

# Nutrition for healthy term infants, six to 24 months: An overview

Jeffrey N Critch; Canadian Paediatric Society; Nutrition and Gastroenterology Committee  
Nutrition and Gastroenterology Committee  
Paediatr Child Health 2014;19(10):547-49  
Posted: Dec 5 2014

## Abstract

*Nutrition for Healthy Term Infants* is a joint statement by Health Canada, the Canadian Paediatric Society, Dietitians of Canada and the Breastfeeding Committee for Canada. It was republished in September 2012, with recommendations on infant feeding from birth to six months of age. The statement was most recently updated in April 2014, with recommendations for feeding older infants and young children from six to 24 months of age. The present practice point outlines the statement development process and principles of feeding, with specific recommendations for clinicians. Health professionals who counsel families on nutrition in infants and young children are advised to read the statement in its entirety because discussion in the longer document expands on and clarifies advice summarized in the principles and recommendations given here. The complete statement is available on Health Canada's website: <http://www.hc-sc.gc.ca/fn-an/nutrition/infant-nourisson/index-eng.php>.

**Key Words:** *Breastfeeding; Iron; NHTI; Responsive feeding; Vitamin D*

## Background

In 2009, a formal review of Nutrition for Healthy Term Infants (NHTI) was initiated by the collaborating organizations of the Infant Feeding Joint Working Group, consisting of representatives from the Canadian Paediatric Society Nutrition and Gastroenterology Committee, Dietitians of Canada, the Breastfeeding Committee for Canada, the Public Health Agency of Canada and Health Canada. The review was divided into two parts, with focus on feeding from birth to six months of age and from six to 24 months of age. The document covering the period from birth to six months was released in September 2012 and is available online in English and French on Health Canada's website: [http://www.hc-sc.gc.ca/fn-an/nutrition/infant-nourisson/recom/index-](http://www.hc-sc.gc.ca/fn-an/nutrition/infant-nourisson/recom/index-eng.php)

[eng.php](http://www.hc-sc.gc.ca/fn-an/nutrition/infant-nourisson/recom/recom-6-24-months-6-24-mois-eng.php). The document covering nutrition from six to 24 months was released in April 2014 and is available at: <http://www.hc-sc.gc.ca/fn-an/nutrition/infant-nourisson/recom/recom-6-24-months-6-24-mois-eng.php>.

Developing the NHTI involved extensive review of the scientific evidence in the peer-reviewed literature. Guidance on content was provided by the Infant Feeding Expert Advisory Group, with broad stakeholder and public consultations.

The NHTI provides health care professionals with evidence-informed advice for communicating accurate and consistent information to Canadian parents and caregivers. The statement is not intended to be an all-encompassing practical guide to infant feeding. While the recommendations are based on available scientific evidence, it is important to note that many infant nutrition studies are not randomized trials. Such research is neither possible nor ethical in many circumstances.

## Principles and recommendations

Nutrition for Healthy Term Infants: Recommendations from Six to 24 Months is organized around seven principles, each of which contains a number of underlying recommendations, rationales and references. These principles and recommendations are summarized below. Clinicians should read the statement in its entirety because discussion in the longer document expands on and clarifies advice summarized in the principles and recommendations.

Breastfeeding – exclusively for the first six months, and continued for up to two years or longer with appropriate complementary feeding – is important for the nutrition, immunologic protection, growth and development of infants and toddlers.

1. Breastfeeding is an important source of nutrition for older infants and young children as complementary foods are introduced.

- Support breastfeeding for up to two years or beyond, as long as mother and child want to continue.

The rationale notes: Breastfeeding beyond six months has been associated with a number of positive infant and maternal health outcomes. Breastfeeding longer, in addition to a wide range of other determinants, may have a protective effect against overweight and obesity in childhood.<sup>[11][3]</sup> Limited evidence suggests breastfeeding continues to provide immune factors during the first and second years.<sup>[4][5]</sup> An observational study suggests breastfeeding to 12 months may protect against infectious illnesses, particularly gastrointestinal and respiratory infections.<sup>[6]</sup> Findings have consistently shown a decreased risk of maternal breast cancer with longer durations of breastfeeding.<sup>[7][9]</sup> Limited evidence also suggests a protective effect for the breastfeeding mother against ovarian cancer.<sup>[10][12]</sup> Mothers who breastfeed their older infants and young children also report experiencing an increased sensitivity and bonding with their child.<sup>[13][15]</sup>

To help improve breastfeeding durations, it is important to promote the implementation of the WHO/UNICEF's Baby-Friendly Hospital Initiative outlined in the Ten Steps to Successful Breastfeeding.<sup>[16]</sup> Its Canadian adaptation is the Baby-Friendly Initiative Integrated 10 Steps for Hospitals and Community Health Services.<sup>[17]</sup> Baby-friendly initiatives are known to increase the initiation, exclusivity and duration of breastfeeding.<sup>[18]</sup>

2. Supplemental vitamin D is recommended for infants and young children who are breastfed or receiving breastmilk.

- Recommend a daily vitamin D supplement of 10 µg (400 IU) for infants and young children who are breastfed or receiving breastmilk.

3. Complementary feeding, along with continued breastfeeding, provides the nutrients and energy to meet the needs of the older infant.

- Recommend gradually increasing the number of times a day that complementary foods are offered while continuing to breastfeed.
- Recommend iron-rich meat, meat alternatives, and iron-fortified cereal as the first complementary foods. Encourage parents and caregivers to progress to introduce a variety of nutritious foods from the family meals.
- Ensure that lumpy textures are offered no later than nine months. Encourage progress towards a variety of textures, modified from family foods, by one year of age.

4. Responsive feeding promotes the development of healthy eating skills.

- Encourage responsive feeding based on the child's hunger and satiety cues.
- Promote offering finger foods to encourage self-feeding.
- Encourage use of an open cup, initially with help.

5. Iron-rich complementary foods help to prevent iron deficiency.

- Continue to recommend a variety of iron-rich foods. Ensure that foods such as meat and meat alternatives and iron-fortified cereal are offered a few times each day.
- If parents and caregivers are introducing cow milk, advise them to delay until nine to 12 months of age. Recommend limiting cow milk intake to no more than 750 mL per day.

6. Foods for older infants and young children must be prepared, served and stored safely.

- Recommend infants and young children always be supervised during feeding.
- Recommend parents and caregivers avoid offering hard, small and round, or smooth and sticky, solid foods. These may cause aspiration and choking.
- Promote safe food preparation and storage to prevent foodborne illness. Recommend avoiding products that contain raw or undercooked meat, eggs, poultry or fish; unpasteurized milk or milk products; unpasteurized juice; and cross-contamination between cooked and uncooked foods.
- Advise parents and caregivers not to give honey to a child under one year of age. This helps to prevent infant botulism.

7. From one year of age, young children begin to have a regular schedule of meals and snacks. Generally follow the advice in Canada's Food Guide: <http://www.hc-sc.gc.ca/fn-an/food-guide-aliment/index-eng.php>.

- Recommend a regular schedule of meals and snacks, offering a variety of foods from the four food groups.
- Recommend foods prepared with little or no added salt or sugar.
- Explain to parents and caregivers that nutritious, higher-fat foods are an important source of energy for young children.
- Encourage continued breastfeeding, or offering 500 mL per day of homogenized (3.25% M.F.) cow milk.

- Advise limiting fruit juice and sweetened beverages. Encourage offering water to satisfy thirst.
- Encourage parents and caregivers to be role models and instil lifelong healthy eating habits.

The NHTI statement recognizes that some infants may not be exclusively breastfed for personal, medical or social reasons. A separate section addresses recommendations on the use of breast milk substitutes. Families need support to optimize an infant's nutritional well-being. The International Code of Marketing of Breast-milk Substitutes<sup>[19]</sup> advises health professionals to inform parents of:

- the importance of breastfeeding,
- the personal, social and economic costs of formula feeding, and
- the difficulty of reversing the decision not to breastfeed.

Families who have made a fully informed choice not to breastfeed should be counselled on the use of breastmilk substitutes. For an older infant or child who is not breastfed or receiving breastmilk:

- Recommend commercial infant formula until nine to 12 months of age (cow milk-based is the standard infant formula; there may be indications for soy-based infant formula or formulas for special medical purposes).
- Advise pasteurized homogenized (3.25% M.F.) cow milk be introduced at nine to 12 months of age. Skim milk is not appropriate in the first two years.
- Advise that, for most healthy young children, there is no indication for the use of commercial formulas beyond one year of age.
- Advise that soy, rice, or other plant-based beverages, whether or not they are fortified, are inappropriate alternatives to cow milk in the first two years.
- Recommend avoiding prolonged bottle feeding and giving bottles at night.

The NHTI statement concludes with questions and answers to help health professionals communicate with families about early nutrition, with information on topics such as the 'picky eater' and when to transition to low-fat milk. Sample menus for different age group are provided.

It is important to emphasize that further research is needed in many areas of infant nutrition. While the current statement is evidence-informed, incomplete data have made some feeding topics controversial. Further data from well-designed and well-conducted studies in both developed and developing countries are necessary to validate and/or refine recommendations in the present statement.

## References

1. Arenz S, R ckerl R, Koletzko B, von Kries R. Breast-feeding and childhood obesity: A systematic review. *Int J Obesity Relat Metab Disord* 2004;28(10):1247-56.
2. Scott JA, Ng SY, Cobiac L. The relationship between breast-feeding and weight status in a national sample of Australian children and adolescents. *BMC Public Health* 2012;12:107.
3. von Kries R, Koletzko B, Sauerwald T, et al. Breast feeding and obesity: Cross sectional study. *BMJ* 1999;319(7203):147-50.
4. Goldman AS, Goldblum RM, Garza C. Immunologic components in human milk during the second year of lactation. *Acta Paediatr Scand* 1983;72(3):461-2.
5. Goldman AS, Garza C, Nichols BL, Goldblum RM. Immunologic factors in human milk during the first year of lactation. *J Pediatr* 1982;100(4):563-7.
6. Fisk CM, Crozier SR, Inskip HM, et al. Breastfeeding and reported morbidity during infancy: Findings from the Southampton Women's Survey. *Matern Child Nutr* 2011;7(1):61-70.
7. Collaborative Group on Hormonal Factors in Breast Cancer. Breast cancer and breastfeeding: Collaborative reanalysis of individual data from 47 epidemiological studies in 30 countries, including 50,302 women with breast cancer and 96,973 women without the disease. *Lancet* 2002;360(9328):187-95.
8. Chang-Claude J, Eby N, Kiechle M, Bastert G, Becher H. Breastfeeding and breast cancer risk by age 50 among women in Germany. *Cancer Causes Control* 2000;11(8):687-95.
9. Brinton LA, Potischman NA, Swanson CA, et al. Breastfeeding and breast cancer risk. *Cancer Causes Control* 1995;6(3):199-208.
10. Luan NN, Wu QJ, Gong TT, Vogtmann E, Wang YL, Lin B. Breastfeeding and ovarian cancer risk: A meta-analysis of epidemiologic studies. *Am J Clin Nutr* 2013;98(4):1020-31.
11. Su D, Pasalich M, Lee AH, Binns CW. Ovarian cancer risk is reduced by prolonged lactation: A case-control study in southern China. *Am J Clin Nutr* 2013;97(2):354-9.
12. World Cancer Research Fund; American Institute for Cancer Research Second Expert Report: Part 3, Chapter 12: Public health goals and personal recommendations, 2013: [http://www.dietandcancerreport.org/cancer\\_resource\\_center/downloads/chapters/chapter\\_12.pdf](http://www.dietandcancerreport.org/cancer_resource_center/downloads/chapters/chapter_12.pdf) (Accessed October 27, 2014).
13. Britton JR, Britton HL, Gronwaldt V. Breastfeeding, sensitivity, and attachment. *Pediatrics* 2006;118(5):e1436-43.
14. Fergusson DM, Woodward LJ. Breast feeding and later psychosocial adjustment. *Paediatr Perinat Epidemiol* 1999;13(2):144-57.
15. Kendall-Tackett KA, Sugarman M. The social consequences of long-term breastfeeding. *J Hum Lact* 1995;11(3):179-83.
16. World Health Organization, UNICEF. (2009). Baby-Friendly Hospital Initiative: Revised, updated and expanded for integrated care. Section 1: Background and implementation, 2009: [http://www.unicef.org/nutrition/files/BFHI\\_2009\\_s1.pdf](http://www.unicef.org/nutrition/files/BFHI_2009_s1.pdf) (Accessed October 27, 2014).
17. Breastfeeding Committee for Canada. (2011). Baby-Friendly Initiative (BFI) integrated 10 steps practice outcome indicators for hospitals and community health services: Summary: [http://breastfeedingcanada.ca/documents/2011-03-30\\_BCC\\_BFI\\_Integrated\\_10\\_Steps\\_summary.pdf](http://breastfeedingcanada.ca/documents/2011-03-30_BCC_BFI_Integrated_10_Steps_summary.pdf) (Accessed October 22, 2014).
18. Pound SL, Unger SL, Canadian Paediatric Society Nutrition and Gastroenterology Committee. The Baby-Friendly Initiative: Protecting, promoting and supporting breastfeeding. *Paediatr*

Child Health 2012;17(6):317-21: <http://www.cps.ca/en/documents/position/baby-friendly-initiative-breastfeeding> (Accessed October 22, 2014).

19. World Health Organization (1981). International Code of Marketing of Breast-milk Substitutes: [w.who.int/nutrition/publications/infantfeeding/9241541601/en/](http://www.who.int/nutrition/publications/infantfeeding/9241541601/en/) (Accessed June 2, 2014).

#### **CPS NUTRITION AND GASTROENTEROLOGY COMMITTEE**

**Members:** Dana Boctor MD, Jeffrey N Critch MD (Chair), Manjula Gowrishankar MD, Jonathan B Kronick MD (Board

Representative), Jae H Kim MD (past member), Catherine Pound MD, Sharon Unger MD

**Liaisons:** Genevieve Courant, Breastfeeding Committee for Canada; A George Davidson MD, Human Milk Banking Association; Tanis Fenton, Dietitians of Canada; Jennifer McCrea, Bureau of Nutritional Sciences, Health Canada; Sarah Jane Schwarzenberg MD, American Academy of Pediatrics; Lynne Underhill, Bureau of Nutritional Sciences, Health Canada

**Principal author:** Jeffrey N Critch MD