

Inappropriate Nutrition Practices for Women

**Definition/
cut-off value**

Routine nutrition practices that may result in impaired nutrient status, disease, or health problems. These practices with examples are outlined below. Refer to “Attachment to 480 - Justification and References” for this criterion.

**Participant category
and priority level**

Category

Priority

Pregnant Women

IV

Breastfeeding Women

IV

Non-Breastfeeding Women

VI

Inappropriate Nutrition Practices for Women	Examples of Inappropriate Nutrition Practices (including but not limited to)
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.
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.

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<p>3. Compulsively ingesting non-food items (pica).</p>	<p>Non-food items:</p> <ul style="list-style-type: none">• Ashes;• Baking soda;• Burnt matches;• Carpet fibers;• Chalk;• Cigarettes;• Clay;• Dust;• Large quantities of ice and/or freezer frost;• Paint chips;• Soil; and• Starch (laundry and cornstarch).
<p>4. Inadequate vitamin/mineral supplementation recognized as essential by national public health policy.</p>	<ul style="list-style-type: none">• Consumption of less than 30 mg of iron as a supplement daily by pregnant woman.• Consumption of less than 400 mcg of folic acid from fortified foods and/or supplements daily by non-pregnant woman.
<p>5. Pregnant woman ingesting foods that could be contaminated with pathogenic microorganisms.</p>	<p>Potentially harmful foods:</p> <ul style="list-style-type: none">• Raw fish or shellfish, including oysters, clams, mussels, and scallops;• Refrigerated smoked seafood, unless it is an ingredient in a cooked dish, such as a casserole;• Raw or undercooked meat or poultry;• Hot dogs, luncheon meats (cold cuts), fermented and dry sausage and other deli-style meat or poultry products unless reheated until steaming hot;• Refrigerated pâté or meat spreads;• Unpasteurized milk or foods containing unpasteurized milk;• Soft cheeses such as feta, Brie, Camembert, blue-veined cheeses and Mexican style cheese such as queso blanco, queso fresco, or Panela unless labeled as made with pasteurized milk;• Raw or undercooked eggs or foods containing raw or lightly cooked eggs including certain salad dressings, cookie and cake batters, sauces, and beverages such as unpasteurized eggnog;• Raw sprouts (alfalfa, clover, and radish); or• Unpasteurized fruit or vegetable juices.

Justification

- 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).

- 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:

Justification (cont)

- 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

Justification (cont)

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).

- 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).

- 4. Inadequate vitamin/mineral supplementation recognized as essential by national public health policy.**

Non-pregnant women of childbearing age who do not consume adequate amounts of folic acid are at greater risk for functional

Justification (cont)

folate deficiency, which has been proven to cause neural tube defects (NTDs), such as, spina bifida and anencephaly (29, 30, 31, 32).

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 (31, 32, 33). 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 (30).

- 5. Pregnant woman ingesting foods that could be contaminated with pathogenic microorganisms.** Food-borne illness is a serious public health problem (34). 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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Justification (cont)

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 (35). 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 (34, 35).

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

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WEBSITES FOR ADDITIONAL INFORMATION:

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>

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-compications.aspx>

3. References - Non-Food Ingestion

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

4. References - Folic Acid

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

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>