355 Lactose Intolerance

Definition/Cut-off Value

Lactose intolerance is the syndrome of one or more of the following: diarrhea, abdominal pain, flatulence, and/or bloating, that occurs after lactose ingestion.

Presence of condition diagnosed, documented, or reported by a physician or someone working under a physician's orders, or as self reported by applicant/participant/caregiver. See Clarification for more information about self-reporting a diagnosis.

Participant Category and Priority Level

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

Justification

Lactose intolerance occurs because of a deficiency in the levels of the lactase enzyme (1). Many variables determine whether a person with lactase deficiency develops symptoms. They include: the dose of lactose ingested; the residual intestinal lactase activity; the ingestion of food along with lactose; the ability of the colonic flora to ferment lactose; and, the individual sensitivity to the products of lactose fermentation (1). Some forms of lactase deficiencies may be temporary, resulting from premature birth or small bowel injuries, and will correct themselves, leaving individuals with the ability to digest lactose sufficiently (2).

Primary lactase deficiency is attributable to relative or absolute absence of lactase that develops in childhood, and is the most common cause of lactose malabsorption and lactose intolerance (2).

Secondary lactase deficiency is one that results from small bowel injury, such as acute gastroenteritis, persistent diarrhea, or other causes that injure the small intestine mucosa, and can present at any age, but is more common in infancy. Treatment of secondary lactase deficiency and lactose malabsorption attributable to an underlying condition generally do not require elimination of lactose from the diet. Once the primary problem is resolved lactose-containing products can be consumed normally. (2)

Congenital lactase deficiency is a rare disorder that has been reported in only a few infants. Affected newborn infants present with intractable diarrhea as soon as human milk or lactose-containing formula is introduced. (2)

Developmental lactase deficiency is the relative lactase deficiency observed among pre-term infants of less than 34 weeks' gestation (2). One study in preterm infants reported benefit from the use of lactase-supplemented feedings or lactose-reduced formulas (3). The use of lactose-containing formulas and human milk does not seem to have any short- or long-term deleterious effects in preterm infants (2).

Lactose is found primarily in milk, milk-based formula and other dairy products, which provide a variety of nutrients essential to the WIC population (calcium, vitamin D, protein). Lactose intolerance varies according to individuals. Some individuals may tolerate various quantities of lactose without discomfort, or tolerate it when consumed with other foods. Dairy products that are soured, or otherwise treated with bacteria that secrete lactase (e.g., Lactobacillus acidophilus), such as cheese and yogurt, are easier to digest in lactose-intolerant individuals because they contain relatively low levels of lactose. (4)

Many individuals diagnosed with lactose intolerance avoid dairy all together. Also, lactose intolerance has been shown to be associated with low bone mass and increased risk of fracture (5). Inadequate dairy intake increases the risk of metabolic syndrome, hypertension, preeclampsia, obesity and certain forms of cancer, especially colon cancer (6).

Implications for WIC Nutrition Services

It is important to assess participants individually for lactose tolerances and nutrient needs to determine the best plan of action. WIC can provide client-centered counseling to incorporate tolerated amounts of lactose-containing foods and/or other dietary sources of calcium, vitamin D and protein into participants' diets. WIC foods such as cheese, lactose-free milk, soy beverages, tofu, and calcium fortified foods (like juice) can provide these nutrients to participants with lactose intolerance. Based on the needs and interests of the participant, WIC staff can, in addition, also offer the following strategies (as appropriate):

- **Except for infants with congenital lactase deficiency**, promote exclusive breastfeeding until six months of age and continue breastfeeding through the first year. For infants with congenital lactase deficiency, treatment is removal and substitution of lactose from the diet with a commercial lactose-free formula (2).
- Tailor food packages to substitute or remove lactose-containing foods.
- Educate participants on meeting nutritional needs in the absence of lactose-containing foods.
- Educate participants on planning lactose-free/lactose-reduced meals and snacks for outings, social gatherings, school and/or work.

Any WIC participant suspected to have lactose intolerance should be referred to a health care provider for evaluation and appropriate diagnosis (7), if needed (see Clarification for additional information on diagnosing Lactose Intolerance).

References

1. National Institutes of Health Consensus Development Conference Statement: Lactose intolerance and health. February, 2010. Available at: http://consensus.nih.gov/2010/lactosestatement.htm. Accessed May 2012.
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3. Shulman RJ, Feste A, Ou C. Absorption of lactose, glucose polymers, or combination in premature infants. J Pediatr. 1995; 127:626-631.
4. Ranciaro A, Tishoff SA. Population genetics: evolutionary history of lactose tolerance in africa [abstract]. NIH Consensus Development Conference Lactose Intolerance and Health; February 2010; 43-47.

5. U.S. Department of Health and Human Services- Office of the Surgeon General. Bone health and osteoporosis: a report of the surgeon general. 2004.
6. Hearney RP. Consequences of excluding dairy or of avoiding milk in adults [abstract]. NIH Consensus Development Conference Lactose Intolerance and Health. February, 2010; 73-77.
7. Chang, Lin MD. Clinical Presentation: But what if it is not lactose intolerance? [abstract]. NIH Consensus Development Conference Lactose Intolerance and Health; February 2010; 39-42.

Additional Reference

1. National Dairy Council [Internet]. Lactose Intolerance Health Education Kit (2011). Available at: http://www.nationaldairycouncil.org/EDUCATIONMATERIALS/HEALTHPROFESSIONALSEDUCATIONKITS/Pages/LactoseIntoleranceHealthEducationKit.aspx. Accessed May 2012

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.

Lactose malabsorption can be diagnosed with a hydrogen breath test. The test involves having individuals ingest a standard dose of lactose after fasting. Elevated levels of breath hydrogen, which are produced by bacterial fermentation of undigested lactose in the colon, indicate the presence of lactose malabsorption (1). The hydrogen breath test is not routinely ordered, and instead, patients are frequently asked to assess symptoms while avoiding dairy products for a period of time followed by a lactose product challenge to determine if they are lactose intolerant (7). The demonstration of lactose malabsorption does not necessarily indicate that an individual will be symptomatic.