Weaning from the breast

Canadian Paediatric Society

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Breast milk is the optimal form of nutrition in infancy. Breastfeeding protects an infant from a wide array of infectious and noninfectious diseases. With very few exceptions, in the healthy term infant, breast milk alone (with vitamin D supplementation) meets all of the nutritional requirements up to six months of life. The Canadian Paediatric Society, Dietitians of Canada, and Health Canada recommend exclusive breastfeeding for at least the first four to six months of life, and continuing with complementary foods for up to two years and beyond (1). The World Health Organization recommends exclusive breastfeeding for the first six months of life in both developing and developed countries (2).

This statement deals with the many influences affecting weaning, and the different processes by which weaning can occur. As well, practical suggestions that the physician may offer to mothers with respect to weaning and nutritional alternatives will be discussed. Problems that may be encountered during the weaning process will also be addressed. The focus of this article is the healthy term infant and the recommendations provided may not be appropriate for infants in special circumstances (eg, prematurity, chronic illness, failure to thrive, etc.)

A review of the literature was performed using MEDLINE (1966 to 2003), the Cochrane database and relevant sites on the World Wide Web, including those of the World Health Organization, the Canadian Paediatric Society, Health Canada and the American Academy of Pediatrics. Given the limited nature of the evidence regarding weaning, the recommendations in this statement are based largely on expert opinion and consensus.

The term weaning comes from the Anglo-Saxon word "wenian" meaning "to become accustomed to something different". Weaning from the breast is a natural, inevitable stage in a child's development. It is a complex process involving nutritional, immunological, biochemical and psychological adjustments (3). Weaning may mean the complete cessation of breastfeeding ('abrupt' or final wean) or, for the purposes of this article, the beginning of a gradual process of the introduction of complementary foods to the infant's diet. The very first introduction of foods other than breast milk is, by definition, the true beginning of weaning.

HISTORICAL AND CULTURAL PERSPECTIVES

Durations of breastfeeding were generally longer in ancient times (4) than in western society today. Aristotle stated that breastfeeding should continue for 12 to 18 months, or when menses restarted in the nursing mother. Mothers in Zulu societies have traditionally breastfed their infants until 12 to 18 months, at which point a new pregnancy would be anticipated. Ancient Hebrews completed weaning at about three years. Most children in traditional societies are completely weaned between two and four years of age (5).

Anthropological theories have recommended final weaning at the following points: when the infant acquires four times his birth weight; when the infant's age is six times the length of gestation (ie, 4.5 years); or when the first molar erupts (6).

The inappropriate early introduction of mixed feedings began in early 19th century western society. Prominent physicians at that time, such as American Pediatric Society founders Dr Luther Emmett Holt and Dr Job Lewis Smith, recommended that weaning begin at around nine to 12 months of age, or when the canine teeth appeared (6). Smith recommended against weaning during the summer months because of the risk of 'weanling diarrhea'. Unfortunately, as weaning began earlier and earlier in the 19th century, infant mortality increased. Introduction of weaning foods was an important cause of infant mortality in the 19th century. This increase in infant mortality, in part, spurred the development of paediatrics as a specialty in medicine (6).

In the early 20th century, mothers were encouraged by the medical community to raise their children scientifically or 'by the book'. In the 1920s, the United States government published *Infant Care*, which at the time was referred to as the 'good book' and was read by women from all socioeconomic statuses. It recommended cod liver oil, orange juice and artificial feeding.

By 1940, the Honourable Paul Martin, Minister of National Health and Welfare, Ottawa, Ontario, published *The Canadian Mother and Child* (8th edn, 1949) written by Dr Ernest Couture. Over two million copies were distributed to new and expectant mothers before its first revision in 1949. Couture emphasized breast milk as the ideal form of nutrition for babies.

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More recently, according to Health Canada, in 1998/1999, 81.9% of children were breastfed for some time. Among those infants who were breastfed, 63.0% were still breastfeeding after three months. Breastfeeding duration rates vary depending on maternal age. While only 49.1% of breastfed infants of mothers 25 years or younger continue to breastfeed after three months, 74.9% of breastfed infants of mothers 35 years or older continue to breastfeed beyond three months (7). The most common reason mothers give for weaning is a perceived insufficient milk supply. Among women who breastfeed for longer than three months, one of the most important reasons for weaning is returning to work (8).

The Canadian breastfeeding statistics may continue to improve because many mothers can now delay returning to work until 12 months postpartum. This practice is facilitated by the federal government's changes in employment insurance for new mothers which now allows them to take up to 12 months of paid maternity leave.

In the United States, rates of breastfeeding are lower. As of 1998, 64% of infants are breastfeeding at hospital discharge and 29% are still breastfeeding at six months (9).

NUTRITIONAL AND DEVELOPMENTAL ISSUES

While it seems clear that infants should ideally be breastfed for at least a year or longer, it is also important to realize that after a certain age, human milk alone will no longer supply all of an infant's nutritional requirements.

At four to six months of age, the infant is developmentally ready to accept solid foods. Sucking and chewing are complex behaviours, having both reflex and learned components. The learned component is conditioned by oral stimulation. If a stimulus is not applied when the neural development is taking place, then the infant may become a poor eater. There is a relationship between prolonged sucking without solids and poor eating (3).

By four to six months of age, iron stores from birth are diminishing and it is therefore appropriate to begin iron-containing foods at that time. Toward the end of the first year of life, breast milk no longer supplies enough protein for the infant, so an additional source such as meat, fish, egg yolk, tofu, lentils and cheese must be provided. Roughage must also be introduced to the diet, although it is not clear when this becomes a necessity. Delaying the introduction of solid foods much beyond six months of age is also likely to put the infant at risk for iron deficiency anemia and other micronutrient deficiencies (10). As a greater variety of solids and liquids are introduced to the infant's diet, weaning continues.

Picciano et al (11) followed older weaning infants (12 to 18 months of age) by collecting data on dietary intake and growth. Many of the study children were ingesting less than the recommended level of fat (less than 30% of total calories). Decreases in iron and vitamin E intake between 12 and 18 months resulted in intakes well below reference standards. Zinc intake was also well below recommended levels. Grains, whole milk dairy products and meats were identified as important sources of the problematic nutrients (iron, vitamin E and zinc) (11).

THE PROCESS OF WEANING

Natural weaning (infant-led weaning)

Weaning may be either planned (mother-led) or natural (infant-led).

Natural weaning occurs as the infant begins to accept increasing amounts and types of complementary feedings while still breastfeeding on demand. When natural weaning is practiced, complete weaning usually takes place between two and four years of age (12). In western cultures, there remains a relative intolerance to this type of weaning and many mothers who breastfeed older infants and children become 'closet nursers'. Closet nursing is nursing privately at home in secret and propagates ignorance about breastfeeding duration (10).

Planned weaning (mother-led weaning)

Planned weaning occurs when the mother decides to wean without receiving cues from the infant that he is ready to stop breastfeeding. Some reasons commonly given for planned weaning include the following: not enough milk or concerns about the baby's growth, painful feedings or mastitis, returning to work, a new pregnancy, wanting the partner or another care-giver to be able to administer feedings, or the baby's teeth beginning to erupt. These situations may result in premature complete weaning despite the mother's original intent to continue breastfeeding. It is appropriate for the physician to inform and support the mother, regardless of whether or not she wishes to continue to breastfeed. If the physician is unsure as to how to provide this type of support, then a referral to a breastfeeding expert should be considered.

See the appendix for an example of a gradual planned (mother-led) weaning schedule.

REFUSAL TO BREASTFEED: 'NURSING STRIKE'

Natural weaning should not be confused with a 'nursing strike'. A sudden refusal to nurse can occur at any time and may be followed through by complete weaning if the mother interprets this as a personal rejection. Nursing strikes are temporary and may be the result of any of a number of different causes such as onset of mother's menses, a change in the mother's diet, soap, or deodorant, or teething or illness in the infant. Simple steps that can be taken to manage a nursing strike include the following:

- Make feeding time special and quiet; minimize distractions.
- Increase the amount of cuddling and soothing of the baby.
- Offer the breast when the infant is very sleepy or when just waking up.
- Do not attempt to 'starve' the infant into submission.
- Offer the breast frequently using different nursing positions, alternating sides. Try nursing in different rooms.

If the above steps do not result in reinstitution of breastfeeding, then the infant should be evaluated to rule out possible illness (10).

ABRUPT OR EMERGENCY WEANING

Occasionally, there is a need for abrupt or emergency weaning, such as in the case of a prolonged unplanned separation of the mother and infant, or severe maternal illness. Many mothers are inappropriately advised to wean when they are placed on medication. There are very few medications that are contraindicated during breastfeeding. These include antimetabolites, therapeutic doses of radiopharmaceuticals and most drugs of abuse. Other drugs must be considered individually. The benefits of continued breastfeeding need to be weighed against the risks of exposure of the infant to the drug as it appears in the breast milk. The reader is referred to Dr T Hale's text, *Medications and Mothers' Milk* (10th edn, 2002), published by Pharmasoft Medical Publishing. Another useful resource is the Motherisk Web site <www.motherisk.org>.

A sudden illness of the child need not be a reason for weaning, and in fact, breastfeeding or pumping and storing the milk until the infant is able to take it should be supported and facilitated by the physician.

When an infant is weaned abruptly, he may refuse the bottle. In these cases, a cup can be offered. The infant may also initially refuse any other type of food from the mother, in which case, a patient caregiver may need to feed the infant. The mother should continue to spend time in close physical contact with the infant, if possible, so that the weaning process is less psychologically traumatic for both mother and infant.

An abrupt weaning will likely cause the mother some discomfort, especially if this occurs during the early postpartum period when her milk production is high. She should be advised to take analgesics and to express just enough milk so that her breasts feel comfortable. Cold gel packs, cold cabbage leaves or breast massage may help to relieve the engorgement (13). She must be watchful for signs of a plugged duct, which may lead to mastitis. She should wear a comfortable, supportive bra. Binding the breasts is not recommended because this will lead to more discomfort and may also result in blocked ducts. There is no need for fluid restriction. Bromocriptine (Parlodel, Novartis Pharmaceuticals, Canada), a prolactin suppressant, is no longer sanctioned as a 'dry-up' medication due to reports of serious adverse drug reactions such as seizures, strokes and death (14,15).

Once the time has come to start final weaning, it should be a gradual process. Abrupt weaning is traumatic for the infant, uncomfortable for the mother, and may result in blocked ducts, mastitis or breast abscesses. Abrupt weaning is to be avoided if possible.

MATERNAL GUILT

Mothers start breastfeeding with the best intentions. Often obstacles are met and premature weaning may result. It is important for the physician to explore a mother's reasons for weaning and to provide her with information so that she can make an educated decision about the process and timing of weaning. Once informed, a mother should not be pressured to breastfeed for longer than she feels is appropriate. Nor should she be criticized for continuing to breastfeed for longer than is the norm in her culture.

A mother may experience mixed emotions when she starts to wean her baby. She may enjoy some of her newly found freedom, but may also mourn the passing of a very intimate phase in her relationship with her child. It is common for a mother to report a sense of loss or sadness, even with gradual weaning (16). She can be reminded that her infant is achieving a new social milestone, that of eating solids and drinking from a cup. As long as she approaches the process with flexibility and sensitivity, the experience should be positive. The physician's role is to support and inform the mother while ensuring adequate nutrition for the infant.

Table 1
Canadian Task Force on the Periodic Health Examination levels of evidence

Level of evidence	Description
I	Evidence obtained from at least one properly randomized trial.
II-1	Evidence obtained from well-designed controlled trials without randomization.
II-2	Evidence obtained from well-designed cohort or case-control analytic studies, preferably from more than one centre or research group.
II-3	Evidence obtained from comparisons between times or places with or without the intervention. Dramatic results in uncontrolled experiments could also be included in this category.
III	Opinions of respected authorities, based on clinical experience, descriptive studies or reports of expert committees.
Classification of recommendations	
A	There is *good* evidence to support this recommendation
B	There is *fair* evidence to support this recommendation
C	There is *poor* evidence to support this recommendation; recommendations may be made on other grounds
D	There is *fair* evidence to support the recommendation that the intervention *not* be performed
E	There is *good* evidence to support that the recommendation that the intervention *not* be performed
I	There is insufficient evidence in quantity or quality to make a recommendation; however, other factors may influence decision-making

RECOMMENDATIONS

- Support exclusive breastfeeding with vitamin D supplementation for the first four to six months (level III-A [Table 1]).

- Encourage continued breastfeeding up to two years and beyond if desired by mother and infant, while providing appropriate nutritional guidance (level III-A).
- Introduce iron fortified infant cereal as the first solid food by six months of age to avoid iron deficiency (level III-A).
- Advise slow, progressive, natural weaning whenever possible (level III-A).
- Inform and support the breastfeeding mother while ensuring adequate nutrition for the infant regardless of the timing of weaning.

APPENDIX

The following is an example of a gradual planned (mother-led) weaning schedule:

- Weaning begins by substituting the child's 'least favourite' feeding with either a cup or bottle. It may be refused, especially after the first few months of age. The baby may accept the substitute feeding more readily from the other parent or another caregiver. Pumped breast milk, formula, or cow milk can be given when age appropriate. It should be kept in mind that one doesn't actually know how much the baby normally takes each time he feeds from the breast. He will stop when he's satisfied. Mother should be counseled to resist the impulse to make him finish whatever is in the bottle or cup. Whole cow milk should be avoided until a baby is at least nine but preferably 12 months of age, and then not more than 720 mL (24 ounces) of milk per day should be offered. If the baby is taking much more than 720 mL, this may result in iron deficiency anemia (17), obesity, and a poor appetite for other foods. Water can be introduced when the baby is taking other foods. Some parents may wish to give fruit juice. The amount should be limited to no more than 60 mL to 120 mL (two to four ounces) per day to avoid interference with the intake of breast milk or its substitute (1,18).
- A second substitute feeding can be given when the baby is accepting the cup or bottle well. This may be within a few days, a few weeks, or even months. Subsequent substitute feedings can be given at a pace ideally determined by mother and baby together.
- If the baby is not yet old enough to hold his own bottle, it should not be propped. Propping a bottle can put the baby at risk for choking. He should be closely supervised or better still, held and cuddled while he takes his feeding. Both mother and baby need the extra closeness during the weaning process.
- Solid foods can be offered at developmentally appropriate times. Initially, a few teaspoonfuls can be offered once a day. Gradually, the amount and number of servings and variety of foods can be increased. Iron fortified infant rice cereal is a good first choice.
- Partial weaning is an option for the mother who wishes to continue with some breastfeeding. This can work well for the mother who is working or studying outside the home. Early morning, evening, and night feedings can continue, even if mother and baby are separated during the day. While away from the infant, mother can pump or express her milk. This should allow her to maintain her production of milk. If she does not pump, but continues to breastfeed, then weight gain will need to be monitored more closely, particularly in the younger infant. Many older infants who have not previously been introduced to the cup or bottle may refuse to drink anything while the mother is away. This can cause the mother a great deal of anxiety, but is usually a temporary problem. These infants will usually take solids while the mother is away, and increase their frequency and length of breastfeeding when she is home. The advice regarding managing a nursing strike (see the section on "Refusal to breastfeed: 'Nursing strike'") can be given in this situation, but rather than offering the breast when the infant is sleepy, offer the sip-cup or bottle. 'Starving' the infant into taking the bottle is not recommended. Once again, watching closely for signs of dehydration or poor weight gain is imperative.

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