

Content  
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# Breastfeeding: Fundamental Concepts

## A Self-Learning Package



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Registered Nurses' Association of Ontario  
L'Association des infirmières et infirmiers  
autorisés de l'Ontario

Based on the Registered  
Nurses' Association of Ontario  
Best Practice Guideline:

*Breastfeeding Best Practice  
Guidelines for Nurses*

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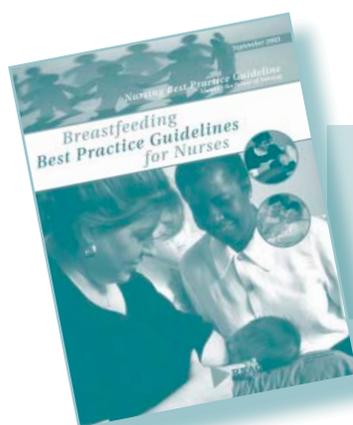
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The RNAO *Breastfeeding Best Practice Guidelines for Nurses* is available for free download from the RNAO website at [www.rnao.org/bestpractices](http://www.rnao.org/bestpractices).

## Learner Objectives

Following completion of this self-learning package, the learner will be able to:

### Objective 1

Support policies that promote breastfeeding.

- ▶ Describe the principles of Family Centred Maternity and Newborn Care.
- ▶ Describe the principles of the Baby Friendly™ Initiative.

### Objective 2

Discuss in general terms, current evidence related to lactation.

- ▶ Describe general benefits of breastfeeding to infant and mother.
- ▶ Describe unique properties of human milk for human infants.
- ▶ Summarize the risks of formula feeding.
- ▶ Identify mammary structures involved in milk production and transfer.

### Objective 3

Provide clinical care consistent with initiation and maintenance of lactation.

- ▶ Identify the key principles for successful breastfeeding.
- ▶ Identify common breastfeeding positions.
- ▶ Recognize correct attachment and effective sucking at the breast.
- ▶ Summarize normal growth parameters of breastfed infants.
- ▶ Apply basic principles of adult learning to client teaching.

### Objective 4

Collaborate with, and provide appropriate referral to other professionals, community groups, and resources.

- ▶ Identify various professionals and organizations that contribute to the support and management of breastfeeding mother/infant pair.
- ▶ Identify resources available for health care professionals to access breastfeeding information.

## Breastfeeding Learning Needs Assessment

NAME \_\_\_\_\_

DATE \_\_\_\_\_

Indicate your *current level of knowledge* in column A, and your *need for content/ skills practice* in column B. Use the following “key”:

### Key for Column A

- 1 No knowledge at present
- 2 Some knowledge
- 3 Extensive knowledge

### Key for Column B

- 1 Minimal experience—need content discussion
- 2 Experience with subject but need a review
- 3 Extensive experience and competent with subject matter and skill set

Content/Skill Set	Column A Current Level of Knowledge	Column B Need for Content/ Skills Practice
Concept of family centered maternity care	.	.
Local and national policies supporting breastfeeding (Baby Friendly™ Initiative)	.	.
Benefits of breastfeeding to mother	.	.
Benefits of breastfeeding to infant	.	.
Unique properties of human milk	.	.
Mammary structures involved in milk production	.	.
Changes in breast during pregnancy and lactation	.	.
Physiology of milk production and removal	.	.
Strategies that support successful lactation	.	.
Practices that interfere with successful lactation and breastfeeding	.	.
Breastfeeding infants with special health needs	.	.
Truths and myths about breastfeeding	.	.

<b>Content/Skill Set</b>	<b>Column A Current Level of Knowledge</b>	<b>Column B Need for Content/ Skills Practice</b>
Medications and treatments compatible with breastfeeding		
Maternal nutrition and fluids during breastfeeding		
The impact of culture, society and community practice on breastfeeding		
Breastfeeding resources available		
Principles of adult learning and adult teaching		
Anatomy and physiology of the suckling process		
Influences on milk production		
Normal growth parameters of breastfed infants		
Influences on infant feeding choices		
Conducting breastfeeding history		
Conducting examination of breasts		
Recognition of correct attachment and effective sucking at the breast		
Recognition of effective milk transfer		
Maintenance of lactation during maternal/infant separation		
Management of common breastfeeding problems		
When to make referrals		

## Introduction

Health care providers play a significant role in protecting, supporting and promoting breastfeeding. They have close contact with families during pregnancy and the newborn period, providing an ideal opportunity to discuss the benefits of breastfeeding, and to provide support to get breastfeeding off to a successful start. As well, health care providers can influence health care policies and practices within their organizations. Therefore, it is important for health care providers to acquire breastfeeding knowledge, skills and education to fulfill their responsibility.

## RNAO Breastfeeding Best Practice Guidelines for Nurses: Select Practice Recommendations

1. It is recommended that nurses endorse the Baby-Friendly™ Hospital Initiative (BFHI), which was jointly launched in 1992 by the World Health Organization (WHO) and the United Nations Children’s Fund (UNICEF). The BFHI directs health care facilities to meet the “Ten Steps to Successful Breastfeeding”.
2. Nurses have a role in advocating for “breastfeeding friendly” environments by:
  - ▶ advocating for supportive facilities and systems such as day-care facilities, “mother and baby” areas for breastfeeding, public breastfeeding areas, 24-hour help for families having difficulties in breastfeeding, and
  - ▶ promoting community action in breastfeeding.

**“Exclusive breastfeeding is recommended for the first six months of life for healthy term infants, as breast milk is the best food for optimal growth. Infants should be introduced to nutrient-rich, solid foods with particular attention to iron at six months with continued breastfeeding for up to two years and beyond.”**

Health Canada, 2004

## Family-Centred Maternity and Newborn Care (FCMNC) National Guidelines

The guiding principles of FCMNC constitute the basis for the organization of national, provincial, regional, and local services for the care of mothers and babies.

## What Is Family-Centred Maternity Care?

*“Family-centred maternity and newborn care is a complex, multidimensional, dynamic process of providing safe, skilled, and individualized care. It responds to the physical, emotional, and psychosocial needs of the woman and her family. In family-centred maternity and newborn care, pregnancy and birth are considered normal, healthy life events. As well, such care recognizes the significance of family support, participation, and choice. In effect, family-centred maternity and newborn care reflects an attitude rather than a protocol.”*

(Rush, 1997; National Guidelines, 2000)

Breastfeeding is an important component of the FCMNC guidelines. During pregnancy, it is important for health care providers to ensure mothers are given the opportunity to make well-informed decisions about infant feeding. Some may consider breastmilk and artificial baby milk to be nutritionally equal; however breastmilk is far superior. It is essential for women and their partners to be informed of the benefits of breastfeeding and the risks of not breastfeeding.

Some health care providers may avoid providing this information for fear of making a woman feel guilty if she chooses not to breastfeed. However, breastfeeding information should be a routine part of health promotion just like discussing smoking cessation, healthy nutrition, or the use of infant car seats.

By early pregnancy, many women have already made the decision about whether to breastfeed or not. Choice of feeding method is influenced by a number of factors, including personal experience, knowledge, culture and the attitudes of significant others. Some women go through a logical process of gathering information to make their decision; others have no decision to make as they see breastfeeding as a normal part of having a baby. Once the woman has made her feeding choice, it is unlikely to change, and health care providers have a responsibility to support her decision.

## What is the Baby Friendly™ Initiative (BFI)?

The Baby Friendly™ Initiative (BFI) is a global campaign of the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF). The BFI is an international program to improve breastfeeding outcomes for mothers and babies. It is a globally recognized, evidence-based quality standard for breastfeeding. Its purpose is to recreate a culture of breastfeeding throughout the world.

The BFI is inclusive of all mothers and babies, regardless of how the babies are fed. While the goal of the BFI is to increase breastfeeding initiation and duration rates by protecting, promoting and supporting

## The Guiding Principles of FCMNC

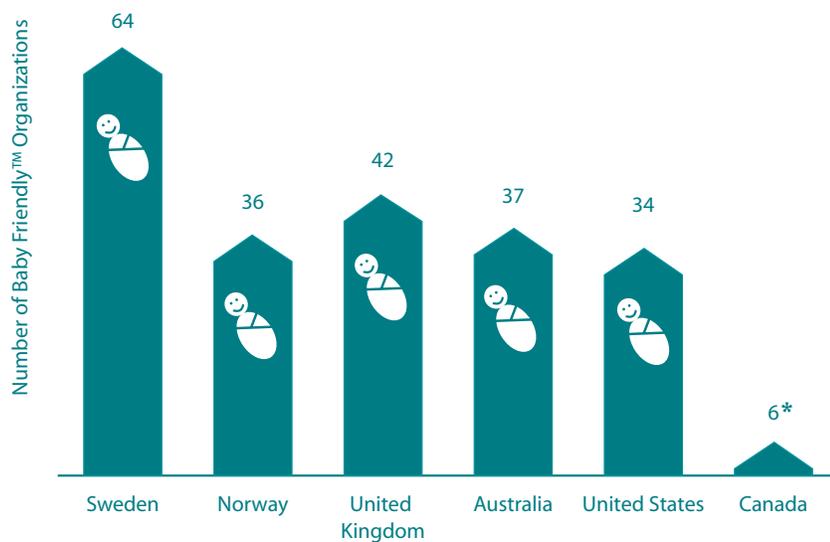
1. Birth is a celebration—a normal, healthy process.
2. Pregnancy and birth are unique for each woman.
3. The central objective of care for women, babies, and families is to maximize the probability of a healthy woman giving birth to a healthy baby.
4. Family-centred maternity and newborn care is based on research evidence.
5. Relationships between women, their families, and health care providers are based on mutual respect and trust.
6. Women are cared for within the context of their families.
7. In order to make informed choices, women and their families need knowledge about their care.
8. Women have autonomy in decision making. Through respect and informed choice, women are empowered to take responsibility.
9. Health care providers have a powerful effect on women who are giving birth and their families.
10. Family-centred care welcomes a variety of health care providers.
11. Technology is used appropriately in family-centred maternity and newborn care.
12. Quality of care includes a number of indicators.
13. Language is important.

breastfeeding, women who make an informed decision to formula feed are supported to ensure they can provide formula in a safe and nurturing way.

The BFI endorses the WHO/UNICEF International Code of Marketing of Breastmilk Substitutes. The Breastfeeding Committee for Canada (BCC) is the national authority for the implementation of the Baby Friendly™ Initiative in Canada.

The Baby Friendly™ Initiative:

- ▶ is evidence based
- ▶ outcomes-oriented
- ▶ protects, promotes and supports breastfeeding
- ▶ benefits all babies
- ▶ World wide there are over 18,285 Baby Friendly™ Hospitals. Here is an example of how many Baby Friendly™ organizations there are in industrialized countries (2003):



\*As of November 2005

### Canadian Baby Friendly™ Hospitals

- ▶ Brome-Missisquoi-Perkins Hospital, Cowansville, Quebec, designated in July 1999 and recertified in November 2004, has about 645 births per year.
- ▶ St. Joseph's Health Care, Hamilton, Ontario, designated in March 2003 – large tertiary care facility, has about 4300 births per year.
- ▶ Centre Hospitalier, Saint Eustache, Quebec, designated in May 2004, has about 1500 births per year.

- ▶ CLSC d'Argenteuil, Lachute Quebec, is Canada's first designated Baby-Friendly™ Community Health Service, November 2004. The area served by the CLSC has about 250 births per annum, some of which take place at Centre Hospitalier Saint-Eustache.
- ▶ La Maison de Naissance Mimosa in Saint Romuald, Quebec is the first birthing centre in Canada to receive the Baby-Friendly designation, January 2005. The birthing centre, which is primarily staffed by midwives, has about 200 births per year.
- ▶ Mission Communautaire du Centre de santé et de service sociaux in Cowansville, Quebec, designated in September 2005.

Other organizations are actively working toward the Baby Friendly™ designation at this time. This process is a complex and lengthy one. However, any progress towards the Baby Friendly™ designation is beneficial to mothers and babies.

The Baby Friendly™ Initiative includes *The Ten Steps to Successful Breastfeeding for Hospitals* and *The Seven Point Plan for the Protection, Promotion and Support of Breastfeeding in Community and Health Services for Public Health Units and Community Health Services*.

## The 10 Steps to Becoming Baby Friendly™

Every facility or agency providing maternity services and care of newborn infants should have the following:

- Step 1** Have a written breastfeeding policy that is routinely communicated to all health care staff.
- Step 2** Train all health care staff in skills necessary to implement this policy.
- Step 3** Inform all pregnant women about the benefits and management of breastfeeding.
- Step 4** Help mothers initiate breastfeeding within a half-hour of birth.
- Step 5** Show mothers how to breastfeed, and how to maintain lactation even if they should be separated from their infants.
- Step 6** Give newborn infants no food or drink other than breast milk, unless medically indicated.
- Step 7** Practice rooming-in; allow mothers and infants to remain together 24 hours a day.
- Step 8** Encourage breastfeeding on demand.
- Step 9** Give no artificial teats or pacifiers (also called dummies or soothers) to breastfeeding infants.
- Step 10** Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from hospital or clinic.

## The Seven Point Plan for the Protection, Promotion and Support of Breastfeeding in Community Health Services

1. Have a written breastfeeding policy that is routinely communicated to all staff and volunteers.
2. Train all health care providers in the knowledge and skills necessary to implement the breastfeeding policy.
3. Inform all pregnant women and their families about the benefits and management of breastfeeding.
4. Support mothers to establish and maintain exclusive breastfeeding to six months.
5. Encourage sustained breastfeeding beyond six months with appropriate introduction of complimentary foods.
6. Provide a welcoming atmosphere for breastfeeding families.
7. Promote collaboration between health care providers, breastfeeding support groups and the local community.

### Baby Friendly™ Accreditation Process

- ▶ self-assessment by the organization
- ▶ internal change to incorporate the BFI
- ▶ documentation review by the Breastfeeding Committee for Canada (BCC)
- ▶ site visit by external team of BFI Assessors
- ▶ mother interviews, staff interviews and direct observation
- ▶ 80% to pass
- ▶ requires re-certification every 5 years

### “Breastfeeding friendly”

- ▶ It is important for all health care facilities to be “baby friendly” and demonstrate their support of breastfeeding by having posters and brochures visible to families
- ▶ Health care facilities should not market infant formula products, or display posters or flyers from the formula companies that may undermine breastfeeding

### Summary of the International Code of Marketing of Breastmilk Substitutes

1. No advertising of these products to the public.
2. No free samples to mothers.
3. No promotion of products in health care facilities.
4. No company representatives to advise mothers.
5. No gifts or personal samples to health workers.
6. No words or pictures idealizing artificial feeding, including pictures of infants, on the labels of the products.
7. Information to health care workers should be scientific and factual.
8. All information on artificial infant feeding, including the labels, should explain the benefits of breastfeeding, and the costs and hazards associated with artificial feeding.
9. Unsuitable products, such as sweetened condensed milk, should not be promoted for babies.
10. All products would be of a high quality and take account of the climatic and storage conditions of the country where they are used.

### Self Reflective Exercise

Reflect on your own organization (hospital, health unit, health centre, etc.). Which of the 10 steps or of the 7 points of the Baby Friendly™ Initiative does your facility currently meet?

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## Contraindications to Breastfeeding

Breastfeeding is possible for the vast majority of mothers and their babies, with the benefits of breastfeeding outweighing the risks. However, there are a few special circumstances in which breastfeeding is not recommended. These include:

- ▶ Galactosemia in the infant
- ▶ Drug abuse by the mother
- ▶ Active tuberculosis in the mother
- ▶ HIV in the mother

## Breast Anatomy

The breast or mammary gland is a complex organ. The development of the breast begins in utero, in the early weeks of gestation. The breast changes under influence of normal physiological processes such as puberty, menstrual cycles, pregnancies, birth, weaning and menopause.

The breast is a secretory gland composed of:

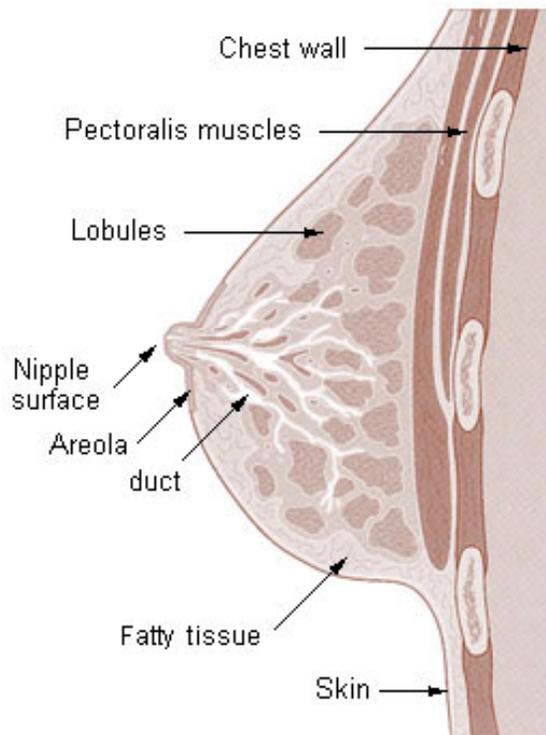
- ▶ Glandular tissue to make and transport the milk
- ▶ Connective tissue to support the breast
- ▶ Blood to nourish the breast and provide nutrients to make milk
- ▶ Lymph to remove waste
- ▶ Nerves to innervate and stimulate the release of hormones for milk production and milk ejection
- ▶ Adipose tissue to protect from injury

Breast size is determined by fatty tissue and genetic inheritance. It is important to recognize and reassure mothers that there are many variations in the size and shapes of women's breasts and that milk production does not depend on breast size.

The enlargement of breasts during pregnancy and lactation indicates that the mammary gland is becoming functional.

## Anatomy of the Breast

1. **Alveoli** – grape-like clusters of glandular tissue which produce milk. The alveoli cells are surrounded by bands of myoepithelial cells, which contract when stimulated by oxytocin. This action expels the milk into the ductules and down into the ducts.
2. **Milk Ducts** – branch like ductules extending from the clusters of alveoli. These ducts transport milk through the breast, and end at the nipple openings. Recent research shows that the ducts do not widen into sinuses located behind the nipple and areola, as previously thought.
3. **Lobes** – each breast contains many lobes (approx. 10-15) that consist of single major branches of alveoli and milk ducts.
4. **Areola** – the darkened area around the nipple. The areola has small oil-producing Montgomery Glands to lubricate and provide protection to the nipple.
5. **Nipple** – has many openings or pores on the surface to allow the milk to be delivered to the baby. The nipple contains erectile smooth muscle tissue that causes it to become firm and protrude if stimulated. The nipple and areola are flexible to conform to the baby's mouth during breastfeeding.



Reference: [http://training.seer.cancer.gov/ss\\_module01\\_breast/unit02\\_sec01\\_anatomy.html](http://training.seer.cancer.gov/ss_module01_breast/unit02_sec01_anatomy.html)

## Influencing Hormones

### Estrogen

The increase of estrogen during pregnancy stimulates the ducts in the breast to grow and become specific. Estrogen levels drop at delivery and remain low for the first several months of breastfeeding.

### Progesterone

The increase of progesterone during pregnancy influences the growth in size of alveoli and lobes. Progesterone levels drop along with estrogen after birth, triggering the onset of copious milk secretion.

### Prolactin

The increase of prolactin during pregnancy contributes to the accelerated growth of the alveoli during pregnancy. The alveolar cells make milk in response to the release of prolactin from the anterior pituitary gland, when the baby sucks at the breast. Therefore, the more the baby effectively stimulates the breast, the more prolactin is released, and the more milk is made. Night time breastfeeding is very important, as prolactin release in response to sucking is the highest between 2 and 6 a.m.

### Oxytocin

Oxytocin contracts the smooth muscle of the uterus during childbirth and in the early days postpartum. Oxytocin also contracts the bands of myoepithelial cells surrounding the alveoli in the breast, to squeeze the newly produced milk into the ducts. This is called the milk ejection or “let-down” reflex.

The milk ejection reflex is responsible for making the milk available to the baby. When the baby latches at the breast, it stimulates the nerve endings in the nipple and areola, sending a message to the posterior pituitary gland to release oxytocin into the bloodstream. Oxytocin quickly stimulates the bands around the alveoli to contract, squeezing the milk into the ducts and towards the nipple, where it is available for the baby to remove. During the milk ejection reflex, the rhythm of the baby’s suck will change from a rapid pattern to deep, slow sucks (about 1 per second).

During a milk ejection reflex, the mother may experience milk leaking from her other breast. Women may experience more than one let-down per breast; the more let-downs that occur, the more milk her baby will receive. Extreme pain, stress hormones, nicotine and alcohol may inhibit oxytocin release temporarily, while relaxation can promote it. The milk ejection reflex can also be triggered without physical stimulation. Mothers may have a let-down if they think about their baby, or if they hear their baby or another baby cry.

## Breastmilk Production

During pregnancy, glandular tissue in the breasts makes colostrum. Colostrum is available after the 7th month, and may leak from the breasts during the last trimester. Pregnancy hormones prevent the breast from making larger quantities of milk. However, the breasts begin to make larger quantities of milk as the levels of hormones drop after delivery—specifically, the delivery of the placenta triggers a fall in estrogen and progesterone, which allows the release of prolactin, prompting the breasts to make milk.

The most important part of establishing a good milk supply is effective and frequent milk removal from the breast during the baby's first weeks of life. It is important to have the breasts drained well and often, either by the baby breastfeeding, or by milk expression (double pumping or hand expression).

Breast storage capacity, the amount of milk the breast can store between feedings, appears to be related to breast size, but is not related to overall milk production. For instance, women with larger storage capacities may feed less frequently because more milk is available to their babies at each feeding, while women with smaller storage capacity need to feed more often.

*The supply and demand response is a feedback control system that regulates the production of milk to match the intake of the infant.*

## Breastmilk

- ▶ is species-specific, so it is especially suited for human babies.
- ▶ provides all of the fluid and nutrients for optimal growth and development, and protects the baby from bacteria and viruses that their mother comes in contact with.
- ▶ adapts to the gestational age of the infant, and changes to meet the baby's needs.
- ▶ composition changes in the early postpartum period, from colostrum to transitional milk, and then to mature milk, when lactation is established.

## Colostrum

- ▶ is the thick, clear to yellowish milk that is present the first few days following birth.
- ▶ is present in small amounts (5-10 cc per feed), as the baby's kidneys are not initially able to handle large volumes of fluid.
- ▶ is higher in protein and minerals, and lower in fat, carbohydrates and some vitamins compared to mature breastmilk.
- ▶ has immunoglobulins (mostly IgA) that provide anti-infective protection for the baby.
- ▶ acts a laxative to help the baby pass meconium.
- ▶ is easily digested.

## Transitional Milk

- ▶ is a mix of colostrum and mature milk, as mother's "milk comes in".
- ▶ is present during the first and second week.
- ▶ higher in fat, lactose and calories.

## Mature Milk

- ▶ is composed of:
  - **foremilk** – the low-fat, high water content milk at the start of the feeding which quenches the baby's thirst.
  - **hindmilk** – the high-fat milk released near the end of the feed (after active let-down of milk) to keep the baby satiated until the next feeding and to help baby gain weight.
- ▶ varies with:
  - the time of day,
  - the length of the breastfeeding,
  - the needs of the baby,
  - parity.

## Components of Breastmilk

### Protein

- ▶ The amount of protein in breastmilk is perfect for infant growth and brain development.
- ▶ Protein in breastmilk is easily digested and well-absorbed.
- ▶ Whey:casein ratio of breastmilk is 60:40.
  - Whey more easily digested than casein.
  - Whey is predominant in breastmilk.
  - Casein is predominant in cow's milk and infant formulas, making the protein in cow's milk formula harder to digest.
- ▶ 8 of 20 amino acids in breastmilk are essential.

### Fat

- ▶ Fat is the most variable component in breastmilk.  
*It changes:*
  - during the feeding
    - low-fat foremilk at the beginning
    - high-fat hindmilk at the end
  - throughout the day
    - high milk volume/low fat content in morning (fat content lowest at 6 AM)
    - low milk volume/high fat content later in the day (fat content peaks at mid-afternoon)
  - with age of infant
    - preterm breastmilk has 30% higher fat concentration for some time
- ▶ lipase enzyme (found in the infant's intestine and in the breastmilk itself) breaks down fat so that it is more easily digested and utilized
- ▶ half of breastmilk calories come from fat
  - mostly in the hindmilk
  - breastmilk contains 20 calories/oz

## Carbohydrate

- ▶ Lactose accounts for most of the carbohydrates in human milk.
- ▶ Lactase enzyme (present in breastmilk) is necessary to convert lactose into simple sugars that can be easily used.
  - Lactose is metabolized easily.
    - energy to growing brain
    - enhances calcium absorption helping to prevent rickets
    - promotes growth of lactobacillus bifidus and lowers harmful organisms in gut
    - available source of galactose

## Vitamins & Minerals

- ▶ Complete, but lower levels found in breastmilk than formula
  - more easily absorbed from breastmilk
  - formula has higher levels, but more are excreted
- ▶ Renal Solute Load (RSL)
  - renal solute load of breastmilk is a third of that in formula, placing less stress on the kidneys

## Vitamin D

- ▶ Breastmilk contains small amounts (15-40 IU/litre) of vitamin D.
- ▶ The most at risk for Vitamin D deficiency are preterm babies, and dark-skinned babies in northern climates.
- ▶ The need for Vitamin D supplementation for healthy full term infants is controversial, however it is recommended that all healthy, full term breastfed infants receive a supplement of 400IU/day from birth, continuing until the infant's diet includes at least 400IU/day of Vitamin D from other dietary sources, or until the breastfed infant reaches 1 year of age.  
(Health Canada, 2004)

## Iron

- ▶ Iron is found in smaller amounts in breastmilk (0.5-1 mg/L) but iron absorption is increased due to high lactose and Vitamin C content.

## Enzymes

- ▶ There are 20 active enzymes in human milk. There are none or limited amounts in cow's milk
- ▶ Help to digest fat
- ▶ Increase bio-availability of other components

## Immunological Benefits of Breastmilk

Overall, the nutritional components of human milk combined with its immune and anti-allergic properties, make it the ideal foundation for infant health.

*During infancy there is protection against:*

- ▶ Respiratory illness
- ▶ Gastrointestinal illness
- ▶ Otitis media
- ▶ Bacteremia
- ▶ Meningitis
- ▶ SIDS

*Beyond infancy there is protection against:*

- ▶ Diabetes
- ▶ Childhood obesity
- ▶ Auto-immune disease
- ▶ Crohn's disease
- ▶ Lymphoma
- ▶ Allergies (food, eczema, asthma)

Protection is dose related and declines in proportion to degree of supplementation with cow's milk or formula.

### Preterm Infants

- ▶ Preterm breastmilk has more protein, fat, antibodies (especially IgA), and lactoferrin than mature milk, making it more suited for the needs of a preterm baby than any artificial formula.
- ▶ Human milk offers protection against Necrotizing Enterocolitis (NEC) and bacteremia.
- ▶ Breastmilk may be expressed and used before the baby is able to breastfeed.
- ▶ Fresh breastmilk is better than frozen (freezing destroys leukocytes).

## Anti-Allergic Benefits of Breastmilk

In addition to the immune properties of breastmilk, it also has anti-allergic benefits.

- ▶ The healthcare professional should assess for a family history of eczema, asthma, food allergies
  - because of risk of sensitization to allergic proteins, even occasional formula supplements can trigger an allergic reaction, and should be avoided
- ▶ epidermal growth factor
  - hastens maturation of intestinal lining
  - strengthens barrier to antigens
  - IgA protects gut from absorbing antigens
- ▶ *greatest benefit if...*
  - exclusively breastfed 6 months, and continue for a minimum of 12 months
  - delay introduction of solids until 6 months
  - allergenic foods (milk, eggs, fish, nuts) eliminated from maternal diet

## Other Benefits of Breastfeeding

### Maternal

- ▶ Offers protection against:
  - type 1 diabetes
  - pre-menopausal breast cancer
  - ovarian cancer
  - osteoporosis
- ▶ Oxytocin release during breastfeeding contracts the uterus and helps reduce bleeding after delivery.
- ▶ Hastens involution of uterus, faster return to pre-pregnant weight

### Infant

- ▶ May enhance infant cognitive development
- ▶ Retinal development
- ▶ Sucking
  - Promotes proper development of jaw & facial structure
  - Speech development

## Attachment

- ▶ Frequent close contact between mother and baby
- ▶ Promotes bonding

## Convenience

- ▶ Breastmilk right temperature
- ▶ Readily available
- ▶ No time or effort to prepare

## Less expensive

- ▶ Formula >\$1800/yr

## Workplace

- ▶ Less absenteeism, secondary to infant illness

## Risks of Formula Feeding

Formula feeding causes increased risk of:

- ▶ Gastrointestinal infections
- ▶ Asthma
- ▶ Otitis media
- ▶ Diabetes
- ▶ Allergy
- ▶ Childhood cancers
- ▶ Cardiovascular disease
- ▶ Infection from contaminated formula

(INFACT Canada, 1995)

## Hazards of Artificial Baby Milk

- ▶ Infant formula may be contaminated through manufacturing error.
- ▶ Errors in mixing formula may cause infant illness.
- ▶ Water used for washing bottles or mixing formula may be contaminated.

### Self Reflective Exercise

How would you respond to a mother who says “Infant formula is as good as breastmilk, so I don’t think I need to breastfeed past the first 2 weeks”?

**Your Response:**

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## Nutrition for the Breastfeeding Mother

- ▶ It is recommended that mothers eat a balanced diet based on a variety of healthy foods, and eat as their appetite dictates.
- ▶ Mothers should drink to satisfy their thirst—a mother does not have to *drink* milk to *make* milk!
- ▶ It is best for mothers to limit their caffeine intake (including coffee, tea, cola, and chocolate) as well as their alcohol intake.

## Medications and Breastfeeding

- ▶ There is ever changing information in regards to breastfeeding and medications, however very few drugs are contraindicated.
- ▶ It is rarely necessary to interrupt breastfeeding due to maternal medication.
- ▶ The benefits of breastfeeding for mother and baby usually outweigh the risks of the infant exposure to the drug. Generally, less than 1% of the maternal drug dose passes into the milk.

## Breast Assessment

- ▶ A woman's breasts may be assessed as part of her prenatal care, particularly if she is concerned about her breasts or nipples.
- ▶ Most women's breasts and nipples are well adapted to feeding their babies.
- ▶ Early identification of situations or physical factors that may interfere with breastfeeding may prevent problems from arising.
- ▶ Referrals to health care providers experienced in dealing with breastfeeding issues may be necessary for:
  - Previous breastfeeding difficulty
  - Breast or nipple abnormality
  - Absence of breast changes during pregnancy
  - Breast reduction or breast augmentation surgery
  - Medical indications for mother or baby that may result in breastfeeding being contraindicated

## Prenatal Breastfeeding Assessment Tool

Demographic Data				
Mother's Name _____				
Mother's Age _____		Current Gestation _____		
Marital Status _____		Language _____		
Employment _____		Education _____		
Bra Size	Shape of Breasts	Description of Breast	Size of Areola	Diameter of Nipple
Pre-pregnant  Now  <input type="checkbox"/> Right Larger <input type="checkbox"/> Left Larger <input type="checkbox"/> Same		<input type="checkbox"/> Flat <input type="checkbox"/> Rounded <input type="checkbox"/> Upright <input type="checkbox"/> Saggy <input type="checkbox"/> Non-lactating <input type="checkbox"/> Firm <input type="checkbox"/> Full	Radius from base of nipple <input type="checkbox"/> Small (1/2-3/4") <input type="checkbox"/> Medium (1") <input type="checkbox"/> Large (1-1 1/2") <input type="checkbox"/> Extra Large (2" +)	<input type="checkbox"/> Small (1/4") <input type="checkbox"/> Medium (3/8") <input type="checkbox"/> Large (1/2") <input type="checkbox"/> Extra Large (3/4")
Length of Nipple	Breast, Nipple & Areola		Birth Plan	Past BF Experience
(A=At rest, S=Stimulated, C=Compressed)  <input type="checkbox"/> Inverts <input type="checkbox"/> 0 <input type="checkbox"/> 1/8" <input type="checkbox"/> 1/4" <input type="checkbox"/> 3/8" <input type="checkbox"/> 1/2" <input type="checkbox"/> 5/8"	<input type="checkbox"/> Tenderness <input type="checkbox"/> Trauma <input type="checkbox"/> Inverted nipple <input type="checkbox"/> Marmet's dimpled nipple <input type="checkbox"/> Thorpes folding nipple <input type="checkbox"/> Dancheck's intussuscepted nipple <input type="checkbox"/> Raspberry nipple <input type="checkbox"/> Fissured nipple <input type="checkbox"/> Supernumerary nipples <input type="checkbox"/> Unusual shape <input type="checkbox"/> Reduction <input type="checkbox"/> Augmentation <input type="checkbox"/> Masses <input type="checkbox"/> Fibrocystic <input type="checkbox"/> Compressibility - tissue behind nipple <input type="checkbox"/> Deformities <input type="checkbox"/> Scarring <input type="checkbox"/> Other		<input type="checkbox"/> Epidural <input type="checkbox"/> Elective C/S <input type="checkbox"/> Rooming-In <input type="checkbox"/> Early Discharge	
			Health Care Provider	Medical Status
			<input type="checkbox"/> Family Physician <input type="checkbox"/> Obstetrician <input type="checkbox"/> Midwife <input type="checkbox"/> Lactation Consultant <input type="checkbox"/> Other	
Cultural Information	Support Assessment	Attitude	Lifestyle	Drugs
	<input type="checkbox"/> Informational <input type="checkbox"/> Emotional <input type="checkbox"/> Material <input type="checkbox"/> Appraisal	<input type="checkbox"/> Significant Others <input type="checkbox"/> HCP <input type="checkbox"/> Peers	<input type="checkbox"/> Nutrition <input type="checkbox"/> Alcohol <input type="checkbox"/> Smoking <input type="checkbox"/> Physical Activity <input type="checkbox"/> Other	<input type="checkbox"/> Prescription <input type="checkbox"/> OTC <input type="checkbox"/> Addictive
Goals				
Resources Received				
Breastfeeding Plan				
Signature: _____ Date: _____				
Adapted with permission from: The Lactation Institute (1993) Breast Assessment for Lactation: © Chele Marmet, MA, IBCLC & Ellen Shell, MA, IBCLC. Lactation Forms: A Guide to Lactation Consultant Charting. Lactation Institute Press. 16430 Ventura Blvd. Ste 303, Encino, CA. 91436 USA. 818-995-1913. <a href="http://lactationinstitute.org">http://lactationinstitute.org</a>				

## Early Postpartum Days

Early, frequent, unrestricted, exclusive and effective breastfeeding in the early days is important for the establishment of breastfeeding. Skilled, consistent help from a health care professional with a positive approach is important as breastfeeding is initiated. Breastfeeding is a learning experience for both the mother and infant—just as the mother learns, so does the infant.

### Key principles to successful breastfeeding

1. Start early.
  - ▶ Provide an opportunity for baby to breastfeed within an hour of birth when babies are most alert.
  - ▶ Place baby skin to skin with mom, and allow time for them to explore each other.
  - ▶ Delay unnecessary procedures that may interfere with the first breastfeeding.
  - ▶ Babies may only lick and nuzzle at first, or they may latch and suckle well.
2. Encourage frequent, unrestricted, baby led feedings.
  - ▶ Babies breastfeed best “on cue”, which is usually every 2 or 3 hours throughout the day and night (a minimum of 8 times in 24 hours).

*Infant feeding cues include:*

    - waking and stretching
    - hand-to-mouth movements
    - rooting
    - sucking and licking
    - Remember... *crying is a late cue!*
  - ▶ The length of nursing time will vary but most babies will take 20 to 30 minutes to complete a feed in the first week. Instruct the mothers to watch the baby and not the clock!
  - ▶ The infant should be allowed to breastfeed as long and as often as they want for the early feeds to stimulate milk production.
  - ▶ Offer both breasts each feeding, as breastfeeding is getting established.
  - ▶ Gently wake the baby and provide the opportunity for the baby to breastfeed at least every 3 hours if the baby is not cueing on their own.

*Waking strategies include:*

- Undressing the baby
  - Placing the baby skin to skin
  - Changing the baby's diaper
  - Gently stroking the baby's arms, legs, and back
  - Gently running your fingers up and down the baby's spine
  - Avoid waking if the baby is in a deep sleep state. Wait 30 minutes and try again.
- ▶ Expect feeding frequency to decrease as the infant gets older and more efficient/effective at breastfeeding.
- 3. Keep mother and baby together.**
- ▶ Mother and baby should room together throughout the postpartum stay, including nights.
  - ▶ Babies need to be close so their mother can recognize and respond to their feeding cues and physical/emotional needs.

### Self Reflective Exercise

Identify 3 possible reasons why the baby may be separated from the mother.

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- 4. Assist with position and latch.**
- ▶ Skilled breastfeeding help from health care providers is essential along with evidence based information
  - ▶ Proper position and latch are the key to:
    - Maternal comfort
    - Adequate milk production
    - Adequate infant growth
    - Prevention of sore nipples
    - Prevention of engorgement
    - Prevention of breast infections

5. Ensure exclusive breastfeeding.
  - ▶ Babies that are breastfeeding should receive only breast milk, without other fluids or foods introduced, unless there is a medical indication.
  - ▶ Supplementation interferes with breastmilk production. If the baby is given a supplement, they may not be hungry to go to the breast at the next feed, and if the breast isn't stimulated, then it won't produce as much milk.
  - ▶ Pacifiers or soothers should be avoided, especially when breastfeeding is getting established. If the baby needs to suck, it should be at the breast!
  - ▶ *Remember...* Whenever breastfeeding is delayed or interrupted, mothers should be helped to establish lactation by expression of milk (by pump or hand).

## Latch and Position

In normal breastfeeding, there are two elements necessary for getting milk from the breast to the baby:

1. a breast that produces and releases milk,
2. a baby who is able to remove the milk from the breast with effective sucking.

How the baby is attached at the breast will determine how successfully these two elements come together.

### Attachment at the breast

- ▶ Baby is held close, tummy to tummy with mother, at the level of the breast.
- ▶ Mother supports her breast with her hand, keeping her thumb and fingers well behind the areola, in a C-hold.
- ▶ Elicit the rooting reflex by touching the baby's lip with mother's nipple.
- ▶ Wait until the baby has a wide-open mouth and bring the baby to the breast (not the breast to the baby).
- ▶ Bring the baby's whole body toward the breast. Do not just cup the baby's head and push it into the breast.
- ▶ Ensure the baby takes a large mouthful of breast (the nipple, areola, and breast tissue form a teat within the baby's mouth).
- ▶ The baby's lips will be flanged outward on the breast, their chin will be deep into the breast, and their lower lip will cover more of the areola than their upper lip.
- ▶ As the baby compresses the breast, milk flows from the breast.

- ▶ Allow the baby to breastfeed until releasing spontaneously.
- ▶ Offer the second breast only after the baby has finished the first.

## The Baby's Sucking Behaviour at the Breast

Breastfeeding is not just suckling, but a series of behaviours including:

- ▶ Rooting and opening wide to attach on the breast
- ▶ Suckling rhythmically and pausing to rest between bursts of sucking and swallowing, while continuing to cup breast tissue with their tongue
- ▶ Coordinating the sequence of suck-swallow-breathe
- ▶ The baby suckles about once per second when a large quantity of milk is flowing (with let-down) and about twice per second when the milk flow slows (toward the end of the feed)

## Breastfeeding Positions

As mothers find out what works best for them, they may need assistance in learning different breastfeeding positions. The most common positions include:

### Cradle-Hold

This is a common position for breastfeeding. In order to latch the baby, the mother may support her breast with the hand opposite the side that the baby is nursing, with her thumb and fingers well back from the areola. Using the arm on the same side the baby is nursing on, the mother supports the baby's head and body and keeps the infant close. The baby should be at the level of the breast, and pillows are useful to provide additional support. The mother turns the baby towards her so that the infant's nose, chin, tummy and knees are touching her. The mother can tuck the infant's lower arm below her breast to keep it out of the way.



### Modified Cradle-Hold

The mother should be seated comfortably with additional pillows as necessary to support her back and arms then tuck the baby under breast. Use of a footstool may be beneficial. The mother can support her breast with fingers positioned at the base of her breast well back from the areola. The baby should be held in the arm opposite to the breast being used. The baby's shoulder and neck are supported by her hand and the baby is turned facing the mother. Holding the back of the



infant's head with her hand may cause the infant to pull away when being put onto the breast. The baby's head and neck should be in a slightly extended position to facilitate the chin touching the breast.

(Biancuzzo, 1999; Lothian, 1995)

### Side-Lying

The mother should lie on her side with one or two pillows supporting her head and her lower arm flexed up. Use pillows as necessary to support her back and legs. The baby should be positioned side-lying, facing the mother, with the head low enough that the mom's nipple is at the level of the baby's nose, and the neck extended so that eye contact with the mother is possible (Scarborough Breastfeeding Network, 1999; Society of Paediatric Nursing of the Royal College of Nursing, 1998). The mother's hand should be across baby's shoulder blades. The mother should pull the baby towards her abdomen, and wait. The baby will extend his head with a wide mouth and will latch onto the breast without assistance.



### Football Hold (Clutch Hold)

The mother should be seated comfortably as per the 'cradle-hold' description. The baby should be positioned on a pillow at the mother's side, on the side of the breast to be used. Use extra pillows to raise baby to the level of the breast. The baby should be tucked in close to the mother's side and held like a football with the bottom against the back of the chair and the legs up behind mother's arm (Scarborough Breastfeeding Network, 1999; Society of Paediatric Nursing of the Royal College of Nursing, 1998). The baby's back should be supported with the mother's arm and his shoulders with mother's hand (avoid holding baby's head).



## Signs that the Baby is Getting Enough

- ▶ The baby is nursing frequently (a minimum of 8 times in 24 hours), and effectively. Effective nursing means the baby seems hungry at the start of the feeding, the mother can hear the baby swallowing or a quiet "ca, ca" sound during the feeding, and the baby appears satisfied at the end of the feeding.

*Satiety cues at the end of the feed include:*

- Spontaneous release of the breast
- Small amount of milk seen in the mouth
- Body relaxed
- Legs extended
- Absence of hunger cues
- Sleep or a contented state

Illustrations reproduced with the permission of the City of Ottawa

- ▶ Urine output
  - Urine is pale and odourless.
  - In the first 2 days, one to two wet diapers is common, along with occasional brick red staining.
  - By day 4, as the milk volume increases, 4 to 6 wet diapers is expected.
  - A tissue placed in the disposable diaper can assist parents in determining if the baby passed urine.
- ▶ Stools
  - The baby has soft or liquid stools, several times per day.
  - Stools should change from black to greenish/brown to yellow and seedy.
  - By day 4, all meconium should be passed.
- ▶ The baby is alert and growing.

***Remember...***

- ▶ The establishment of lactation in the first 3 to 5 days is vital to the well being of the newborn.
- ▶ The newborn may take from birth to 48 hours to establish feeding patterns.
- ▶ With effective stimulation, the onset of lactation (milk coming in) usually takes 2 to 3 days.
- ▶ Consistent, appropriate, professional support during this critical period has a positive impact on breastfeeding success.

## Factors That May Interfere with Establishing Milk Supply

- ▶ Separation of mothers and babies
- ▶ Infrequent or missed feedings
- ▶ Restricted duration of feeding
- ▶ Poor position and latch (resulting in ineffective suckling)
- ▶ Sleepy babies
- ▶ Supplementation for non-medical reasons
- ▶ Use of pacifiers to delay feedings

## Infant Growth

- ▶ Normal human growth is greatest during infancy.
- ▶ There are growth differences between breastfed and formula fed infants: breastfed infants have the same or a greater weight gain in the first 3 to 4 months than formula fed babies, but after this time, formula fed babies weigh more.
- ▶ Growth grids used are based on formula fed infants growth patterns. Breastfed infant grids are not yet developed.

### Weight loss

- ▶ Infants may lose approximately 7% of their birth weight the first week. It is important to assess if breastfeeding is effective and if there is evidence of milk transfer.
- ▶ 10% loss indicates potential hypovolemia & dehydration.
  - Intervention is required.
  - When supplementation is required, use breastmilk first, then formula.

### Weight gain

- ▶ Babies need to regain their birth weight by 2 to 3 weeks.
- ▶ On average, infants gain 15 - 30 gm/day or ½ - 1 kg/month.

## Healthy Full-Term Infants: Early Nutritional Requirements

- ▶ Born with an excess of fluid volume
- ▶ Glycogen stores available for baby
  - tolerate the initial fast while awaiting the onset of lactation
  - no nutritive intake is necessary initially
  - glucose stores sufficient to meet needs

## Fluid Requirements

- ▶ 150ml/kg/day (by day 5)

*For example:*

- A baby weighing 3 kg would require a total of 450 ml for 24 hours.  
(150ml x 3 kg = 450 ml total volume)
- If the baby has 8 feeds per day, each feed would be about 56 mls.  
(450 ml ÷ 8 = 56 mls per feed)

## Milk Volume Requirements

- ▶ An infant's anatomy and physiology matches mother's milk volume and composition.
- ▶ A healthy baby has no need for larger volumes of fluid any earlier than what is physiologically available from the breast.

*Stomach size (capacity):*

- At birth: 4-7ml (2 ml/kg) (1 tsp = 5 ml)
- By first week: 50 ml (3 tbsp = 45 ml)

*Colostrum Production:*

- In first 24 hours: 37 ml (5 - 10 ml per feed)
- By day 3: milk volume increasing ("milk coming in")
- By first week: milk volume approximately 500 ml/day

## Normal Newborn Behaviour

Breastfeeding is dependent not only on the mother but on the behaviours of the infant. In the normal, healthy full term infant, the reflexes needed for breastfeeding are strong and support the capability of the baby obtaining sufficient nutrition from the breast.

### Periods

#### **First Period: Quiet Alert**

- ▶ Alert from birth to two hours, eager to breastfeed
- ▶ Sucking response most intense in the 1st hour

#### **Second Period: Light to Deep Sleep**

- ▶ 2-20 hours of age
- ▶ May not be alert enough to feed

**Third Period: Increased Wakefulness**

- ▶ 20-24 hours of age
- ▶ Baby will feed frequently, alternating between short periods of light sleep and quiet wakefulness
- ▶ The cluster of mini-feedings by the baby is usually followed by a period of deep sleep

**Sleep & Awake States**

A normal, healthy newborn demonstrates 6 states:

- ▶ Deep sleep
- ▶ Light sleep
- ▶ Drowsy
- ▶ Quiet Alert
- ▶ Active Awake
- ▶ Crying

**Self Reflective Exercise**

Which is the best state for breastfeeding?

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- ▶ A normal full term newborn should:
  - have awake, alert periods
  - sleep for short periods
  - be consolable
  - be satisfied after feeds
- ▶ It is best to feed the baby in the drowsy or quiet alert state.
- ▶ A crying baby cannot latch on. They need consoling before they will become interested in feeding again.
- ▶ Newborns cycle through patterns of deep and light sleep.
- ▶ It is important to teach the mother to recognize when the baby starts to stir and signal with feeding cues. If the baby is not put to breast when they cue, they will cycle back into a deeper sleep again.

## Consoling Strategies

It is important for health care providers to show the mother ways to settle and console her baby, so that they gain the skill and confidence before going home.

*Some consoling strategies are:*

- ▶ *Kinesthetic:* cuddle, carry, rock, swing
- ▶ *Tactile:* skin-to-skin contact, massage, rhythmic patting, stroking
- ▶ *Physical:* swaddling, flexed positioning
- ▶ *Auditory:* parent's voice, soft rhythmic sounds, singing, mechanical or white noise
- ▶ *Visual:* parent's face, eye contact, lights, mirrors, mobiles, black & white pictures
- ▶ *Gustatory/Olfactory:* taste of breastmilk/colostrum, finger to suck, scent of parent's clothing

## Special Situations

- ▶ Breastfeeding is possible and preferred in special situations such as preterm births, multiple births and babies with congenital abnormalities such as Down's Syndrome or Cleft Lip/Palate.
- ▶ In these situations, where the risk of illness is high, breastmilk can help in preventing complications.
- ▶ With ongoing, skilled support, most mothers can successfully breastfeed a baby born with special needs – or provide them with the nutritional and protective benefits with expressed breastmilk.
- ▶ For the preterm infant, breastfeeding has been shown to be less physiologically demanding than bottle feeding.
- ▶ Skin to skin contact, with the baby licking and nuzzling at the breast provides early preparation for breastfeeding.
- ▶ Preterm babies can begin breastfeeding whenever they are physically stable. By 32 weeks gestation, they are usually able to coordinate sucking and swallowing.

## Skin-to-Skin Contact (Kangaroo Care)

Kangaroo care is a way of nurturing a baby to enhance skin-to-skin contact between baby and parent. The term kangaroo care is used because the method is similar to how the baby kangaroo is nurtured by its mother, nestled in a safe environment.

### Benefits for Baby

- ▶ Promotes more consistent heart and respiratory rates
- ▶ Stabilizes oxygen needs
- ▶ Promotes temperature regulation

### Benefits for Mother

- ▶ Helps increase breastmilk supply
- ▶ Promotes a very special bond between infant and mother
- ▶ Helps comfort a fussy baby

### How to practice skin-to-skin contact or Kangaroo Care

- ▶ The parent holds the baby against their naked chest with the baby in an upright position.
- ▶ Baby is dressed in a diaper and hat only, and is kept warm by the heat of the parent's chest.
- ▶ A light blanket may cover both of them, if needed.
- ▶ Kangaroo care is especially valuable for premature babies who seem to thrive snuggled next to their parent's chest.

(INFACT Canada, 1995)

## Principles of Adult Learning

### Self Reflective Exercise

Take a moment to think about how adults learn best.

Identify 3 ways to facilitate learning:

- 1.
- 2.
- 3.

Identify 3 barriers to learning:

- 1.
- 2.
- 3.

### Adults Learn Best

- ▶ By seeing, hearing and doing
- ▶ When they want to learn and are ready to learn
- ▶ If they are interested in the content
- ▶ In an environment conducive to learning
- ▶ By past experience
- ▶ In a non-threatening, trusting environment
- ▶ By feeling rewarded
- ▶ If information presented builds on what they already know
- ▶ If basic needs are met: food, shelter, health

### Principles of Facilitation

- ▶ Create comfortable environment
- ▶ Share control of content and process—base the information on mom's needs
- ▶ Build self-esteem
- ▶ Make learning relevant to the situation
- ▶ Build self-responsibility

## Adult Learning and Breastfeeding Education

- ▶ Provide breastfeeding information through:
  - Verbal instruction
  - Written information for reference
  - Demonstration and practice time
- ▶ Repeat yourself—“say it in different ways”
- ▶ Provide support—listen, care, advise

## How can we help?

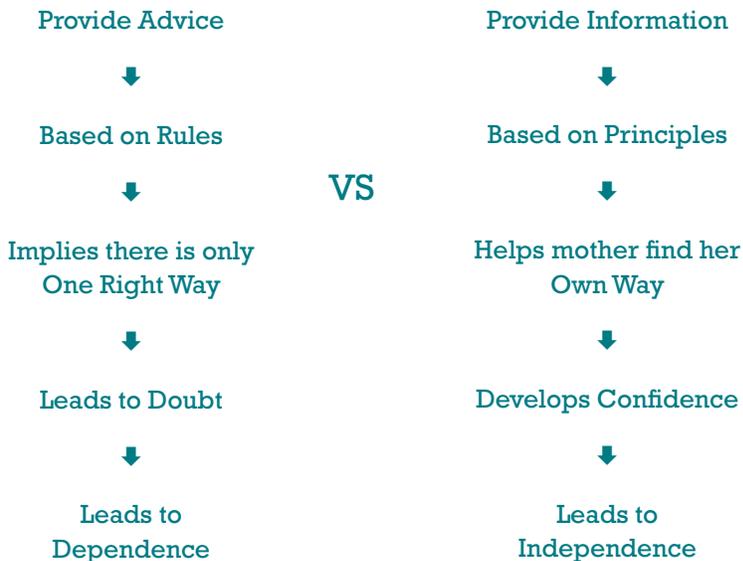
- ▶ Emphasize the POSITIVE!
- ▶ Listen to yourself critically
  - Realize the power of non-verbal messages
  - Be conscious of your tone, facial expression
- ▶ Think about each interaction with sensitivity
- ▶ Build the mother’s confidence, sense of strength and control
- ▶ Think about how you position yourself when assisting with breastfeeding
- ▶ Reassure... Encourage... Reassure again.

## Guidelines for Giving Feedback

- ▶ Focus on behaviour & observation, not assumption
- ▶ Share information
- ▶ Be descriptive and specific
- ▶ Avoid the words “never” or “always”
- ▶ Provide constructive alternatives
- ▶ Avoid overload
- ▶ Give immediate feedback
- ▶ Check for understanding
- ▶ Monitor non-verbal responses

## Model for Breastfeeding Support

(Jones & Green, 1996)



- ▶ Many women receive conflicting or inaccurate information from friends, relatives and health care providers that may jeopardize their breastfeeding success.
- ▶ As health care professionals, we need to have consistent, evidence based information in order to assist women to make informed choices about breastfeeding.
- ▶ It is our responsibility to provide information, based on principles, for mothers to find their own way, which develops confidence and leads to independence.

## Regional Breastfeeding Support

Follow-up support services are especially helpful for breastfeeding families. These may include:

- ▶ Delivery hospital Breastfeeding Drop-In Clinics
- ▶ Local Public Health Department
- ▶ Well Baby Drop-In Clinics
- ▶ Healthy Babies, Healthy Children Program – home visits
- ▶ Lactation consultants (hospital-based or private)

- ▶ Parent telephone “hot lines”
- ▶ Community Health Centres, Early Years Centres
- ▶ La Leche League

A list of all breastfeeding support services should be compiled for each community. Delivery hospitals, public health units and community agencies work collaboratively to provide as much support as they can to new mothers and babies.

Support services in your community include:

- ▶
- ▶
- ▶
- ▶

## Breastfeeding Resources

Association of Women’s Health, Obstetric & Neonatal Nursing (AWHONN)

<http://www.awhonn.org/>

Breastfeeding Committee of Canada (BCC)

[www.breastfeedingcanada.ca](http://www.breastfeedingcanada.ca)

Canadian Institute of Child Health (CICH)

[www.cich.ca](http://www.cich.ca)

Canadian Lactation Consultants Association (CLCA)

[www.clca-accl.ca](http://www.clca-accl.ca)

Canadian Pediatric Society (CPS)

[www.cps.ca](http://www.cps.ca)

Canadian Pharmacists Association (CPA)

[www.pharmacists.ca](http://www.pharmacists.ca)

Health Canada (HC)

[www.hc-sc.gc.ca](http://www.hc-sc.gc.ca)

Registered Nurses’ Association of Ontario (RNAO)

[www.rnao.org](http://www.rnao.org)

## International Breastfeeding Support

Infant Feeding Action Coalition (INFACT)

[www.infactcanada.ca](http://www.infactcanada.ca)

International Lactation Consultants Association (ILCA)

[www.ilca.org](http://www.ilca.org)

La Leche League International (LLL)

[www.lalecheleague.org](http://www.lalecheleague.org)

United Nations Children Fund (UNICEF)

[www.unicef.org](http://www.unicef.org)

World Alliance for BF Action (WABA)

[www.waba.org.my](http://www.waba.org.my)

World Health Organization (WHO)

[www.who.ch](http://www.who.ch)

## Other Online Resources

Breastfeeding.com

[www.breastfeeding.com](http://www.breastfeeding.com)

Breastfeeding Online

[www.breastfeedingonline.com](http://www.breastfeedingonline.com)

Motherisk

[www.motherisk.org](http://www.motherisk.org)

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## Breastfeeding Knowledge Quiz

1. Long-term benefits of breastfeeding on maternal health include which two of the following statements?
  1. *It is associated with rapid weight loss in the immediate postpartum period.*
  2. *There is decreased incidence of ovarian cancer and premenopausal breast cancer.*
  3. *It prevents postpartum depression.*
  4. *It is associated with decreased risk of osteoporosis.*
  - a) 1 & 2
  - b) 2 & 4
  - c) 1 & 3
  - d) 3 & 4
2. Breastfeeding has been shown to be protective against all of the following infant illnesses EXCEPT:
  - a) respiratory infections
  - b) asthma
  - c) cardiovascular disease
  - d) gastrointestinal disorders
3. Describe how preterm breastmilk differs from term breastmilk.

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4. The most variable constituent in human milk is:
  - a) protein
  - b) fat
  - c) lactose
  - d) calcium
5. Briefly describe how foremilk differs from hindmilk.

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6. Milk is produced by which part of the breast?
- a) ductules
  - b) alveoli
  - c) areola
  - d) Montgomery Glands
7. Which one of the following hormones is necessary for a “let-down”, or milk ejection reflex to occur?
- a) prolactin
  - b) estrogen
  - c) oxytocin
  - d) progesterone
8. Which three of the following would you expect to observe when an infant has a correct latch?
- 1. *lips visible and flanged outward*
  - 2. *no clicking or smacking sounds*
  - 3. *no part of the areola can be seen*
  - 4. *mother states she has no persistent nipple pain*
- a) 1, 2, 3
  - b) 2, 3, 4
  - c) 1, 3, 4
  - d) 1, 2, 4
9. Mrs. Smith has just given birth to a healthy term infant. She asks “How often should I nurse my baby?” The most appropriate response would be:
- a) Feed your baby on demand whenever he cries (at least 8-12 times in 24 hours);
  - b) Feed your baby whenever he wakes up and cues to be fed (at least 8 times in 24 hours);
  - c) Let baby sleep through the night tonight. You both need rest;
  - d) Feed frequently, on the first side for 5-10 minutes, before changing breasts.
10. How does a new mother know that her 5-7 day old baby is getting enough milk?

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- 11.** Indicators of adequate milk intake AFTER the second week of life include which of the following?
1. *firm daily stools*
  2. *6 to 8 wet diapers daily*
  3. *birth weight regained*
  4. *6 to 8 breast feedings daily*
- a)** 1, 2  
**b)** 1, 4  
**c)** 3, 4  
**d)** 2, 3
- 12.** The WHO Code of Marketing of Breast Milk Substitutes states that professionals should promote breastfeeding by:
1. *encouraging breastfeeding immediately after birth*
  2. *advising limited nursing periods for the first few days to prevent nipple soreness*
  3. *offering formula gift packs to new mothers*
  4. *explaining the benefits of breastfeeding to families making an infant feeding choice*
- a)** 1, 2, 4  
**b)** 1, 4  
**c)** 2, 3  
**d)** all of the above

### True or False

- 13.** Breastfeeding and formula feeding are equivalent in quality. (T/F)
- 14.** Mothers should wash their nipples with soap and water before each breastfeeding. (T/F)
- 15.** Mothers should continue to breastfeed even if they have a cold or the flu. (T/F)
- 16.** Premature babies should be given a bottle before breastfeeding in order to assess the oro-motor maturity. (T/F)
- 17.** A woman who has had a breast augmentation cannot successfully breastfeed. (T/F)
- 18.** “Drink to thirst” is a nursing mother’s best guide on how much liquid she should drink. (T/F)
- 19.** Breast fullness is a normal part of early lactation on day 3 - 4. (T/F)
- 20.** Exclusive breastfeeding is recommended for the first 6 months. (T/F)

- 21.** Your first recommendation to a mother who complains of bleeding from her nipples should be:
- a)** Mother should continue to breastfeed.
  - b)** Baby should be assessed at the breast for position and latch
  - c)** Discontinue breastfeeding so the nipples can heal
  - d)** Apply Lansinoh or Purelan ointment to the nipples
- 22.** In a baby who is breastfeeding effectively, the tongue is;
- a)** down and over the lower gum line
  - b)** positioned above the nipple
  - c)** against the hard palate
  - d)** easily visible
- 23.** Which two of the following breastfeeding positions are considered to work best for the small premature infant?
1. *cradle hold*
  2. *side lying*
  3. *football hold*
  4. *cross arm hold*
  5. *C- hold*
- a)** 2 & 3
  - b)** 1 & 4
  - c)** 3 & 4
  - d)** 1 & 5
- 24.** Which of the following would you consider as possible reasons if a mother complains of sore nipples?
- a)** poor position or latch
  - b)** Candida infection
  - c)** improper use of a breast pump
  - d)** bra is too tight
  - e)** all of the above
- 25.** In which of the following would breastfeeding be contraindicated?
1. *smoking*
  2. *use of street drugs such as cocaine*
  3. *use of alcohol in moderation*
  4. *HIV in mother*
  5. *galactosemia in the infant*
- a)** 1, 2, 5
  - b)** 2, 3, 4
  - c)** 2, 4, 5
  - d)** all of the above

- 26.** A mother of a Down's Syndrome baby says she is interested in breastfeeding. The best advice to give her would be:
- a)** Breastfeeding is possible, but you may need some extra help.
  - b)** It would be best for you to see a Lactation Consultant.
  - c)** Down's babies usually need a nipple shield to breastfeed well.
  - d)** Down's babies are too hypotonic to breastfeed effectively.
- 27.** After the first day, Mrs. Smith states that she has sore nipples. Which of the following would be your first response to this situation?
- a)** Advise her to expose her nipples to the air after each feeding.
  - b)** Show her how to express a few drops of colostrum onto her nipples.
  - c)** Ask her to show you how she is positioning the baby for feeding.
  - d)** Show her how to break the latch of her baby at the breast.
- 28.** Outline 3 of the 10 steps or 7 points of the Baby Friendly™ Initiative.

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- 29.** Which of the following breastfeeding positions are initially MOST comfortable for most women who have had a cesarean birth?

1. *football hold*
2. *side lying*
3. *cradle hold*
4. *C-hold*

- a)** 1 & 2
- b)** 3 & 4
- c)** 1 & 3
- d)** 2 & 4

- 30.** List 3 community resources available to a breastfeeding mother once she is discharged from hospital.

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## Breastfeeding Knowledge Quiz Answer Sheet

1. B
2. C
3. Higher levels of protein, fat, antibodies in preterm breastmilk.
4. B
5. Foremilk higher in lactose and water, and lower in fat. Hindmilk higher in fat.
6. B
7. C
8. D
9. B
10. Audible swallowing, pause at end of suck- indicates milk transfer, baby satisfied at end of feed, change to seedy yellow stools by at least 3rd day, 6-8 very wet diapers per day.
11. D
12. B
13. FALSE
14. FALSE
15. TRUE
16. FALSE
17. FALSE
18. TRUE
19. TRUE
20. TRUE
21. B
22. A
23. C
24. E
25. C
26. A
27. C
28. Any 3 of the ten steps for hospitals or seven points for community health centres
29. A
30. Public health departments, breastfeeding drop-in clinics, lactation consultants, family physicians, CLSC or Nourri-lait in Quebec.