peer counselor, if appropriate |
| Breastfeeding & Postpartum Women | <ul style="list-style-type: none"> • Screen for any medical conditions • If a medical condition exists, recommend that participant seek appropriate medical care and/or follow recommendations of health care provider • Encourage and support breastfeeding • Provide information on any breastfeeding concerns participant may have • Inform participant of the breastfeeding resources that WIC provides • Review breastfeeding information appropriate to infant's age, including: <ul style="list-style-type: none"> ▪ frequency of feedings ▪ weight gain ▪ stooling patterns |

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| | <ul style="list-style-type: none"> ▪ growth spurts ▪ introduction of solids ▪ returning to work/school • Refer to lactation counselor/educator and/or breastfeeding peer counselor, if appropriate |
| Infants & Children | <ul style="list-style-type: none"> • Screen for any medical conditions • If a medical condition exists, recommend that participant seek appropriate medical care and/or follow recommendations of health care provider |
| Dietary/Nutrition Practices | |
| Pregnant Women | <ul style="list-style-type: none"> • Pregnant women may be particularly receptive to guidance regarding behaviors that may influence the developing fetus, so this is an excellent time to discuss general healthy eating habits. • Discuss recommended caloric intake for optimal weight gain during pregnancy • Counsel on basic prenatal nutrition • Educate on Listeriosis • Encourage participant to take prenatal vitamins with MD approval |
| Breastfeeding & Postpartum Women | <ul style="list-style-type: none"> • Explain recommended calorie intake <ul style="list-style-type: none"> ▪ Dietary intake should be well balanced and include all food groups in the Food Guide Pyramid. ▪ A breastfeeding woman needs to consume at least 1,800 calories per day. • Encourage participant to eat small, healthy snacks between meals • Encourage participant to take multivitamin with 400 micrograms folic acid every day throughout childbearing years, even if pregnancy is not planned <ul style="list-style-type: none"> ▪ Folic acid (folate) is one of the B vitamins that women need in their daily diet. <ul style="list-style-type: none"> ➤ It is used to build red blood cells and prevent certain types of anemias. ➤ Folic acid has also been shown to help prevent heart |

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| | <p>disease and colon cancer.</p> <ul style="list-style-type: none"> ➤ Men, women and children should consume at least 400 micrograms each day. ▪ This vitamin is even more important for a woman who could become pregnant. ▪ Taken before pregnancy it can help prevent birth defects such as neural tube defects (i.e. Spina Bifida). <ul style="list-style-type: none"> ➤ Neural tube defects are abnormalities of the spine which happen in the first 30 days after a woman becomes pregnant. ➤ In Utah, neural tube defects happen more often in women up to 30 years of age, after their first healthy baby. |
| Infants & Children | <ul style="list-style-type: none"> • Review current dietary intake and meal pattern • Review diet and meal/snack patterns appropriate for age • If necessary, tailor food package (see P&P for details on situations in which food package tailoring is appropriate) • Educate caregiver on best infant feeding practices to help infant maintain healthy weight, such as: <ul style="list-style-type: none"> ▪ breastfeed (discuss benefits) ▪ learn infant's hunger cues and feed when hungry ▪ watch sucking pattern and allow infant to slow and stop the feeding (don't force infant to finish the bottle or other foods) ▪ do not add cereal to the bottle • If infant is breastfeeding, assess: <ul style="list-style-type: none"> ▪ latch ▪ frequency of breastfeeding, length of feeds ▪ wet diaper output, etc. ▪ supplemental feeds ▪ need for additional assistance or support • If infant is being fed formula, assess: <ul style="list-style-type: none"> ▪ mixing and preparation ▪ intake (ounces) at feedings • Encourage caregiver to delay feeding solids until infant is developmentally ready • Review division of responsibility in food regulation: <ul style="list-style-type: none"> ▪ parents are responsible for what and when food is served ▪ children are responsible for what and how much they eat |
| All Participants | <ul style="list-style-type: none"> • Review Food Guide Pyramid • Discuss benefit of WIC foods • If necessary, tailor food package (see P&P for details on situations in which food package tailoring is appropriate) |

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| | <ul style="list-style-type: none"> • Provide special dietary guidelines on fish consumption <ul style="list-style-type: none"> ▪ Recommend that participant not eat shark, swordfish, king mackerel, or tilefish due to the high levels of mercury they contain ▪ Inform participant that she may eat up to 12 ounces a week of a variety of fish and shellfish that are lower in mercury such as, shrimp, canned light tuna, salmon, pollock, and catfish ▪ Explain that albacore tuna (i.e. “white”) tuna, has more mercury than canned light tuna; so participant should eat no more than 6 ounces of albacore tuna per week ▪ Instruct participant to check local advisories about the safety of eating fish caught by family and friends in local lakes, rivers, and costal areas; if no advisories exist, participant may eat up to 6 ounces (one average meal) per week of fish caught from local waters, but she should not eat any other fish during that week |
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Predisposing Risks

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| All Participants | <ul style="list-style-type: none"> • Refer to smoking cessation program if participant or anyone in his/her household smokes <ul style="list-style-type: none"> ▪ If participant smokes, explain potential risks associated with smoking during pregnancy, such as higher rates of: <ul style="list-style-type: none"> ➤ spontaneous abortions ➤ stillbirth ➤ bleeding during pregnancy ➤ placental complications (abruptio placenta, placenta previa) ➤ complications of labor (preterm labor, prolonged and premature rupture of the membranes) ➤ fetal growth restriction ➤ small for gestational age • Encourage participant to abstain completely from alcohol and illegal drugs • If participant is homeless or is a migrant, review food preparation and safety techniques appropriate for current living conditions <ul style="list-style-type: none"> ▪ Assign food package which accommodates participant’s current access to housing and refrigeration <ul style="list-style-type: none"> ➤ The “Homeless” food packages include UHT, evaporated, or powdered milk; canned juice; and canned beans ▪ Adjust food package monthly if needed |
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| | <ul style="list-style-type: none">• If domestic violence and/or child abuse/neglect occurs in the participant's household, refer to appropriate law enforcement and community agencies (Follow the procedures outlined in the P&P for documenting and reporting domestic violence and child abuse/neglect.) |
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Referrals

Introduction

Referrals are an integral component of the WIC Program. Helping participants find and use other resources in the community will help provide better total health care for them.

Referrals can be provided by informing the participant (verbally or written) of local agencies or services available for assistance. Agencies or services can be directly contacted for referral only with participant's prior approval. Document this in participant's chart.

Each WIC clinic must have a current listing of local referral agencies and services. Agencies and services on the listing may include Food Stamps, Family Employment Program, Medicaid (including income limits), Child Support Enforcement, substance abuse treatment, domestic violence, breastfeeding support, well child, immunizations, dental health, family planning, housing, Human Services, migrant services, transportation, and food banks.

This manual does not replace the mandatory clinic listing of local referral agencies and services. It is simply designed to provide WIC staff with information about some of the referral resources that may be available. You may refer participants to any appropriate community agency or organization. You are not limited to the referral resources listed in this manual. Keep in mind that available services may vary according to location.

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Baby Watch Early Intervention Services

Baby Watch is Utah's network of service for children ages birth to three with developmental delays or disabilities.

The program provides early identification and developmental services for families of infants and toddlers, aged birth to three. Some of the services offered include:

- A full assessment of a child's current health and development status.
- Service coordination among provider, programs, and agencies.
- Strategies to build on family concerns, priorities, and resources.
- Developmental services: occupational therapy, physical therapy, speech language therapy, etc.

These services are provided through the coordinated effort of parents, community agencies, and a variety of professionals. Places where services are provided include Baby Watch Centers, home, and community settings such as child care.

Children birth to three years of age who meet or exceed the definition of developmental delays in one or more of the following areas qualify for services.

- Physical development
- Vision and hearing
- Feeding and dressing skills
- Social and emotional development
- Communication and language
- Learning, problem solving, and play skills

For local phone numbers or more information visit <http://www.utahbabywatch.org/> .

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| Baby Your Baby | <p>This is a cooperative effort between the Utah Department of Health, Intermountain Health Care and KUTV 2News Fresh Air. The program was designed to provide helpful information for parents and their children. From financial help to preparing for pregnancy, Baby Your Baby has the answers. Through Medicaid and the Baby Your Baby program, financial help is available on a temporary basis to Utah women who are pregnant and do not have the money to pay for prenatal care. Call us at 1-800-826-9662.</p> <p>The Baby Your Baby toll-free hotline is open weekdays from 8:00 a.m. to 5:00 p.m. Operators can provide information, referrals and assistance in finding financial aid and access to community services.</p> |
| Boys & Girls Club | <p>In every community, boys and girls are left to find their own recreation and companionship in the streets. An increasing number of children are at home with no adult care or supervision. Young people need to know that someone cares about them.</p> <p>Boys & Girls Clubs offer that and more. Club programs and services promote and enhance the development of boys and girls by instilling a sense of competence, usefulness, belonging and influence.</p> <p>Boys & Girls Clubs are a safe place to learn and grow – all while having fun. They are truly The Positive Place For Kids.</p> <p>We offer <u>after-school programs</u> addressing educational achievement, career exploration, drug and alcohol avoidance, health and fitness, gang and violence prevention, cultural exploration, leadership development and community service. Call 1-800-854-CLUB to find the closest Boys & Girls Club.</p> |
| Catholic Community Services | <p>Our mission is to serve those most in need. Our goal is to alleviate human suffering by providing direct service programs for the poor, the disadvantaged and the elderly. Respect for the gift of life and the dignity of the individual are core values that underline the broad array of services that Catholic Community Services of Utah provides for people regardless of race, religion or other personal factors. Included in these services are the provision of:</p> <ul style="list-style-type: none">• food, clothing, day shelter and other assistance to the homeless;• resettlement and support of refugees and migrants;• nurturing and education for children;• services for the elderly and disabled;• residential assistance and counseling for people with substance abuse issues;• help for victims of domestic violence. <p>For more information visit http://www.ccsutah.org/index.html or</p> |

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| | <p>call (801) 977-9119.</p> |
| Child and Family Services | <p>Our primary goal is to prevent child abuse and neglect. We also investigate abuse and neglect. We offer foster care, youth services, and assistance with domestic violence.</p> <p>Please help us STOP child abuse and neglect. If you suspect abuse or neglect is occurring, call the Child Abuse/Neglect Hotline at (800) 678-9399.</p> <p>Call local law enforcement immediately if there is an emergency.</p> |

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| Children's Health Insurance Program (CHIP) | <p>This is a state health insurance plan for children. Many working Utah families who don't have other health insurance qualify for CHIP. CHIP covers:</p> <ul style="list-style-type: none">• Well-child exams• Immunizations• Health care provider visits• Health care provider services• Prescriptions• Hearing and eye exams• Mental health services• Dental services for prevention and treatment of tooth decay• Children qualify for CHIP based on income and family size. In addition, children must be:• under age 19• U.S. citizens or legal residents• not covered by other health insurance <p>Apply for CHIP during open enrollment. To find out when open enrollment will be held, watch and listen for TV, radio, and other announcements. You may also call 1-877-KIDS-NOW (1-877-543-7669) or visit http://www.utahchip.org/ .</p> |
| Children's Service Society (CSS) | <p>Our mission is to provide services which meet the developmental needs of children, promote quality child care and encourage positive relationships in biological and adoptive families.</p> <p>CSS professional social work services are offered to clients nationwide and include free, confidential, individual pregnancy counseling for women who are experiencing an unplanned pregnancy; prenatal classes for single women; parenting education classes; Grandfamilies: a support, information, and advocacy service for grandparents and other relatives who are raising their kin's children; infant and special needs adoption services for both birth parents and adoptive parents; and post-adoptive services including Connections: a confidential intermediary search and reunion service for biological family members; support groups for adopted children and teens; and individual therapeutic counseling for all members of the adoption triad.</p> <p>For more information call (800) 839-7444 or (877) 355-7444 or visit http://www.cssutah.org/contact.htm .</p> |

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| Department of Workforce Services | <p>We offer a wide variety of services such as:</p> <ul style="list-style-type: none"> • Child Care Services • Community Resources • DWS Eligibility Policy • Economic Information • Financial Services • Food Stamps • Guide to Federal Government Benefit Programs • Medical Assistance Programs • Training Services • Unemployment Insurance • Veteran Services • Women and Infant Children (WIC) |
| Disability Law Center | <p>This is a private non-profit organization designated by the Governor to protect the rights of people with disabilities in Utah.</p> <p>The work of the Disability Law Center focuses on four long-range goals:</p> <ol style="list-style-type: none"> 1. People with disabilities will be free from abuse and neglect. 2. People with disabilities will receive appropriate services. 3. People with disabilities will be free from discrimination. 4. People with disabilities will have equal employment opportunities. <p>Services are statewide and free of charge to all eligible individuals in Utah. Contact us at 1-800-662-9080 (Voice) or 1-800-550-4182 (TTY).</p> |
| Domestic Violence Information Line | <p>We provide a statewide toll-free information service to all communities within the state of Utah. We are committed to educating individuals about the dynamics of domestic violence and moving towards a violence free community.</p> <p>The Domestic Violence Information Line is committed to linking individuals with domestic violence issues to information and/or resources within their community. It is our goal to update and track services available to the community on a statewide basis. We are dedicated to linking individuals with counseling, shelters, safe houses, support groups, police, mental health services, human service agencies, legal services, victims assistance groups and more.</p> <p>The Information and Referral Center, a program of Community Services Council, a private nonprofit organization, implemented Utah's first and only statewide, toll-free Domestic Violence Information Line in October of 1993. The Domestic Violence</p> |

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| | <p>Information Line operates 8:30a.m. - 9:00p.m., daily. If you live in the state of Utah and you need information regarding domestic violence please call us at 1-800-897-LINK (5465).</p> |
| <p>Expanded Food and Nutrition Education Program (EFNEP) & Family Nutrition Program (FNP)</p> | <p>EFNEP & FNP are services of Utah State University Extension. They are unique national programs designed to reach limited resource audiences. The goal is to improve the nutrition, health, and well-being of families. They do all of the following:</p> <ul style="list-style-type: none"> • Provide education in cooperation with food assistance programs (food stamps, WIC, etc.) • Provide individual one-on-one education at home or in small group settings • Have nutrition assistants from similar background teach participants on their own level • Promote wise nutrition choices • Teach practical cooking skills • Teach menu planning, shopping skills, and budgeting skills |
| <p>Head Start</p> | <p>Head Start and Early Head Start are comprehensive child development programs that serve children from birth to age 5, pregnant women, and their families. They are child-focused programs and have the overall goal of increasing the school readiness of young children in low-income families.</p> |
| <p>Home Energy Assistance Target (HEAT) Program</p> | <p>The HEAT program is Utah's version of the federal LIHEAP program (Low Income Home Energy Assistance Program). This program provides winter utility assistance to low-income households targeting those who are truly vulnerable - the lowest-income households with the highest heating costs, the disabled, elderly, and families with preschool-age children.</p> <p>HEAT is not a welfare program. A family does not need to be receiving welfare in order to qualify for this program. It is a Federal Funded Energy Assistance Program that is operating through this office. Some facts about Utah's HEAT Program:</p> <ul style="list-style-type: none"> • Federally funded - Based on 125% of the Federal Poverty Rate • No length of residence requirement, but must be a permanent resident of the U.S. and Utah • Additional amounts are available for members of target groups such as the elderly (over 60), disabled, and families with a child under the age of six. • The Program runs from November 1st (or the nearest weekday) to March 31st (or the nearest weekday) • Serves approximately 33,000 Utah households each year • Services to clients are provided through local Community |

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| | <p>Action Programs, Association of Government Agencies, or other nonprofit agencies.</p> <ul style="list-style-type: none">• The Program is administered by the State of Utah through the Department of Community and Economic Development, Division of Community Development. <p>For more phone numbers or more information visit http://dced.utah.gov/community/heat.html .</p> |
| Immunization Program | <p>The mission of the Utah Department of Health Immunization Program is to improve the health of Utah's citizens through vaccinations to reduce illness, disability, and death from vaccine-preventable infections.</p> <p>The Utah Vaccines for Children (VFC) program provides vaccines to participating providers, for children who are: not insured, on Medicaid, Native American or Alaskan Native, or whose insurance doesn't cover immunizations. Find out if your doctor participates in the VFC program.</p> <p>In 1993, the "Every Child by Two" Immunization Taskforce in conjunction with the Utah Immunization Program and other sponsors, developed a mobile immunization clinic known as Care-A-Van. This mobile clinic was designed to help increase access to immunization services and primarily targets areas identified with low immunization levels or limited immunization services.</p> <p>The Care-A-Van travels throughout the state every February through October. Immunizations are free for children ages 0-35 months of age and are only \$5.00 per shot for all other children needing immunizations who meet VFC* eligibility guidelines. For more information, please contact the Utah Immunization Program at (801)538-9450 or Community Nursing Services at (801)233-6214. Or visit http://www.immunize-utah.org/public/evchild_caravan.htm .</p> |
| Job Corps | <p>Job Corps is a no-cost education and vocational training program administered by the U.S. Department of Labor that helps young people ages 16 through 24 get a better job, make more money and take control of their lives.</p> <p>At Job Corps, students enroll to learn a trade, earn a high school diploma or GED and get help finding a good job. When you join the program, you will be paid a monthly allowance; the longer you stay with the program, the more your allowance will be. Job Corps supports its students for up to 12 months after they graduate from the program.</p> |

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| | <p>To enroll in Job Corps, students must meet the following requirements:</p> <ul style="list-style-type: none">• Be 16 through 24;• Be a U.S. citizen or legal resident;• Meet income requirements;• Be ready, willing and able to participate fully in an educational environment. <p>Funded by the United States Congress, Job Corps has been training young adults for meaningful careers since 1964. Job Corps is committed to offering all students a safe, drug-free environment where they can take advantage of the resources provided.</p> <p>If you're interested in joining the Job Corps program or finding out more about it, call 1-800-733-JOBS (1-800-733-5627). An operator will provide you with general information about the program, refer you to the admissions counselor closest to where you live and mail you an information packet.</p> |
| La Leche League | <p>We believe breastfeeding gives the best possible start for good mothering and helps to develop and deepen the close relationship between a mother and her child. Leaders in your area have been accredited by La Leche League International and are qualified to answer a mother's questions about preparation and technique, as well as offer support on an informal mother-to-mother basis.</p> <p>"Our wish is that every woman anywhere in the world who wants to breastfeed her baby will have the information and support she needs to do so. Yes, breastfeeding is simple and natural and an exquisitely beautiful way to nurture a new life." -THE WOMANLY ART OF BREASTFEEDING</p> <p>For support, encouragement, or answers to your breastfeeding questions, call a La Leche League Leader anytime. In addition to individual phone help, La Leche League offers a monthly series of four meetings. Mothers to be, mothers (with infants and toddlers), and other women interested in learning more about the womanly art of breastfeeding are welcome to attend. You may begin attending at any meeting. Those who are pregnant will find it helpful to start attending La Leche League meetings before the baby arrives.</p> <p>These informal discussions with other breastfeeding mothers are led by an accredited La Leche League Leader, and include the following topics.</p> <ul style="list-style-type: none">• The Importance of Breastfeeding• The Baby Arrives: The Family and the Breastfeeding Baby• Meeting Breastfeeding Challenges |

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| | <ul style="list-style-type: none"> • Nutrition and Weaning |
| | <p>Available at the meetings is an excellent library containing books about breastfeeding, childbirth, nutrition, child care, and parenting. For more information call (801) 264-LOVE or visit http://www.Illusa.org/UT/Utah.html .</p> |
| LDS Family Services | <p>No one is immune from the challenges in this life. When social or emotional challenges arise, help is available.</p> <p>We provide:</p> <p>Birth Parent Services:</p> <ul style="list-style-type: none"> • Free counseling to birth parents and birth grandparents regardless of race or religion. • Birth parent support groups (where available). • Temporary housing for birth mothers who wish to live away from home during the pregnancy. • Medical and legal arrangements based on individual needs. • Continued schooling arrangements. • Adoption placement services tailored to the birth parent's needs, which may include the selection of adoptive parents, meetings, and exchanges of information. • Birth parents may call 1-800-537-2229 for a referral to the office nearest them. <p>Adoption Services:</p> <ul style="list-style-type: none"> • An in-depth qualification process prior to couples adopting. • Adoption education classes and support group. • A wide range of adoption plans. |

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| Medicaid | <p>We pay medical bills for people</p> <ul style="list-style-type: none"> • who qualify for a category of Medicaid • who have low income or cannot afford health care; • who have resources (assets) under the federal limit for the category of Medicaid. <p>An individual must qualify each month for continued coverage. The monthly income standard varies between approximately 55% and 133% of the Federal Poverty Level, depending on category. A person whose income exceeds the monthly income limit may be considered for the Medically Needy program. This program, also referred to as the "spenddown" program, allows a person who is otherwise eligible either to pay "excess" monthly income to the State of Utah or to accept responsibility for a portion of their monthly medical bills.</p> |
| National Runaway Switchboard | <p>Every day, between 1.3 and 2.8 million runaway and homeless youth live on the streets of America. One out of every seven children will run away before the age of 18.</p> <p>For Teens: Are you having problems at home? Are you thinking about running away? Have you already run away and need to find a place to stay, food, clothing, legal or medical assistance? Being a teenager isn't easy. We're here 24 hours a day. We're confidential and free. Whether you are in a crisis, have a friend who is in trouble, need statistics for a school report, or want ideas for spreading the word about our services, we can help. Talk to us. Call 1-800-RUNAWAY.</p> <p>For Parents: Being the parent of a teenager isn't easy. We're available 24 hours a day. We're confidential, and we're free. We can help. Talk to us. Call 1-800-RUNAWAY.</p> |
| Planned Parenthood | <p>Our mission is to promote responsible sexual behavior and to reduce the physical, emotional and social costs of unplanned and unwanted pregnancy, Planned Parenthood Association of Utah is committed to:</p> <p>Providing accurate information and education to individuals of all ages concerning the emotional and physical aspects of human sexual behavior and reproduction;</p> <ul style="list-style-type: none"> • Providing affordable, high-quality reproductive health care services; • Protecting and advocating for the rights of individuals to understand and manage their reproductive lives. <p>We also respect each individual's right to privacy, so our counseling</p> |

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| | <p>and services are always confidential. Some of the services we provide include:</p> <ul style="list-style-type: none"> • Providing various contraceptives • Breast exam • Pap test • Annual exam • HIV/AIDS testing and counseling • Pregnancy testing and counseling • Sexually transmitted infection testing and treatment • Urinary tract infection diagnosis and treatment |
| <p>The Pregnancy Resource Center</p> | <p>This is a non-profit, charitable organization dedicated to helping those who find themselves in an unexpected pregnancy. Free and confidential services include:</p> <ul style="list-style-type: none"> • Free pregnancy tests and peer-counseling • Support groups • Help for single moms • Temporary shelter • Adoption assistance • Medical and legal referrals • Abstinence programs • Material resources • Much more... <p>For more information call (801) 363-5433 or visit http://pregnancyresource.net/ .</p> |
| <p>Pregnancy RiskLine</p> | <p>This is a telephone service designed to provide accurate and current information about the effects of environmental exposures on pregnancy outcome and breastfed infant. The goal of the Pregnancy Riskline is to provide health care providers and consumers with accurate, up-to-date information regarding risks to a fetus or breastfed infant to prevent unjustified anxiety leading to unnecessary abortions, costly prenatal screening, diagnostics and testing of an exposed fetus or infant.</p> <p>Supervisors for the Pregnancy Riskline include the Chief of Medical Genetics Services and the Chief of Maternal-Fetal Medicine at the University of Utah Health Sciences Center and the Director of Community and Family Health Services at the Utah Department of Health. The Infectious Diseases as well as The Rocky Mountain Center for Occupational and Environmental Health and the Utah State Health Department Division of Epidemiology provide additional consultation to the Pregnancy Riskline.</p> <p>Call 1-800-822-2229. The service is available Monday through</p> |

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| | <p>Friday from 8:30 A.M. to 4:30 P.M. While the service is not emergency-oriented, if a line is busy, answering machines take messages allowing staff to re-contact callers. Staff will return messages after 6:00 P.M. on weekends.</p> |
| Primary Care Network (PCN) | <p>The Primary Care Network (PCN) is health coverage for adults who qualify. Applications are only accepted during enrollment sessions, which are held when resources are available to cover more people.</p> <p>To enroll, watch and listen for announcements about the next PCN enrollment session in the news or visit http://health.utah.gov/pcn/.</p> |
| Tobacco Quit Line | <p>This is a statewide telephone tobacco cessation service. It is designed to help Utahns quit using tobacco. The Quit Line was modeled after Group Health Cooperative's Free & Clear program. In a study Free & Clear and self-help materials improved quit rates by over one-half compared to people not using the program. The U.S. Public Health Service has also supported the effectiveness of telephone-based interventions. There are several levels of help, which are as follows:</p> <p>Level 1: Information and Referral This level is for those who might not be interested in stopping tobacco use right now but who want basic information. If interested, callers may be referred to local cessation programs. They also are sent a Quit Kit.</p> <p>Level 2: Brief Counseling This level is for adults who aren't ready to quit but want to talk with someone about it. They will speak to a trained Specialist for up to 15 minutes. The Specialist will help identify reasons for quitting and steps callers can take to be successful when they try to quit.</p> <p>Level 3: Single In-Depth Counseling Qualified adults who want to quit will talk to a trained Specialist for up to 45 minutes. The Specialist will discuss why, when, and how a person is using tobacco. They will help the person identify individual barriers to quitting. They will also help them develop strengths that will increase successful quitting. Callers may be referred to a local resource for more help. If interested, callers may enroll in the Level 4 option.</p> <p>Level 4: In-Depth Counseling with Follow-up The Quit Line's Intensive telephone program is for qualified adults who want follow-up. Participants receive four scheduled calls with a Specialist during your quit process. The Specialist spends time working with callers on improving the desire to quit. They will also cover the ways a person can stay quit.</p> |

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| | <p>Hours of operation: 6am-10pm Monday-Sunday Telephone Number: 1-888-567-TRUTH (or 1-888-567-8788) Spanish Telephone Number: 1-877-629-1585 TTY: 1-877-777-6534</p> |
| Utah Food Bank | <p>We gather and distribute emergency food to individuals and families experiencing the pain of hunger in Utah. Food is gathered and sorted in the Utah Food Bank warehouse and then distributed throughout the state to more than 260 food pantries, churches, senior centers, after school programs and group homes. Utah Food Bank Programs include:</p> <p>DROPS (Delivery Redistribution of Produce and Surplus): distributes fresh produce, dairy products, and day old bread to 24 sites in low-income neighborhoods throughout the state of Utah</p> <p>Brown Bag/Food Box Program: partners with Life Care Bank to deliver bags or boxes of highly nutritious produce, meat, and dairy products to elderly individuals with low incomes to supplement their food purchases</p> <p>Kids Café: provides three dinners each week for hundreds of at-risk children at seven low-income areas throughout Utah</p> <p>For more information visit http://www.csc-ut.org/foodbank.htm .</p> |
| Utah Legal Services (ULS) | <p>ULS is a nonprofit law office which provides legal help in non-criminal cases, free of charge, to those who qualify. ULS serves the entire state through a variety of locations and in 1990, Utah had more than 300,000 persons eligible for legal help from ULS.</p> <p>Utah Legal Services seeks to protect the rights of the disadvantaged and persons of limited means by legal representation, advocacy, and education throughout Utah.</p> <p>We take telephone calls Monday through Friday from 9:00 a.m. until 2:00 p.m. If you can call downtown Salt Lake City as a local call, dial 328-8891. Outside the Salt Lake valley, please call 1-800-662-4245 toll free.</p> <p>When you have a legal problem that ULS can help you with, the most important thing is to contact us as soon as possible. The earlier you contact us, the easier it will be for both you and us because it will give us more time to help you.</p> |

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| Utahns Against Hunger (UAH) | <p>While the challenge of ending hunger looms large and seems impossible, UAH believes that hunger can end. UAH works to eliminate hunger in a number of ways:</p> <ul style="list-style-type: none">• Working with emergency food pantries, providing them with information to assist their clients• Expansion of child nutrition programs• Work to improve the implementation of public policy in federal nutrition programs, as well as monitoring program effectiveness and ease of access• Statewide distribution of resource information tailored for each region• Direct service, providing a comprehensive list of emergency food pantries to the community as well as assisting people with food stamp problem resolution <p>To obtain lists of emergency food banks throughout the state call 1-800-453-FOOD (3663).</p> |
| Utah Poison Control | <p>This is a 24-hour resource for poison information, clinical toxicology consultation and poison prevention education. Contacting the Utah Poison Control Center is free and confidential. Nationally Recognized as a Certified Regional Poison Control Center by the American Association of Poison Control Centers (AAPCC), UPCC is one of 50 centers with such distinction. Call 1-800-222-1222.</p> <p>There is no such thing as a dumb question. Specialists answer calls about the following types of substances and much more!</p> <ul style="list-style-type: none">• Medications• Herbal supplements• Cleaning substances• Cosmetics and personal care products• Plants and mushrooms• Snake bites and bee stings• Chemicals in the home, workplace or environment• Automotive products• Pesticides• Drug overdoses |
| Utah Transit Authority (UTA) | <p>Call and tell us where you want to go; and we'll tell you what bus and TRAX trains to take. 1-888-743-3882. (Yes, we speak Spanish!)</p> |

Nutrition Risk

Nutrition risk is a requirement for certification in the WIC Program. It is defined broadly by Public Law 94-105 as, “(a) detrimental or abnormal nutritional conditions detectable by biochemical or anthropometric measures, (b) other documented nutritionally related medical conditions, (c) dietary deficiencies that impair or endanger health, (d) conditions that predispose persons to inadequate nutritional patterns or nutritionally related medical conditions.” (WIC Nutrition Risk Criteria, A Scientific Assessment, Institute of Medicine, National Academy Press, Washington, D.C., 1996) The general categories of nutrition risk include:

- Anthropometric
- Biochemical
- Clinical/Health/Medical
- Dietary
- Other

RISC is the National Risk Identification and Selection Collaborative which is made up of appointed federal and state representatives. The purpose of RISC is to develop, review, research, and update each of the risks on a cyclic basis in response to emerging research. Each state WIC agency is allowed to determine which nutrition risks are to be considered “high risk” and which risks are to be considered “low risk”. The Institute of Medicine (IOM) recommends that nutrition risks that have a strong relationship to risk and potential to benefit from the services of the WIC Program be considered high risk.

Nutrition Risk Assessment

Nutrition risk assessment is critical to the operation of the WIC Program. It is essential for determining program eligibility. Nutrition risk assessment involves the use of a risk criterion which consists of a risk indicator and a cut-off point. According to the IOM, “a risk indicator is any measurable characteristic or circumstance that is associated with an increased likelihood of poor outcomes, such as poor nutrition status, poor health, or death” (Summary Report, 1996). The cutoff point represents a specific measurable value or the existence of a condition. Nutrition risk assessments are conducted by Competent Professional Authorities (CPAs) as defined by Federal Regulations. The process of nutrition risk assessment involves review of the general categories of nutrition risk including, anthropometric, biochemical, clinical/health/medical, dietary, and other.

Please note in the specific risk definitions that follow certain risk factors have “a” and “b” delineations to indicate whether it is auto-assigned or manually selected for certain categories.

101 Underweight Women

Definition/cut-off value

Pregnant Women:

- prepregnancy Body Mass Index (BMI) < 18.5

Non-Breastfeeding Women:

- current Body Mass Index (BMI) < 18.5

Breastfeeding Women Who Are <6 Months Postpartum:

- current Body Mass Index (BMI) < 18.5

Breastfeeding Women Who Are > or equal to 6 Months postpartum:

- current Body Mass Index (BMI) < 18.5

Note: A BMI table is included in this section 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.

Participant category and priority level

| Category | Priority | High Risk |
|-------------------|----------|--------------------|
| Pregnant | I | BMI < 18.0 18.5 |
| Breastfeeding | I | N |
| Non-Breastfeeding | VI | N |

Parameters for auto assign

Will be auto assigned if prepregnancy BMI is < 18.5

Will be auto assigned for postpartum and breastfeeding women if current BMI is <18.5

~~Will be auto assigned as high risk if prepregnancy BMI is < 18~~

High Risk Flag

For pregnant women who have a prepregnant BMI < 18.5, it is necessary to manually select the high risk box in the VISION risk screen.

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.

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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 longterm 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 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 of which need to be addressed.

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) infants, 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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Justification for high risk

Because she is **Due to** beginning her **the** pregnancy underweight, she **the participant** is at increased risk of having a low weight gain during pregnancy. **Low pre-pregnancy BMI and low weight gain in the 2nd and 3rd trimester significantly increases risk for interuterine growth retardation and may increase risk for preterm delivery.** WIC can provide individual counseling on diet and weight gain, helping the participant gain an appropriate amount of weight, and increasing the baby's birth weight.

Additional counseling guidelines

Pregnant participants:

- Inform of risks to infant, such as:
 - low birth weight
 - fetal growth restriction
 - perinatal mortality
 - **preterm delivery**
- Inform of risks to mother, such as:
 - antepartum hemorrhage
 - premature rupture of membranes
 - anemia
 - endometritis
 - cesarean delivery

| 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.

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USDA 2/02

High Risk References

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103 Underweight or At Risk of Becoming Underweight

Definition/cut-off value

103a

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*

103b

Underweight

Birth to 2 years:

- ≤ 5th percentile weight for length*

2 -5 years:

- ≤ 5th percentile Body Mass Index (BMI)-for-age*

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

Participant category and priority level

| Category | Priority | High Risk |
|----------|----------|------------------------|
| Infants | I | ≤ 5 th %ile |
| Children | III | ≤ 5 th %ile |

Parameters for auto assign

103a

Will be auto assigned if weight for length or BMI for age is less than between 6th and 10th percentile.

103b

Will be auto assigned if weight for length or BMI for age is $\leq 5^{\text{th}}$ percentile.

High Risk Flag

Will be auto assigned as high risk if weight for length or BMI is $\leq 5^{\text{th}}$ percentile.

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 $< 5^{\text{th}}$ percentile are in need of nutritional intervention, and b) many authors also view a child at $\leq 10^{\text{th}}$ 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).

Justification for high risk

A child whose weight for height is $\leq 5^{\text{th}}$ percentile is universally recognized as underweight and in need of nutrition intervention. The WIC nutritionist can help improve the nutritional status of this child by providing individual counseling and food package tailoring.

Additional counseling guidelines

- Discuss issues which may affect participant's weight status, such as:
 - parental body composition
 - recent illnesses
 - developmental delays
- Provide ideas for increasing calories if needed

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111 Overweight Women

Definition/cut-off value

Pregnant Women

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- prepregnancy Body Mass Index (BMI) ≥ 25
Non-Breastfeeding Women
- prepregnancy Body Mass Index (BMI) ≥ 25
Breastfeeding Women less than 6 Months Postpartum
- prepregnancy 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 which can be found in risk factor 101, 131, or 133. 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 | High Risk |
|-------------------------|----------|---|
| Pregnant | I | N BMI ≥ 30 |
| Breastfeeding Women | I | N |
| Non-Breastfeeding Women | VI | N |

Parameters for auto assign

Will be auto assigned for pregnant women when pre-pregnancy BMI ≥ 25

Will be auto assigned for postpartum and breastfeeding women who are less than 6 months postpartum when the pre-pregnancy BMI is ≥ 25

Will be auto assigned for breastfeeding women who are ≥ 6 months postpartum when the current BMI is ≥ 25

High Risk Flag

For pregnant women who have a pre-pregnancy BMI ≥ 30 , it is necessary to manually select the high risk box in the VISION risk screen.

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. For the overweight woman, emphasis should be on selecting food choices of high nutritional quality and

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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 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 is increasing 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.

Justification for high risk

~~Not applicable~~

Additional counseling guidelines

Pregnant participants:

- Inform of increased risks, such as:
 - diabetes mellitus
 - hypertension
 - blood clots
 - preterm birth
 - macrosomia
 - difficult labor
 - complications with C-Section
- Explain that weight-loss is not recommended during pregnancy
 - However, pregnancy is a good time to focus on healthy dietary and physical activity behaviors

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113 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)*

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

Participant category and priority level

| Category | Priority | High Risk |
|-----------------------------------|-----------------|------------------|
| Children (≥ 24 months of age) | III | N |

Parameters for auto assign

Will be auto assigned if BMI for age is ≥ 95th percentile

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.

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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).

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.

Justification for high risk

Not applicable

Additional counseling guidelines

- First step in weight control for most overweight children is not weight loss
 - Goal should be to maintain baseline weight or to gain weight at a slower rate
- Weight goals can be achieved through modest changes in diet and activity
 - Avoid short term diets or physical activity programs that promote rapid weight loss rather than long term changes
 - Emphasize the importance of the whole family making changes—not just the participant who is overweight!
 - Help caregiver to teach and model healthy attitudes toward food and physical activity without emphasizing body weight
- Help participant pick one or two goals to work on
 - Start slowly, and help participant monitor changes and progress
 - Suggested Diet Behavior goals could include:
 - healthy eating habits
 - eating three meals per day and choosing healthy, low calorie snacks
 - modestly reducing fat in the family's diet (Don't restrict fat in children less than 2 years of age.)
 - drinking low fat and non fat milk after the age of 2
 - limiting the consumption of high sugar foods like soda and juice (Do not forbid sweets and desserts. Emphasize moderation.)
 - being aware of portion sizes, especially high fat and high sugar foods
 - limit the frequency of high calorie fast food meals
 - eating a variety of foods by introducing new foods often
 - drinking more water
 - engaging in physical activities that the whole family enjoys
 - reducing the time in front of the TV (Limit TV and computer games to no more than 1 to 2 hours per day)

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114 At Risk of Becoming Overweight

Definition/cut-off value

Having one or more risk factors for being at-risk of becoming overweight

The risk factors are limited to:

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- Being ≥ 24 months of age and $\geq 85^{\text{th}}$ and $< 95^{\text{th}}$ percentile Body Mass Index (BMI) *.
- Being < 12 months of age and born to a woman who was obese (BMI ≥ 30) at the time of conception or at any point in the first trimester of the pregnancy.
 - BMI based on self reported, by the mother, prepregnancy weight and height, **or**
 - Measured weight and height documented by staff or other health care provider

114 b

- Being ≥ 12 months of age and having a biological mother who is obese (BMI ≥ 30) at the time of the child's certification.
 - BMI based on self reported, by the mother, weight and height, **or**
 - Weight and height measurements taken by staff at the time of certification
- Note: If the mother is pregnant or has had a baby within the past 6 months, use pre-pregnancy weight to assess for obesity.

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

Participant category and priority level

| Category | Priority | High Risk |
|----------|----------|-----------|
| Infants | I | N |
| Children | III | N |

Parameters for auto assign

Will be auto assigned if ≥ 24 months of age and BMI is ≥ 85 and < 95 percentile

Will be auto assigned if mother is active WIC participant

AND

if < 12 months of age and mother has a BMI ≥ 30 at time of conception or at any point in the first trimester of the pregnancy.

Must be manually assigned when ≥ 12 months of age and having a biological mother who is obese (BMI ≥ 30) at the time of the child's certification.

- BMI based on self reported, by the mother, weight and height, or
- Weight and height measurements taken by staff at time of certification

Justification

The rise in the prevalence of overweight in children and adolescents in the United States is one of the most important public health issues we face today. National surveys from the mid-1960s to the early 1990s document a significant increase in overweight among children from preschool age through adolescence. These trends parallel a concurrent increase in obesity among adults, suggesting that fundamental

shifts are occurring in dietary and/or physical activity behaviors that are having an adverse effect on overall energy balance.

Specific reasons for the rapid rise in obesity in the United States are not well understood. Important contributors include a large and growing abundance of calorically dense foods and an increased sedentary lifestyle for all ages. Evidence from recent scientific studies has shown that obesity tends to run in families, suggesting a genetic predisposition. However, a genetic predisposition does not inevitably result in the development of obesity. Environmental, social and other factors mediate the relationship.

In any individual, and in the same individual at different times of life, the relative influence of genetics, environment, and development may vary. In other words, individuals with an otherwise genetic predisposition to obesity still may be lean in an environment of food scarcity or high demand for physical activity; while individuals not genetically predisposed may become obese in an environment

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that encourages over-consumption (especially of calorically dense foods) and includes few inducements to physical activity.

Children 2 years of age and older with a BMI at the 85th-94th percentile are at risk of overweight while those with a BMI at or above the 95th percentile are overweight. Adults with a BMI greater than or equal to 30 are obese while those with a BMI at or greater than 40 are classified as extremely obese.

Increasingly, attention is being focused on the need for comprehensive strategies that focus on preventing overweight/obesity and a sedentary lifestyle for all ages. Scientific evidence suggests that the presence of obesity in a parent greatly increases the risk of overweight in preschoolers, even when no other overt signs of increasing body mass are present.

The WIC Program has the opportunity to become an important player in public health efforts to curb the increasing spread of obesity by actively identifying and enrolling infants and children who may be at-risk of becoming overweight in childhood or adolescence, and assisting them and their families in making dietary and lifestyle changes necessary to reduce their risk factors. The issue of a child being at risk of overweight may cause some families to feel embarrassed; therefore, it is extremely important for WIC staff to treat these families with sensitivity and compassion. Appropriate nutrition education emphasizing the importance of prevention (addressing both feeding/eating behaviors and physical activity), food choices within the food prescriptions, and appropriate referrals provided through WIC would benefit not only the at-risk infants and children, but also their families.

For this criterion, the definition of parental obesity (BMI \geq 30) applies to all parents, regardless of age (teen and adult). Although there are recommended obesity BMI cut-point specific for sex and age 2 – 18 year old (see reference #3), there is only a slight difference between these cut-points and the ones used to define obesity for an individual over 18 years of age. Based on the slight differences in cut-points and lack of research suggesting otherwise, RISC elected to use a single definition of parental obesity for ease in applying these criterion.

Justification for high risk

Not applicable

Additional counseling guidelines

- First step in weight control for most overweight children is not weight loss
 - Goal should be to maintain baseline weight or to gain weight at a slower rate
- Weight goals can be achieved through modest changes in diet and activity
 - Avoid short term diets or physical activity programs that promote rapid weight loss rather than long term changes
 - Emphasize the importance of the whole family making changes—not just the participant who is overweight!

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- Help caregiver to teach and model healthy attitudes toward food and physical activity without emphasizing body weight
- Help participant pick one or two goals to work on
 - Start slowly, and help participant monitor changes and progress
 - Suggested goals could include:
 - improving healthy eating habits
 - eating three meals per day and choosing healthy, low calorie snacks
 - modestly reducing fat in the family's diet (Don't restrict fat in children less than 2 years of age.)
 - drinking low fat and non fat milk after the age of 2
 - limiting the consumption of high sugar foods like soda and juice (Do not forbid sweets and desserts. Emphasize moderation.)
 - being aware of portion sizes, especially high fat and high sugar foods
 - limit the frequency of high calorie fast food meals
 - eating a variety of foods by introducing new foods often
 - drinking more water
 - engaging in physical activities that the whole family enjoys
 - reducing the time in front of the TV (Limit TV and computer games to no more than 1 to 2 hours per day.)

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Abbreviated Body Mass Index (BMI) Table

This table may be used to determine paternal (male or female) obesity (BMI \geq 30).

| Height | Inches | Weight (lbs) equal to BMI 30 |
|--------|--------|------------------------------|
| 4' 10" | 58 | 143 |
| 4' 11" | 59 | 148 |
| 5' 0" | 60 | 153 |
| 5' 1" | 61 | 158 |
| 5' 2" | 62 | 164 |
| 5' 3" | 63 | 169 |
| 5' 4" | 64 | 174 |
| 5' 5" | 65 | 180 |
| 5' 6" | 66 | 186 |
| 5' 7" | 67 | 191 |
| 5' 8" | 68 | 197 |
| 5' 9" | 69 | 203 |
| 5' 10" | 70 | 209 |
| 5' 11" | 71 | 215 |
| 6' 0" | 72 | 221 |
| 6' 1" | 73 | 227 |
| 6' 2" | 74 | 233 |
| 6' 3" | 75 | 240 |

Source: Evidence Report of Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults, 1998. National Institutes of Health/National Heart, Lung, and Blood Institute (NHLBI). Note: a complete BMI table is available on the NHLBI website: www.nhlbi.gov/guidelines/obesity/ob_home/htm

121 Length/Height \leq 10th Percentile

Definition/cut-off value

Short Stature

Birth to 2 years

- \leq 5th percentile length-for-age*

2 – 5 years:

- \leq 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 | High Risk |
|----------|----------|-----------|
| Infants | I | N |
| Children | III | N |

Parameters for auto assign

Will be auto assigned if length/height is \leq 10th percentile

Justification

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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).

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).

Justification for high risk

Not applicable

Additional counseling guidelines

- Discuss issues which may affect participant's growth:
 - caloric intake and quality of the diet
 - poverty and food insecurity
 - inadequate knowledge of appropriate diet
 - child neglect or abuse
 - illnesses or diseases which could affect growth
 - prematurity and birth weight
 - parental stature (mother's height may be best indicator)
 - cultural background (black and possibly Asian)
 - altitude
- Review current dietary intake and meal pattern
 - Look for deficiencies in calories, protein (particularly animal protein), zinc, vitamin A, iron, copper, iodine, calcium, and phosphorus

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131 Low Maternal Weight Gain

Definition/cut-off value

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:

| Prepregnancy Weight Groups | Definition (BMI) | Total Weight Gain Range (lbs) |
|----------------------------|------------------|-------------------------------|
| Underweight | < 18.5 | 28-40 |
| Normal Weight | 18.5 to 24.9 | 25-35 |
| Overweight | 25.0 to 29.9 | 15-25 |
| Obese | ≥ 30.0 | 11-20 |

Multi-fetal Pregnancies: See Justification for information.

Note: A BMI table is at the end of this section 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.

Participant category and priority level

| Category | Priority | High Risk |
|----------|----------|-----------|
| Pregnant | I | Y |

Parameters for auto assign

None

To manually assign risk 131, select the radio button 131 in the Anthropometrics panel or select 131 in the Risk panel.

The High Risk designation will automatically activate.

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).

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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).

Justification for high risk

Low gestational weight gain is associated with an increased risk of giving birth to a growth-retarded infant. This has important adverse consequences for subsequent somatic growth and neurobehavioral development. It also increases the risk of infant mortality. Some maternal characteristics associated with an increased risk of low gestational weight gain (< 6 lbs) occur in combination, e.g., low family income, black race, young age, unmarried status and low educational level, and are associated with short gestational duration and increased risk of premature delivery. WIC supplemental foods, nutrition education counseling, and environment for frequent monitoring of weight gain status, may improve infant outcomes.

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Additional counseling guidelines

- Discuss issues which may affect participant's weight gain:
 - perception of body weight gain
 - adequacy of food in the home
 - pattern of weight gain and birth outcomes in previous pregnancies
 - excessive exercise
 - environmental stressors
 - breastfeeding energy expenditure
- Counsel on ways to improve dietary intake, such as eating more high calorie/nutrient dense foods

Clarification

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

First Trimester: 0-13 weeks

Second Trimester: 14-26 weeks

Third Trimester: 27-40 weeks

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

BMI Table for Determining Weight Classification for Women (1)

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

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(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.

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. 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.
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.

USDA 2/0

132 Maternal Weight Loss During Pregnancy

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Definition/cut-off value

132a

Any weight loss below pregravid weight during 1st trimester

OR

132b

Weight loss of ≥ 2 pounds in the 2nd or 3rd trimesters (beginning the 14th week gestation)

Participant category and priority level

| Category | Priority | High Risk |
|----------|----------|-----------|
| Pregnant | I | Y |

Parameters for auto assign

Any weight loss below pregravid weight during 1st trimester

Must be manually selected if weight loss of ≥ 2 lbs in 2nd or 3rd trimester

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.

Justification for high risk

Low gestational weight gain is associated with an increased risk of giving birth to a growth-retarded infant. This has important adverse consequences for subsequent somatic growth, neurobehavioral development. It increases the risk of infant mortality. Some maternal characteristics associated with an increased risk of low gestational weight gain (< 6 lbs) occur in combination, e.g., low family income, black race, young age, unmarried status and low educational level, and are associated with short gestational duration and increased risk of premature delivery. WIC supplemental foods, nutrition education counseling, and environment for frequent monitoring of weight gain status may improve infant outcomes.

Additional counseling guidelines:

- Discuss issues which may affect participant's weight gain:
 - perception of body weight gain
 - adequacy of food in the home
 - pattern of weight gain and birth outcomes in previous pregnancies
 - excessive exercise

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- environmental stressors
- breastfeeding energy expenditure
- Counsel on ways to improve dietary intake, such as eating more high calorie/nutrient dense foods

References

1. Institute of Medicine: WIC Nutrition Risk Criteria: A Scientific Assessment; 1996; pp. 81-82.
2. Metropolitan Life Insurance Co.: New weight standards for men and women; 1959; 40:1-4.
3. Brown, Judith E., RD, MPH, PhD: Final Report on Prenatal Weight Gain Considerations for WIC; September 1998; commissioned by the Risk Identification and Selection Collaborative.
4. Centers for Disease Control and Prevention: Prenatal Nutrition Surveillance System User's Manual. Atlanta, GA: CDC; 1994; page 8-3.

133 High Maternal Weight Gain

Definition/cut-off value

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 pre-pregnancy 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 based on Body Mass Index (BMI) for singleton pregnancies, as follows:

| Prepregnancy Weight Groups | Definition | Total Weight Gain |
|----------------------------|------------------|-------------------|
| Underweight | BMI < 18.5 | > 40 lbs |
| Normal Weight | BMI 18.5 to 24.9 | > 35 lbs |
| Overweight | BMI 25.0 to 29.9 | > 25 lbs |
| Obese | BMI \geq 30.0 | > 20 lbs |

Multifetal 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,

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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 | High Risk |
|-------------------------|----------|-----------|
| Pregnant | I | Y |
| Breastfeeding | I | N |
| Non-Breastfeeding Women | VI | N |

Parameters for auto assign

None

To assign risk 133, select the radio button 133 in the Anthropometrics panel or select 133 in the Risk Panel.

The High Risk designation will automatically activate for the Pregnant category.

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)

Obesity is one of the most important long-term child outcomes related to high maternal weight gain. A small number of relatively large and recent epidemiologic studies show that higher 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 (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 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

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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 (4). 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 (4). 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.

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 (1). 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.

Justification for high risk

Very high gestational weight gain is associated with an increased rate of birth weight which is associated with an increased risk of fetopelvic disproportion, operative delivery, birth trauma, asphyxia and mortality. WIC's role to counsel pregnant women to achieve recommended weight gain, emphasize high nutritional quality foods, and monitor weight gain through frequent weight checks and visits, can lead to better birth outcomes.

Additional counseling guidelines

- Discuss benefits of appropriate weight gain:
 - healthier birth weight baby
 - decreased risk of subsequent obesity
 - less body fat to lose after delivery

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- easier to do physical activities
 - feel better psychologically
- Discuss risks of excessive weight gain:
 - increased risk for delivering high birth weight babies which can lead to complications (see justification section)
 - infants weighing > 9 lbs are at higher risk; > 9.5 lbs at increased mortality risk
 - increased risk of pregnancy induced hypertension, preeclampsia, toxemia
- Discuss ways to improve nutritional intake, such as:
 - decreasing high calorie/low nutrient-dense foods
 - eating more high fiber fruits and vegetables
 - paying attention to portion sizes
 - decreasing frequency of eating, if appropriate
 - low-fat recipes and cooking
 - cultural cooking choices
 - drinking more water
- Address behavioral factors:
 - eating environment (eating in front of the TV)
 - psychological factors (eating when feeling stressed or emotionally upset)
 - cultural factors (body perceptions)
 - substitution behaviors (leave the kitchen area and go outside)
 - “triggers” that stimulate eating (know them and have a plan)
 - participant’s readiness to change

Clarification

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

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

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

BMI Table for Determining Weight Classification for Women (1)

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| | | | | |
|-----|----------|-------------|-------------|----------|
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| 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.

References

1. Institute of Medicine. WIC nutrition risk criteria: a scientific assessment. National Academy Press, Washington, D.C.; 1996.
2. 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.
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. Brown JE and Carlson M. Nutrition and multifetal pregnancy. J Am Diet Assoc. 2000;100:343-348.

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.

USDA 2/02

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 | High Risk |
|----------|----------|-----------|
| Infants | I | Y |
| Children | III | Y |

Parameters for auto assign

Must be manually selected

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).

Justification for high risk

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Failure to thrive is a serious growth problem and, on occasion, can lead to severe forms of protein energy malnutrition (PEM) or micronutrient deficiency diseases. Failure to thrive can lead to developmental delays despite weight gain. WIC participation can help restore nutrition status, improve weight gain, and promote rehabilitation and growth/catch-up growth by providing key nutrients and nutrition counseling. The WIC setting can also provide immediate referral for nutrition and health intervention.

Additional counseling guidelines

- Discuss caregiver's understanding of FTT diagnosis
- Discuss factors that may be involved in growth failure, such as:
 - inadequate caloric intake
 - mother-infant interaction
 - Tactfully discuss parent/child interaction
 - Does caregiver respond to child's nutritional and emotional needs (educate on cues)
 - Remember, in many FTT cases, caregiver(s) are very tentative and not neglectful
 - swallowing problems - organic (CNS, cleft palate, etc.)
 - too sick or too tired to eat (e.g. cardiac conditions, cancer, etc.)
 - anorexia
 - spitting-up/vomiting
 - gastro esophageal reflux (GER)
 - diarrhea
 - May need to use lactose-free products after GI episodes
 - malabsorption
 - Illness or disease (gastrointestinal, endocrine, or other chronic disease)
 - genetic factors
 - formula intolerances, food preferences
 - secondary issues (e.g. medications)
 - unclear origin
- If appropriate, use disease specific growth charts for counseling (e.g. Down's Syndrome)
 - Explain expected and realistic growth pattern - maintaining or gradually increasing channels
 - Explain that frequent weight, height, OFC checks, are important in following growth
- Recommend rate of weight gain per week/month
- Provide basic dietary recommendations for optimal growth
 - recommend appropriate calorie level

| | |
|----------|-------------|
| < 3 mo | 120 kcal/kg |
| 3-5 mos | 115 kcal/kg |
| 6-8 mos | 110 kcal/kg |
| 9-11 mos | 105 kcal/kg |

(possibly based on IBW for catch-up growth)

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- If appropriate, explain standard mixing instructions for formula/medical nutritional products prescribed by health care provider (see Product Guide)
 - Refer participant to MD for any special written instructions for mixing
 - Identify if nutritional products are being tolerated or accepted
 - Refer to MD if not
- If appropriate, discuss meal plan to balance use of nutritional product with solid foods
- Discuss meal scheduling
 - May need to add more snacks and meals OR
 - Offer foods only at mealtimes (Eliminate “grazing” to stimulate appetite.)
- Educate on increasing calorie concentration:
 - Give “calorie booster” or “power packing” idea
- Discuss modification of foods
 - May need to change textures, temperature, presentations
- Encourage physical activity if child is medically able
- For breastfeeding infants, discuss:
 - availability of adequate volume of breast milk
 - fatigue at feeds, good latch/suck
 - pumping, SNS use, bottle supplementation
 - number of feeds, length of time between feeds
 - (could use baby weight scales to measure volume intake)
- For premature infants use adjusted gestational age for solid food introduction

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.

USDA 4/04

135 Inadequate Growth

Definition/cut-off value

An inadequate rate of weight gain as defined below

135a

Infants from birth to 1 month of age:

- excessive weight loss after birth (> 8% lost from birth)
- not back to birth weight by 2 weeks of age

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- older infants up to 12 months of age according to minimum expected weight gain

135b

Children not gaining minimum expected weight gain based on table below.

Participant category and priority level

| Category | Priority | High Risk |
|----------|----------|-----------|
| Infants | I | Y |
| Children | III | Y |

~~This risk factor is **not autoassigned** for children and must be assessed at every certification visit by reviewing the growth charts, determining the amount of weight gained and referring to the table below. For infants from birth to 6 months of age and based on 2 weights taken at least 1 month apart, the infant's actual weight gain is less than the calculated expected minimal weight gain based on the table below. For infants and children from 6 months to 59 months of age and based on 2 weights taken at least 3 months apart, the infant's or child's actual weight gain is less than the calculated expected minimal weight gain based on the table below.~~

This risk factor is **not autoassigned in all cases** and must be assessed at every certification visit by reviewing the growth charts at the Anthropometrics panel or screen under "Assessment" in the VISION navigational tree. Determine the amount of weight gained. For infants from 1 month to 6 months of age and based on 2 weights taken at least 1 month apart, the infant's actual weight gain is less than the calculated expected minimal weight gain based on the table below. For infants and children from 6 months to 59 months of age and based on 2 weights taken at least 3 months apart, the infant's or child's actual weight gain is less than the calculated expected minimal weight gain based on the table below. When the expected minimal weight gain is less than the amount listed in the table below, select or check the 135 check box in the Anthropometrics panel.

| Age | Minimum Expected Weight Gain | | | |
|--------------|------------------------------|-------------|--------------|------------------|
| | Grams/Day | Ounces/Week | Ounces/Month | Pounds/Month |
| Birth – 1 mo | 18 | 4 | 19 | 1 lb 3 oz |
| 1 - 2 mos | 25 | 6 | 27 | 1 lb 11 oz |
| 2 - 3 mos | 18 | 4 | 19 | 1 lb 3 oz |
| 3 - 4 mos | 16 | 4 | 17 | 1 lb 1 oz |
| 4 - 5 mos | 14 | 3 | 15 | ----- |
| 5 - 6 mos | 12 | 3 | 13 | ----- |
| Age | Grams/Day | Ounces/Week | Ounces/Month | Pounds/ 6 Months |
| 6 - 12 mos | 9 | 2 ¼ | 9 ½ | 3 lb 10 oz |
| 12 – 59 mos | 2 ½ | .6 | 2.7 | 1 lb |

- Determine that minimal weight gain has not been achieved.
- Assess if any medications have been prescribed, and determine if there is a negative effect on appetite and caloric intake.

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- c. Write a HRCPP, and include a referral to a physician for medical assessment.
- d. Consult with the RD concerning dietary instruction and the follow up schedule in the WIC clinic.

Parameters for auto assign **None**

Autoassigned for an infant that is currently < one month of age if any weight recorded for the infant is $\leq 92\%$ of the birth weight.

Autoassigned for an infant that is currently < one month of age if any weight recorded after 2 weeks of age is less than the birth weight.

Must be manually selected

An inadequate rate of weight gain as defined below

Infants from birth to 1 month of age:

- Excessive weight loss after birth ($> 8\%$ lost from birth)
- Not back to birth weight by 2 weeks of age
- Older infants up to 12 months of age according to minimum expected weight gain

Must be manually selected

For children not gaining minimum expected weight gain

High Risk Flag

The High Risk designation will automatically activate for the Infant and Child category.

Justification

Weight for age is a sensitive indicator of acute nutritional inadequacy. The rate of gain during infancy, especially early infancy is rapid, and abnormalities in rate of weight may often be detected in just a few months. There is little question that decrease in the rate of weight gain during infancy is the earliest indication of nutritional failure. In contrast, children beyond infancy grow rather slowly, and many months of observation may be required to demonstrate that the rate of weight gain is unusually slow. During the first eighteen months of life, to change in weight fluctuates and then declines rapidly. Because of this deceleration it may be difficult to differentiate normal growth slowing from an abnormal rate. After 18 months weight gain becomes more linear so assessment becomes easier.

Infants and children with abnormally slow growth can benefit from nutrition and health interventions to improve weight and height gain. The diagnosis of slow growth must consider possible causes of growth changes including underfeeding and disease conditions. Underfeeding, for any number of reasons, and disease conditions are the main causes of abnormally slow growth. Factors associated with underfeeding by an infant or child include inadequate sources of nutrient dense foods; lack of social support for the caregiver; an adverse social and psychological environment; a disorganized family; depressed parents or caregivers; and the caregiver's lack of education, health and nutrition

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knowledge, mental and physical abilities, and responsibility for child care. There is good evidence that through nutrition education, supplemental foods, and referrals to other health and social services, participation in the WIC Program will benefit infants and children with slow growth. In keeping with the preventive nature, a cut-off point approximating the 10th percentile rate of change in weight for age was chosen.

Justification for high risk

Inappropriately low weight for stature provides a clear indication of recent malnutrition. The WIC environment provides for an excellent opportunity to identify a decline in growth through anthropometric monitoring and prevent deterioration through ongoing nutrition education and supplemental foods. Such intervention promotes catch-up growth in weight and other dimensions of growth. The participant can also benefit from additional nutritional and medical referrals.

Additional counseling guidelines

- Explain that height, weight, and OFC are indicators of growth and nutritional adequacy
 - Discuss factors affecting growth, such as:
 - family history of growth (e.g. height, weight, build of parents/siblings)
 - illness or sickness
 - possible decreased appetite or intake
 - increased caloric expenditure, e.g. fevers
- Explain that under-eating, for a variety of reasons (and disease conditions) are the main causes of abnormally slow growth
- Keep in mind that factors associated with under-eating may include:
 - lack of social support for the caregiver
 - adverse social and psychological environment
 - caregiver's lack of education, health and nutrition knowledge, mental and physical abilities
- For children, assess intake of non-nutritive foods/inappropriate choices
 - If appropriate, discuss ideas for "calorie boosting"

References

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2. Guo, S, Rouche, AF, Fomon, SF, Nelson, SE, Chumlea, WC, Rogers, RR, Baumgartner, RN, Zeigler, EE and Siervogel, RM: Reference data on gains in weight and length during the first two years of life; J Pediatr; 1991; 119:355-362
3. Institute of Medicine: WIC Nutrition Risk Criteria: A Scientific Assessment; 1996; pp. 123-124.

4. Fomon, Samuel, J.: Nutrition of Normal Infants; Mosby; 1993; pp. 47-51.

141 Low Birth Weight

Definition/ cut-off value

Low Birth Weight (LBW)

Birth weight defined as \leq 5 pounds 8 ounces (\leq 2500 g), for infants and children less than 24 months old

Very Low Birth Weight (VLBW)

Birth weight defined as \leq 3 pounds 5 ounces (\leq 1500 g), for infants and children less than 24 months old

Note: See "Guidelines for Growth Charts and Gestational Age Adjustments 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 | High Risk |
|----------------------------------|----------|-----------|
| Infants | I | Y |
| Children ($<$ 24 months old) | III | N |

Parameters for auto assign

Will be auto assigned for infants if birth weight is \leq 5 lbs 8 oz (141 a)

Must be manually assigned for children at 12 months of age and up to, but not including 24 months of age (141 b)

Justification

Low birth weight (LBW) 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).

Justification for high risk

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Low birth weight is associated with poor health, growth and development. It is the most important biologic predictor of infant death and deficiencies in physical and mental development. The consequences of low birth weight caused by IUGR and those caused by prematurity differ, however when combined with low birth weight they pose an increased risk. Extreme low birth weight are at a very high risk for long term neurobehavioral dysfunction and poor school performance. Infants must receive an optimal nutrient intake to survive, meet the needs for an extended period of rapid postnatal growth, and complete their growth and development. There is a potential to benefit from the WIC program through intervention that supports breastfeeding, provides nutrient dense foods, provides nutrition education and health referrals.

Additional counseling guidelines

- Explain low birth weight: LBW: <2500g, VLBW: <1500g, ELBW: <1000g
 - ELBW infants are at very high risk for long-term neurobehavioral dysfunction
 - LBW infants are at increased risk for poor health and growth and development, but risk lessens as child gets older
- Discuss importance of optimal nutrient intake to meet growth needs since infant is at higher risk
- Encourage breastfeeding, unless medically contraindicated
 - If necessary, provide breastfeeding assistance and support
- Medical monitoring by physician is necessary if infant is receiving formula with caloric content which is greater than 22 calories per ounce or if infant is receiving human milk fortifier (HMF)
 - If HMF is prescribed, stress importance of physician monitoring blood levels for certain nutrients including calcium, phosphorus, magnesium, sodium, vitamins A & D and possibly others
 - Medical monitoring is critical for ruling out potential toxicity/adverse effects associated with abnormal blood levels of these nutrients

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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142 Prematurity

Definition/cut-off value

142 a

Birth at \leq 37 weeks gestation for infants less than 12 months

142 b

Birth at \leq 37 weeks gestation for a child at 12 months of age and up to, but not including 24 months of age.

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 | High Risk |
|----------------------------------|----------|-----------|
| Infants | I | Y |
| Children ($<$ 24 months old) | III | N |

Parameters for auto assign

Will be auto assigned if:
mother is active WIC participant
AND
infant was born at least 3 weeks early based on EDD

Must be manually assigned for children

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).

Justification for high risk

Preterm infants have increased nutritional needs for the following.

- Protein

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- Calories
- Calcium, phosphorus and magnesium
- Sodium
- Zinc, copper and iodine
- Vitamin A
- Iron
- Water soluble vitamins because of higher protein requirements and reduced vitamin reserves associated with shortened gestation.

Preterm infants also need more frequent assessment of nutritional health and ongoing adjustment of nutritional intake throughout the neonatal period to ensure appropriate growth and development. Scientific research supports the fact that aggressive early nutrition intervention can improve growth outcomes in preterm infants. The postnatal period in the first year of life is critical for catch-up growth which can only occur if optimal nutrition support is being provided.

Additional counseling guidelines

- Encourage compliance with:
 - recommended feeding method (breast, bottle, gavage, parenteral, enteral)
 - supplementation of breastmilk or formula (HMF, high caloric density formula, vitamin/mineral supplementation)
 - pumping and/or mixing instructions
 - continued follow-up with health care provider(s)
- Calculate rate of weight gain if two weights are available:
 - appropriate growth is 20-25 gms (.75 to 1 oz) per day
- Assess current caloric and dietary intake
 - goal range is 110-150 kcal/kg/day
 - average intake is usually around 120 kcal/kg/day
- Contact MD for prescription if higher calorie formula or change in formula is warranted
 - Remember premature formulas must be vouchered monthly
- If mom is breastfeeding:
 - refer to a Lactation Educator and peer counselor
 - offer lots of support and encouragement
 - provide an electric pump if needed
- Remember that soy-based formulas are not recommended for premature infants (AAP).
- Refer to occupational therapist if needed (Oral aversion is very common due to prolonged use of TPN and/or tube feedings.)
- Assist parents in determining if their infant is ready for solid foods

References

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

USDA 4/04

151 Small for Gestational Age

Definition/ cut-off value

For infants and children < 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 | High Risk |
|-------------------------------|----------|-----------|
| Infants | I | Y |
| Children (< 24 months old) | III | N |

Parameters for auto assign

Must be manually selected

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.

Justification for high risk

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Infants who are SGA are likely to have permanent mild deficits in growth and neurocognitive development. They will benefit from individual nutrition counseling and growth assessment.

Additional counseling guidelines

- Explain potential risks of SGA:
 - higher mortality and morbidity rates
 - slower physical growth
 - possibly slower mental development
 - congenital abnormalities
 - long term deficit growth and neurocognitive development
- If also premature, HMF, or supplements of premature formula are recommended with the continuation of long term breastfeeding
- If breastfeeding is not possible or feasible, work with medical provider to provide formula tailored to meet infant's needs
- Explain appropriate calorie level and nutrient intake to encourage growth
- delay solids until the infant is developmentally ready

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.

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152 Low Head Circumference

Definition/ cut-off value

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< 5th percentile head circumference based on National Center for Health Statistics/ Centers for Disease Control and Prevention age/sex specific growth charts (2000)

Note: For premature infants, 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 | High Risk |
|----------|----------|-----------|
| Infants | I | Y |

Parameters for auto assign

Will be auto assigned if head circumference is < 5th percentile

Justification

Low head circumference (LHC) is related to a variety of genetic, nutrition, and health factors. Head size is also related to socioeconomic status, and the relationship is mediated in part by nutrition factors. Abnormal LHC is indicative of future nutrition and health risk, particularly poor neurocognitive abilities. LHC is associated with LBW and is a strong predictor of growth retardation and other dimensions of growth and development. However, LHC alone does not necessarily indicate an abnormal head size. The diagnosis of abnormal LHC must also be based on the presence of other evidence and knowledge of the causes of LHC (1).

Although WIC agencies may choose not to take head circumference measurements, referral data that indicates LHC may be used to assign the risk. LHC, whether determined by referral data or head circumference measurement, necessitates the appropriate referral and follow-up by WIC staff.

Justification for high risk

Poor nutrition affects weight, then height, then head circumference thus a small head circumference may indicate advanced malnutrition. An infant with low head circumference may also experience poor neurocognitive abilities and growth or developmental retardation which affect nutrition. An infant with a small head circumference may benefit from individual counseling follow-up by a Registered Dietitian.

Additional counseling guidelines

- Explore potential causes of low head circumference, such as:

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- malnutrition during critical stages of brain development (from early fetal life through approximately 3 months past delivery). Mother's prepregnancy weight, fat stores, and weight gain during pregnancy are correlated with head size.
- genetic disorders such as autosomal and sex chromosome abnormalities
- health factors including: PKU, exposure to neurotoxic substances, cocaine and alcohol use during pregnancy, intracranial hemorrhages, perinatal asphyxia, ischemic brain injury, and other major congenital CNS abnormalities
- Explain risks associated with low OFC:
 - poor neurocognitive abilities
 - lower IQ
 - growth or developmental retardation
 - increased morbidity
- Poor nutrition affects weight first, then height, then head circumference; thus a small head circumference may indicate advanced malnutrition
- Preterm, black, and Asian children may be smaller, but should not fall < 10th percentile

References

1. Institute of Medicine. WIC nutrition risk criteria a scientific assessment. Washington (DC): National Academy Press; 1996. p. 114.

USDA 4/04

153 Large for Gestational Age

Definition/ cut-off value

Birth weight \geq 9 pounds (\geq 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 | High Risk |
|----------|----------|-----------|
| Infants | I | N |

Parameters for auto assign

Must be manually selected

Justification

Infant mortality rates are higher among full-term infants who weigh > 4,000 g (> 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 age 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).

Justification for high risk

Not applicable

Additional counseling guidelines

- Explain potential risks of LGA, such as:
 - childhood/adult obesity
 - developmental or intellectual retardation
 - if also premature, higher mortality and morbidity rates

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.

USDA 4/04

201 Low Hematocrit/Low Hemoglobin

Definition/ cut-off value

Hematocrit or hemoglobin 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

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Cut-off values are adjusted for age, gender, trimester of pregnancy, smoking and altitude. Cut-off values are based on the levels established by the Center for Disease Control and Prevention (CDC).

High risk = hematocrit > 3 percent below anemia cutoff or hemoglobin > 1 gm/dL below anemia cutoff. Example: If anemia is < 34.5% then high risk will be flagged when the hematocrit is < 31.5%.

Altitude levels

Use the altitude level for the clinic area where the applicant lives. Altitude levels of Utah's WIC clinics are summarized in the table below.

| District | County/Clinic | Altitude |
|------------|---------------|-----------|
| Bear River | Logan | 4000-4999 |
| Bear River | Brigham City | 4000-4999 |
| Bear River | Tremonton | 5000-5999 |
| Bear River | Randolph | 6000-6999 |
| Bear River | Park Valley | 5000-5999 |
| Central | Nephi | 5119 |
| Central | Eureka | 6442 |
| Central | *West Desert | 7000 |
| Central | Delta | 4650 |
| Central | Fillmore | 5061 |
| Central | Junction | 5000-5999 |
| Central | Loa | 7020 |
| Central | *Bullfrog | 5200 |
| Central | *Hanksville | 4666 |
| Central | Manti | 5800 |
| Central | Mt. Pleasant | 5700 |
| Central | Richfield | 5303 |
| Central | Salina | 5160 |
| Davis | all clinics | 4000-4999 |
| Salt Lake | all clinics | 4000-4999 |

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201 Low Hematocrit/Low Hemoglobin, Continued

Altitude levels, continued

| District | County/Clinic | Altitude |
|--------------|---------------|-----------|
| Southeast | Moab | 4000-4999 |
| Southeast | Price | 5000-5999 |
| Southeast | Green River | 4000-4999 |
| Southeast | East Carbon | 6000-6999 |
| Southeast | Castle Dale | 5000-5999 |
| Southeast | Blanding | 6000-6999 |
| Southeast | Monticello | 7000-7999 |
| Southwest | St. George | 2880 |
| Southwest | Mesquite | 1600 |
| Southwest | Hurricane | 3266 |
| Southwest | Beaver | 5895 |
| Southwest | Panguitch | 6670 |
| Southwest | Cedar City | 5800 |
| Southwest | Parawon | 5800 |
| Southwest | Kanab | 4925 |
| Southwest | Escalante | 5258 |
| Summit | *Coalville | 5000-5999 |
| Summit | Park City | 7000-7999 |
| Summit | *Kamas | 5000-5999 |
| Tooele | Wendover | 4000-4999 |
| Tooele | Dugway | 4000-4999 |
| Tooele | Tooele | 5000-5999 |
| Tri-County | Vernal | 5000-5999 |
| Tri-County | Roosevelt | 5000-5999 |
| Utah County | all clinics | 4000-4999 |
| Wasatch | Wasatch | 5000-5999 |
| Weber/Morgan | Ogden | 4000-4999 |
| Weber/Morgan | Morgan | 4000-4999 |

*Note: The community is at a different altitude level than the WIC clinic. Assign nutrition risk based on the participant's community of residence.

201 Low Hematocrit/Low Hemoglobin, Continued

Hematocrit/hemoglobin cutoff values

Use the hematocrit/hemoglobin value listed in the table below for the clinic area where the applicant lives (adjusted for trimester of pregnancy (for pregnant women), smoking (for women), and age (for children)). Each value in the table is the cutoff below which is considered low iron. The high risk low iron value is described on page 79.

Hematocrit Values

| Altitude | Smoking | 1 st trimester Hct < | 2 nd trimester Hct < | 3 rd trimester Hct < | Postpartum Hct < | Infant 7- < 12 mo Hct < | Child 1-2 yrs Hct < | Child 2-< 5 yrs Hct < |
|--------------|--------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------|-------------------------------|---------------------------|-----------------------------|
| 0-2999 ft | Non smoker | 33.0 | 32.0 | 33.0 | 35.7 | 32.9 | 32.9 | 33.0 |
| | < 1 pack/day | 34.0 | 33.0 | 34.0 | 36.7 | | | |
| | 1-<2 pks/day | 34.5 | 33.5 | 34.5 | 37.2 | | | |
| | ≥ 2 pks/day | 35.0 | 34.0 | 35.0 | 37.7 | | | |
| 3000-3999 ft | Non smoker | 33.5 | 32.5 | 33.5 | 36.2 | 33.4 | 33.4 | 33.5 |
| | < 1 pack/day | 34.5 | 33.5 | 34.5 | 37.2 | | | |
| | 1-<2 pks/day | 35.0 | 34.0 | 35.0 | 37.7 | | | |
| | ≥ 2 pks/day | 35.5 | 34.5 | 35.5 | 38.2 | | | |
| 4000-4999 ft | Non smoker | 34.0 | 33.0 | 34.0 | 36.7 | 33.9 | 33.9 | 34.0 |
| | < 1 pack/day | 35.0 | 34.0 | 35.0 | 37.7 | | | |
| | 1-<2 pks/day | 35.5 | 34.5 | 35.5 | 38.2 | | | |
| | ≥ 2 pks/day | 36.0 | 35.0 | 36.0 | 38.7 | | | |
| 5000-5999 ft | Non smoker | 34.5 | 33.5 | 34.5 | 37.2 | 34.4 | 34.4 | 34.5 |
| | < 1 pack/day | 35.5 | 34.5 | 35.5 | 38.2 | | | |
| | 1-<2 pks/day | 36.0 | 35.0 | 36.0 | 38.7 | | | |
| | ≥ 2 pks/day | 36.5 | 35.5 | 36.5 | 39.2 | | | |
| 6000-6999 ft | Non smoker | 35.0 | 34.0 | 35.0 | 37.7 | 34.9 | 34.9 | 35.0 |
| | < 1 pack/day | 36.0 | 35.0 | 36.0 | 38.7 | | | |
| | 1-<2 pks/day | 36.5 | 35.5 | 36.5 | 39.2 | | | |
| | ≥ 2 pks/day | 37.0 | 36.0 | 37.0 | 39.7 | | | |
| 7000-7999 ft | Non smoker | 36.0 | 35.0 | 36.0 | 38.7 | 35.9 | 35.9 | 36.0 |
| | < 1 pack/day | 37.0 | 36.0 | 37.0 | 39.7 | | | |
| | 1-<2 pks/day | 37.5 | 36.5 | 37.5 | 40.2 | | | |
| | ≥ 2 pks/day | 38.0 | 37.0 | 38.0 | 40.7 | | | |

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Hemoglobin Values

| Altitude | Smoking | 1 st trimester Hgb < | 2 nd trimester Hgb < | 3 rd trimester Hgb < | Postpartum Hgb < | Infant 7- < 12 mo Hgb < | Child 1-2 yrs Hgb < | Child 2-< 5 yrs Hgb < |
|--------------|--------------|---------------------------------|---------------------------------|---------------------------------|------------------|-------------------------|---------------------|-----------------------|
| 0-2999 ft | Non smoker | 11.0 | 10.5 | 11.0 | 12.0 | 11.0 | 11.0 | 11.1 |
| | < 1 pack/day | 11.3 | 10.8 | 11.3 | 12.3 | | | |
| | 1-<2 pks/day | 11.5 | 11.0 | 11.5 | 12.5 | | | |
| | > 2 pks/day | 11.7 | 11.2 | 11.7 | 12.7 | | | |
| 3000-3999 ft | Non smoker | 11.2 | 10.7 | 11.2 | 12.2 | 11.2 | 11.2 | 11.3 |
| | < 1 pack/day | 11.5 | 11.0 | 11.5 | 12.5 | | | |
| | 1-<2 pks/day | 11.7 | 11.2 | 11.7 | 12.7 | | | |
| | > 2 pks/day | 11.9 | 11.4 | 11.9 | 12.9 | | | |
| 4000-4999 ft | Non smoker | 11.3 | 10.8 | 11.3 | 12.3 | 11.3 | 11.3 | 11.4 |
| | < 1 pack/day | 11.6 | 11.1 | 11.6 | 12.6 | | | |
| | 1-<2 pks/day | 11.8 | 11.3 | 11.8 | 12.8 | | | |
| | > 2 pks/day | 12.0 | 11.5 | 12.0 | 13.0 | | | |
| 5000-5999 ft | Non smoker | 11.5 | 11.0 | 11.5 | 12.5 | 11.5 | 11.5 | 11.6 |
| | < 1 pack/day | 11.8 | 11.3 | 11.8 | 12.8 | | | |
| | 1-<2 pks/day | 12.0 | 11.5 | 12.0 | 13.0 | | | |
| | > 2 pks/day | 12.2 | 11.7 | 12.2 | 13.2 | | | |
| 6000-6999 ft | Non smoker | 11.7 | 11.2 | 11.7 | 12.7 | 11.7 | 11.7 | 11.8 |
| | < 1 pack/day | 12.0 | 11.5 | 12.0 | 13.0 | | | |
| | 1-<2 pks/day | 12.2 | 11.7 | 12.2 | 13.2 | | | |
| | > 2 pks/day | 12.4 | 11.9 | 12.4 | 13.4 | | | |
| 7000-7999 ft | Non smoker | 12.0 | 11.5 | 12.0 | 13.0 | 12.0 | 12.0 | 12.1 |
| | < 1 pack/day | 12.3 | 11.8 | 12.3 | 13.3 | | | |
| | 1-<2 pks/day | 12.5 | 12.0 | 12.5 | 13.5 | | | |
| | > 2 pks/day | 12.5 | 12.2 | 12.7 | 13.7 | | | |

Participant category and priority level

| Category | Priority | High Risk |
|---------------|----------|--|
| Pregnant | I | Hematocrit >3%ile OR Hemoglobin > 1 g/dl below cut-off |
| Breastfeeding | I | Hematocrit >3%ile OR Hemoglobin > 1 g/dl below cut-off |
| Postpartum | IV | Hematocrit >3%ile OR Hemoglobin > 1 g/dl below cut-off |
| Infant | I | Hematocrit >3%ile OR Hemoglobin > 1 g/dl below cut-off |
| Children | III | Hematocrit >3%ile OR Hemoglobin > 1 g/dl below cut-off |

Utah WIC Nutrition Risk Manual

Clarification

For pregnant women being assessed for iron deficiency anemia, blood work must be evaluated using trimester values established by CDC. Thus, a pregnant woman would be certified, based on the trimester in which her blood work was taken.

CDC defines a trimester as a term of three months in the prenatal gestation period with the specific trimester defined as follows in weeks:

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

CDC begins the calculation of weeks starting with the first day of the last menstrual period.

Parameters for auto assign

~~Will be auto assigned based on age, gender, trimester of pregnancy, smoking and clinic altitude~~
~~Will be auto assigned as high risk if hematocrit is > 3% below anemia cutoff or hemoglobin is > 1 g/dl below anemia cut-off~~
~~When a participant is transferred, the auto assign is set according to current clinic cut-off values~~

High Risk Flag

Must be manually selected.

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.

Justification for high risk

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Anemia is one of the most preventable and treatable nutritional deficiencies. It is also one of the most common. The WIC nutritionist can play an important role in decreasing the prevalence of this condition in women and children by:

- providing a high iron food package
- counseling
- follow-up hematocrit testing

References

1. Institute of Medicine: Nutrition During Pregnancy; National Academy Press; 1990; pp. 284-285.
2. Institute of Medicine: Iron Deficiency Anemia: Recommended Guidelines for the Prevention, Detection, and Management Among US Children and Women of Childbearing Age; 1993.
3. Institute of Medicine: WIC Nutrition Risk Criteria: A Scientific Assessment; 1996; pp. 154-159.
4. Morbidity and Mortality Weekly Report: CDC Criteria for Anemia in Children and Childbearing-Aged Women; April 3, 1998; Vol. 47; No. RR-3.
5. Centers for Disease Control and Prevention: Prenatal Nutrition Surveillance System User's Manual. Atlanta, GA: CDC; 1994; page 8-3.

211 Elevated Blood Lead Levels

Definition/cut-off value

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

The lead level must be tested and documented by a qualified person in a local health department, physician's office, hospital, or lead treatment program.

Participant category and priority level

| Category | Priority | High Risk |
|---------------|----------|-----------|
| Pregnant | I | N |
| Breastfeeding | I | N |
| Postpartum | VI | N |
| Infant | I | N |
| Children | III | N |

Parameters for auto assign

Utah WIC Nutrition Risk Manual

Will be auto assigned if blood lead level $\geq 10 \mu\text{g/dl}$

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 participant 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 $25 \mu\text{g/dl}$. 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.

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.

Justification for high risk

Not applicable

Additional counseling guidelines

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- Explain potential risks of lead intake:
 - Women:
 - lead crosses the placenta and can be detrimental to a developing fetus
 - lead stored in bone is mobilized during lactation, however effect is unknown
 - increased blood pressure
 - Infants, Children and Women:
 - neurobehavioral and cognitive impacts including lower IQ
 - damage to the central nervous system, kidneys, and hematopoietic (formation of red blood cells) systems
 - increased risk of coma, convulsions, and death (at extremely high levels)
- Screen for PICA (may consume lead paint chips)
- Inform participant of potential sources of lead, such as:
 - residual deposits (soil dust, old paint and plaster)
 - all homes built before 1978 have some lead based paint
 - homes build before 1960 have the highest levels of lead based paint (The more intact the paint is, the less the risk of exposure.)
 - Corners and doorways and windows tend to deteriorate from friction even if painted over
 - occupational exposure
 - lead-containing imported containers used for serving or storing food or beverages
 - lead-containing jewelry (particularly inexpensive imported necklaces that infants or children may put in their mouths)
 - *note - gasoline, paint, and soldered cans no longer contain elevated levels of lead in the US
- Help participant find ways to eliminate lead exposure
- Review dietary intake and make the following recommendations:
 - Encourage lowfat diet because fat increases absorption of lead
 - Encourage regular meals because lead absorption is reduced on a full stomach
 - Encourage consumption of WIC foods high in iron (cereal, beans, peanut butter), vitamin C (juice) and calcium (milk, cheese, beans) to help reduce absorption of lead
 - Encourage adequate intake of calories, magnesium, zinc, thiamin, and vitamin E as they may also help reduce the absorption of lead (A vitamin supplement may be warranted.)
- Recommend blood lead level be retested within 12 months

References

1. Institute of Medicine: WIC Nutrition Risk: A Scientific Assessment; 1996; pp. 229-232.
2. Screening Young Children for Lead Poisoning: Guidance for State and Local Public Health Officials; November 1997.
3. CDC Morbidity and Mortality Weekly Report; February 20, 1997.

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 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 | High Risk |
|----------|----------|-----------|
| Pregnant | I | Y |

Parameters for auto assign

Must be manually selected

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.

Justification for high risk

Women who are experiencing hyperemesis gravidarum are at risk for weight loss, dehydration, and metabolic imbalances. Women with this condition may also be plagued with insomnia, extreme fatigue and nausea for most or all of the pregnancy. The WIC nutritionist can play a vital role in helping her identify triggers for nausea and develop her own techniques and diet for relief, and ultimately help her experience the joys of pregnancy.

Additional counseling guidelines

- Encourage participant to keep a diary to identify triggers for nausea - include time of day, foods eaten, smells, activities, and stimuli like lights and noise
- Recommend appropriate calorie and fluid intake
- Recommend small, frequent meals
- Encourage eating foods that are craved

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- Experiment with different types of foods such as salty, bitter or sour

References

1. Institute of Medicine: WIC Nutrition Risk Criteria: A Scientific Assessment; 1996; pp. 166-168.
2. Erick M. *No More Morning Sickness - A Survival Guide for Pregnant Women*. New York, NY: Plume; 1993.

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 | High Risk |
|----------|----------|-----------|
| Pregnant | I | Y |

Parameters for auto assign

Must be manually selected

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).

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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 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.

Justification for high risk

Data suggests that even minor abnormalities in glucose metabolism will cause increases in infant birth weight and put mother and infant at risk for complications. The WIC nutritionist can play a vital role in counseling and assuring the participant receives comprehensive counseling and follow-up by appropriate health care providers outside of WIC.

Additional counseling guidelines

- Remember, women with gestational diabetes often feel well and are in their last trimester of pregnancy; therefore they may be casual about their treatment
- Emphasize the positive outcomes for treatment with gestational diabetes
- Explain potential risks to mother, such as:

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- Fatigue
- difficult labor and cesarean delivery
- increased risk of infection
- toxemia and preeclampsia
- diabetes after the pregnancy ends
- Inform participant of potential risks to infant, such as:
 - large birth size (macrosomia)
 - low blood sugar after birth
 - jaundice
 - respiratory distress syndrome
 - cardiovascular problems
 - kidney dysfunction
 - hypocalcemia
 - fetal death in extreme cases
- Explain relationship between diet, insulin and exercise
- Provide basic counseling on diet which provides nutrient needs for pregnancy and facilitates normal blood glucose levels:
 - Encourage participant to consume calories adequate for recommended weight gain but not excessive weight gain
 - Recommend diet which contains approximately 40-50% carbohydrate, 20-25% protein and 30-35% fat
 - Activity Factor - Add 40-60% of basal needs for light activity
- Keep timing of meals consistent from day to day with calorie and carbohydrate content fairly evenly divided from meal to meal
- Recommend increased intake of high fiber foods and complex carbohydrates
- Counsel on importance of not consuming foods high in refined sugar and juice
- Plan for food to be taken to correct hypoglycemic episodes
- Plan for food and fluids to be taken for periods of increased physical activity and illness
- Plan for a bedtime snack to prevent nocturnal hypoglycemia
- Eat midmorning and midafternoon snacks, if needed
- Encourage moderate regular exercise
 - Best to exercise after snack or meal
 - Don't exercise if blood glucose is < 80 mg/dL or higher than 250 mg/dL
 - Take carbohydrate in case of hypoglycemia
 - Always exercise with a partner in case blood sugar drops
- Stress importance of maternal follow-up during prenatal period, postpartum period and annually
- Stress importance of maintaining healthy body weight

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 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).

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.
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.

303 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 physician's orders

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Participant category and priority level

| Category | Priority | High Risk |
|---------------|----------|-----------|
| Pregnant | I | N |
| Breastfeeding | I | N |
| Postpartum | VI | N |

Parameters for auto assign

Must be manually selected

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 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).

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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).

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.

Kitzmilller JL, Dang-Kilduff L, Taslimi MM

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.

Adapted from the National Diabetes Education Program.

References

1. Evert AG, Vande Hei K. Gestational diabetes education and diabetes prevention strategies. *Diabetes Spectrum*. 2006; 19 (3):135-139.
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; 145-163.
3. Thomas AM, Gutierrez YM. American Dietetic Association guide to gestational diabetes mellitus in postpartum considerations. Eds. American Dietetic Association. 2005; 101-113.
4. Kitzmiller JL, Dang-Kilduff L, Taslimi MM. Gestational diabetes after delivery: short-term management and long-term risks. *Proceedings of the fifth international workshop — conference on Gestational Diabetes Mellitus*. *Diabetes Care*. Jul 2007; 30 Suppl 2:S225-231.
5. 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.
6. Reader DM. Medical nutrition therapy and lifestyle interventions. *Proceedings of the fifth international workshop — conference on Gestational Diabetes Mellitus*. *Diabetes Care*. Jul 2007; 30 Suppl 2:S188-193.

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 order

Participant category and priority level

| Category | Priority | High Risk |
|---------------|----------|-----------|
| Pregnant | I | N |
| Breastfeeding | I | N |
| Postpartum | VI | N |

Parameters for auto assign

Must be manually selected

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

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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 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.

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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.

Justification for high risk

Not applicable

References

1. American Dietetic Association. Nutrition Care Manual. Hypertension; 2006. <http://www.nutritioncaremanual.org>. Accessed May 2009.
2. National Heart, Lung, and Blood Institute, 2000, Working group report on high blood pressure in pregnancy; 2000 Jul. NIH Publication No. 00-3029
3. Irani RA, Xia Y. The functional role of the rennin-antiotensin system in pregnancy and preeclampsia. Placenta. 2008; 763-771.
4. Roberts JM, Bodnar LM. Report on the WIC nutrition risk criteria for hypertension in pregnancy. July 2007. Unpublished.
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7. Gaugler-Senden, I, Berends A, deGroot C, Steegers E.: Severe, very early onset preeclampsia: subsequent pregnancies and future cardiovascular health. European Journal of Obstetrics and Gynecology and Reproductive Biology. 2008:171-177.
8. Institute of Medicine. Weight gain during pregnancy: reexamining the guidelines (Prepublication Copy). National Academy Press, Washington, D.C.; 2009

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/Postpartum:
most recent pregnancy

Participant category and priority level

| Category | Priority | High Risk |
|---------------|----------|-----------|
| Pregnant | I | N |
| Breastfeeding | I | N |
| Postpartum | VI | N |

Parameters for auto assign

Must be manually selected

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.

Justification for high risk

Not applicable

References

1. Preterm Labor; ACOG Technical Bulletin; No. 206; June 1995.
2. Hoffman HJ, Bakketeig LS.: Risk factors associated with the occurrence of preterm birth; Clin Obstet Gynecol; 1984; 27:539-522.

3. Keirse MJNC, Rush RW, Anderson AB, Turnbull AC: Risk of preterm delivery in patients with a previous preterm delivery and/or abortion; Br J Obstet Gynecol; 1978; 85:81.85.

312 History of Low Birth Weight

Definition/cut-off value

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

Pregnant Women:
any history of low birth weight

Breastfeeding/Postpartum:
most recent pregnancy

Participant category and priority level

| Category | Priority | High Risk |
|---------------|----------|-----------|
| Pregnant | I | N |
| Breastfeeding | I | N |
| Postpartum | VI | N |

Parameters for auto assign

Must be manually selected

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).

Justification for high risk

Not applicable

References

1. Institute of Medicine: Committee to Study the Prevention of Low Birth Weight: Preventing Low Birth Weight; 1985; p. 51.
2. Institute of Medicine: Nutrition During Pregnancy; National Academy Press; 1990, pp. 176-211
3. Kramer: Intrauterine Growth and Gestational Duration Determents. Pediatrics; October 1987; 80(4):502-511.

321 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 loss 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

Postpartum Women:

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 | High Risk |
|---------------|----------|-----------|
| Pregnant | I | N |
| Breastfeeding | I | N |
| Postpartum | VI | N |

Parameters for auto assign

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Must be manually selected

Justification

Pregnancy:

Previous fetal and neonatal deaths are strongly associated with preterm low birth weight (LBW) 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 spontaneous abortions. Adverse outcomes related to history of spontaneous abortion include recurrent spontaneous abortions, 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 spontaneous abortion has been implicated as an indicator of a possible neural tube defect in a subsequent pregnancy. Women who have just had a spontaneous abortion 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.

Justification for high risk

Not applicable

Additional counseling guidelines

- Acknowledge participant's loss, and provide sensitive, compassionate counseling
- Explain importance of maintaining health and nutritional status

References

1. Spinnillo, A, et al: Maternal high risk factors and severity of growth deficit in small gestational age infants; Ear Human Dev; 1994; 38:35-43.

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2. Thorn, D.H.: Spontaneous abortion and subsequent adverse birth outcomes; Am J Obstet Gyn; 1992; 111-6.
3. Carmi, R. et al: Spontaneous abortion-high risk factor for neural tube defects in subsequent pregnancy; Am J of Med Gen: 1994; 51:93-97.
4. Paz, J. et al: Previous miscarriage and stillbirth as risk factors for other unfavorable outcomes in the next pregnancy; Bri J of Obstet Gyn: October 1999; 808-812.
5. Institute of Medicine: Committee to Study the Prevention of Low Birth Weight: Preventing Low Birth Weight; 1985; p. 51.
6. Shapiro, S, LF Ross, and HS Levine: Relationship of Selected Prenatal Factors to Pregnancy Outcome and Congenital Anomalies. Am.J.Public Health; February 1965; Vol. 55, No. 2; pp. 268-282.
7. Preterm Labor; AGOG Technical Bulletin, No. 206; June 1995. Institute of Medicine: Nutrition During Pregnancy; National Academy Press; 1990; pp. 176-211.
8. Kramer: Intrauterine Growth and Gestational Duration Determents. Pediatrics; October 1987; 80(4):502-511.

331 Pregnant < 18 Years at Conception

Definition/cut-off value

Conception < 18 years of age

Pregnant Women:
current pregnancy

Breastfeeding/Postpartum:
most recent pregnancy

Participant category and priority level

| Category | Priority | High Risk |
|---------------|----------|-----------|
| Pregnant | I | Age < 16 |
| Breastfeeding | I | N |
| Postpartum | VI | N |

Parameters for auto assign

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Will be auto assigned if date of LMP is before 18th birthday

Will be auto assigned as high risk if pregnant and date of LMP is before 16th birthday

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.

Justification for high risk

Pregnant teens are at risk for poor birth outcomes. Teenagers less than 16 years may be especially vulnerable and can benefit from individualized follow-up, support, and encouragement to meet dietary and weight gain goals.

Additional counseling guidelines

- Support weight gain as normal part of pregnancy process
- Explain need for the body to change to support pregnancy
- Explain potential risk of low weight gain:
 - low birth weight infant
 - premature infant

References

1. Institute of Medicine: Nutrition During Pregnancy; National Academy Press; 1990; pp. 74, 269, 279.
2. Storey, M.: Nutrition Management of the Pregnant Adolescent; A Practical Reference Guide; USDA and March of Dimes; DHHS; 1990; pp. 21-26.
3. Endres: Older pregnant women and adolescents: Nutrition data after enrollment in WIC; J. of Am. Diet. Assn.; August 1987; 87(8):1011-1019.
4. Kennedy and Kotlechuck: The effect of WIC supplemental feeding on birth weight: A case control analysis; Am. J. of Clin. Nutr.; September 1984; 40:579-585.

332 Closely Spaced Pregnancies

Definition/cut-off value

Conception before 16 months postpartum

Pregnant Women:
current pregnancy

Breastfeeding/Postpartum:
most recent pregnancy

Participant category and priority level

| Category | Priority | High Risk |
|---------------|----------|-----------|
| Pregnant | I | N |
| Breastfeeding | I | N |
| Postpartum | VI | N |

Parameters for auto assign

Will be auto assigned if < 24* months from EDD to date last pregnancy ended

*Note: 24 months - 9 month pregnancy = 16 month interconceptual period

Justification

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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.

Justification for high risk

Not applicable

Additional counseling guidelines

- Explain that closely spaced pregnancies leave less time to replenish nutrient stores; therefore good nutrition is very important during this pregnancy
- Explain benefits of spacing pregnancies
 - less risk for preterm birth, low birth weight, and infant mortality
 - more time for mother's body to replenish nutrient stores
 - more time for mom and baby to strengthen their nurturing relationship
 - more time to enjoy breastfeeding

References

1. Worthington-Roberts, B.S. and Williams, S.R.: Nutrition in Pregnancy and Lactation; 1989; pp. 401-402.
2. Institute of Medicine: Committee to Study the Prevention of Low Birthweight: Preventing Low Birthweight; NAS; 1985; pp. 103-106.

3. Lieberman et al.: The association of interpregnancy interval with small for gestational age births; *Obstet. Gynecol.*; 1989; 74:1-5.
4. Lang and Lieberman: Interpregnancy Interval and Risk of Preterm Labor; *Am. J. of Epidem*; 1990; vol 132(2) 304-309.
5. Schall, J.L. et al.: Maternal Micronutrient and Short Interpregnancy Interval: Abstracts Society for Epidemiologic Research: Annual Meeting, Buffalo; June 1991; vol. 134(7) p. 770.
6. Caan, et al.: Benefits associated with WIC supplemental feeding during the interpregnancy interval; *American Journal Clin. Nutr.*; 1987; 45:29-41.
7. WIC Program Regulations: Section 246.7 (e)(2)(ii).

333 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/Postpartum:
most recent pregnancy

Participant category and priority level

| Category | Priority | High Risk |
|---------------|----------|-----------|
| Pregnant | I | N |
| Breastfeeding | I | N |
| Postpartum | VI | N |

Parameters for auto assign

Must be manually selected

Justification

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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.

Justification for high risk

Not applicable

References

1. Institute of Medicine: WIC Nutrition Risk Criteria: A Scientific Assessment; 1996; pp. 201-204.
2. Kramer et al.: Determinants of low birth weight: Methodological assessment and meta -analysis. Bull. World Health Organization; 1987; 65:663-73.
3. MacLeod & Kiely: The effects of maternal age and parity on birthweight: A population based study in New York City; Int. J. Gynecol. Obstet; 1988; 26:11-19.
4. Taffel: Trends in low birthweight: United States, 1975 - 1985. Centers for Disease Control, National Center for Health Statistics; 1989.

334 Lack of Prenatal Care

Definition/cut-off value

Prenatal care beginning after the 1st trimester (after 13th week) of pregnancy

Participant category and priority level

| Category | Priority | High Risk |
|----------|----------|---------------------------|
| Pregnant | I | 3 rd Trimester |

Parameters for auto assign

Must be manually selected

High Risk Flag

Must be manually selected.

Justification

Women who do not receive early and adequate prenatal care are more likely to deliver premature, growth retarded, or low birth weight infants (2). 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 (2).

Justification for high risk

The scientific literature indicates that prenatal care initiated in the third trimester has been associated with increased risk of:

- Neonatal death
- Stillborn infant
- Prematurity
- Low birth weight

Additional counseling guidelines

- Explain importance of receiving early and adequate prenatal care

References

1. The American Academy of Pediatrics and the American College of Obstetricians and Gynecologists: Guidelines for Perinatal Care; 4th ed., Chapter 4; Washington, D.C.; August 1997.
2. Institute of Medicine: WIC Nutrition Risk Criteria: A Scientific Assessment; 1996; pp. 208-210.
3. Kessner DM, Singer J, Kalk CE, Schlesinger ER: Infant Death: An Analysis by Maternal Risk and Health Care. Contrasts in Health Status; Vol. I, Washington, DC; Institute of Medicine; National Academy of Sciences; 1973.
4. Centers for Disease Control and Prevention: Prenatal Nutrition Surveillance System User's Manual. Atlanta, GA: CDC; 1994; page 8.

335 Multifetal Gestation

Definition/cut-off value

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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 | High Risk |
|---------------|----------|-----------|
| Pregnant | I | Y |
| Breastfeeding | I | Y |
| Postpartum | VI | N |

Parameters for auto assign

Will be auto assigned if breastfeeding or postpartum and total number of infants ≥ 2 in the computer system (335 a)

Must be manually selected for pregnant women (335 b)

Will be auto assigned high risk if breastfeeding and total number of infants ≥ 2 in the computer system.

Manually Assigned

When pregnant women report in nutrition assessment interview that they are pregnant with more than 1 infant.

High Risk Flag

High Risk designation will automatically assign for pregnant and breastfeeding women.

Justification

Multifetal 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.

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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.

Justification for high risk

Multiple fetal gestations are associated with low birth weight, fetal growth restriction, placental and cord abnormalities, preeclampsia, anemia, shorter gestation, and increased risk of infant mortality. A woman meeting this risk criteria can benefit from assessment of her weight gain and individual nutrition counseling through WIC.

Additional counseling guidelines

Pregnant participants:

- For twin gestations, the recommended range of maternal weight gain is 37-54 pounds with a gain of 1.5 pounds per week during the second and third trimesters
 - Underweight women should gain at the higher end of the range and overweight women should gain at the lower end of the range
 - Four to six pounds should be gained in the first trimester
- 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 pregnancy.
- Generally accepted dietary recommendations include:
 - increased needs for calories, protein, iron, calcium, folate, vitamin B6, and zinc (table of food guidelines to follow)
 - a need for increased weight gain (table of guidelines follow) during pregnancy, especially for those women who are of low or normal prepregnancy weight
- Encourage early weight gain due to reduced stomach capacity as pregnancy progresses
- Encourage small, frequent energy-dense meals every 2-3 hours at first, then every hour or two as the pregnancy proceeds
 - A liberal fat intake (40% of calories) may be needed due to volume restrictions
- Encourage an extra serving of milk for each fetus to meet calcium needs
- Recommend iron supplements beginning in the second trimester
- Recommend limiting caffeinated beverages to 3 servings/day

The Daily Food Guide listed below represents the minimum number of servings recommended for a singleton pregnancy. However, for women pregnant with multiples 300 calories more a day, compared to women pregnant with one baby, are needed. Women pregnant with multiples should discuss the number of extra calories they should eat with their health care providers.

Reference: "Multiples: Twins, Triplets, and Beyond," March of Dimes Website

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| Daily Food Guide | Provides: | Servings |
|---|---------------------------------|----------|
| Meat | protein, iron, zinc, B vitamins | 2 |
| Milk Products | protein, calcium | 2 |
| Grains & Cereals (select whole grains whenever possible) | carbohydrates, B vitamins, iron | 6 |
| Fruit | vitamins A & C | 2-4 |
| Vegetables | vitamins A & C | 3-5 |

- Each of the “Healthy Choices” listed below has about 300 calories
 - 1 slice of bread with 2 tablespoons of peanut butter
 - 3 oz. of meat with ½ cup of sweet potatoes
 - 1 flour tortilla with ½ cup of refried beans, ½ cup of cooked broccoli and ½ cup of cooked red peppers

Breastfeeding participants:

- Assess:
 - dietary adequacy of mother
 - growth of infants (including test weighing)
- Reassure mother that she can provide adequate milk
- Encourage simultaneous breastfeeding to increase prolactin levels
 - Teach positions for simultaneous breastfeeding (double clutch, parallel, double cradle)
- Verify proper latch-on and positioning
- Could refer to support group for multiples

References

1. Brown JE and Carlson M. Nutrition and multifetal pregnancy. J Am Diet Assoc. 2000;100:343-348.
2. Institute of Medicine. WIC nutrition risk criteria: a scientific assessment. National Academy Press, Washington, D.C.; 1996.
3. 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.

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. 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.
3. 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.
4. Worthington-Roberts, BS. Weight gain patterns in twin pregnancies with desirable outcomes. *Clin.Nutr.* 1988;7:191-6.

336 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 | High Risk |
|----------|----------|-----------|
| Pregnant | I | Y |

Parameters for auto assign

Must be manually selected

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.

Justification for high risk

Fetal Growth Restriction (FGR) usually leads to low birth weight which is the strongest possible indicator for prenatal mortality risk. Severely growth restricted infants are at increased risk of: fetal and neonatal death, hypoglycemia, polycythemia, cerebral palsy, anemia, bone disease, birth asphyxia, long-term neurocognitive delays.

Additional counseling guidelines

- Assess nutritional status with emphasis on well-balanced intake
- Assess and promote healthy weight gain
 - food supplementation during pregnancy to improve weight gain reduces the risk of FGR

References

1. Institute of Medicine: Nutrition During Pregnancy: Part I, Weight Gain; and Part II, Nutrient Supplements; National Academy Press; 1990.
2. Institute of Medicine: WIC Nutrition Risk Criteria: A Scientific Assessment; 1996.
3. Williams, SR: Nutrition and Diet Therapy; 1989; 6th edition.
4. Worthington-Roberts, BS and Williams, SR: Nutrition During Pregnancy and Lactation; 1989; 4th edition.
5. Stein, ZA and Susser, M.: Intrauterine Growth Retardation: Epidemiological Issues and Public Health Significance. Seminars in Perinatology; 1984; pp. 8:5-14.
6. Altman D.G. and Hytten F.E.: Intrauterine growth retardation: Let's be clear about it; Br. J. Obstet. Gynaecol. 96:1127-1132.
7. Barros, F.C., S.R. Huttly, C. G. Victora, B. R., Kirkwood, and J.P. Vaughan: Comparison of the causes and consequences of prematurity and intrauterine growth retardation: A longitudinal study in southern Brazil. Pediatrics; 1992; 90:238-244.
8. Kramer, M.S., M. Olivier, F.H. McLean, G.E. Dougherty, D.M. Willis, and R.H. Usher: Determinants of fetal growth and body proportionality. Pediatrics; 1990; 86:18-26.
9. Kramer, M.S., M. Olivier, F.H. McLean, D.M. Willis, and R.H. Usher: Impact of Intrauterine growth retardation and body proportionality on fetal and neonatal outcome; Pediatrics; 86:707-713.

10. Institute of Medicine: Nutrition During Pregnancy; National Academy Press; 1990; pp. 212-20, 10-12, 18, 20.

337 History of Birth of a Large for Gestational Age Infant

Definition/cut-off value

Pregnant Women:

Any history of giving birth to an infant weighing \geq 9 pounds (4000 grams)

Breastfeeding/Non-Breastfeeding Women:

Most recent pregnancy, or history of giving birth to an infant weighing \geq 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 | High Risk |
|-------------------|----------|-----------|
| Pregnant | I | N |
| Breastfeeding | I | N |
| Non-Breastfeeding | VI | N |

Parameters for auto assign

Must be manually selected

Justification

Women with a previous delivery of an infant weighing $>$ 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 $>$ 9 lbs. (4000 grams). Risks for the infant include dystocia, meconium aspiration, clavicular fracture, brachia plexus injury, and asphyxia (3).

Justification for high risk

Not applicable

Additional counseling guidelines

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- Maternal obesity, high prepregnancy weight, and large gestational weight gain contribute significantly to LGA
- Counsel on recommended weight gain based on prepregnancy BMI
- Review weight gain pattern from previous pregnancies
- If woman is diabetic see NRF #302 for counseling tips

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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338 Pregnant and Currently Breastfeeding

Definition/cut-off value

Breastfeeding woman now pregnant

Participant category and priority level

| Category | Priority | High Risk |
|----------|----------|-----------|
| Pregnant | I | N |

Parameters for auto assign

Will be auto assigned if category is pregnant and “yes” is entered in currently breastfeeding field

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

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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.

Justification for high risk

Not applicable

Additional counseling guidelines

- Ensure that WIC's advice is consistent with MD's recommendations
- Encourage adequate rest.
- Monitor stress level
- Other important considerations include:
 - the age of the nursing child
 - the natural decrease in milk supply that occurs during pregnancy (usually in the last 4 months) could compromise the infant's nutritional needs, if the baby is less than a year old
 - suggest that mother keep track of the baby's weight gain and offer supplemental feedings if they are needed
 - the child's need to nurse (physically and emotionally)
 - some babies wean on their own during pregnancy
 - other babies who weaned during pregnancy may want to breastfeed again once the new baby is born
 - whether the mother is experiencing any breastfeeding related discomforts (such as sore nipples caused by hormonal changes) and the degree of her discomfort
 - the mother's past nursing experience(s)
 - health concerns related to the pregnancy (which may be medical reasons to consider weaning)
 - uterine pain or bleeding while breastfeeding (uterine contractions stimulated by breastfeeding usually pose no danger to the unborn baby and do not increase the risk of premature delivery, but refer participant to physician immediately)
 - history of premature birth
 - continued loss of weight by mother during pregnancy
- Hormones of pregnancy will not be harmful to breastfeeding infant or toddler
- During last few months of pregnancy milk changes to colostrum in preparation for birth
- Nursing child cannot "use up" the colostrum -- no matter how much he nurses; the colostrum will still be available at birth for the newborn
- If mother chooses to nurse both after baby's birth ("tandem nursing"), follow-up with Dietitian/Lactation Educator is appropriate
- Remember that newborn is priority of the two children
- Listen to the mother's feelings, as it is an individual decision whether or not to continue breastfeeding through a pregnancy (and after)

References

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1. Mohrbacher, N., Stock, J.: The Breastfeeding Answer Book: Revised Edition Schaumburg, IL; La Leche League International; 1997.

341 Nutrient Deficiency Diseases

Definition/cut-off value

Diagnosis of nutritional deficiencies or a disease caused by insufficient dietary intake of macro and micro nutrients

Diseases include:

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 | High Risk |
|---------------|----------|-----------|
| Pregnant | I | Y |
| Breastfeeding | I | Y |
| Postpartum | IV | Y |
| Infants | I | Y |
| Children | III | Y |

Parameters for auto assign

Must be manually selected

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 to those with an overt nutrient deficiency.

Justification for high risk

Persistent malnutrition may lead to elevated morbidity and mortality rates. Important functional disturbances may occur as a result of a single or multiple nutrient deficiencies including: impaired cognitive function; impaired function of immune system; and impaired function of skeletal muscle. Participants who meet this criteria are extremely high risk and need counseling which addresses their individual needs.

Additional counseling guidelines

- Review WIC foods high in nutrient(s) individual to participant's nutrient deficiency
 - Discuss ways in which to incorporate WIC foods into diet
- Explain potential risks particular to participant's nutritional disease
 - Provide basic nutrition counseling appropriate for specific nutritional disease

References

1. Institute of Medicine: WIC Nutrition Risk Criteria: A Scientific Assessment; 1996; pp. 159-166.
2. Worthington, Vonnie S., et al.: Nutrition Throughout the Life Cycle, 2nd ed.; 1992; pp. 102-107.
3. Institute of Medicine: WIC Nutrition Risk Criteria: A Scientific Assessment; 1996; pp. 164-165.

342 Gastro-Intestinal Disorders

Definition/cut-off value

Diseases and/or or conditions that interferes 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

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Presence of gastro-intestinal 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 | High Risk |
|-------------------------|----------|-----------|
| Pregnant | I | Y |
| Breastfeeding | I | Y |
| Non-Breastfeeding Women | IV | Y |
| Infants | I | Y |
| Children | III | Y |

Parameters for auto assign

Must be manually selected

Justification

Gastrointestinal disorders increase nutrition risk through 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 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 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).

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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.

Justification for high risk

GI disorders increase nutrition risk through a number of ways: impaired food intake; impaired digestion of food; generalized or specific nutrient malabsorption; and excessive GI losses. Frequent loss of nutrients through vomiting, diarrhea, malabsorption or infections can lead to malnourishment and lowered resistance to disease in individuals with chronic symptoms. It is important that WIC participants receive individual counseling tailored to meet the nutritional needs of their GI disorder.

Additional counseling guidelines

- Explain potential nutritional risks of participant's specific GI disease
- Recommend increased nutrient intake, if needed, to correct existing deficiencies, or to counterbalance excessive losses of nutrients or fluid
- Review signs of dehydration and malnutrition due to frequent loss of nutrients via vomiting, diarrhea, malabsorption, and/or infections

Special Note:

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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343 Diabetes Mellitus

Definition/cut-off value

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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 physician's orders

Participant category and priority level

| Category | Priority | High Risk |
|-------------------------|----------|-----------|
| Pregnant | I | Y |
| Breastfeeding | I | Y |
| Non-Breastfeeding Women | VI | Y |
| Infants | I | Y |
| Children | III | Y |

Parameters for auto assign

Must be manually selected

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, genitourinary, cardiovascular symptoms and sexual dysfunction. Patients with diabetes have an

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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).

Justification for high risk

The chronic hypoglycemia of diabetes is associated with long term damage, dysfunction and failure of various organs, especially the eyes, kidneys, nerves, heart, and blood vessels. The WIC nutritionist can play a vital role in providing nutrition counseling and assuring the participant receives comprehensive follow-up outside WIC.

Additional counseling guidelines

- Empower women to self-manage by obtaining information from health care providers
- Explain potential risks of DM, such as:

All diabetics:

- cardiovascular disease
- renal disease
- circulatory disease
- foot problems
- vision loss
- hypertension

Pregnant diabetics:

- difficult labor and delivery
- increased risk of infection, preeclampsia, toxemia, fetal malformation, fetal and neonatal death, large birth size, congenital abnormalities, neonatal death
- more complications for infants at birth, such as may be poor feeders, may have hyperbilirubinemia or be hypoglycemic

Breastfeeding diabetics:

- During first few days after childbirth, diabetic mothers often experience drastic changes in blood sugar levels
 - Because it is body's natural response to childbirth hormones responsible for lactation cause physiological changes to occur more naturally
- Drastic changes in blood sugars may occur after giving birth (i.e. increased risk of hypoglycemia during first few weeks); they require close monitoring, along with insulin and dietary adjustments
 - Once control is achieved mom should have no further problems if she follows good management practices
- Important to receive prompt lactation support soon after delivery and while in hospital due to possible NICU and other interventions that could delay or interfere with breastfeeding

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- Milk may be a little slower coming in
 - 5 to 6 days if in good control; 6 to 7 days without good control vs. 3 to 4 days in non-diabetic moms
 - This is due to fluctuating insulin requirements and other physiologic changes
 - Early and frequent feedings may help bring in milk
- Very important to recognize and treat hypoglycemia, especially following night-time breastfeeding
- May be more prone to mastitis and infections of nipples and vagina
 - Risk of yeast infection increases when blood sugar levels increase
 - Use good hygiene
 - Keep nipples clean and dry after nursing
 - Treat plugged ducts, lump, sore spots promptly
- Encourage breastfeeding with MD approval
 - Breastfeeding appears to have protective effect on onset of diabetes in childhood
 - Amount of insulin needed during breastfeeding may decrease (can be up to half!) due to hormones released (insulin is compatible with breastfeeding)
 - Hormones released during breastfeeding relax mother, reducing stress (Stress can aggravate diabetes.)
 - Overall, breastfeeding tends to make diabetes more manageable
 - Psychologically, breastfeeding can help mom feel “normal” because like every other breastfeeding mother, she is able to give her baby the best
- For all diabetic participants provide basic diabetic counseling to facilitate normal blood glucose levels, such as how to:
 - maintain optimal blood glucose levels by balancing food, activity & medications
 - keep timing of meals consistent from day to day with carbohydrate content fairly evenly divided from meal to meal
 - plan for midmorning and midafternoon snacks, if needed, to match food intake to peak insulin action
 - plan for bedtime snack to prevent nocturnal hypoglycemia
 - limit sodium intake (if participant has hypertension)
 - limit/abstain from alcohol, especially on empty stomach
 - consume calories adequate to maintain healthy weight
 - maintain normal growth & development pattern in infants and children
 - plan for periods of increased physical activity
 - maintain appropriate blood glucose levels during illness, infections, nausea/vomiting
 - plan for hypoglycemic episodes

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

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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

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Participant category and priority level

| Category | Priority | High Risk |
|---------------|----------|-----------|
| Pregnant | I | N |
| Breastfeeding | I | N |
| Postpartum | VI | N |
| Infants | I | N |
| Children | III | N |

Parameters for auto assign

Must be manually selected

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.

Justification for high risk

Not applicable

Additional counseling guidelines

- Explain potential risks of **Hyperthyroidism**:
 - Result of overactive thyroid gland, leading to too much thyroid hormone in the body (must be treated medically)
- Symptoms include:
 - “pop eyes”
 - goiters (enlarged thyroid)
 - strain on heart, muscles, nervous system
 - fast pulse
 - extreme nervousness
 - muscle tremors
 - weight loss, depleted body stores
- Considerations for breastfeeding mothers include:
 - The ability to breastfeed does not appear to be affected by hyperthyroidism
 - Mother’s health care provider must be involved in her decision to breastfeed
 - Breastfed infants of mothers with treated hyperthyroidism must have their thyroid monitored for normal function

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- Some thyroid suppressants may suppress baby's thyroid as well; therefore mother needs to find breastfeeding compatible medications such as PTU (Propylthiouracil) Carbimazole, or methimazole (tapazole)
- Compensate for lost weight, exhausted body reserves and depleted vitamin and minerals stores via:
 - high calorie/protein/carbohydrate diet
 - multi-vitamin/mineral supplement (calcium, phosphorus, B-complex, and vitamin D)
- Explain potential risks of **Hypothyroidism**:
- Hypothyroidism is result of sluggish thyroid gland producing too little thyroid hormone (must be treated medically)
- Symptoms include
 - fatigue ("bone tired")
 - puffed up hands, face, eyelids
 - weight gain (because metabolism kicks into low gear)
 - depression
 - poor appetite
 - cold intolerance
 - dry skin and thinning hair
- Considerations for infants include:
 - Infant should be screened to rule out hypothyroidism (T4 & TSH testing process should not be a hazard to nursing.)
 - May not grow properly, leading to stunting
 - Breastfed infants of mothers with untreated hypothyroidism may not gain weight satisfactorily
 - Infant may fail to gain weight on breastmilk alone
 - Monitor breastfed infant's weight
- Considerations for breastfeeding women include:
 - Untreated hypothyroidism can result in reduced milk supply
 - Woman should be well controlled by thyroid replacement therapy to ensure full lactation
 - Health care provider must be involved in decision to breastfeed to assure thyroid supplements are compatible with breastfeeding
 - Due to sluggish metabolism leading to weight gain, low calorie diet may be warranted for mother
- Considerations for postpartum women include:
 - Identify hypothyroidism in postpartum women, especially with normal thyroid women have prolonged "baby blues" fatigue or depression
 - Screen for self-medication with drugs or herbs

References

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345 Hypertension and Pre-Hypertension

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 | High Risk |
|-------------------------|----------|-----------|
| Pregnant | I | N |
| Breastfeeding | I | N |
| Non-breastfeeding Women | VI | N |
| Infants | I | N |
| Children | III | N |

Parameters for auto assign

Must be manually selected

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

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- 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).

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.

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

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

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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.

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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346 Renal Disease

Definition/cut-off value

Any renal disease including pyelonephritis and persistent proteinuria, but excluding urinary tract infections (UTIs) 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 | High Risk |
|---------------|----------|-----------|
| Pregnant | I | Y |
| Breastfeeding | I | Y |
| Postpartum | IV | Y |
| Infants | I | Y |
| Children | III | Y |

Parameters for auto assign

Must be manually selected

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.

Justification for high risk

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 pregnancy-aggravated hypertension. Pregnant women with chronic renal disease have an increased risk of azotemia. All participants with renal disease need individual counseling with an RD, to assure that appropriate food packages and referrals are provided.

Additional counseling guidelines

- Potential risks for pregnant women include:
 - decreased kidney function (temporary or permanent) as pregnancy progresses
 - depending on disease state, may end up on hemodialysis before pregnancy ends
 - strong possibility of developing preeclampsia-like syndrome superimposed on underlying vascular disease (i.e. pregnancy-induced hypertension)
 - increased anemia
 - women with chronic renal disease often have proteinuria (i.e. protein in the urine) but additional risk of azotemia is increased if she increases her protein intake
 - premature delivery
 - SGA infant
 - fetal loss and morbidity
- Potential risks for infants and children include:
 - Oral aversion is common
 - Infants may miss the “bonding” stage with food, so often don’t “feel” hungry
 - Inadequate growth and developmental delay leading to growth failure (i.e. FTT) as disease progresses
- Participant may be on a protein restricted diet (with greater percent being of high biological value)
- Reinforce early intervention and constant adherence to dietary recommendations and restrictions
- Refer to health care provider for individual assessment of calcium, iron, thiamine, riboflavin, niacin and folic acid levels
- Considerations for breastfeeding women:
 - Option to breastfeed is a matter of risk:benefit ratio
 - Decision must be made with health care provider(s)

References

1. Institute of Medicine: WIC Nutrition Risk Criteria: A Scientific Assessment; 1996; pp. 174-175.

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 | High Risk |
|----------------|----------|-----------|
| Pregnant | I | Y |
| Breastfeeding* | I | Y |
| Postpartum | IV | Y |
| Infants | I | Y |
| Children | III | Y |

*Some cancer treatments may contraindicate breastfeeding.

Parameters for auto assign

Must be manually selected

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.

Justification for high risk

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Participants are at medical and nutritional risk depending on the stage of disease and type of treatment. The most common nutritional risk is PEM (Protein Energy Malnutrition) and wasting. Irradiation treatment also contributes to PEM. PEM is associated with impaired immune competence, increased susceptibility to infections, major organ dysfunction, and increased morbidity and mortality. Hematopoietic, GI and immunologic systems are most affected by PEM. Some chemotherapy drugs (e.g. cytosine arabinoside), are toxic to the GI tract and pose additional nutritional risks.

Additional counseling guidelines

- Help problem solve identify areas in dietary plan that could be improved
- Provide tricks such as modifying temperatures, textures, or using supplemental food products, especially if treatment or medications affected taste perception or appetite
 - Low-lactose diet may improve abdominal discomfort and diarrhea caused by treatment or GI infections
- If appropriate, provide additional ideas for increased calorie and protein intake
- The type of cancer and stage of disease progression determines the type of medical treatment and nutrition management
 - The type of ongoing treatment may put the participant at increased nutrition risk and health risk (irradiation to the neck, esophagus, abdomen, pelvis, or intense or frequent use of corticosteroid therapy)
- PEM (Protein Energy Malnutrition) and wasting are the most common nutritional risks
 - PEM is associated with impaired immune competence, increased susceptibility to infections, etc.
 - Explain need for protein and energy
 - Assist with meal planning and following the daily food guide with emphasis on meeting the protein group
- Dietary fat intake may need to be modified if malabsorption, maldigestion occurs

References

1. Institute of Medicine: WIC Nutrition Risk Criteria: A Scientific Assessment; 1996; pp. 175-176.
2. Zeman FJ. Clinical Nutrition and Dietetics. Lexington, Mass: The Collamore Press; 1993.
3. Robinson CH, Weigley ES, Mueller DH. Basic Nutrition and Diet Therapy. New York, NY: Macmillan Publishing Company; 1980.
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5. American Dietetic Association: Pediatric Manual of Clinical Dietetics 2nd Edition; 2003

348 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 | High Risk |
|---------------|----------|-----------|
| Pregnant | I | N |
| Breastfeeding | I | N |
| Postpartum | VI | N |
| Infants | I | N |
| Children | III | N |

Parameters for auto assign

Must be manually selected

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).

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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.

Justification for high risk

Not applicable

Additional counseling guidelines

- Considerations for **Epilepsy**:
 - Find out if seizures controlled by medications
 - Identify medications
 - Reinforce following prescription instructions
 - Identify possible drug nutrient interaction (e.g. Phenobarbital may increase needs of folate, vitamin D, K, calcium, B vitamins, increase risk of osteomalacia, increase appetite, increase nausea, vomiting, anorexia)
 - Address possible drug nutrient interaction through dietary recommendations
- Considerations for **Cerebral Palsy (CP)**:
 - For underweight participants, recommend increased calorie and nutrient intake and vitamin/mineral supplementation
 - For overweight participants discuss prevention of obesity
- Considerations for **Neural tube defects (NTDs)**:
 - Symptoms may include:
 - genitourinary problems, bladder and bowel incontinence
 - variable weakness to flaccid paralysis in lower extremities
 - hydrocephalic
 - possible decreased intelligence
 - For overweight participants discuss prevention of obesity
 - Encourage foods high in folic acid
 - Bioavailability of folic acid in foods is approximately half
 - If appropriate, recommend folic acid supplementation, with MD approval
 - Recommend maternal intake of at least 400µg (.4 mg) daily
 - .4 mg daily for women who have had an affected infant previously in the periconceptual period is believed to greatly reduce the risk of having infant with NTD
 - Refer women on anticonvulsant drugs to MD regarding increased risk of NTD birth (e.g. Valproic acid/Depakene and Carbamazepine are associated with NTD; folic acid reduces the risk)
 - Possible disorders of ascorbic acid metabolism may occur
 - Increase fluids to prevent bladder infections
 - Consume high fiber diet to avoid constipation
- Considerations for **Multiple Sclerosis (MS)**:
 - Identify if chewing or swallowing is affected
 - Provide recommendations for appropriate food choices and modifying food textures
 - May need to try thicker drinks, shakes, puddings

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- May need to avoid foods that crumble (e.g. crackers, toast, cakes) that can cause choking
- Try soft, blenderized, mashed foods or stewed/cooked fruits/vegetables vs. raw
- Identify if characteristic problems such as: vision problems, weakness, fatigue, decreased coordination, numbness, paralysis, and decreased mobility affect:
 - food shopping
 - meal preparation
 - self feeding
- Provide recommendations
- Encourage to maintain normal weight (appropriate BMI) as activity decreases
- If constipation is a problem, provide recommendations for high fiber, increased water, exercise, etc.
- Possibly limit caffeine intake
- Encourage exercise as recommended by MD
 - Encourage to prevent overheating with exercise
 - Exercise in cool water, in an air-conditioned environment, with appropriate clothing (overheating temporarily aggravates MS symptoms)
- Refer postpartum women to MD if symptoms temporarily increase after delivery (sometimes there are less symptoms during pregnancy) Studies show that pregnancy does not alter the long-term course of MS
- Considerations for **Parkinson's disease**:
 - Parkinson's is usually diagnosed in age groups in late 40s (average age 55 – 65)
 - Medications frequently used are L-dopa and carbidopa (sinemet) and have fewer restrictions with diet interactions (e.g. protein, B6 Pyridoxine)
 - A very small percentage of patients need to decrease amount of protein in diet
 - Distribute the protein throughout day in several meals and separate taking their medications from the protein meals by 1 -1/2 hours.
 - Maintain appropriate BMI (prevent low BMI or weight loss)
 - Encourage exercise with MD approval
 - Provide high calorie diet
 - Encourage calorie dense food choices diet (e.g. peanut butter, cheese, whole milk)
 - Encourage more foods per day, more frequent meals
 - Identify if characteristic involuntary muscle movements affect:
 - self feeding
 - meal preparation/cooking
 - walking and working in the kitchen
 - Identify swallowing difficulties (which can lead to weight loss)
 - Modify foods, textures to accommodate
 - Eating slowly or not finishing meals may be common
 - Plan cold foods for end of meal (so cooked meals do not get cold and unappealing to eat)
 - Identify if medications cause nausea or GI upset
 - Recommend small amount of food (e.g. crackers, bread) eaten with medication to help prevent nausea

- Identify if there is constipation
 - Increase fiber and liquids in diet

References

1. Institute of Medicine: WIC Nutrition Risk Criteria: A Scientific Assessment; 1996; pp. 177-178.
2. Zeman FJ. Clinical Nutrition and Dietetics. Lexington, Mass: The Collamore Press; 1993.
3. Robinson CH, Weigley ES, Mueller DH. Basic Nutrition and Diet Therapy. New York, NY: Macmillan Publishing Company; 1980.
4. Pike RL, Brown ML. Nutrition an Integrated Approach. New York, NY: John Wiley & Sons; 1984.
5. Institute of Medicine: Nutrition During Pregnancy. Washington, DC: National Academy Press; 1990.
6. Mayo Clinic Diet Manual: A Handbook of Nutrition Practices; Seventh Edition; 1994; pp. 287-291.
7. Sarnoff, J, and Rector, DM. MS Information, Food for Thought: MS and Nutrition; 5/14/99; pp. 1-6.
8. Chang, MW, Rosendall, B, and Finlayson, BA. Mathematical modeling of normal pharyngeal bolus transport: a preliminary study. J. Rehabil Res Dev, 1998 Jul; 35 (3): 327-34.
9. Berkow, et al.: Merck Manual; 1992; 16th Edition; pp. 1354-1356.

349 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.

Includes:

- cleft lip or palate
- Down's syndrome
- thalassemia major
- sickle cell anemia (not sickle cell trait)
- muscular dystrophy

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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 | High Risk |
|---------------|----------|-----------|
| Pregnant | I | N |
| Breastfeeding | I | N |
| Postpartum | VI | N |
| Infants | I | N |
| Children | III | N |

Parameters for auto assign

Must be manually selected

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 (2). 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 (2).

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,

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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.

Justification for high risk

Not applicable

Additional counseling guidelines

- Explain that disorders affect nutrition if they cause problems with self-feeding, digestion, absorption or utilization of nutrients and/or hypoxia (low oxygen levels)
- Considerations for **Cleft Lip and Palate**:
 - Discuss and address solutions to feeding difficulties
 - Infant cannot create an airtight seal (for negative pressure) to suck
 - Swallowing can be affected (excessive air intake)
 - Discuss and address solutions to other difficulties, such as:
 - respiratory problems
 - more ear infections
 - weight and height can be subnormal, due to feeding problems
 - dental decay
 - Discuss feeding methods
 - Determined by severity of cleft
 - Breastfeeding and/or pumped breastmilk
 - Mom and baby may need breastfeeding assistance
 - Breastfeeding provides benefits of decreased infections, ear and respiratory and prior to surgeries and post surgery protection
 - Aids in development of orofacial muscles
 - Breastfeeding at breast with cleft palates is very difficult and many medical professionals do not encourage it due to outcomes
 - Less severe cleft lips, especially after surgery, can be more successful at breast
 - Try different positions to get seal, both mother and baby comfortable, head slightly higher than buttocks
 - Use finger or thumb to seal cleft lips
 - Direct nipple away from back of throat
 - Support breast and chin to prevent tiring (“Dancer” position)
 - Shorter feeds may be necessary due to fatigue
 - Get “let down” before feeding

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- Pump to keep milk supply up
 - Use of hind milk
 - Support breastfeeding mom's efforts (regardless of outcome)
 - Brecht feeder (syringe with flexible tubing)
 - Beniflex (crossed nipple)
 - Haberman feeder (large nipple with collection receptacle)
 - Supplemental Nutrition System (SNS), Infant Feeding Tube devices
 - Formula
 - Support recommended feeding techniques
 - Use feeding method up to 4-6 months until infant can use cup and spoon feeding
 - Explain importance of closely monitoring weight gain
 - For older infants receiving solids:
 - Avoid acidic and spicy foods that could cause irritation of the mouth and nose
 - Avoid nuts, peanut butter, leafy vegetables, peeling of raw fruits, creamed dishes that could get caught in cleft
 - Child may eat slower, may tire before eating adequately
 - Offer smaller, more frequent meals of high caloric dense foods (low fluid content)
- Explain lip surgery/repair:
 - Usually schedule when infant reaches 10 lbs or about 6-8 weeks
 - May use feeding assistance device until can resume breastfeeding
 - Offer water after feeding to prevent contamination of suture line
- Explain palate repair:
 - Usually schedule at 12-14 months old
 - Palatal obturator used to keep the hard palate from closing
 - Post operation - use cup feeding not spoon feeding or straw to avoid injury to the repair site
 - Diet of soft, finely pureed or mashed 10-20 days, then normal diet
 - Avoid hard foods (e.g. raw vegetables)
- Considerations for **Down Syndrome**:
 - Discuss feeding method(s)
 - Dependent on if very low tone or have other medical problems
 - Breastfeeding options and using pumped breastmilk
 - Use of Supplemental Nursing System (SNS), Infant Feeding Tube device
 - Use of cup, flexible cup (e.g. - Infa Feeder)
 - Use of appropriately suited bottle and nipple
 - Discuss and address solutions to feeding difficulties
 - Mom and baby may need breastfeeding assistance
 - Encourage small frequent feedings and correct latch/positioning
 - Low muscle tone may fatigue or be less effective at feedings (e.g. - 2-3 gum presses and then sweep tongue to get milk from breast)
 - Flat tongue gets less milk at breast (doesn't cup)
 - Gulping and choking happens more easily; airway not as well protected with swallowing
 - Discuss breastfeeding techniques
 - Encourage cuddling, skin to skin for stimulation

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- Encourage to direct nipple away from back of throat or more upward to assist milk flow for easier swallowing
 - Observe nursing patterns, may change with need to burp
 - Support breast and chin to prevent tiring (“Dancer” position)
 - Shorter feeds may be necessary due to fatigue
 - Get “let down” before feeding
 - Use double electric breast pump to keep milk supply up
 - Encourage patience and learning
 - Support breastfeeding mom’s efforts (irrelevant of outcome)
- Explain importance of monitoring weight gain (use Down Syndrome growth chart for counseling)
- For older infant receiving solids:
 - Avoid nuts, peanut butter, leafy vegetables, or foods that are difficult to manipulate in mouth or cause choking
 - May eat slower, may tire before eating adequately
 - Possibly delay introduction to solid foods due to late appearance of the chewing reflex and of teeth
 - Offer small bites, clear mouth, offer liquids due to storage of food in the high arched palate (thrusting of food out of the mouth with the tongue)
 - Use bibs/overshirts; increased mucus production
 - Offer smaller more frequent meals
- Considerations for **Sick Cell Anemia**:
 - If participant has unusually high or low hematocrit/hemoglobin, refer to MD
 - Dietary intakes should be normally low in iron
 - Iron rich foods such as liver and iron fortified cereals should be excluded
 - Requirements for water soluble vitamins are high
 - Dietary intake of fat should be low (< 30% of total calories especially if participant has liver and gall bladder disease)
 - Zinc supplementation may be helpful (refer to MD)
- Considerations for **Thalassemia**:
 - If participant has unusually high or low hematocrit/hemoglobin, refer to MD
 - Include diet rich in water soluble vitamins
 - Recommend diet low in iron if transfusions are part of treatment
- Considerations for **Muscular Dystrophy**:
 - Refer to MD for monitoring medications and possible side effects, GI problems
 - Calorie requirements may be less than normal
 - Limit high calorie, low nutrient density foods
 - Limit fat to no greater than 30% of total calories
 - Increase fiber if constipation is a problem
 - Watch for increase in weight gain, (increase in BMI), or obesity
 - Encourage following exercise program, physical and respiratory therapies
 - Watch for swallowing difficulties, if phlegm accumulates due to ingestion of dairy
 - Ensure adequate calcium intake and use juices to clear phlegm

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- Watch for changes in functional ability or mobility that affect caloric intake (e.g. self feeding) or caloric expenditure (e.g. ability to walk/move)
- May need to use rubber mesh mat or moistened paper towel under plate to prevent slipping
- Use lightweight plastic bowls vs. glass or ceramic
- Increase diameter of eating utensils with foam
- Use wide-handled plastic mugs & sip cups, two handled cups or water bottles with straws
- Cut out rim of disposable cup to fit child's nose (allows chin forward comfort)
- For swallowing difficulties:
 - Suck ice chips to desensitize the gag reflex (adults)
 - Tip chin down if food gathers in the back of the mouth
 - Place frozen package of peas on the front of the neck to relax muscle spasms

References

1. Institute of Medicine: WIC Nutrition Risk Criteria: A Scientific Assessment; 1996; pp. 179-181.
2. Ohio Neonatal Nutritionists: Nutritional Care for High Risk Newborns: Stickley Publishers; 1985; pp. 126-137, 141.
3. Grand, Stephen, and Dietz: Pediatric Nutrition: Theory and Practice; Butterworths; 1987; pp. 481-487.
4. Pediatric Nutrition in Chronic Diseases and Developmental Disorders: Prevention, Assessment and Treatment, Edited by Shirley Walberg Ekvall, PhD, FAAMD, FACN, RD; Oxford University Press; 1993; pp. 289-292.
5. Zeman FJ. Clinical Nutrition and Dietetics. Lexington, Mass: The Collamore Press; 1993.
6. Berkow R, et al. The Merck Manual of Diagnosis and Therapy. Rahway, NJ: Merck Sharp and Dohme Research Laboratories; 1982.
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8. Danner SC, Cerutti ER. Nursing Your Baby with Down Syndrome. Waco, TX: Childbirth Graphics; 1986.
9. American Dietetic Association: Pediatric Manual of Clinical Dietetics; 1998; pp. 177-178.
10. Berkow, et al.: Merck Manual; 1992; 16th Edition; page 1388.

351 Metabolic Inborn Errors

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:

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

Participant category and priority level

| Category | Priority | High Risk |
|---------------|----------|-----------|
| Pregnant | I | Y |
| Breastfeeding | I | Y |
| Postpartum | IV | Y |
| Infants | I | Y |
| Children | III | Y |

Parameters for auto assign

Must be manually selected

Justification

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

Justification for high risk

Untreated pregnant women with certain inborn errors of metabolism have a higher risk of spontaneous abortion and other health or nutrition risks. Infants born to mothers with untreated PKU may show fetal growth restriction, microcephaly, low birth weight, and congenital heart disease. If not detected and treated soon after birth, infants accumulate abnormal metabolites in their blood, resulting in mental retardation, seizures, growth retardation, and developmental delays. Appropriate dietary management, which includes the use of special formulas, can minimize the medical risks to the individual.

Additional counseling guidelines

- Considerations for **Phenylketonuria (PKU)**:
 - Individuals with PKU lack the enzyme to convert phenylalanine (an essential amino acid) to tyrosine
 - Pregnant women are at higher risk of spontaneous abortion or other health or nutrition risks
 - High levels of phenylalanine and its metabolites are toxic to the developing central nervous system
 - Risk to fetus and newborn such as IGR, congenital anomalies, mental retardation
 - Total restriction of phenylalanine can also cause problems such as microcephaly, intrauterine growth retardation, FTT
 - Infants born to mothers with untreated PKU may show fetal growth restriction, microcephaly, LBW, and congenital heart disease
 - Infants need to be treated soon after birth to prevent serious health problems
- Review benefits of treatment:
 - During pregnancy, lowering intake of phenylalanine to normal levels reduces the risk of damage to the fetus or newborn
 - Infants and children who receive early and continuous dietary treatment can normalize blood phenylalanine and can have normal mental development
- Reinforce:
 - Infants with PKU should not be exclusively breastfed
 - They need to follow their prescription for low phenylalanine formula in conjunction with breastfeeding (e.g. Phenex 1, Analog XP)
 - Individuals with disorder, or parent/caregiver, need to learn foods low in phenylalanine, portion sizes, planning for diet
 - Not to use artificial sweetener aspartame
 - For foods containing it, read labels (no NutraSweet, Equal)
- Considerations for **Galactosemia**:
- Reinforce:
 - Importance of receiving ongoing medical/dietary care
 - No breastfeeding
 - Importance of following prescribed formula or dietary prescription which may change with the participant's needs
- Considerations for **Hyperlipoproteinemia (HLP)**:

- Reinforce:
 - Need for ongoing medical/dietary care
 - Need to follow dietary recommendations (which are individualized depending on the type) such as:
 - decrease saturated fat
 - decrease cholesterol
 - increase fiber
 - decrease alcohol
 - Follow medications
 - Participants with high triglyceride levels and/or hypertension need to follow MD treatment, such as:
 - no smoking
 - regular exercise
 - Encourage compliance to prevent atherosclerosis and coronary heart disease

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. Zeman FJ. Clinical Nutrition and Dietetics. Lexington, Mass: The Collamore Press; 1993.
4. Robinson CH, Weigley ES, Mueller DH. Basic Nutrition and Diet Therapy. New York, NY: Macmillan Publishing Company; 1980.
5. Institute of Medicine: Nutrition During Pregnancy. Washington, DC: National Academy Press; 1990.
6. The American Dietetic Association. Handbook of Clinical Dietetics. New Haven, Conn: Yale University Press; 1981.
7. The American Dietetic Association: Pediatric Manual of Clinical Dietetics; Table 2-Metabolic Disorders Amenable to Nutrition Therapy; 1998; p. 288.

352 Infectious Diseases

Definition/cut-off value

A disease caused by growth of pathogenic microorganisms in the body severe enough to affect nutritional status

Includes:

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

Participant category and priority level

| Category | Priority | High Risk |
|----------------|----------|-----------|
| Pregnant | I | N |
| Breastfeeding* | I | N |
| Postpartum | VI | N |
| Infants | I | N |
| Children | III | N |

*Breastfeeding is contraindicated for women with HIV or AIDS.

*Breastfeeding may be permitted for some women with hepatitis (see counseling guidelines).

Parameters for auto assign

Must be manually selected

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 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.

Justification for high risk

Not applicable

Additional counseling guidelines

- Discuss need for receiving adequate nutrients, calories and protein to:
 - maintain health status
 - fight infection (e.g. -- more calories utilized with fever)
 - prevent malnutrition
 - maintain adequate protein stores, prevent catabolism
 - promote healing
- Discuss:
 - changes in dietary intake, appetite
 - if participant is anorexic, nauseous
 - recent weight loss or changes
 - appropriate weight status or recommended weight gain for growth or pregnancy
 - if medically allowed, moderate physical activity
 - basic precautions of spreading infectious disease (e.g. - frequent handwashing with food preparation)
- Discuss appropriate dietary recommendations:
 - Include food sources of vitamin A, C, iron and zinc
 - Offer small, frequent meals if intake is poor
 - Cater to personal preferences to spark appetite and encourage better intake
 - Offer high calorie, nutrient dense foods to maintain or increase weight
 - Reinforce to follow directions on medications (if to be taken with or without foods); identify possible food nutrient interactions (NRF #357)
- Discourage:
 - drug use
 - smoking
 - alcohol use
- Encourage:
 - adequate rest, prevention of fatigue
 - limiting stress
 - receiving help from other services specific to the disease
- Breastfeeding recommendations:
 - It is not recommended for women to breastfeed if they have HIV/AIDS
 - Hepatitis: 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

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- Hepatitis B: Breastfeeding is permitted after the infant receives Hepatitis B specific immunoglobulin (HBIG) and the first dose of the series of Hepatitis B vaccine
- Hepatitis C: Breastfeeding is permitted for mothers without co-infection (e.g. HIV)
- For other infectious diseases, breastfeeding has specific immunological benefits to prevent infant from disease
- If the woman's health and nutrition status is severely compromised, consult MD regarding breastfeeding

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. Zeman FJ. Clinical Nutrition and Dietetics. Lexington, Mass: The Collamore Press; 1993.
5. 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.

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 | High Risk |
|----------------|----------|-----------|
| Pregnant | I | N |
| Breastfeeding* | I | N |
| Postpartum | VI | N |
| Infants | I | N |
| Children | III | N |

Parameters for auto assign

Must be manually selected

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 (1,2).

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 (3).

Justification for high risk

Not applicable

Additional counseling guidelines

- Explain definition of a food allergy.
 - True food allergies involve abnormal immunologic responses to food proteins
 - The proteins are resistant to digestion and elicit the formation of antibodies
 - This allergic response occurs immediately after food is eaten (this is different from a food intolerance)
- Explain characteristics of a food allergy:
 - Will always result in same symptomatic reaction for that individual (could be more mild or severe)
 - If individual is ill or stressed, symptoms may be more severe
 - Sensitization can occur; may have previously tolerated a food but now has a reaction
 - There may be potential for thresholds for individuals with multiple allergies (from contacting, inhaling or ingesting allergens)
 - Some food allergy reactions can be more severe for those who have other allergies (even though not food allergens) (e.g. during pollen season)
- Inform that:
 - the most common offending foods are: peanuts, cow's milk, eggs, soy beans, nuts from trees, wheat, and seafood
 - Prevalence:
 - 4 - 8% young infants
 - 1 - 2% children
 - < 1% adults
- Discuss reactions that can occur:
 - GI - nausea, vomiting, diarrhea, abdominal pain, colic, loss of appetite, constipation, malabsorption, cheilitis and stomatitis (inflammation of the lip and mouth)

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- Dermatologic - itchy “wheels”, hives, eczema, dermatitis, rash around mouth, or ulcers in/around mouth
- Respiratory - chronic rhinitis, asthma, recurrent bronchitis, recurrent croup, recurrent otitis media, chronic coughing, spitting up blood from irritated lungs or bronchioles
- CNS - headache, insomnia, irritability, listlessness, drowsiness
- Hematologic – anemia
- Systemic - anaphylaxis, FTT, malnutrition
- Assist with:
 - Eliminating allergenic food(s) from diet
 - Meal planning at home, away from home, at restaurants
 - Adjusting food package: try goat’s milk (40% of those sensitive to cow’s milk can tolerate goat’s milk)
 - Reading labels to identify allergenic foods (see NRF #354 “Celiac Disease” and #355 “Lactose Intolerance” for food list and other ideas)
 - Identify unobvious allergen sources in foods; they are widely found in commercial and prepared foods (e.g. corn, eggs)
 - Modifying or substituting recipes
- If the CPA/RD determines that a client’s calcium intake is compromised, offer calcium fortified orange juice by providing the client with a Special Food letter indicating the client’s need for calcium fortified orange juice
- Educate participant about anaphylactic response
 - It is a whole-body systemic reaction in which airway can be blocked, shock can occur, etc. in seconds to minutes
- If allergic individual has potential for anaphylactic response they should know
 - what foods could precipitate anaphylactic response - legumes, especially peanuts, tree nuts, seafood particularly shellfish, berries
 - what treatments or medications should be administered at time of reaction
 - wearing a medical alert bracelet or jewelry could provide for more immediate treatment
- For pregnant participants:
 - Follow diet without emphasis on any one food
 - Not recommended to eat large quantities of any high allergenic food
 - Replace diet with nutrients and energy due to the elimination of the allergenic foods (e.g. - provide calcium food list if milk is eliminated)
 - If foods are eliminated long term, recommend vitamin/mineral supplements
- For infants:
 - Infants are more susceptible to the development of food allergies than adults
 - Their digestive system is more permeable to proteins and is not fully mature
 - Infants born to parents with allergies are at a greater risk
 - Infants may have less allergies when they are older
- Recommendations for infants:
 - Exclusively breastfeed for a minimum of 1 year to reduce severe allergic disease, especially in the high risk infant
 - If breastfed infant shows signs of digestive problems:
 - do not stop breastfeeding!

- refer to MD/RD/CLC
- eliminate potential allergenic foods in lactating mother's diet
- For non-breastfed infants provide milk or soy based or hydrolysate infant formulas
 - Reinforce that formulas, unlike breastmilk, do not have the immunologic benefits to actually reduce/prevent allergies
- Delay introduction of solids until infant is developmentally ready
- Adjust for gestational age for introduction of foods
- Delay high allergenic foods in infants with family history of allergies
 - If cow's milk allergy, wait a minimum of first 12 months to introduce dairy products
- Allow a minimum of 3-5 days to introduce new foods and confirm no adverse reactions
- Allow for adequate time to rechallenge foods
- Recommendations for children:
 - Provide psychological support to the child with multiple allergies; they do not need to feel different or fragile
 - Provide special treats or foods (e.g. - at birthdays, holidays) to replace other foods the child cannot have
 - Refer to www.foodallergy.org for up-to-date food recalls or warnings because of undisclosed milk or other common allergens and accurate information about food allergies and anaphylaxis

References

1. Butkus, Nicholson, Sue, PhD, RD: Food Allergies. Nutrition Focus for Children with Special Health Care Needs; July/August 1995; Vol. 10, No. 4.
2. Clinical Nutrition and Dietetics: Nutrition in Diseases of the Immune System, New York; 1991; pp. 149-185.
3. Queen, Patricia and Lang, Carol: Handbook of Pediatric Nutrition; 1993; pp. 219-226.
4. Zeman FJ. Clinical Nutrition and Dietetics. Lexington, Mass: The Collamore Press; 1993.
5. Dobler ML. Food Allergies. Chicago, IL: The American Dietetic Association; 1991.

354 Celiac Disease

Definition/cut-off value

Also known as:

Celiac Sprue
Gluten Enteropathy

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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 | High Risk |
|---------------|----------|-----------|
| Pregnant | I | N |
| Breastfeeding | I | N |
| Postpartum | VI | N |
| Infants | I | N |
| Children | III | N |

Parameters for auto assign

Must be manually selected

Justification

Individuals need to remove all wheat from diet. Wheat in 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 wheat-free diet.

Justification for high risk

Not applicable

Additional counseling guidelines

- Explain disease
 - Gluten is a protein found in wheat, rice, oats, and barley (WROB)
 - Gluten may be fractionated into two parts: gliadin (the damaging fraction) and glutenin
 - In oats, it is prolamins
 - Lining of small intestine is damaged when gluten is ingested
 - Symptoms include: constipation alternating with diarrhea, steatorrhea, excessive gas, bloating, weight loss with high calorie intake, anemia, itchy blistering lesions, projectile vomiting and growth failure in infants and children
 - Even if participant does not experience symptoms, damage still occurs

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- Can lead to malabsorption and malnutrition
- If disease is untreated it can lead to other problems such as organ system problems, OB/GYN problems, dental problems, behavioral changes/irritability, decreased concentration in children
- Celiac disease may be associated with other disorders such as Type I IDDM, hypoglycemia
- Disease typically seen in:
 - infants when cereals are added
 - adolescence - remission and then later reoccurs
 - adults age 20 – 30 secondary to intestinal damage
- Help participant identify/avoid gluten sources
 - Avoid gluten in diet by eliminating wheat, rye, oats, barley, buckwheat (kasha), kamut (hybrid of wheat and rye), millet, quinoa, spelt (ancient wheat) or triticale flours
 - Identify less obvious food sources of gluten such as salad dressing, ice cream, candies, gravies and sauces containing fillers, malted milk, beer and ale from barley, paste products, food containing bran or labeled graham (e.g. - graham crackers), soy sauce solids, food starch – modified (ingredient labeling term that indicates the presence of gliadin (the damaging fraction of gluten)), flour, self-rising flour, enriched flour, monosodium glutamate (MSG), hydrolyzed vegetable protein (HVP), cereals, cereal extracts, distilled vinegar, emulsifiers and stabilizers
 - Many medications may contain gluten; check with MD, pharmacist or refer to drug information from Celiac Sprue Association
 - Some foods, such as cereals, could be contaminated with gluten during manufacturing
- If medically necessary, gluten free cereals may be approved
 - The following WIC-approved cereals are WROB free:
 - Instant grits
 - Malt-O-Meal puffed rice (special food letter needed)
 - Contact the State agency if special approval is needed
- Recommend to incorporate the following into diet:
 - Life-long adherence to diet
 - Adequate intake of protein, carbohydrate and fat (without WROB)
 - Encourage fat soluble vitamins A, D, E, K, the B vitamins (including folate), through food and vitamin/mineral supplementation
 - Fiber through other sources (e.g. beans, lentils), corn, rice millet, corn breads and flours from rice, arrowroot, corn breads and flours from rice, arrowroot, potato, soy, tapioca
 - Cereals including Cream of Rice, hominy, corn meal, puffed rice
 - Wheat starch can be used to prepare baked products but not substituted freely as flour
 - Use rice vinegar, wine vinegar or pure cider vinegar, not distilled vinegar
- For newly diagnosed individuals:
 - allow for GI recovery (up to 6 months)
 - recommend to avoid fat until steatorrhea subsides
 - recommend to avoid lactose
- Provide simplified meal plan regarding weaning from wheat based to rice based diet
- Avoid overwhelming participant with too many details at once

- Provide a few excellent recipes
- Discuss planning meals when away from home or when in restaurants
- Provide a list of manufacturers who provide special food products
- Provide list of support groups for Celiac Disease

References

1. Clinical Nutrition and Dietetics: The Intestinal Tract and Accessory Organs; New York; 1991; Chapter 8; pp. 218-258.
2. Semrod, Carol E., MD.: Celiac Disease and Gluten Sensitivity. Columbia University Division of Gastroenterology (via internet:<http://cpmcnet.columbia.edu/dept/gi/celiac.html>); 1995.
3. Institute of Medicine: WIC Nutrition Risk Criteria: A Scientific Assessment; 1996; pp. 192-193.
4. Zeman FJ. Clinical Nutrition and Dietetics. Lexington, Mass: The Collamore Press; 1993.
5. The American Dietetic Association. Handbook of Clinical Dietetics. New Haven, Conn: Yale University Press; 1981.
6. Hartsook EI. Gluten-Sensitive Enteropathy: Update for Health-Care Professionals. The Gluten Intolerance Group of North America; 1981.
7. Hartsook EI. Celiac Sprue: Patient Resource and Information Guide. The Gluten Intolerance Group of North America. 1991.
8. Dobler ML. Nutrition Fact Sheet. Chicago, FU National Center for Nutrition and Dietetics, The American Dietetics Association; 1991.
9. Dobler ML. Lactose Intolerance. Chicago, IL: The American Dietetic Association; 1991.

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

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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 | High Risk |
|---------------|----------|-----------|
| Pregnant | I | N |
| Breastfeeding | I | N |
| Postpartum | VI | N |
| Infants | I | N |
| Children | III | N |

Parameters for auto assign

Must be manually selected

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.

Justification for high risk

Not applicable

Additional counseling guidelines

- Explain
 - Lactose intolerance may be secondary to GI upset or illness
- Dietary recommendations to discuss:
 - Avoid foods containing lactose
 - Limit portion size of lactose-containing foods
 - Consume dairy foods with meals (diluted with other foods)
 - Heated milk products may be better tolerated (lactose broken down)
 - Higher-fat dairy foods (ice cream) may be better tolerated, for occasional treats
 - Lactose enzyme tablets are available to take when lactose containing foods are ingested (but are expensive)

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- Try lactose-reduced or lactose-free milks (Lactaid, Dairy Ease)
- Choose low-lactose foods such as aged hard cheese or yogurt for calcium source
 - Active culture foods such as yogurt help break down lactose
- Read labels to avoid foods containing milk or lactose such as: milk solids, non-fat milk solids, whey, lactose, margarine, sour cream, malted milk, butter, buttermilk
- Avoid foods that may contain lactose; breads, candy/cookies, cold cuts, hot dogs, bologna, commercial sauces and gravies, cream soups, dry cereals, frostings, frozen breaded fish/chicken, prepared and processed foods, salad dressings containing milk or cheeses, sugar substitutes, chocolate drink mixes, coffee drinks/mixes
- Kosher foods that contain the word “pareve” or “parve” are acceptable and do not contain milk
- Creamers do not adequately substitute milk
- If dairy intake is compromised, include foods rich in calcium, vitamin A & D
- If participant’s calcium intake is compromised, offer calcium-fortified orange juice by providing the client with a Special Formula/Food letter indicating the client’s need for calcium-fortified orange juice
- Substitute fruit juice or water in baked products that call for milk
 - Choose recipes that produce a good product since texture may be different
- For infants:
 - If breastfeeding, continue to breastfeed (Breastmilk is easily digested and will help with recovery of illness, diarrhea and other symptoms.)
 - If formula fed, use lactose reduced formula

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.
4. Zeman FJ. Clinical Nutrition and Dietetics. Lexington, Mass: The Collamore Press; 1993.

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 | High Risk |
|---------------|----------|-----------|
| Pregnant | I | N |
| Breastfeeding | I | N |
| Postpartum | VI | N |
| Infants | I | N |
| Children | III | N |

Parameters for auto assign

Must be manually selected

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).

Justification for high risk

Not applicable

Additional counseling guidelines

- Hypoglycemia is a manifestation of disease; is not a disease in itself
- Discuss signs and symptoms of hypoglycemia

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- If rate of fall of blood glucose is rapid may experience sweating, weakness, hunger, tachycardia (increased heart rate)
- If rate of fall of blood glucose is slow (over many hours) may experience headache, blurred vision, incoherent speech, mental confusion
- If hypoglycemia is prolonged, more serious problems can occur
- If participant experiences symptoms, eat something (e.g. ½ cup juice or milk)
- If hypoglycemia is secondary to disease or other medical condition, follow medical recommendations
- There are many different causes or etiologies
- Signs and symptoms and when they occur may vary
- In infants potential causes of hypoglycemia include:
 - SGA
 - Fetal Growth Restriction
 - mother with Gestational Diabetes
- Dietary recommendations
 - Encourage regular scheduled meals (e.g. 3 meals, 3 snacks)
 - Encourage not to miss meals
- Encourage participant to ask MD about allowed exercise
- If participant is pregnant, discuss with MD feeding plan for newborn
 - Allow mother to breastfeed soon after delivery and frequently thereafter
- If infant is being treated in the hospital, recommend the mother/parents be available for and make arrangements for frequent feedings if medically allowed
 - For breastfed infants - to prevent possible “nipple confusion,” increase milk production, benefits to baby, etc.
 - For formula/bottle fed infants - for bonding and interaction

References

1. National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK): National Diabetes Information Clearinghouse; NIDDK internet address: www.niddk.nih.gov; February 10, 1997.
2. Institute of Medicine: WIC Nutrition Risk Criteria: A Scientific Assessment; 1996; pp. 217-218.
3. Zeman FJ. Clinical Nutrition and Dietetics. Lexington, Mass: The Collamore Press; 1993.

357 Drug Nutrient Interactions

Definition/cut-off value

Use of prescription or over-the-counter drugs or medications that have been shown to interfere with nutrient intake or utilization, to an extent that nutritional status is compromised

Participant category and priority level

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| Category | Priority | High Risk |
|---------------|----------|-----------|
| Pregnant | I | N |
| Breastfeeding | I | N |
| Postpartum | VI | N |
| Infants | I | N |
| Children | III | N |

Parameters for auto assign

Must be manually selected

Justification

The drug treatment of a disease or medical condition may itself affect nutritional status. Drug induced nutritional deficiencies are usually slow to develop and occur most frequently in long-term drug treatment of chronic disease. Possible nutrition-related side effects of drugs include, but are not limited to, altered taste sensation, gastric irritation, appetite suppression, altered GI motility, and altered nutrient metabolism and function, including enzyme inhibition, vitamin antagonism, and increased urinary loss.

The marketplace of prescribed and over-the-counter drugs is a rapidly changing one. For knowledgeable information on the relationship of an individual's drug use to his/her nutritional status, it is important to refer to a current drug reference such as Physician's Desk Reference (PDR), a text such as Physician's Medication Interactions, drug inserts, a pharmacist or the Pregnancy Riskline (if the woman is pregnant or breastfeeding).

Justification for high risk

Not applicable

Additional counseling guidelines

- Explain the factors associated with drug nutrient interaction
 - All drugs taken by pregnant women can be considered potentially harmful to the fetus
 - Misuse of some drugs during pregnancy can result in fetal malformations
 - Food components affect drug absorption and bioavailability
 - Effects vary for each drug
 - Drugs can affect the stomach emptying time
 - Drugs can compete with nutrients for absorption
 - Drugs can affect appetite, induce nausea, and impair sense of taste which may reduce food intake and contribute to weight loss
 - Use of some prescription and over-the-counter drugs are not advisable in breastfeeding

- Some adverse effects can be minimized through adequate nutrient intake and timing of intake in relation to meals and breastfeeding
- Explain possible nutrition related side effects of the medication(s) that participant is currently taking
- Refer participant to her health care provider for the drug nutrient interaction or if a drug nutrient reaction is suspected.

References

1. Allen, M: Food-Medication Interactions; 7th edition; Tempe, Arizona; 1991.
2. Physician's Desk Reference; 51st edition; Montvale, New Jersey; Medical Economics Company, Inc.; 1997
3. Diet and Drug Interactions. Daphne A. Roe, M.D., F.R.C.P.
4. Handbook on Drug and Nutrient Interactions: A Reference and Study Guide.
5. Institute of Medicine: WIC Nutrition Risk Criteria: A Scientific Assessment; 1996; pp. 217-218.
6. Pronsky, ZM: Powers and Moore's Food Medications Interactions; 10th edition; 1997.
7. USPDI: Drug Information for the Health Care Professional; 19th Edition; Micromedex; World Color Book Services, Taunton, Mass.; 1999.
8. Briggs, G. et. al.; Drugs in Pregnancy and Lactation, 5th Edition; Williams & Wilkins, Baltimore, Maryland; 1998.

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:

- 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

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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 | High Risk |
|---------------|----------|-----------|
| Pregnant | I | Y |
| Breastfeeding | I | Y |
| Postpartum | VI | N |

Parameters for auto assign

Must be manually selected

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.

Justification for high risk

Eating disorders can seriously complicate any pregnancy since the nutritional status of the pregnant woman is an important factor in perinatal outcome. Weight gain is of critical importance. With bulimia the outstanding problem is the detrimental biochemical environment to the fetus. Individual counseling and WIC food can assist the pregnant woman gain an appropriate amount of weight and increase the baby's birth weight.

Additional counseling guidelines

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- Explain the potential risks of inadequate weight gain, weight loss during pregnancy or poor weight status prior to pregnancy, if appropriate (see counseling recommendations under risk factors 101, 131, and 132)
- Encourage intake of prenatal vitamins

References

1. Worthington-Roberts, B., and Williams, SR: Nutrition in Pregnancy and Lactation; 5th ed.; Mosby Pub; St. Louis; pp. 270-271.
2. Strober, M: International Journal of Eating Disorders; Vol. 8, No. 3; 1986; pp. 285-295.
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.

359 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 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 | High Risk |
|---------------|----------|-----------|
| Pregnant | I | N |
| Breastfeeding | I | N |
| Postpartum | VI | N |
| Infants | I | N |
| Children | III | N |

Parameters for auto assign

Must be manually selected

Justification

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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.

Persons experiencing severe trauma such as an automobile accident or burn exhibit a hypermetabolic state that may reach the basal levels and persist for 2 months or longer.

Alterations in the metabolism of glucose, protein and fat occur following injury.

Justification for high risk

Not applicable

Additional counseling guidelines

- Explain that participant's recent injury (trauma, burn, surgery) may cause her to have higher nutrient needs than normal for several months
 - Persons experiencing severe trauma such as an automobile accident or burns exhibit a hypermetabolic state that may reach the basal levels and persist for 2 months or longer
 - Alterations in metabolism of glucose, protein and fat occur following injury
- Counsel on methods to achieve adequate diet for age and condition with emphasis on foods of high nutrient density.

References

1. Institute of Medicine: WIC Nutrition Risk Criteria: A Scientific Assessment; 1996; pp. 188-189.

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:

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- juvenile rheumatoid arthritis (JRA)
- lupus erythematosus (lupus)
- cardiorespiratory diseases (CRD)
- heart disease
- cystic fibrosis (CF)
- 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 | High Risk |
|---------------|----------|-----------|
| Pregnant | I | N |
| Breastfeeding | I | N |
| Postpartum | VI | N |
| Infants | I | N |
| Children | III | N |

Parameters for auto assign

Must be manually selected

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 (PEM).

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.

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 birth weight 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.

Justification for high risk

Not applicable

Additional counseling guidelines

- Discuss providing adequate energy (calories) and nutritional intake to maintain or provide for normal growth and development and body weight
- Counsel that goal is to prevent malnutrition which can lead to growth retardation, poor development and motor skills
- If appropriate, discuss the use of special formulas, especially higher calorie ones, which may be indicated for some of these conditions, especially to help correct the growth and weight problems in children with JRA, CF and lupus.

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- **Juvenile rheumatoid arthritis (JRA):**
 - Discuss nutritional risk associated with this disease:
 - About 36% experience protein energy malnutrition (PEM)
 - Lowered intakes of energy, vitamin E, calcium and iron
 - Serum vitamin C may be low in patients taking high doses of aspirin
 - Counsel participant on increasing energy level in the diet as well as consuming adequate amounts of calories, vitamins A & C, calcium & iron, if appropriate
- **Lupus erythematosus:**
 - In pregnancy, there is an increased risk of late pregnancy losses (after 28 weeks) and spontaneous abortion
 - Late pregnancy losses are secondary to hypertension, renal failure and cardiac defects in the fetus
 - More common in dark-skinned ethnic groups, including blacks, Hispanics, Asians and some American Indian tribes
 - Occurs mostly in women between ages of 15 to 65 years of age
 - Discuss nutritional risk associated with this disease:
 - Increased risk of infection, malaise, anorexia, and weight loss
 - Little is known about nutrient metabolism or requirements in a person with lupus, so emphasis on sound nutritional practices is important
- **Cardiorespiratory diseases (CRD) including heart, asthma & Cystic Fibrosis (CF):**
 - These diseases interfere with normal physiological processes
 - Counsel regarding nutritional risk of CRD:
 - failure to thrive
 - malnutrition
 - growth failure can also be aggravated because of increased metabolic requirements and difficulty in sucking and swallowing
 - If participant has congestive heart failure, encourage to limit salt intake
 - **Cystic Fibrosis:**
 - Diet should be individualized based on use of pancreatic enzyme replacement therapy
 - Protein deficiency is more common in first year when requirements are greatest
 - Ensure protein intake is adequate
 - Fat recommendations are the same as normal diets (35 – 40% of the calories)
 - Food items with fat should be as tolerated
 - Sodium needs are high because of sweat losses
 - Liberal use of salt is recommended
 - Frequent height and weight evaluation is recommended for infants and children
 - If growth is poor, the diet may need to increase up to 150% of the RDA for calories
 - Goal of nutritional therapy is to overcome energy deficit
 - Reinforce need to follow health care provider recommendations including use of pancreatic enzyme supplementation
 - Vitamin and mineral supplementation should be recommended or reinforced
 - Infants can be fed breastmilk and/or all types of formula

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- Breastfed infants may require additional sodium
- Formula fed infants may need additional calories from fat or carbohydrates
- Formula may be recommended up to 24 months
- Follow normal guidelines for introduction of solids

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.
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.

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 | High Risk |
|---------------|----------|-----------|
| Pregnant | I | N |
| Breastfeeding | I | N |
| Postpartum | VI | N |
| Children | III | N |

Parameters for auto assign

Must be manually selected

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.

Justification for high risk

Not applicable

Additional counseling guidelines

- Explain the risk associated with maternal depression for mother and fetus:
 - appetite changes
 - anorexia
 - bulimia
 - weight loss
 - more likely to smoke during pregnancy
 - attend prenatal care less frequently
 - higher incidence of low birth weight babies
 - higher perinatal mortality rates
- Explain the risks associated with maternal depression for the child:
 - more stomachaches and headaches in preschool children
 - delayed achievement of developmental milestones
 - child behavior problems such as sleep problems, feeding problems, child depression, social isolation, ADD, withdrawal and defiant behaviors
- Discuss importance of consuming nutritious, well-balanced diet to promote good physical and mental health
- Reinforce use of medication, if prescribed

References

1. Institute of Medicine: WIC Nutrition Risk Criteria: A Scientific Assessment; 1996; pp. 315-316.

362 Developmental Delays

Definition/cut-off value

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Developmental, sensory or motor disabilities that restrict the ability to intake, chew or swallow food or require tube feeding to meet nutritional needs

Includes:

- 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 | High Risk |
|---------------|----------|-----------|
| Pregnant | I | N |
| Breastfeeding | I | N |
| Postpartum | VI | N |
| Infants | I | N |
| Children | III | N |

Parameters for auto assign

Must be manually selected

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 have: 1) 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) to use 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:

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- 1) difficulty with transition to textures, especially during infancy;
- 2) increased sensory sensitivity; restricted intake due to color, texture, and/or temperature of foods;
- 3) decreased selection of foods over time;
- 4) 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 an adequate diet.

Justification for high risk

Not applicable

Additional counseling guidelines

- Explain that nutrition and energy needs must be individualized for each person
- Discuss providing adequate energy and nutrient intake to maintain or provide for adequate growth and development including appropriate/adequate fluid levels
- Factors to consider include:
 - developmental level or oral-motor skills level (i.e. chewing, swallowing and self feeding)
 - feeding position is of prime importance
 - head and body should be supported to minimize abnormal oral movement patterns and increase participant's voluntary oral control
 - muscle tone, cough and gag reflexes, especially if hypersensitive gag reflexes are a problem
 - tube feeding, oral feeding or the process of transitioning from tube to oral feeding
 - availability and use of specially adapted utensils for feeding
 - bowel management, especially constipation management (fiber and fluid recommendations)
- Discuss:
 - recommended frequency of meals and snacks
 - appropriate mealtime behavior management
 - recognizing and responding to hunger cues
- Discuss ways to select nutritionally adequate food based on participant's oral-motor feeding development levels and total energy needs, including:
 - appropriate choices for texture level, i.e. liquid, pureed, thickened liquids
 - ways to increase or decrease caloric intakes
 - if appropriate, discuss use of special formulas, especially higher calorie formulas, which may be indicated for some of these conditions
- Participant may have special/altered nutrient needs due to drug/nutrient interactions

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- Provide family with lots of positive reinforcement and support
- For participants diagnosed with **Autism**:
 - Recognize that child may have a sensory-based feeding problem that results in extreme pickiness, difficulty with changes, sensitivity to tastes, texture, smells and new foods or anything different
 - Picky eating is not a result of inadequate parenting with food
 - Be sensitive to difficulties family experiences with feeding
 - Children with autism who are especially sensitive to tastes, textures, smells or new foods need many exposures to a new food before they will eat it
 - Touching, playing with and otherwise interacting with food can desensitize child
 - Child may move through many stages before food is accepted, including touching, smelling or licking the food
 - Keep mealtimes consistent
 - Use same plates and utensils
 - Eat at same place and at same time
 - Teach social structure of eating
 - Child needs to stay at table with the family
 - Offer small servings of a few (2-3) foods at one time
 - Avoid offering too much food or too many choices
 - Make changes gradually
 - Offer a food the child likes at each meal
 - Offer new foods along with foods child will already eat
 - Introduce foods in forms similar to foods child already eats
 - Continue to offer variety of foods, or child will become more restrictive over time
 - Use non-food reinforcement (verbal praise is best)
 - Reinforce child for ANY positive food behavior
 - Reinforce siblings for appropriate eating behaviors as well
 - Many parents are experimenting with special diets (casein-free, gluten-free) or supplements
 - There is at present no established scientific basis for restrictive diets for children with autism
 - However, if parent chooses to try dietary restriction, refer to dietitian
 - Dietitian should support family and provide guidance on adequate diet and appropriate substitutes for foods restricted (e.g. substitute soy formula for milk, authorize calcium-fortified juice, recommend gluten-free cereal)

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.

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2. Paper submitted by Betty Lucas, MPH, RD, CD to the Risk Identification and Selection Collaborative (RISC); November, 1999.
3. Zeman: Clinical Nutrition and Dietetics, 2nd Edition; 1991; pp. 713-14, 721-72, 729-730.
4. Ogata, Beth, and Betty Lucas. *Autism, Nutrition, and Picky Eating*. Center on Human Development and Disability, University of Washington, Seattle, WA. September 1999. (handout in DDPD newsletter)
5. Toomey, Kay A. *When Children Won't Eat: Managing and Preventing Problematic Eating Patterns in Children with Autism*. Presentation at Autism Pre-Conference, May 20, 2000, San Francisco.

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 | High Risk |
|---------------|----------|-----------|
| Breastfeeding | I | N |
| Postpartum | VI | N |

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 >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 >25) or obese (BMI >30) and who have one or more additional risk factors (see Table 1 in Clarification).

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.

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.

Justification for high risk

Not applicable

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.

371 Maternal Smoking

Definition/cut-off value

Any daily smoking of tobacco products, i.e., cigarettes, pipes, or cigars

Participant category and priority level

| Category | Priority | High Risk |
|---------------|----------|-----------|
| Pregnant | I | N |
| Breastfeeding | I | N |
| Postpartum | VI | N |

Parameters for auto assign

For pregnant women will be auto assigned if “Yes” is selected for “Smk during PN”

OR

anything greater than zero is entered in the “Cig/Day PN” field

For breastfeeding women will be auto assigned if anything greater than zero is entered in the “Cig/Day PP” field

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.

Justification for high risk

Not applicable

Additional counseling guidelines

- Explain potential risks associated with smoking during pregnancy:
 - spontaneous abortions
 - stillbirth
 - bleeding during pregnancy
 - placental complications (abruptio placenta, placenta previa)
 - complications of labor (preterm labor, prolonged and premature rupture of the membranes)
 - fetal growth restriction
 - small for gestational age
 - perinatal mortality
- Other adverse effects which are significantly greater as maternal age increases:
 - Prematurity
 - neonatal mortality (respiratory distress syndrome and SIDS)
- Inform breastfeeding woman that smoking has been reported to:
 - decrease production and volume of breastmilk
- Counsel on ways to achieve adequate diet for age and condition with emphasis on increased intakes of vitamins A & C, fiber, folate and iron

References

1. Breastfeeding Handbook for Physicians, American Academy of Pediatrics and American College of Obstetrics and Gynecologists. 2006.
2. Dietary Reference Intakes for Vitamin C, Vitamin E, Selenium and Carotenoids (2000) Institute of Medicine, the National Academy of Science.
3. McPhillips, C.E.Eaton, et. al.: Dietary Difference in Smokers and Non- Smokers from two Southeastern New England communities. JADA; March 1994; pp. 287-292.
4. Giraud, D. Martin, J. Driskell: Plasma and Dietary Vitamin C and E Levels of Tobacco Chewers, Smokers and Nonusers, JADA; July 1995; pp. 798-802.
5. Elsie Pamuk, Tim Byers, Ralph Coates, Jodi Vann, Anne Sowell, Elaine Gunter, Deborah Glass: Effect of Smoking on Serum Nutrient Concentrations in African-American Women. Am J Clin Nutr; 1994; 59:891-5.
6. Manual of Clinical Dietetics 6th ed., American Dietetic Association. 2000.
7. 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,

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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.

8. Women and Smoking: A Report of the Surgeon General – 2001.
http://www.cdc.gov/tobacco/data_statistics/sgr/sgr_2001/sgr_women_chapters.htm

372a & 372c Alcohol Use

Definition/cut-off value

For Pregnant Women:

- Any current alcohol use

For Breastfeeding and Postpartum Women:

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

Participant category and priority level

| Category | Priority | High Risk |
|---------------|----------|-----------|
| Pregnant | I | Y |
| Breastfeeding | I | N |
| Postpartum | VI | N |

Parameters for auto assign

Will be auto assigned if 1 or more drinks is entered in the Dr/Wk PN field for pregnant women

Must be manually assigned as **372 c** for breastfeeding and postpartum women

Assign if participant is currently routinely drinking 2 or more drinks per day or if participant is binge drinking (see definition of binge drinking under “Definition/cut-off value”).

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

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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.

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.

Justification for high risk

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 potential to damage the fetus at every stage of pregnancy. There is no cure for FAS, prevention is the only answer. Therefore, the recommendation is not to drink any alcoholic beverage during pregnancy. WIC can provide supplemental foods, nutrition education and referral to medical and social services which can monitor and provide assistance to the family.

Additional counseling guidelines

- Explain risks associated with drinking alcohol during pregnancy and breastfeeding:
 - It is rapidly transmitted through placenta and through breastmilk
 - There is no known safe amount during pregnancy
 - It can damage the fetus at any stage of pregnancy
- Excessive alcohol during pregnancy can cause:
 - low birth weight
 - reduced growth rate
 - birth defects
 - mental retardation
 - adverse physical and behavioral effects
 - spontaneous abortions

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- subtle behavioral effects
- poor postnatal growth in children without full Fetal Alcohol Syndrome (FAS)
- FAS
- Excessive alcohol during breastfeeding period may be associated with:
 - failure to initiate let-down reflex
 - lethargy in breastfed infant
 - low intake of folate, thiamin, etc.
- Excessive alcohol consumption may impair a postpartum woman's ability to care for her infant
- Counsel on ways to provide an adequate diet for age and condition:
- If appropriate, emphasize nutrients that chronic alcoholics frequently have a lower nutrient intake of:
 - protein from meat
 - vegetable sources
 - dairy foods and calcium sources
 - cereals and breads
 - B vitamins and vitamin D
- If appropriate, discuss nutrient deficiencies that occur in heavy drinkers and food sources of these nutrients to combat deficiencies:
 - Zinc
 - vitamin A
 - folate
 - thiamin

References

1. USDA/DHHS Dietary Guidelines; 1995.
2. Lawrence, Ruth: Maternal & Child Health Technical Information Bulletin: A Review of the 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.
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 of Press; 1990; pp. 88, 177, 391-394.
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.

372b Illegal Drug Use

Definition/cut-off value

Any current illegal drug use

Participant category and priority level

| Category | Priority | High Risk |
|---------------|----------|-----------|
| Pregnant | I | Y |
| Breastfeeding | I | N |
| Postpartum | VI | N |

Parameters for auto assign

Must be manually selected

Justification

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.

Justification for high risk

The exact amount of illegal drugs a pregnant woman can take in without risk to the developing fetus is not known. Drugs have the potential to damage the fetus at every stage of pregnancy. Some of

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the illegal drug effects are irreversible. Therefore, the recommendation is to not take any illegal drugs during pregnancy. WIC can provide supplemental foods, nutrition education and referral to medical and social services which can monitor and provide assistance to the family.

Additional counseling guidelines

- Explain risks associated with use of illegal drugs during pregnancy and breastfeeding:
 - Rapidly transmitted through placenta and through breastmilk
 - No known safe amount during pregnancy
 - Can damage the fetus at any stage of pregnancy
- If appropriate, explain specific risks of illegal drug use during pregnancy:
 - Marijuana can cause higher rates of:
 - low birth weight
 - miscarriage
 - stillbirth
 - fetal abnormalities
 - Cocaine can cause higher rates of:
 - Miscarriage
 - premature onset of labor
 - Intrauterine Growth Retardation (IUGR)
 - developmental/behavioral abnormalities in children in the preschool years
 - infants may exhibit signs of cocaine toxicity
 - Heroin, methadone and other narcotics may more likely cause:
 - stillborn
 - low birth weight
 - need to go through withdrawal soon after birth
 - Amphetamines may cause higher rates of:
 - congenital defects
 - growth retardation
 - preterm delivery
- For breastfeeding women:
 - Marijuana, cocaine, and heroin appear in breastmilk
 - Marijuana may cause lethargy and decreased feedings in the infant
 - Cocaine and heroin put infant at considerable risk of toxicity
- For postpartum women, illegal drug use may impair ability to care for infant
- Counsel on ways to provide adequate diet for age and condition emphasizing any nutrients participant may be low in
 - Cocaine, phencyclidine (PCP), and marijuana users may have low serum levels of iron or folate
 - Cocaine is an appetite suppressant and may cause participant to reduce intake of energy and nutrients

References

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1. USDA/DHHS Dietary Guidelines; 1995.
2. Lawrence, Ruth: Maternal & Child Health Technical Information Bulletin: A Review of the 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.
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 of Press; 1990; pp. 88, 177, 391-394.
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.
8. Behnke, M., Eyler, F., Garvan, C., Wobie, K.: The Search for Congenital Malformations in Newborns with Fetal Cocaine Exposure; Pediatrics Vol. 107, No. 5 May 2001.

381 Dental Problems

Definition/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 CPA, include:

- 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)

Participant category and priority level

| Category | Priority | High Risk |
|---------------|----------|-----------|
| Pregnant | I | N |
| Breastfeeding | I | N |

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| | | |
|------------|-----|---|
| Postpartum | VI | N |
| Infants | I | N |
| Children | III | N |

Parameters for auto assign

Must be manually selected

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 (1). 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 (2). 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.

Justification for high risk

Not applicable

Additional counseling guidelines

- Explain risks associated with dental problems
 - In adults:
 - missing teeth affects the chewing ability and nutritional intake
 - for pregnant women with gingivitis there is an increased risk of pre-term low birth weight as a result of preterm labor or premature rupture of the membranes
 - In children:
 - increased risk of primary tooth loss
 - possible feeding problems
 - damage to permanent teeth
 - potential speech problems
- Emphasize correcting inappropriate dental feeding practices and teaching participant preventative practices
 - For infants:
 - hold infant for bottle and breast feedings
 - do not allow the infant/toddler to sleep with the bottle or use it unsupervised during waking times

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- wipe infant's gums with a soft cloth after feeding
- introduce foods, beverages and meals/snacking behaviors that promote oral health (i.e. fruit juices in a cup)
- For women and children:
 - Eating frequency is associated with caries risk
 - Drink water to satisfy thirst and hydration needs
 - Limit consumption of sweetened beverages
 - Consume them with meals and snacks that contain other foods (such as proteins) which can buffer them
 - The more times a day the child consumes solid or liquid food, the higher the caries risk
 - Caregivers should be counseled to offer structured meal and snack patterns

References

1. Agerberg, G and Carlsson, GE: Chewing ability in relation to dental and general health; Aeta Odontol. Scand.; 1981; 39:147-153.
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: Nutrition and Dental Health; Oxford Medical Publications; 1993.

382 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 (1).

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 | High Risk |
|----------|----------|-----------|
| Infants | I | Y |
| Children | III | Y |

Parameters for auto assign

Must be manually selected

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 (1). 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 (2). 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 (3). Drinking, particularly abusive drinking, is often found in families that suffer from a multitude of other social problems (4). 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.

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.

Justification for high risk

The major complications of failure to thrive, poor growth throughout childhood and poor suck in the infant make these children high risk. The parent/caregiver is also frequently recovering from their own health problems. WIC can help by providing food, nutrition education and referrals to other agencies to help the family.

Additional counseling guidelines

- Explain risks associated with FAS:

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- irreversible birth defects
 - failure to thrive
 - pattern of poor growth throughout childhood
 - poor suck (for infants)
 - babies are also more irritable, have difficulty feeding and sleeping
 - poor appetite due to slower rate of growth
 - may lead to feeding behavioral problems
 - delays in feeding skills due to slower rate of growth
 - auditory and vision problems
 - malformed and misaligned secondary teeth
 - learning difficulties
 - language delays
 - attention deficit disorders
- All of above risks place child at risk for poor nutrition
 - If appropriate, discuss extra family stress of a special needs child
 - Counsel on ways to provide adequate diet and nutritional intake for age and developmental level
 - Special consideration should be given to:
 - feeding skill level and appropriate textures
 - meal planning and infant food preparation
 - feeding and meal times
 - If child has short attention span, more feeding times may be appropriate
 - If excessive weight gain is a problem in children, stress lower caloric food choices and exercise

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401 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 | High Risk |
|--------------------------------|----------|-----------|
| Pregnant Women | IV | N |
| Breastfeeding Women | IV | N |
| Non-Breastfeeding Women | VI | N |
| Children \geq 2 years of age | V | N |

Parameters for auto assign

Must be manually selected

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.

IOM Committee Findings Related to Dietary Risk and Supporting Research

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(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

"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

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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)

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*.

Justification for high risk

Not applicable

Additional counseling guidelines

None

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USDA 3/05

411 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.

Participant category and priority level

| Category | Priority | High Risk |
|----------|----------|-----------|
| Infants | IV | N |

Parameters for auto assign

Must be manually selected

| Inappropriate Nutrition Practices for Infants | Examples of Inappropriate Nutrition Practices (including but not limited to) |
|--|---|
| 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>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.” |
| 411.2 Routinely using nursing bottles or cups improperly. | <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. |
| 411.3 Routinely offering | Examples of inappropriate complementary foods: |

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| Inappropriate Nutrition Practices for Infants | Examples of Inappropriate Nutrition Practices (including but not limited to) |
|---|--|
| <p>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> | <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. |
| <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>411.6 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. |

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| Inappropriate Nutrition Practices for Infants | Examples of Inappropriate Nutrition Practices (including but not limited to) |
|--|---|
| 411.8 Routinely feeding a diet very low in calories and/or essential nutrients. | <p>Examples:</p> <ul style="list-style-type: none"> ▪ Vegan diet; ▪ Macrobiotic diet; and ▪ Other diets very low in calories and/or essential nutrients. |
| 411.9 Routinely using inappropriate sanitation in preparation, handling, and storage of expressed breastmilk or formula. | <p>Examples of inappropriate sanitation:</p> <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. | <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. |
| 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. ▪ Breastfed infants who are ingesting less than 500 mL (16.9 ounces) per day of vitamin D-fortified formula and are not taking a supplement of 200 IU of vitamin D. ▪ Non-breastfed infants who are ingesting less than 500 mL (16.9 ounces) per day of vitamin-D fortified formula and are not taking a supplement of 200 IU of vitamin D. |

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 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 dilute 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 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.

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, 32). 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, 32).

Dehydration and metabolic acidosis can occur (3, 5, 10, 32). 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, 33-37). 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 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 2 hours or longer than recommended by the manufacturer;
- has been held in the refrigerator longer than 48 hours for concentrated or ready-to-eat 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, 51-53). 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 (51); 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.

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, Maté, 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 AA P recommends a supplement of 400 IU per day for the following (4, 61):

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

Justification for high risk

Not applicable

Additional counseling guidelines

- Considerations for **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:**
 - Discuss risks of feeding infants a milk that does not provide ideal nutrition
 - Encourage participant to breastfeed or use a formula that will provide optimal nutrition for infants
- Considerations for **Routinely using nursing bottles or cups inappropriately:**
 - Discuss risks associated with improper use of bottles/cups
 - Discuss importance of good oral health
- Considerations for **Routinely offering complementary foods or other substances that are inappropriate in type or timing:**
 - Discuss infant feeding recommendations
- Considerations for **Routinely using feeding practices that disregard the developmental needs or stage of the infant:**
 - Discuss infant feeding recommendations
 - Encourage parents to follow infant's hunger and satiety cues
- Considerations for **Feeding foods to an infant that could be contaminated with harmful microorganisms or toxins:**
 - Discuss foods that may be harmful to an infant due to an immature digestive tract
- Considerations for **Routinely feeding inappropriately diluted formula:**
 - Review correct formula dilution procedure
 - Discuss risks of not properly diluting formula
- Considerations for **Routinely limiting the frequency of nursing of the exclusively breastfed infant when breast milk is the sole source of nutrients:**
 - Review appropriate breastfeeding practices
 - Help mother identify infant's hunger and satiety cues
- Considerations for **Routinely feeding a diet very low in calories and/or essential nutrients:**
 - Review infants' nutrient needs
 - Help parent identify foods that provide adequate nutrients
- Considerations for **Routinely using inappropriate sanitation in preparation, handling, and storage of expressed breastmilk or formula:**
 - Review food safety recommendations
- Considerations for **Feeding dietary supplements with potentially harmful consequences:**
 - Review infant feeding recommendations
 - Discuss risks of feeding infants supplements not prescribed by an MD
- Considerations for **Routinely not providing dietary supplements recognized as essential by national public health policy when an infant's diet alone cannot meet nutrient requirements:**
 - Review infants' nutrient needs
 - Discuss why certain dietary supplements (prescribed by an MD) could be beneficial

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USDA 3/05

425 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.

Participant category and priority level

| Category | Priority | High Risk |
|----------|----------|-----------|
| Children | V | N |

Parameter for auto assign

Must be manually selected

| 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. | Examples of inappropriate beverages as primary milk source: <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. | Examples of sugar-containing fluids: <ul style="list-style-type: none"> • Soda/soft drinks; • Gelatin water; • Corn syrup solutions; and • Sweetened tea. |

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| Inappropriate Nutrition Practices for Children | Examples of Inappropriate Nutrition Practices (including but not limited to) |
|--|---|
| 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. |
| 425.4 Routinely using feeding practices that disregard the developmental needs or stages of the child. | <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). |
| 425.5 Feeding foods to a child that could be contaminated with harmful microorganisms. | <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). |

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| Inappropriate Nutrition Practices for Children | Examples of Inappropriate Nutrition Practices (including but not limited to) |
|---|---|
| 425.6 Routinely feeding a diet very low in calories and/or essential nutrients. | <p>Examples:</p> <ul style="list-style-type: none"> • Vegan diet; • Macrobiotic diet; and • Other diets very low in calories and/or essential nutrients. |
| 425.7 Feeding dietary supplements with potentially harmful consequences. | <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. |
| 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. | <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. |
| 425.9 Routine ingestion of non-food items (pica). | <p>Examples of inappropriate nonfood items:</p> <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). |

Justification

425.1 Routinely feeding inappropriate beverages as the primary milk source.

Goat's milk, sheep's milk, imitation milks and substitute milks 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 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 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 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, pokeroor or pokeweed, periwinkle, nutmeg, catnip, hydrangea, juniper, Mormon tea, thorn apple, yohimbe bark, lobelia, oleander, Maté, 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).

Justification for high risk

Not applicable

Additional counseling guidelines

- Considerations for **Routinely feeding inappropriate beverages as the primary milk source:**
 - Review milk recommendations that are appropriate for the child's age and nutrition needs
- Considerations for **Routinely feeding a child any sugar-containing fluids:**
 - Discuss importance of good oral health
 - Encourage caregiver to help child maintain a healthy weight by giving water to drink most of the time
- Considerations for **Routinely using nursing bottles, cups, or pacifiers improperly:**
 - Discuss importance of good oral health
 - Review methods of weaning child from bottle or pacifier
- Considerations for **Routinely using feeding practices that disregard the developmental needs or stages of the child:**
 - Review feeding recommendations
 - Help caregiver understand importance of following child's hunger and satiety cues
- Considerations for **Feeding foods to a child that could be contaminated with harmful microorganisms:**
 - Review food safety recommendations
- Considerations for **Routinely feeding a diet very low in calories and/or essential nutrients:**
 - Review child's nutrient needs
 - Help parent identify foods that provide adequate nutrients
- Considerations for **Feeding dietary supplements with potentially harmful consequences:**
 - Review child feeding recommendations
 - Discuss risks of feeding children supplements not prescribed by an MD
- Considerations for **Routinely not providing dietary supplements recognized as essential by national public health policy when a child's diet alone cannot meet nutrient requirements:**
 - Review child's nutrient needs
 - Discuss why certain dietary supplements (prescribed by an MD) could be beneficial
- Considerations for **Routine ingestion by child of nonfood items (Pica):**
 - Discuss risks of ingesting non-food items and help parent identify ways to keep child from eating the nonfood item(s)

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427 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.

Participant category and priority level

| | | |
|-----------------|-----------------|------------------|
| Category | Priority | High Risk |
|-----------------|-----------------|------------------|

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| | | |
|-------------------------|----|---|
| Pregnant Women | IV | N |
| Breastfeeding Women | IV | N |
| Non-Breastfeeding Women | VI | N |

Parameters for auto assign

Must be manually selected

| 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 |

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| Inappropriate Nutrition Practices for Women | Examples of Inappropriate Nutrition Practices (including but not limited to) |
|--|--|
| | <ul style="list-style-type: none"> • Starch (laundry and cornstarch). |
| 427.4 Inadequate vitamin/mineral supplementation recognized as essential by national public health policy. | <ul style="list-style-type: none"> • Consumption of less than 27 mg of iron as a supplement daily by pregnant woman. • Consumption of less than 150 mcg 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. |
| 427.5 Pregnant woman ingesting foods that could be contaminated with pathogenic microorganisms. | <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. |

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)
- 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).

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 effects 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 United 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, 30, 31). 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).

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*).

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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.

Justification for high risk

Not applicable

Additional counseling guidelines

- Considerations for **Consuming dietary supplements with potentially harmful consequences:**
 - Discuss risks of taking supplements not prescribed by an MD
- Considerations for **Consuming a diet very low in calories and/or essential nutrients; or impaired caloric intake or absorption of essential nutrients following bariatric surgery:**
 - Discuss importance of consuming adequate energy and nutrients
 - People who have undergone bariatric surgery are at risk for calcium, iron, and vitamin B12 deficiency. Review ways to prevent deficiency.
- Considerations for **Compulsively ingesting non-food items (pica):**
 - Discuss risks of ingesting non-food items and help participant identify ways to abstain from eating the nonfood item(s)
- Considerations for **Inadequate vitamin/mineral supplementation recognized as essential by national public health policy:**
 - Discuss why certain dietary supplements (prescribed by an MD) could be beneficial
- Considerations for **Pregnant woman ingesting foods that could be contaminated with pathogenic microorganisms:**
 - Discuss food safety recommendations
 - Review ways to prevent Listeriosis

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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

<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>

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428 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 | High Risk |
|--------------------------|----------|-----------|
| Infants 4 to 12 months | IV | N |
| Children 12 to 23 months | V | N |

Parameters for auto assign

Must be manually selected

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.

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| 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 |

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

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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)

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 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 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:

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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 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)

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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.

Justification for high risk

Not applicable

Additional counseling guidelines

None

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USDA 3/05

501 Possibility of Regression

Definition/cut-off value

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- 1) 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 CPA determines there is a possibility of regression in nutritional status without the benefits that the WIC Program provides. Participants shall not be considered at nutritional risk based on the possibility of regression for consecutive certification periods.

When regression can be used:

- participant was at nutritional risk during the last certification period
- nutrition risk from last certification period has been resolved
- CPA ruled out the existence of all other risk factors
- participant will regress to previous nutrition risk without WIC benefits

When regression **cannot** be used:

- at the initial certification
- participant can be certified for other risk factors
- participant was certified using only the following risk factors during the last certification period
 - Women – 101, 111, 131, 132, 133, 301, 302, 334, 335, 381 (gingivitis of pregnancy), 601
 - Infants – 141, 142, 151, 153, 701, 702
 - All participants – 501, 502

Participant category and priority level

| Category | Priority | High Risk |
|---------------|----------|-----------|
| Breastfeeding | VII | N |
| Postpartum | VII | N |
| Infants | VII | N |
| Children | VII | N |

Parameters for auto assign

Must be manually selected

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

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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.

Justification for high risk

Not applicable

Additional counseling guidelines

- Congratulate participant on improved nutritional status
- Give dietary recommendations appropriate to prevent reoccurrence of previous risk factor(s)
- Reinforce positive practices
- Inform participant of possibility of not requalifying for WIC at next certification

References

1. WIC Program Regulations: Section 246.7(e)(1)(iii)

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.

Participant category and priority level

| Category | Priority | High Risk |
|---------------|----------|-----------|
| Pregnant | I* | N |
| Breastfeeding | I* | N |
| Postpartum | IV* | N |
| Infants | I* | N |
| Children | III* | N |

*This priority is automatically assigned if priority is not known.

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Parameters for auto assign

Must be manually selected

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.

Justification for high risk

See specific risk factors

Additional counseling guidelines

See specific risk factors

References

1. WIC Program Regulations: Section 246.7(k); FNS Instruction 803-11, Rev. 1.

601 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 | Priority | High Risk |
|---------------|---------------|-----------|
| Breastfeeding | I, II, or IV* | N |

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

Parameters for auto assign

Must be manually selected

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 (3). Lactation requires an additional 500 kcal per day (approximately) as increased protein, calcium, and other vitamins and minerals (4, 5). Inadequate maternal nutrition may result in decreased nutrient content of the milk (5).

Justification for high risk

Not applicable

Additional counseling guidelines

- Encourage and support continued breastfeeding
- Provide information on any breastfeeding concerns participant may have

References

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602 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

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- 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 | High Risk |
|---------------|----------|-----------|
| Breastfeeding | I | Y |

Parameters for auto assign

Must be manually selected

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.
- 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 breastmilk 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.

Justification for high risk

Breastfeeding provides optimal nutrition for infants during the first year of life. If complications arise in the breastfeeding process, the possibility that breastfeeding will continue diminishes greatly. The role of the Lactation Educator in the WIC program is to provide breastfeeding information to the WIC participant and triage any problems that arise with the breastfeeding dyad. WIC has the ability to ensure breastfeeding success.

Additional counseling guidelines

- **Severe breast engorgement:**
 - review hand expression procedures
 - massage breast while nursing
 - cold packs between feedings to reduce swelling
 - warm shower or warm pack to promote milk ejection
 - wear supportive bra
 - loan electric breast pump for 24 hours or issue manual pump for relief
- **Recurrent plugged ducts**
 - feed on affected side first
 - massage breast in warm shower
 - warm compress or gentle massage to area before feedings
 - position baby's chin close to sore spot
 - avoid tight fitting bras and clothing
- **Mastitis**
 - nurse more frequently, at least every 2 hours
 - feed on affected side first
 - get plenty of bed rest
 - increase fluid intake
 - call MD for probable antibiotic prescription
 - warm compresses before feedings
 - avoid tight fitting bras
- **Flat or inverted nipples**
 - use breast pump to pull out nipples prior to feedings
 - wear breast shells between feedings
 - start with short time periods, working up to 8 hours
 - do not wear at night
 - compress breast and areola between 2 fingers making it easier for infant to grasp
- **Cracked, bleeding or severely sore nipples**
 - involve the Lactation Educator as soon as possible for assessment
 - check positioning

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- short, frequent feedings – every 1-2 hours
- begin nursing on the side which is least sore first
- break baby's suction before removing from the breast
 - slip finger into corner of mouth, between gums
- rub a small amount of breastmilk or pure Lanolin on nipple after each feeding
- air-dry breasts after each feeding
- avoid using lotions, soaps, creams
- avoid using breast pads with plastic liners, rubber nipples or pacifiers
- **Age ≥ 40 years:**
 - mom should be counseled on signs of adequate milk supply
 - 6-8 wet diapers
 - 4 or more bowel movements each day (before 2 months)
 - baby should be gaining weight
 - mother's milk should come in by 4 days postpartum
- **Failure of milk to come in by 4 days postpartum**
 - supplement until milk comes in
 - continue to put baby to breast
 - feed formula with infant dropper or cup to avoid nipple confusion
 - use breast pump to stimulate milk supply
- **Tandem nursing**
 - vary nursing patterns – younger infant needs to receive both fore and hindmilk
 - breastfeed younger infant every 1 ½ to 3 hours
 - give mother assurance that younger baby is receiving enough breastmilk
 - 6-8 wet diapers
 - 4 or more bowel movements each day (before 2 months)
 - eat a balanced and nutritious diet including healthy snacks
 - drink to thirst

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603 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

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| Category | Priority | High Risk |
|----------|----------|-----------|
| Infants | I | Y |

Parameters for auto assign

Must be manually selected

Justification

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 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.

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.

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.

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.

Justification for high risk

Breastfeeding provides optimal nutrition for infants during the first year of life. If complications arise in the breastfeeding process, the possibility that breastfeeding will continue diminishes greatly. The role of the Lactation Educator in the WIC program is to provide breastfeeding information to the WIC participant and triage any problems that arise with the breastfeeding dyad. WIC has the ability to ensure breastfeeding success.

Additional counseling guidelines

- **Breastmilk jaundice**
 - discontinue breastfeeding for 24-36 hours
 - review pumping guidelines – may need to loan electric pump for 48 hours
- **Breastfeeding jaundice**
 - avoid water supplements
 - supplement with extra calories (formula) if necessary
- **Weak or ineffective suck**
 - feed baby when awake and alert
 - listen for suck-swallow pattern
 - swallow after every two or three sucks
 - suck-swallow pattern should last 5-10 minutes per breast
- **Difficulty latching on to mother's breast**
 - review counseling for flat or inverted nipples or breast engorgement if appropriate
 - mother may need to support breast using C-hold

References

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2. Maisels MJ, and Newman TB: Kernicterus in otherwise healthy, breastfed term newborns; Pediatr.; 1995; 96:730.
3. Neifert M: Early assessment of the breastfeeding infant; Contemporary Pediatr.; 1996; 13:142.
4. Neifert M: The optimization of breastfeeding in the perinatal period: Clinics in Perinatology; June 1998 (In Press); 25.
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11. Neifert M, Lawrence R, and Seacat J: Nipple confusion: Toward a formal definition; J Pediatr.; 1995; 126:s-125.
12. Wilson-Clay B: Clinical use of silicone nipple shields; J Hum Lact; 1996; 12:279.
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15. Meier P, Engstrom JL, Fleming BA, et al.: Estimating milk intake of hospitalized preterm infants who breastfeed; J Hum Lact; 1996; 12:21.
16. Thullen JD: Management of hypernatremic dehydration due to insufficient lactation; Clin Pediatr; 1988; 27:370.
17. Weaver LT, Ewing G, and Taylor LC: The bowel habits of milk-fed infants; J Pediatr Gastroenterol Nutr; 1988; 7:568.
18. Lawrence RA: Breastfeeding: A Guide for the Medical Profession; 4th Edition; 1994; pp. 371-372, 452-454.
19. Mohrbacher, N., Stock, J.: The Breastfeeding Answer Book, La Leche League International, Revised Edition, 1997.
20. Huggins, K.: The Nursing Mother's Companion, 3rd Edition, 1995.

701 Mom on WIC/Mom Not on WIC 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

If mother was not on during pregnancy but would have qualified, the CPA must document what the mother would have qualified for.

Participant category and priority level

| Category | Priority | High Risk |
|----------|----------|-----------|
| Infants | II | N |

Parameters for auto assign

Must be manually selected

Justification

Federal Regulations designate these conditions for WIC eligibility (1).

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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 (2, 3).

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 (2, 3).

Justification for high risk

Not applicable

References

1. WIC Program Regulations: Section 246.7(e)(1)(ii).
2. Journal of the American Dietetic Association: Nutrition Services: A Literature Review; April 1989; Supplement vol. 89(4): s-13, s-19.
3. Ryan, A.S., Martinez, G.A. and Malec, D.J.: The Effect of the WIC Program on Nutrient Intakes of Infants; Medical Anthropology; 1984; vol. 9, no. 2.

702 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 | High Risk |
|----------|---------------|-----------|
| Infants | I, II, or IV* | N |

*Note: Must be the same priority as at-risk mother.

Parameters for auto assign

Must be manually selected

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 (4, 5). Inadequate maternal nutrition may result in decreased nutrient content of the milk (5). Special attention should therefore be given to the health and nutritional status of breastfed infants whose mothers are at nutritional risk (3).

Justification for high risk

Not applicable

Additional counseling guidelines

- Encourage and support continued breastfeeding
- Address any breastfeeding concerns she may have

References

1. WIC Program Regulations: Section 246.7(e)(1)(i)
2. WIC Program Regulations: Section 246.7(d)(1)(ii)
3. Worthington-Roberts, BS and Williams, SR: Nutrition in Pregnancy and Lactation; 4th Edition; Times-Mirror/Mosby College Publishing; 1989; pp. 364-365.
4. Food and Nutrition Board: Recommended Dietary Allowances; 10th revision; National Academy of Sciences; National Research Council; 1989; 34-35.
5. Institute of Medicine: Nutrition During Lactation; National Academy Press; 1991; pp. 103, 140, 214.

703 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

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Participant category and priority level

| Category | Priority | High Risk |
|----------|----------|-----------|
| Infants | I | N |

Parameters for auto assign

Must be manually selected

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 (2, 4). 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 (5). 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 (3, 4).

Justification for high risk

Not applicable

Additional counseling guidelines

- Review basic infant nutrition
- If bottle feeding
 - discuss bottle sanitation and preparation
 - review formula mixing instructions
 - issue concentrate or ready-to-feed, if appropriate

References

1. WIC Program Regulations: Section 246.7(e)(2)(ii)
2. Accardo, Pasquale and Whitman, Barbara: Children of Mentally Retarded Parents; American Journal of Disease of Children; 1990; 144:69-70.
3. Pollitt, Ernest and Wirtz, Steve: Mother-infant feeding interaction and weight gain in the first month of life; Journal of American Dietetic Association; 1981; 78:596-601.

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4. Grand, R, Stephen, J, and Dietz, W.: Pediatric Nutrition: Theory and Practice; Butterworths; 1987; pp. 627-644.
5. McCullough, C: The Child Welfare Response; The Future of Children; Spring 1991; vol. 1(1); pp. 61-71.

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 designed to provide temporary living accommodations
 - This includes group shelters, rescue missions, shelters for victims of domestic violence, motels, etc.
- a public or private place not ordinarily used as a regular sleeping accommodation for human beings
 - Examples include tents, cars, parks, hallways, sidewalks, abandoned buildings, doorsteps, etc.
- a temporary residence for persons intended to be institutionalized

A homeless person may no longer be considered homeless while living in a temporary accommodation of another individual if it has been more than 365 days.

Participant category and priority level

| Category | Priority | High Risk |
|---------------|----------|-----------|
| Pregnant | IV | N |
| Breastfeeding | IV | N |
| Postpartum | VI | N |
| Infants | IV | N |
| Children | V | N |

Parameters for auto assign

Will be auto assigned if “homeless” is marked in residential status field

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

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population contains a sizable 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.

Justification for high risk

Not applicable

Additional counseling guidelines

- Review food preparation and safety techniques appropriate for current living conditions
 - buy powdered or evaporated milk
 - buy canned meats like tuna, chicken, turkey or ham
 - buy canned soups with meat and beans for extra protein
 - buy small amounts or fresh fruits and vegetables
 - buy fruit juice in bottles or cans

References

1. WIC Program Regulations; Section 246.7(e)(2)(iv).

802 Migrancy

Definition/cut-off value

Categorically eligible women, infants and children who are members of a family 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 a temporary residence for the purpose of such employment.

Participant category and priority level

| Category | Priority | High Risk |
|-----------------|-----------------|------------------|
| Pregnant | IV | N |
| Breastfeeding | IV | N |
| Postpartum | VI | N |
| Infants | IV | N |
| Children | V | N |

Parameters for auto assign

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Will be auto assigned if “migrant” is marked in residential status field

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.

Justification for high risk

Not applicable

Additional counseling guidelines

- Review food preparation and safety techniques appropriate for current living conditions
 - buy powdered or evaporated milk
 - buy canned meats like tuna, chicken, turkey or ham
 - buy canned soups with meat and beans for extra protein
 - buy small amounts or fresh fruits and vegetables
 - buy fruit juice in bottles or cans

References

1. WIC Program Regulations: Section 246.7(e)(2)(iv).

901 Environmental Risk

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 (2).”

State law requires the reporting of known or suspected child abuse or neglect. WIC staff must report such information to Child Protective Services. WIC regulations pertaining to confidentiality do not take precedence over such State law.

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Law does not required WIC to report suspected battering; however, extensive referrals must be given.

Participant category and priority level

| Category | Priority | High Risk |
|---------------|----------|-----------|
| Pregnant | IV | N |
| Breastfeeding | IV | N |
| Postpartum | VI | N |
| Infants | IV | N |
| Children | V | N |

Parameters for auto assign

Must be manually selected

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 nonorganic failure to thrive.

Justification for high risk

Not applicable

Additional counseling guidelines

- **Child Abuse**
 - Neglect and physical, emotional and sexual abuse have long term physical and emotional consequences for children
 - Child abuse is a crime
 - Report all child abuse to Child Protective Services
 - Give mom tips on coping with a crying baby
 - Meet baby's basic needs such as feed, change, make comfortable, etc.
 - Take baby for a ride in stroller or in car
 - Swaddle baby snugly in soft warm blanket

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- If frustrated and need a break, put baby in playpen or crib, go to another part of the house and do something to calm down for a moment
- Call a friend or relative to take over for a while, then get away and get some rest
- **Domestic Violence**
 - There are five tasks in helping victims of domestic violence
 - Ask questions
 - Assess woman's safety
 - Report to law enforcement
 - Refer her to those who can provide more help
 - Chart the violence and referrals
 - Avoid using the words "domestic violence", "abused", or "battered" when speaking with victim
 - Counsel parent on impact of domestic violence on children:
 - may be injured during an incident of parental violence
 - may be traumatized by fear for their mother, their own helplessness in protecting her, or blame themselves for not preventing /causing it
 - may become violent themselves or have other serious emotional and behavioral problems
 - Let participant know that WIC is a place she can trust to come for help
 - Share these steps for a quick exit with women experiencing domestic violence
 - Always keep some money hidden
 - Pack a suitcase or bag to store with a friend or neighbor
 - Include a change of clothing for self and children, toilet articles, and extra set of keys to the house and/or the car
 - Keep special items in easy to locate but safe place so that they can be located on short notice
 - Items include medicine, ID, social security cards and birth certificates, marriage license, insurance policies, extra cash, checkbook, savings account book, valuable jewelry, credit cards, WIC ID packet, and immunization records
 - Know exactly where to go and how to get family member or friend who will help
 - Call your doctor or go to emergency room if hurt
 - Call law enforcement (911)
 - Physical abuse is a crime
 - The only way to protect safety and guarantee that violent partner will get help is to involve legal system

References

1. Institute of Medicine: WIC Nutrition Risk Criteria: A Scientific Assessment; 1996; pp. 317-321.
2. The Child Abuse Prevention and Treatment Act Reauthorized; October 1996; Public Law 104-25.

902 Woman or Infant/Child of Primary Caregiver with Limited Ability to Make Feeding Decisions

Definition/cut-off value

Woman (pregnant, breastfeeding, or postpartum) or infant/child whose primary caregiver is assessed to have a limited ability to make appropriate feeding decisions and/or prepare food. Includes 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 | High Risk |
|---------------|----------|-----------|
| Pregnant | IV | N |
| Breastfeeding | IV | N |
| Postpartum | VI | N |
| Infants | IV | N |
| Children | V | N |

Parameters for auto assign

Must be manually selected

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.

Justification for high risk

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Not applicable

Additional counseling guidelines

- Assess need for assistance in shopping, cooking and preparing meals
- Give tips on grocery shopping
- If bottle feeding
 - discuss bottle sanitation and preparation
 - review formula mixing instructions
 - issue concentrate or ready-to-feed, if appropriate

References

1. Accardo and Whitman B.: Children of Mentally Retarded Parents; American Journal of Diseases of Children; 1990; 144:69-70.
2. Pollitt, Ernest and Wirth: Mother-Infant Feeding Interaction and Weight Gain in the First Month of Life; J. Am. Diet Assoc.; 1981; 78:596-601.
3. Grand, Stephen, Dietz: Pediatric Nutrition: Theory and Practice; 1987; pp. 627-644.
4. Institute of Medicine: WIC Nutrition Risk Criteria: A Scientific Assessment; 1996; pp. 321-323.
5. WIC Program Regulations: Section 246.7(e)(2).

903 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 | High Risk |
|---------------|----------|-----------|
| Pregnant | IV | N |
| Breastfeeding | IV | N |
| Postpartum | VI | N |
| Infants | IV | N |
| Children | V | N |

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Parameters for auto assign

Must be manually selected

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. CPAs 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 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.

Justification for high risk

Not applicable

Additional counseling guidelines

- Review nutrition risks that many foster care children have:
 - anemia
 - diabetes
 - seizure disorders
 - inadequate nutrition
 - growth retardation including short stature
 - failure to grow

References

1. American Medical News: America's Sickest Children; January 10, 1994; 15-19.
2. Chernoff, Robin, et al: Assessing the Health Status of Children Entering Foster Care; Pediatrics Vol. 93., No. 4; April 1994; 594-600.
3. DuRouseau, Pamela C., et al: Children in Foster Care: Are they at nutritional risk?; Research and Professional Briefs Vol. 91, No. 1; January 1991; 83-85.
4. Government Accounting Office: Foster Care - Health Needs of Many Young Children Are Unknown and Unmet; GAO/HEHS; 95-114; May 1995.
5. Halfon, Neal, et al: Health Status of Children in Foster Care; Archives of Pediatric and Adolescent Medicine; Vol. 149; April 1995; 386-392.
6. Schor, Edward: The Foster Care System and Health Status of Foster Children; Pediatrics Vol. 69, No. 5; May 1982; 521-527.

904

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 | High Risk |
|----------|----------|-----------|

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| | | |
|---------------|-----|---|
| Pregnant | I | N |
| Breastfeeding | I | N |
| Postpartum | VI | N |
| Infants | I | N |
| Children | III | N |

Parameters for auto assign

None

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).

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).

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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 nonsmokers 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 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)

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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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Appendix A: Not-Allowed Nutrition Risk Criteria

- USDA does not currently allow the following nutrition risk factors.
 - Maternal Short Stature
 - Abnormal Postpartum Weight Change
 - Urinary Tract Infections
 - Food Intolerances other than those specifically allowed (Celiac Disease, Lactose Intolerance, etc.)
 - Pregnancy at Age Older than 35
 - History of Post-term Delivery
 - Preeclampsia/Eclampsia
 - Placental Abnormalities
 - Vegetarian Diets other than Vegan
 - Low Level of Maternal Education/Literacy
 - Weight for Age
 - Hemorrhage associated with Pregnancy
 - Risk of Anemia: History of Anemia Requiring Treatment
 - Prepregnancy Underweight for Postpartum Women
 - Transfer from Infant to Child Diet
 - Infant Taking More than 1 quart of Formula per Day
 - Rapid Growth (Not Related to Catch Up Growth)
 - Chronic or Recurrent Infections – Bronchitis
 - Otitis Media
 - Passive Smoking
 - Smokeless Tobacco
 - Smoking for Nonlactating Postpartum Women
 - Food Insecurity
 - Nulliparity
 - Consumption of Fish from Water Contaminated with Toxic Substances
 - Accidental Poisoning
 - Consumption of Drinking Water Contaminated with Nitrate
 - Infant or Child of Woman with Diabetes during Pregnancy
 - Attention Deficit Hyperactive Disorder/Attention Deficit Disorder
 - Excessive Caffeine Intake
 - Inadequate Diet

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