Reference Guide

FOR INFANT NUTRITION

FIRST NATIONS OF QUEBEC AND LABRADOR HEALTH AND SOCIAL SERVICES COMMISSION

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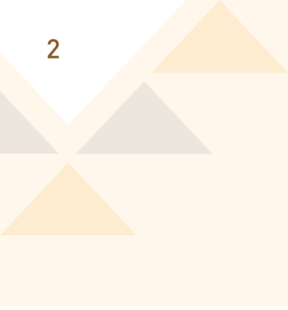

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Introduction

The traditional diet of First Nations is very healthy and varied, consisting primarily of foods obtained through fishing, hunting and agriculture. However, for several years, transformative changes have been made to the lifestyles of First Nations—changes that have resulted in physical, psychological and emotional health problems. Furthermore, significant gaps exist between the health of First Nations and that of the overall Quebec population. These gaps are also observed among young children. Indeed, nearly half of young children between the ages of 2 and 5 are overweight or obese. A gap has also been observed between First Nations and the rest of the Quebec population regarding the decision to breastfeed or use commercial infant formulas. Different factors, including the mother's age, income and education levels, seem to have a bearing on this decision.

In order to put forth strategies to reduce these gaps, and in the hopes of improving the health of First Nations children, the FNQLHSSC and the FNIHB have joined forces to develop this regional reference guide on infant nutrition.

The main objective of this reference guide is to provide professionals and early childhood workers with the best recommendations available regarding nutrition for young children. These recommendations have been gleaned from our literature review, and are consistent with the recommendations issued by the authorities in the field. This document covers themes including breastfeeding, breast milk substitutes, nutritional supplements and complementary foods, and serves to bolster the recommendations and back the promising practices adopted by our communities in order to better structure regional strategies and encourage local initiatives.

This section provides a global portrait of First Nations families and children in Quebec who live in the communities. However, the comparisons made with other families and children in Quebec must be interpreted with caution. Some of the data available on First Nations and Quebec populations were drawn from different reference periods and result from different data collection methods. Nonetheless, the Quebec data has been presented to give the reader an idea of the gap that exists between First Nations and the rest of the Quebec population.

Characteristics of First Nations families

First Nations families living in the communities are generally larger and consist in large proportion of single-parent families. Mothers are generally younger. Overall, First Nations families also have a smaller household income than Quebec families.

- In 2008, the average age of First Nations parents at the birth of their first child was 21.6 years, indicating that First Nations women have their first child earlier in life.[1] In 2008, across Quebec, the average age of mothers at the birth of their first child was 28 years.[2]
- In Quebec, in 2011, there were children in 60% of households. This proportion was 67% in Aboriginal households. More than one-quarter (27.9%) of Aboriginal families have 3 or more children, as opposed to 14.4% of non-Aboriginal families.[3]
- In 2011, the percentage of single-parent families was 27.8% in Quebec and 32.1% among First Nations.[4]
- In 2007, 34.2% of First Nations adults lived in a household with an income under $20,000.[5]
- In 2008, 24.8% of First Nations adults lived in a household with moderate or severe food insecurity. [6] In Quebec, in 2004, 8.1% of adults were in a similar situation.[7]

Risk behaviours during pregnancy

The data available indicate that a significant percentage of First Nations mothers engaged in risk behaviours involving alcohol and smoking (tobacco) during their pregnancy.

- In 2002, among First Nations women who had already given birth, 29.6% reported having consumed beer, wine or alcoholic beverages during their pregnancy. Among the pregnant women who consumed alcohol, 62.2% drank alcohol less than once per week and 18.1% drank only one alcoholic beverage per month.[8] In a Quebec study published in 2006, the proportion of women who reported drinking alcohol during their last pregnancy was similar (26.1%).[9]
- In 2008, more than half of First Nations women who were pregnant or had given birth reported having smoked during their pregnancy[10] The proportion of First Nations women who smoked during their pregnancy would therefore be about twice as high as the proportion of the general Quebec population, estimated to be between 17% and 22%.[11]

Nutrition for infants

A gap has been observed between First Nations and the rest of the Quebec population regarding the decision to breastfeed or use commercial infant formulas. Different factors, including the mother's age, income and education levels, seem to have a bearing on this decision. In addition, a high proportion of First Nations babies have been observed to have early childhood tooth decay and Vitamin D deficiency.

- According to data collected in 2008, in First Nations communities, 35.4% of children had been breastfed.[12] In Quebec, in 2005-2006, 85.1% of babies had been breastfed.[13] Of the children who had been breastfed in First Nations communities, 37.2% were breastfed for more than 6 months.[14]
- Several factors seem to influence the likelihood of whether or not First Nations mothers will breastfeed their child. The proportion of children who are breastfed decreases with geographic isolation and increases with household income. The mother's age also seems to influence the decision to breastfeed: Mothers between the ages of 26 and 34 years opt to breastfeed in higher proportions than mothers who are either younger or older (FNQLHSSC, 2013).[15]
- The data collected in 2008 indicate that breastfeeding support groups were present in 9 of the 21 First Nations communities surveyed.[16]
- Aboriginal children are disproportionately affected by early childhood tooth decay. Early childhood tooth decay is found among 18.7% of infants.[17] The prevalence of early childhood tooth decay is greater among children from low income households (FNQLHSSC, 2013).[18]
- Vitamin D deficiency is common among pregnant First Nations and Inuit women.[19] Vitamin D deficiency in pregnant or breast-feeding women can lead to Vitamin D deficiency in infants, which could negatively impact their future health. The Canadian Paediatric Surveillance Program reported 104 confirmed cases of Vitamin D-deficiency rickets among young children in Canada between 2002 and 2004. A high proportion of cases were of First Nations (13%) and Inuit (12%) descent.[20,21]

Nutrition for young children

The problems with obesity that plague First Nations are not limited to adults—a strong proportion of children are also overweight or obese. The eating habits of young children and the sedentary nature of their activities may in part explain these weight-related issues.

- According to 2008 data, among young children aged 2 to 5 years, 13.0% were overweight and 35.0% were obese. The data also showed that the proportion of children who were overweight increased with geographic isolation.[22]
- The eating habits of a significant proportion of children include foods that are high in empty calories. In fact, 44.9% of children eat ready-made meals (e.g. hamburgers, pizza, fries) several times per week; and 22.0% of children aged 5 years and under eat sweets (e.g. candy, cake, cookies) every day. The consumption of empty calories by children is negatively correlated to household income. More children living in households reporting less than $20,000 household income eat such foods daily, as opposed to children from wealthier households (FNQLHSSC, 2013).[23]
- Among First Nations, close to two-thirds (63.3%) of parents with children aged 5 years and under consider their children's diet to be (always or almost always) balanced (FNQLHSSC, 2013).[24]
- A significant number of children take part in sedentary activities: 35.4% of children aged 5 years and under watch more than 90 minutes of television per day, and only 18.6% watch less than 30 minutes per day (FNQLHSSC, 2013).[25]
- According to a study published in 2013, early childhood tooth decay affects a large proportion of school-aged First Nations children, namely, 30.9% of children aged 3 to 5 years.[26]

Breastfeeding – Basic Recommendations

By the end of the 1960s, breastfeeding rates had reached an all-time low: bottle was king, and a symbol of modern times.[27]

In the last 30 years, there has been a gradual return to breastfeeding, which has had a non-negligible impact in improving infant health. We can now say with certainty that breastfeeding provides significant protection for the child against the development of several health problems. In addition, breastfeeding provides a host of benefits for both mother and child, as demonstrated by a growing body of research developed over the years.[28] However, information on these benefits is either covered in a very cursory manner, or are simply unknown by most of the population.

According to the global public health recommendation, infants should be exclusively breastfed until the age of 6 months. Afterwards, breastfeeding should be sustained until the age of 2 years or beyond, and complemented with appropriate foods.[68] Note that the benefits outlined below are dose-dependent; the longer breastfeeding is maintained, the greater the benefits. In fact, studies have found a link between extended breast-feeding and a reduced incidence of various health problems. The benefits for the mother are also dose-dependent.

Useful Links

- WHO - Breastfeeding
- Ligue La Leche *(French only)*
- From Tiny Tot to Toddler (INSPQ)

- Naître et grandir *(French only)*
- Heath Canada – Infant Feeding

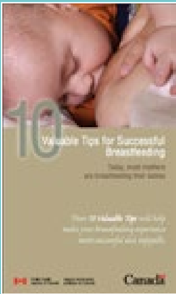
DID YOU KNOW?

Babies who are exclusively breastfed should receive a daily Vitamin D supplement (400 IU) the entire time breastfeeding continues (until the age of 24 months).

Kanesatake is the first Aboriginal community in North American to have received the WHO/UNICEF Baby-Friendly accreditation.

Useful Links

> Ten Valuable Tips for Successful Breastfeeding (PHAC)



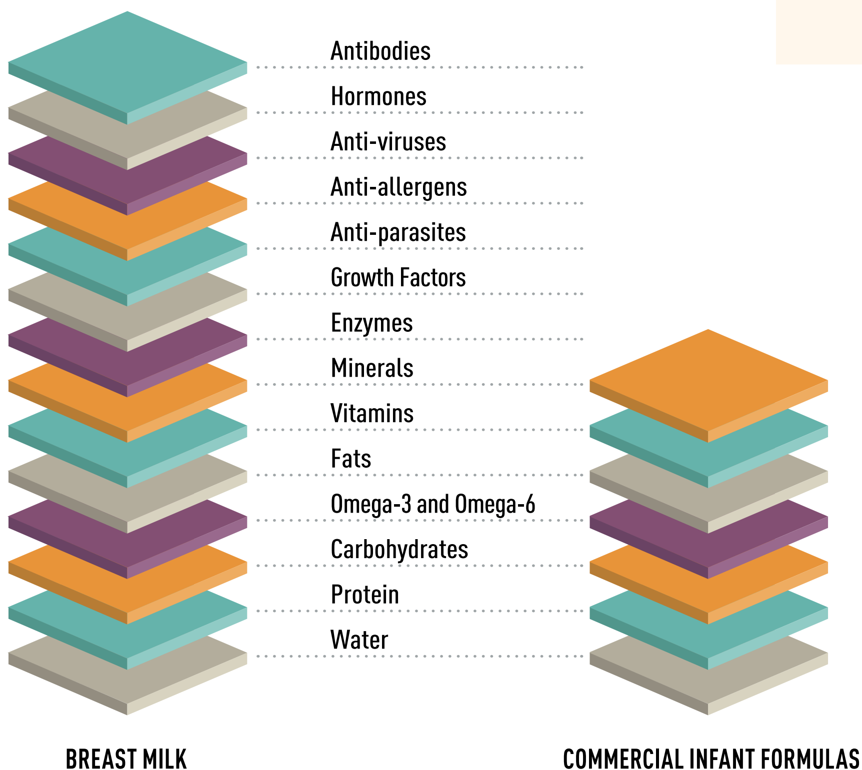
Benefits of breastfeeding for the child

- The maternal milk consumed at the very beginning of life plays a crucial role in weight management and control in childhood and even into adulthood.[29,30]
- Maternal milk also provides moderate protection against obesity later in life.
- A study has demonstrated that allergic diseases were significantly less frequent among children who were breastfed for more than 6 months, compared to those breastfed for less than 6 months.[31]
- Breast milk contains everything your baby needs: protein, fats, lactose, vitamins, iron, antibodies, minerals, water and enzymes. The balance of nutrients in breast milk also adapts to the child's age and changing needs. It does not contain any bacteria and has anti-infective properties.
- Breast milk contains substances that prevents the growth of harmful bacteria in the intestines and protect against gastrointestinal infections and diarrhea.
- Babies who are breastfed are at a lower risk for sudden infant death syndrome (SIDS),[32] have fewer ear infections (otitis media) and respiratory tract infections,[33] and are a lower risk for developing allergies, eczema, asthma, heart disease, cancer, type 1 diabetes and obesity.
- The mother's eating habits can influence the taste of her breast milk, which can help the baby become accustomed to different flavours.

DID YOU KNOW?

Breastfeeding women may safely drink alcohol without negatively impacting their child so long as they respect certain conditions. Refer to ***Appendix 1*** *to learn about the time required for alcohol to be eliminated from your breast milk.*

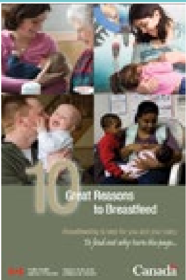
Breast milk contains more of the good stuff than commercial infant formulas



Have you ever compared breast milk to commercial infant formulas? Consult the chart above!

Useful Links

- 10 Great Reasons to Breastfeed Your Baby (PHAC)



- Nourri-Source Federation
- Initiative des amis des bébés au Québec (MSSSQ) *(French only)*

Benefits of breastfeeding for the mother

- Breastfeeding reduces postpartum bleeding and the risk of anemia. It also helps women return to their pre-pregnancy weight and prevent obesity. Breastfeeding mothers often have greater self-confidence and better stress management, and develop a closer attachment bond with their baby. The reason? The levels of oxytocin, which increase during breastfeeding, have a positive impact on the mother's physiological and psychological health.[34]
- Breastfeeding reduces the incidence of hypertension and heart disease (including heart attacks), as well as hypercholesterolemia. It also raises good cholesterol (HDL) levels.[35]
- A study has shown that breastfeeding decreases the mother's risk of developing type 2 diabetes; the longer a woman breastfeeds, the less likely she is to develop diabetes.[36]
- Women who developed gestational diabetes and then breastfeed have lower blood glucose levels than women who do not breastfeed. Among these higher-risk women, breastfeeding, by optimizing weight loss, also helps reduce or delay the risk of developing type 2 diabetes later in life.[37] As well, breastfeeding women with pre-existing type 1 diabetes have a reduced need for insulin as breastfeeding decreases blood glucose levels.

Benefits of breastfeeding for both mother and child

- Breastfeeding does more than simply feed the child: It also strengthens the emotional bond between the mother and child, bringing warmth, love and affection to the relationship.
- Breast milk is readily available and always at the right temperature. Since it eliminates the need to prepare commercial infant formulas and bottles, it also saves time, energy and money.
- Breastfed babies enjoy better health and are less frequently sick, resulting in decreased health care costs and fewer sick days from work.

The Baby-Friendly Initiative

In 1991, the World Health Organisation (WHO) and United Nations Children's Fund (UNICEF) launched the Baby-Friendly Hospital Initiative (BFHI) to transform hospital settings into centres of breastfeeding support and thereby give every child the best possible start in life. In Canada, BFHI is now known as the Baby-Friendly Initiative (BFI), which fosters the implementation of practices that promote breastfeeding not only in maternity wards, but also in other public places visited by mothers, fathers and families.

10 steps to successful breastfeeding, according to the Baby-Friendly Initiative [38,39,40]

As illustrated by the portrait of the situation, the breastfeeding rate in First Nations communities (35.4% in 2008) is much lower than that for the general Quebec population (85.1% in 2005-2006). In 1991, the World Health Organisation (WHO) and UNICEF created the Baby-Friendly Initiative (BFI), an international program that promotes the implementation of the "10 steps to successful breastfeeding" identified by the two organizations in 1989 to encourage the initiation and maintenance of breastfeeding. Table 1 presents these 10 steps.

Useful Links

- Breastfeeding Committee for Canada
- Protecting, Promoting and Supporting Breastfeeding: A Practical Workbook for Community-Based Programs
- Baby-Friendly Initiative

DID YOU KNOW?

By implementing even one single step from the Baby-Friendly Initiative, you are making progress towards creating an environment that encourages breastfeeding in your community!

TABLE 1

10 steps to successful breastfeeding

Policies	Have a written breastfeeding policy that is routinely communicated to all health care providers and volunteers.
Training	Ensure that all health care providers have the knowledge and skills necessary to implement the breastfeeding policy.
Antenatal preparation	Inform pregnant women and their families about the importance and process of breastfeeding.
Early contact	Place babies in uninterrupted skin-to-skin contact with their mothers immediately following birth for at least an hour or until completion of the first feeding or as long as the mother wishes. Encourage mothers to recognize when their babies are ready to feed, offering help as needed.
Guidance	Assist mothers to breastfeed and maintain lactation should they face challenges, including separation from their infants.
Use of supplements	Support mothers to exclusively breastfeed for the first 6 months, unless supplements are medically indicated.
Rooming-in	Facilitate 24-hour rooming-in for all mother-infant dyads: mothers and infants remain together.
Feeding on demand	Encourage baby-led or cue-based breastfeeding. Encourage sustained breastfeeding beyond the 6 months with appropriate introduction of complementary foods.
Teats and pacifiers	Support mothers to feed and care for their breastfeeding babies without the use of artificial teats or pacifiers.
Continuing support	Provide a seamless transition between the services provided by the hospital, community health services and peer support programs.

Source: The Baby-Friendly Initiative: Evidence-Informed Key Messages and Resources,

Best Start Resource Centre and Baby-Friendly Initiative Ontario (2013)

Recommendations for special situations:

There may occasionally be obstacles to initiating and sustaining breastfeeding. However, best practices exist to promote breastfeeding in these circumstances.

Exclusive breastfeeding for premature babies

Breastfeeding or giving breast milk to premature babies has, among other things, been linked to a reduced incidence of infections, improved neurological development and fewer hospital readmissions. Breastfeeding premature babies can be quite difficult as they have not yet achieved the same degree of physiological and neuromuscular development as full-term babies.[41]

- Skin-to-skin contact between the mother and newborn is recommended as it gives the baby better access to the breast and stimulates milk flow.[42]
- A prompt discharge from the hospital with 24/7 access to breastfeeding support from peers and professionals can help mothers feel better supported and at ease.
- Monitoring weight gain and milk intake increases the mothers' sense of self-efficacy and encourages them to continue breastfeeding.

Useful Links

The following websites contain information on the effects of drug use while breastfeeding and offer recommendations for parents:

- Centre IMAGe du CHU Ste-Justine
- Portail d'information périnatale de l'INSPQ ("Les Fiches" section, French only)
- Motherisk
- LactMed
  LactMed is also available as an application (available on iTunes, Google Play or at http://toxnet.nlm.nih.gov/help/lactmedapp.htm)

DID YOU KNOW?

Regarding drug use: It is strongly recommended that mothers be monitored by a doctor or a breastfeeding specialist. Substances can pass into breast milk, and elimination time and the effects in breastfed infants vary depending on the type of drug, the dose, the mother and child's health, and the use of concomitant drugs.

ALCOHOL AND DRUG USE WHILE BREASTFEEDING [43, 44, 45, 46, 47]

Harmful effects and recommendations

TABLE 2

Alcohol and drugs: effects in infants and recommendations – Summary

Substance	Effects in breastfed infants	Duration of
Alcohol [46, 48,49]	> Decrease in milk intake > Hypoglycemia > Sleep disturbance > Impaired motor development	> Depends number on page
Substance	**Effects in breastfed infants**	**Duration of**
Nicotine[50, 51, 52, 53] (e.g. cigarettes and nicotine replacement therapies, including patches, lozenges, gum, etc.)	> Sudden infant death syndrome (SIDS) > Respiratory tract infections (bronchitis, pneumonia) > Otitis > Asthma and allergies	> Peaks at > About 2 t breast m
Cannabis[46, 54, 55, 56] (Marijuana)	> Lethargy > Irritability > Poor feeding > Delayed motor development	> Days to v slowly re
Caffeine[46, 57] (e.g. coffee, tea, soft drinks, energy drinks, chocolate)	> Irritability, nervousness > Sleep disturbance > Decrease in breast milk iron levels (cigarette compounds these effects)	> Peaks ab
Stimulants[44, 55, 58] (e.g. cocaine, crack, methamphetamine)	> Irritability > Vomiting > Tremors > Sleep disturbance > Agitation > Sleepiness > Poor feeding > Risk of transmitting infection in cases of intravenous use (e.g. HIV, Hepatitis B)	> Up to 36 > Variable,
Opiates[44, 55, 59] (e.g. morphine, codeine, fentanyl, heroine)	> Sleepiness > Vomiting > Tremors > Poor feeding > Breathing difficulties > Withdrawal symptoms > Death > Risk of transmitting infection in cases of intravenous use (e.g. HIV, Hepatitis B)	> Variable,

table

f presence in breast milk	Recommendations
. on the mother's weight and the of drinks (see table in Appendix 1 30-31)	> 1 drink: Breastfeed infant prior to drinking and wait 2 to 3 hours before next feed > 1 drink: Use milk expressed prior to drinking

f presence in breast milk	Recommandations
30 to 60 minutes to 3 hours to eliminate from ilk	> Do not expose infant to second-hand smoke > Wait 2 to 3 hours after smoking (or more, if possible) before breastfeeding
weeks (remains in body fat and is leased)	> Abstain from use or limit to occasional use > Do not expose infant to second-hand smoke > Discuss with health care team
bout 1 hour after consumption	> Reduce caffeine consumption to less than three cups/day > Choose decaffeinated options > Avoid combining with smoking (cigarettes)
hours according to substance and dose	> Do not breastfeed in the 24 hours following consumption > Discuss with health care team
according to substance and dose	> Do not breastfeed > Variable delay before resuming breastfeeding – discuss with health care team

Useful Links

- **Appendix 1 –** Time (hours : minutes) required for alcohol to be eliminated from breast milk, based on mother's weight and number of drinks.
- **Appendix 3** presents a table drawn from The Academy of Breastfeeding Medicine that outlines the care recommendations for women with substance and alcohol abuse problems.

Substance abuse and addiction

Women suffering from alcoholism or drug addiction must receive the necessary care and support to safely breastfeed their child; ideally, this should include individual monitoring by a multidisciplinary team and participation in an addiction treatment program. Several criteria must be taken into consideration to evaluate the risks and benefits of breast-feeding for the infant: the history of addiction treatment, the psychiatric history, medication, the infant's state of health, the presence of adequate family and community support, and access to medical, psychiatric and pediatric care. Individualized prenatal care plan should be developed to prepare woman for breastfeeding, the postpartum period, parenting and treatment options. This care plan should include information on the consequences of substance abuse for breastfed infants, as well as instructions on how to safely prepare and use commercial infant formulas when breastfeeding is contraindicated. In all cases, it is important to work closely with mothers according to their level of motivation.[60,43,44,45]

Breast milk substitutes and nutritional supplements – Basic recommendations

Even though breastfeeding is the optimal way to feed an infant, some mothers cannot practise exclusive breastfeeding. When it is not possible for mothers to breastfeed their child, Health Canada recommends that they manually express their milk or use donor milk from a milk bank that complies with the guidelines of the Human Milk Bank Association of America, when such a bank is available, before opting for commercial infant formulas.

This section provides information on the types of commercial infant formulas, the indications for use of maternal milk substitutes, nutritional supplements (e.g. Vitamin D), as well as recommended practices for preventing early childhood tooth decay (also known as "baby bottle tooth decay").

TYPES OF BREAST MILK SUBSTITUTES

Donor breast milk

- It is recommended that only donor milk from milk banks that comply with the guidelines of the Human Milk Bank Association of North America be used, even if donor milk banks remain rare in Canada.[61].

Commercial infant formulas

Several types of commercial infant formulas are available. In Canada, all commercial infant formulas must comply with the Food and Drug Regulation, and all manufacturers must demonstrate that their product composition promotes infant growth and development. The main types of commercial infant formulas are made using cow's milk, goat's milk and soy milk, or are formulated for special medical purposes.

Cow's milk commercial infant formulas

This is the standard for full-term babies that are not exclusively breastfed.[64]

- Iron fortified: May be recommended for babies at risk of iron deficiency, such as babies with a birth weight of less than 3000 g and/or whose mother had diabetes or drank excessive amounts of alcohol during pregnancy. It is recommended that infants first be tested to assess their iron stores before iron supplementation is prescribed.[64]
- Lactose-free: Does not provide any additional benefits over regular, cow's milk commercial infant formulas.[64]
- Partially hydrolyzed: Proof of benefits not conclusive.[64]
- Thickened: No indications for using thickened commercial infant formula or adding a thickener (e.g. rice starch, rice cereal) to milk regular formula to avoid reflux or aid sleep.[24,64]

Cases of severe reflux should be evaluated by a health care team.

DID YOU KNOW?

Quebec opened a mother's milk bank in the winter of 2014. The mandate of this bank, which is overseen by Héma-Quebec, is to provide maternal milk to extremely preterm babies (born at 32 weeks or earlier) who cannot be breastfed. Outside of the greater region of Montreal and Laval, donor milk is distributed through the Centre hospitalier de Rimouski, the CSSS de Chicoutimi and the CSSS de Gatineau.[61, 62, 63]

Soy-based commercial infant formulas

Only infants with galactosaemia and those who cannot consume cow's milk products for cultural or religious reasons should drink soy-based commercial infant formulas.[25,64] Galactosaemia is a disorder characterized by an absence of the enzymes that normally transform the galactose found in milk into glucose that can be absorbed by the organism.

Other sources of milk[84,91]

- It is possible to replace commercial infant formula with 3.25% (M.F.) homogenized milk as of the age of 9 months, so long as the infant's diet is regularly complemented with iron-rich foods. However, it is preferable to wait until age 2 before introducing cow's milk.
- Skim milk (0% or 1% M.F.) is not recommended before age 2. Milk with 2% or higher milk fat content is more appropriate for infants.
- For infants who cannot consume cow's milk, it is recommended that they be fed soy-based commercial infant formula until age 2.
- Plant-based milk substitutes (e.g. soy, rice, almond, coconut milks) cannot be used as a replacement for cow's milk before age 2.

Useful Links

- To learn more about the safe preparation, use and storage of powdered commercial infant formulas, see **Appendix 2.**

The benefits of commercial infant formulas containing essential fatty acids (Omega 3 and Omega 6) have not been conclusively proven.[64]

There is not enough data to confirm the benefits of dietary nucleotide supplementation in commercial infant formulas.[64]

INDICATIONS FOR NUTRIENT SUPPLEMENTATION (VITAMINS AND OTHERS)

Vitamin D[87, 88, 70]

- Babies who are partially breastfed should receive a 10 µg supplement of Vitamin D (400 IU, same dose as for exclusively breastfed infants) during the first year of life.
- Babies who are not breastfed generally do not require a Vitamin D supplement.
- Special caution is required in the case of First Nations and Inuit children; as mothers are more likely to have a Vitamin D deficiency, newborns may have a smaller store at birth.
- Special caution is required for infants whose mothers did not take prenatal vitamins, as they could present with a deficiency.

Iron[70]

- Iron deficiencies are most likely among children with a birth weight of less than 3000 g and/or whose mother had diabetes or consumed excessive amounts of alcohol during pregnancy.
- It is recommended that infants first be tested to assess their iron stores before iron supplementation is prescribed.

DID YOU KNOW?

For infants under the age of 9 months, avoid any milk that is not biologically formulated for human infants, such as cow's milk (including evaporated milk such as Carnation), goat's milk, soy milk, etc.[64]

Other supplements

- There is no proof of any benefits of giving Vitamin A supplements to mothers or infants under the age of 6 months.
- There is not enough proof to claim that adding prebiotics or probiotics to maternal milk substitutes results in any benefits.[64,31,90,65]

Preventing early childhood tooth decay [86,77,74,75,76]

- Prolonged bottle feedings (night and day) place infants at a much higher risk for cavities.
- Offer liquids in an open cup as of the age of 6 months (except for commercial infant formula).
- Do not give your child sugary drinks or add sugar to the bottle.
- Start brushing as soon as the first tooth appears by massaging the gums with a facecloth.
- Promote and maintain the use of fluoride varnish at least once per year.
- Promote the application of dental sealants on occlusal (chewing) surfaces as soon as molars appear.
- Promote the use of fluoridated toothpaste for all children (the size of a grain of rice for infants and the size of a pea for toddlers).

Useful Links

> To learn about bottle-feeding and feeding frequency: From Tiny Tot to Toddler (INSPQ)

> To learn more about the medical reasons and conditions that justify the use of breast milk substitutes, consult **Appendix 3.**

Lactose intolerance is very rare in infants. It is often confused with an allergy to the proteins found in cow's milk. A milk protein allergy must be confirmed by the health care team, which can then recommend another type of commercial infant formula.[91]

Useful Links

- From Tiny Tot to Toddler (INSPQ)
- Naître et grandir website
- The FNQLHSSC's Food Guide From 0 to 4 Years

Complementary foods and infant nutrition – Basic recommendations

For young children, a healthy diet consists in both the nutritional quality of foods as well as the child's environment. This section presents an overview of feeding recommendations for infants between the ages of 6 months and 1, for children between the ages of 1 and 6, and for instilling good eating habits at a very young age.

INFANTS BETWEEN THE AGES OF 6 MONTHS AND 1 [77,78,79,80,81,82,84,85]

Introducing complementary foods

Babies have relatively high energy needs as a result of their rapid rate of growth and development. Until the age of 6 months, these needs are completely met through breast milk or commercial infant formulas. As such, it is recommended that complementary foods start to be introduced at the age of 6 months, while continuing feedings (breast milk or commercial infant formulas). Note that breast milk and/or commercial infant formulas should form the mainstay of the infant's diet until age 1. The solids introduced serve to supplement the infant's diet. Several signs may indicate that the infant is ready for solids. To learn these signs, consult the links in the textbox.

Why not start introducing solids at the age of 4 months? Simply put, because the infant's body is not ready. Infants have limited digestion capacity, their kidneys are not sufficiently developed, their immune system is still fragile, and they have yet acquired the capacity to swallow, hold their head up, sit upright on a chair, etc.

That said, it is important to introduce solids before the age of 7 to 9 months to avoid growth delays and nutrient deficiencies. At this point, breast milk and commercial infant formulas are no longer sufficient to meet the infant's nutritional needs. If infants do not start receiving solids at this point, a number of problems may arise, including the development of a preference for liquid foods and the refusal to eat solids. This is also the age when preferences for flavours and textures are established.

When non-breastfed infants between the ages of 9 and 12 months eat a variety of iron-rich foods (meats and substitutes, iron-fortified cereals), pasteurized homogenized cow's milk (3.25% M.F.) may replace the infant formula as principal source of milk.

Introducing solids

When introducing solids, start with iron-rich foods such as game and other meats, poultry, fish, eggs, legumes, tofu, iron-fortified cereals, etc. The infant's iron stores begin to get low at this age, which is why it is important to start with iron-rich foods. Afterwards, other types of food may be introduced to the infant's diet: fruits, vegetables, milk products, etc. Complementary foods are chosen based on the family's values and eating habits.

Only one food should be introduced at a time. Avoid mixing foods in order to allow the infant to discover individual flavours and the parents to watch for signs of an allergic reaction. As additional foods are gradually introduced, opt for a variety of foods with high nutritional value, while adapting to the infant's needs and capacities. Infants should be exposed to a variety of foods early on to allow them to develop their tastes and make it easier to continue introducing new foods as they grow.

Useful Links

- In 2014, Health Canada published new recommen-dations for the nutrition of infants from 6 to 24 months.
- From Tiny Tot to Toddler (INSPQ)
- Naître et grandir website

DID YOU KNOW?

It is normal for some infants to gag when being introduced to new foods. This is a normal reflex to avoid choking.

Useful Links

- To make well-informed decisions regarding mercury in fish: http://www.hc-sc.gc.ca/fn-an/securit/chem-chim/environ/mercur/cons-adv-etud-eng.php OR http://www.extenso.org/article/quels-poissons-contiennent-le-plus-de-mercure/ *(French only)*
- Extenso.org *(French only)*
- Association québécoises des allergies alimentaires: http://allergies-alimentaires.org/fr *(French only)*
- http://www.hc-sc.gc.ca/fn-an/nutrition/infant-nourisson/recom/recom-6-24-months-6-24-mois-eng.php

Food texture

Gradually vary food textures from one meal to the next, while remaining vigilant of the baby's reactions. Most infants start by eating smooth purées, but some infants are quite willing to eat thicker purées or foods that have simply been mashed with a fork.

Hydration

Clean, purified water (boiled if necessary) can be offered to infants several times per day to quench their thirst. Avoid liquids with poor nutritional value, such as sugary drinks and juice.

According to Health Canada's new recommendations, as fluids other than breast milk are introduced, it is safe to offer them in an open cup. [93]

Healthy preparation and storage of food

Foods for infants or young children must be safely prepared, served and stored. For more information on this subject, refer to the suggested publication in the textbox to the right. Some precautions must be taken when preparing fish and game meat.

Food allergies[89,90]

According to new guidelines, it is no longer necessary to wait until your infant is of a certain age to introduce foods that are more likely to cause allergies, even if the infant has a greater risk of developing an allergy (i.e. if the infant has a parent or sibling with an allergic disorder). However, it is advisable to consult a doctor or allergist. In addition, the recommendation to wait 3 days before introducing a new food remains as relevant as ever, as it allows the parents to determine thecause of an allergic reaction, should one occur.

In Canada, most serious allergic reactions are caused by

10 foods that are considered allergens: nuts, eggs, soy, peanuts, wheat, seafood (fish, crustaceans and shellfish), sesame seeds, milk, sulphites and mustard.

EATING HABITS OF INFANTS

For young children, a healthy diet consists not only in the quality of the food they eat, but also in how, when, where and with whom they eat it. Parents can create a positive environment for meal times, recognize the signs of hunger and satiety, and encourage—not force!—their child to eat while keeping distractions to a minimum.

To promote the development of healthy eating habits and to better understand your child, try to keep in mind the following factors that influence eating habits:

- Individual factors such as age, gender, preferences, fear of trying new foods, etc.
- Socio-cultural environment: culture, family, friends, daycare, media, etc.
- Physical environment: food availability and accessibility, portion sizes, dishes, etc.
- Political environment: the implementation of a food policy in the community.
- Economic environment: cost of foods, marketing strategies used by grocery stores, etc.

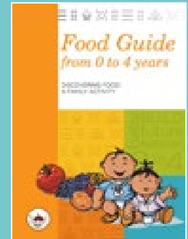
DEVELOPING FOOD PREFERENCES

The sense of taste begins to develop in utero. This process continues when different flavours are transmitted through breast milk and when the first solids are introduced. Infants can absolutely learn to love food! For example, human beings

Useful Links

Childhood is a critical period for adopting healthy eating habits. The following reference documents explain the different factors that contribute to healthy eating habits:

- Food Guide From 0 to 4 Years (FNQLHSSC)



- Resource: Feeding Your Baby, Louise Lambert-Lagacé Dt.P.: http://www.louise-lambert-lagace.ca/lllenglish/feedingchild.htm

Useful Links

- Training offered through Croqu'plaisirs and Extenso's Nos petits mangeurs website *(French only)*
- Cadre de référence Gazelle et Potiron (MFA, *French only*)

- From Tiny Tot to Toddler (INSPQ)
- Naître et grandir website *(French only)*

are programmed to be attracted to sweet tastes, whereas the taste for acidic or sour foods is cultivated over time. All children develop their tastes at their own pace.

Usually, infants will first look, smell, touch and then taste the food before finally eating it. Going from one step to another takes time. Although some infants may love trying new foods, this is not always the case, and it is important to respect the fact that this is part of their process. However, you can create an environment that encourages your child to try and appreciate new flavours, for instance by applying educational strategies, adopting helpful attitudes and behaviours, and doing food-related activities together. Never force a child to eat. Adults are responsible for the quality of the food, and children are responsible for the quantity they eat.

RESPECTING SIGNS OF HUNGER AND SATIETY

Until the age of 3, infants have the reflex to stop drinking or eating when they are no longer hungry. Afterwards, environmental factors will have a considerable impact on their signs of hunger and satiety; as such, it is crucial to teach children to recognize these signs and respond appropriately.

TO EACH HIS ROLE!

The role of parents (and childcare providers) is to emphasize the quality of the foods, rather than the quantity. Nutritious foods must take centre stage, and since no one can better gauge their hunger than children themselves, they will decide the foods and quantities they will eat.

NUTRITION FOR YOUNG CHILDREN BETWEEN THE AGES OF 1 AND 6 [83,84,85]

The nutritional needs of children become greater with age. During the first year of life, infants discover a wide array of flavours and textures. By age 1, most children eat the same foods as the rest of the family. It is important to maintain good eating habits and to continue introducing a wide variety of food to their diets.

Young children require a diet that is energy and nutrition dense. Low-fat or other "diet" foods are not appropriate for them. Since they have such high energy and nutrition needs but such a small stomach, children should eat frequently, for instance, three meals per day, in addition to two or three snacks.

The efforts made since birth to provide infants with all the nutrition they need must be continued as they grow older. Infants must be offered a varied diet that includes foods from all four food groups from Canada's Food Guide for First Nations. In so doing, they will obtain all the nutrients they need to ensure optimal growth.

Vitamin and mineral supplements

Regular vitamin and mineral supplements are not recommended for all children. However, breastfed children should receive a Vitamin D supplement until the age of 24 months (see section "Breast milk substitutes and nutritional supplements").

Some groups of children are more at risk for nutritional deficiencies, and would therefore benefit from supplements, for example: children from disadvantaged backgrounds (especially those subject to abuse or neglect), children with anorexia, chronic lack of appetite or poor eating habits, children who are strictly vegetarian or who are on a restrictive diet as a result of food allergies, children with weight problems (e.g. obesity) or chronic illness. In such cases, it is important to consult a health professional (e.g. doctor, nutritionist, pharmacist).

Useful Links

- Canada's Food Guide for First Nations, Inuit and Métis
- In terms of specific dietary reference intakes (DRI)s: http://www.hc-sc.gc.ca/fn-an/nutrition/reference/index-eng.php
- Extenso – Nos petits mangeurs *(French only)*
- English resources are also available through the Croqu'plaisir training

Appendices

APPENDIX 1

IME (HOURS:MINUTES) REQUIRED FOR ALCOHOL TO BE ELIMINATED BASED ON MOTHER'S WEIGHT AND NUMBER OF DRINKS

Mother's weight kg (lb)	Numbe				
	1	2	3	4	5
40.8 (90)	2:50	5:40	8:30	11:20	14:10
43.1 (95)	2:46	5:32	8:19	11:05	13:52
45.4 (100)	2:42	5:25	8:08	10:51	13:34
47.6 (105)	2:39	5:19	7:58	10:38	13:18
49.9 (110)	2:36	5:12	7:49	10:25	13:01
52.2 (115)	2:33	5:06	7:39	10:12	12:46
54.4 (120)	2:30	5:00	7:30	10:00	12:31
56.7 (125)	2:27	4:54	7:22	9:49	12:16
59.0 (130)	2:24	4:49	7:13	9:38	12:03
61.2 (135)	2:21	4:43	7:05	9:27	11:49
63.5 (140)	2:19	4:38	6:58	9:17	11:37
65.8 (145)	2:16	4:33	6:50	9:07	11:24
68.0 (150)	2:14	4:29	6:43	8:58	11:12
70.3 (155)	2:12	4:24	6:36	8:48	11:01
72.6 (160)	2:10	4:20	6:30	8:40	10:50
74.8 (165)	2:07	4:15	6:23	8:31	10:39
77.1 (170)	2:05	4:11	6:17	8:23	10:28
79.3 (175)	2:03	4:07	6:11	8:14	10:18
81.6 (180)	2:01	4:03	6:05	8:07	10:08
83.9 (185)	1:59	3:59	5:59	7:59	9:59
86.2 (190)	1:58	3:56	5:54	7:52	9:50
88.5 (195)	1:56	3:52	5:48	7:44	9:41
90.7 (200)	1:54	3:49	5:43	7:38	9:32
93.0 (205)	1:52	3:45	5:38	7:31	9:24
95.3 (210)	1:51	3:42	5:33	7:24	9:16

Based on Koren, G., "Drinking alcohol while breastfeeding: Will it harm my baby?" *Can Fam Physician* Vol. 48 (2002), 39-41.
Online: http://www.motherisk.org/prof/updatesDetail.jsp?content_id=347] (consulted November 2, 2015).

FROM BREAST MILK,

er of drinks

6	7	8	9	10	11	12
17:00	19:51	22:41				
16:38	19:25	22:11				
16:17	19:00	21:43				
15:57	18:37	21:16	23:56			
15:38	18:14	20:50	23:27			
15:19	17:52	20:25	22:59			
15:01	17:31	20:01	22:32			
14:44	17:11	19:38	22:06			
14:27	16:52	19:16	21:41			
14:11	16:33	18:55	21:17	23:39		
13:56	16:15	18:35	20:54	23:14		
13:41	15:58	18:15	20:32	22:49		
13:27	15:41	17:56	20:10	22:25		
13:13	15:25	17:37	19:49	22:02		
13:00	15:10	17:20	19:30	21:40	23:50	
12:47	14:54	17:02	19:10	21:18	23:50	
12:34	14:40	16:46	18:51	20:57	23:03	
12:22	14:26	16:29	18:33	20:37	22:40	
12:10	14:12	16:14	18:15	20:17	22:19	
11:59	13:59	15:59	17:58	19:58	21:58	23:58
11:48	13:46	15:44	17:42	19:40	21:38	23:36
11:37	13:33	15:29	17:26	19:22	21:18	23:14
11:27	13:21	15:16	17:10	19:05	20:59	22:54
11:17	13:09	15:02	16:55	18:48	20:41	22:34
11:07	12:58	14:49	16:41	18:32	20:23	22:14

APPENDIX 2

MEDICAL REASONS AND CONDITIONS JUSTIFYING THE USE OF MATERNAL MILK SUBSTITUTES

Several underlying medical reasons and conditions may justify the use of maternal milk substitutes, whether on a permanent or temporary basis, or in complement to maternal milk.

Infant conditions

Classic galactosaemia (inability to digest galactose, a sugar found in milk) and congenital lactase deficiency (not to be confused with lactose intolerance) are rare conditions in which infants cannot be fed maternal milk.[64,69,70,71]

- The choice of commercial infant formula must be discussed with the health care team (e.g. family doctor, pediatrician, endocrinologist, nutritionist).
- Given that these are genetic, lifelong conditions, children must be closely monitored for growth, diet, and calorie and nutrition intake by the health care team, particularly when introducing complementary foods.

Maternal conditions

- Permanent stop to breastfeeding:
  - HIV infection[66,67,64,69]
- Temporary stop to breastfeeding:
  - Lesions on both breasts causes by the herpes virus (until the lesions have resolved)[66]
  - Untreated tuberculosis (infectious)[66,64,69]
  - Serious illness that prevents the mother from taking care of her child[66,64]
  - Medications that are contraindicated for breastfeeding[66,67,64]
  - Use of illicit substances: Mothers should be encouraged to stop using these substances, informed of the associated risks and offered the necessary support to achieve abstinence (see the section on breastfeeding to learn about the effects of some of the most common substances)

Do not forget to consider substances used as part of diagnostic testing, surgeries or chemotherapy (the duration of interruption should be adapted to the situation and discussed with the health care team).

Mothers should receive advice and support to maintain their milk production during any temporary interruption in breastfeeding.

The risks and benefits of breastfeeding should always be discussed in the context of a personalized approach.

Conditions for which breastfeeding should be supplemented with maternal milk (breast milk donors/milk banks) or special commercial infant formulas

Metabolic diseases in infants, such as phenylketonuria and inborn errors of amino acid metabolism, require that maternal milk be supplemented with special commercial infant formulas.[67,64,69]

Babies with very low birth weight (less than 1500 g), extremely preterm babies (born at 32 weeks or earlier) and babies who are at a risk of hypoglycemia.[66]

- The breast milk/special commercial infant formula ratio must be determined with the health care team (family doctor, pediatrician, endocrinologist, nutritionist, etc.).
- Infants should be closely monitored for growth, diet, and calorie and nutrition intake by the health care team.

Conditions for which breastfeeding can continue, although health problems may be of concern[64,73]

- Breast abscess: Breastfeeding should be continued on the unaffected breast until the affected breast heals.
- Hepatitis B: Vaccinate the child 48 hours after birth, or as soon as possible.
- Hepatitis C: If the nipples are bleeding or become chapped, it is recommended to interrupt breastfeeding until they have healed, given that the virus can be transmitted by blood.
- Mastitis: When the breasts become very sore, manually express the milk to keep the situation from deteriorating.

The risks and benefits of breastfeeding should always be discussed in the context of a personalized approach.

Useful Links

- Consult the Centre IMAGe du CHU Ste-Justine[70] *(French only)* and Motherisk[71] for more information on this topic.
- Consult LactMed[72] to determine the level of safety and the risks associated with using various medications and natural health products while breastfeeding.

APPENDIX 3

RECOMMENDATIONS FOR BREASTFEEDING AND DRUG-DEPENDENT WOMEN[43]

When to encourage women and support them in their decision to breastfeed:	
	> Women engaged in substance abuse treatment and who plan to pursue with postpartum treatment (with a professional).
	> Women whose counsellors (professionals) confirm that they have been able to achieve and maintain sobriety during pregnancy and approve their plan for breastfeeding.
	> Women who plan to continue in substance abuse treatment in the postpartum period.
	> Women who have maintained their sobriety for 90 days prior to delivery and have demonstrated the ability to maintain sobriety in an outpatient setting.
	> Women who have a negative maternal urine toxicology testing at delivery (except for prescribed medications).
	> Women who received consistent prenatal care.
	> Women who do not have medical contraindications to breastfeeding (e.g. HIV).
	> Women who are not taking a psychiatric medication that is contraindicated during lactation.
	> Women who are stable on methadone and wish to breastfeed.

When to discourage women from breastfeeding :	> Women who did not receive prenatal care. (Since there were no follow-ups during the pregnancy, it is impossible to ascertain their level of addiction and to safely recommend breastfeeding.)
	> Women relapsing in the 30-day period prior to delivery.
	> Women who are not willing to engage in a prenatal or postpartum substance abuse treatment or who have no plans for pediatric care.
	> Women with positive maternal urine toxicology test results at delivery.
	> Women who demonstrate behavioural qualities or other indicators of active drug use or alcohol consumption.

When to proceed with caution:	> Women relapsing in the 90- to 30-day period prior to delivery, but who maintained abstinence within the 30 days prior to delivery.
	> Women with concomitant use of other prescription (e.g. psychotropic) medication during lactation.
	> Women who started prenatal care and/or substance abuse treatment during or after the second trimester.
	> Women who attained sobriety only in an inpatient setting.

The Academy of Breastfeeding Medicine Protocol Committee, "ABM Clinical Protocol #21: Guidelines for Breastfeeding and the Drug-Dependant Woman," *Breastfeeding Medicine* Vol. 4, No. 4 (2009), 225-228.

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