

**CLINICAL**  
VIDEOCONFERENCING  
*Network*

# Post-Partum as a Specialty: Excellence in Breastfeeding

*March 29, 2005*  
*8 AM to 4 PM*

Presented by:

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# CVN Program Guidelines

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*Remember to use a blue or black pen or pencil, and to completely fill in each square you select.*

The **grading scale** goes from 1 to 6, 1 being the lowest grade, and 6 being the highest. In some cases, there is an option to select "N/A" or "not applicable."

Please **do not staple**, tear, fold, or mutilate evaluation forms - this makes it difficult for the machine to score them.

When providing feedback on instructors, you should **record each presenter's feedback in the same order**. Here is the list of today's presenters - please write each instructor's name in the following order, in the empty spaces labeled "Presenter":

1. Andrea Windom
2. Patricia Ross
3. Laura Alexander

## Attendance Records

Please make sure your **facility name** is filled in at the top of the attendance sheet, under "Kaiser Facility."

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Thank you again for your participation,  
and we look forward to seeing you again!



Andrea Windom, MSN,PNP  
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## **Post-Partum as a Specialty: Excellence in Breastfeeding**

### **Objectives**

Upon completion of the videoconference and discussion of case studies, post-partum nurses will be able to:

1. identify historical and current factors that influence infant-feeding decisions, and the critical influence perinatal nurses exert in the promotion and protection of breastfeeding..
2. identify the rare contraindications to breastfeeding
3. describe the anatomy of the breast and the physiology of lactation.
4. appropriately counsel a nursing mother regarding her nutritional needs.
5. evaluate positioning and attachment of the nursing infant in the clinical setting
6. identify hospital practices that are associated with successful breastfeeding, and list at least five of the Ten Steps to Successful Breastfeeding.
7. effectively prevent and manage common early breastfeeding problems such as engorgement, sore nipples, difficult latch, transient hypoglycemia, hyperbilirubinemia, nursing the borderline premature infant, and nursing post surgical birth.

8. describe what contributes to the Insufficient Milk Syndrome, and how to determine adequate intake in a breast-fed infant
9. discuss medical indications for giving a supplemental feeding to a nursing infant, and some alternatives to offering a bottle.
10. identify lactation support information and services for breastfeeding mothers and for medical professionals, including local community resources.

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**Post-Partum as a Specialty: Excellence in Breastfeeding**  
Lecture Outline and Schedule

**8:00-8:15 am**      **Introductions and Housekeeping**      **Lynda Garrett**

**8:15-9:50 am**      **Section A**      **Andrea Windom**

- I. Historical and cultural influences in infant feeding
- II. Statistics
- III. Theoretical Framework: Broffenbrenner's Ecological Model
- IV. Advantages of Breastfeeding
- V. Barriers to Breastfeeding
- VI. Contraindications to Breastfeeding  
*Case 1: Prenatal question: BF promotion*
- VII. Anatomy of the Lactating Breast
- VIII. Physiology of Lactation  
Video: Delivery Self-Attachment
- IX. Practices That Promote Breastfeeding: Baby Friendly Hospital Initiative

**10:00-10:15 am**      **Break**

**10:15-11:50 am**      **Section B**      **Laura Alexander**

- X. Latch  
Video: Breastfeeding: A Guide to Successful Positioning
- XI. Nursing Twins
- XII. Maternal Nutrition for Lactation  
*Case 2: Maternal Nutrition*
- XIII. Neonatal Hypoglycemia
- XIV. Hyperbilirubinemia  
*Case 3: Bili*

**12:00noon-1:00 pm**      **Lunch**

**1:00-2:00 pm**      **Case Studies**      **Nurse Proctors**

- Case 4: Sleepy Baby*
- Case 5: Nursing post C-section*
- Case 6: Breast discomfort*
- Case 7: Sore nipples*
- Case 8: Difficult Latch*
- Case:9: Supplements*

*Case 10: Constant nursing*  
*Case 11: Nighttime feeding*

<b>2:00-2:45 pm</b>	<b>Section C: Review of Case Studies</b>	<b>Pat Ross</b>
<b>3:00-3:50 pm</b>	<b>Section D</b>	<b>Andrea Windom</b>
	XV. Insufficient Milk Syndrome	
	XVI. Supplementating a BF Infant	
	<i>Case 11: Weight Loss</i>	
	XVII. Expressing and Storing Human Milk	
	<i>Case 12: Seperation</i>	
	XVIII. Nursing the Borderline Premature Infant	
	Video: A Premie Needs His Mother, part 2	
	<i>Case 13: 35 Weeker</i>	
<b>3:50 pm</b>	<b>Post-test and Evaluations</b>	<b>Nurse Proctors</b>
<b>4:00 pm</b>	<b>Adjournment</b>	

## Post-Partum as a Specialty, Class I: Excellence in Breastfeeding Lecture Notes

### I. Historical Issues in Infant Feeding

Before 1940's, few alternatives to breastfeeding

### II. Statistics

Year	Percent of Mom's BF at Hospital Discharge	Percent BF @ 6 mos.	Percent BF @ 12 mos.
1920's	97%		
1946	38%		
1970	20%		
1982	62%	30%	
1990	51.5%	17.6%	
1995	59.7%	21.6%	
1998	64.3%	30.6%	
2001	65.1%	27%	12.3%
2003	70.9%	36.2%	17.2%
Healthy People 2010	75%	50%	25%

### Breastfeeding in the Hospital and at 6 Months by Group (%)

<i>Category</i>	<i>In Hospital</i>		<i>At 6 Months</i>	
	1990	1998	1990	1998
All infants	51.5	64.3	17.6	18.6
White	57.6	67.9	20.5	30.6
Black	23.0	44.9	6.3	18.5
Hispanic	48.0	66.2	13.2	24.5
WIC	33.7	52.6	8.2	18.9
Non-WIC	62.9	75.2	23.6	38.5

From Riordan & Hopple (2000).

American Academy of Pediatrics Recommends that infants be *exclusively* breastfed for six months, and should continue with supplemental foods for at least one year.

### III. Theoretical Framework: Broffebrenner's Ecological Model (Tiedje et al, 2002)

1. Based on body of research on the influence of the external environment.
2. Infant feeding decisions influenced by family, healthcare delivery systems and providers, community institutions, and society/culture
3. Interventions to influence feeding decisions must occur on many levels, not simply with individual mother and infant
4. *Provider working w/families must develop expertise and enthusiastically promote and support BF*

### IV. Advantages of Breastfeeding

1. Less infection: URI, OM, AGE, UTI, pneumonia, bacteremia, meningitis, NEC, late-onset neonatal sepsis
  - \* Mechanism not clearly understood in each case
  - \* BM has > 200 components which directly destroy or inactivate pathogens or indirectly prevent entry, transport, and proliferation of bacteria and viruses
  - \* Secretory immunoglobins (esp sIgA) and migratory lymphocytes play a role in mucosal immunity - effect may be present for years after BF
  - \* *Post-neonatal infant mortality rates are reduced by 21% in breastfed infants*
  - \* Saves \$400.00 - \$500.00 per year in direct health costs per child breast fed
  - \* Potential for decreased annual health care costs of \$3.6 billion dollars in US
  - \* 38% less illness in WIC study
2. Antiallergic factors: less atopy
  - \* sIgA has protective anti-absorptive effect on gut guards against entry by foreign protein
  - \* 11% of recurrent wheezing in an Arizona study was attributed to not having been breast-fed

3. Less SIDS
  - \* Mechanism unknown. Theories include more contact, less URIs
  - \* 4 deaths in 1000 in US attributed to not having been breast-fed
4. Environmental advantages
  - \* Grain, water, land and waste for dairy cattle
  - \* Processing, packaging and transporting formula
  - \* Less solid waste
5. Nutritionally superior
  - \* Has evolved to be the perfect milk for human species
  - \* Easier to digest due to higher lactalbumin:casein ratio
  - \* No possibility of mixing errors, contamination, or infant scalding
6. Benefits the maternal-child interaction
  - \* Frequent skin:skin contact has positive effects on bonding
  - \* Prolactin associated with increased mothering behaviors
7. Cognitive advantages
  - \* 8.6 IQ points even after control of confounding variables
  - \* Theories include absence of docosahexanoic acid (DHA) in formula
8. Lower rates of childhood obesity
  - \* In 8 of 11 well-designed studies, breastfeeding reduced the rate of childhood and adult obesity by 21-34%
9. Advantages for mother
  - \* Facilitates involution
  - \* Burns calories and aids in weight loss
  - \* Delays menstruation and diminishes fertility
  - \* Less pre-menopausal breast CA
  - \* Less ovarian CA
  - \* Less bone demineralization

- \* Less expensive
- \* More convenient
- \* Less time missed from work with sick child
- \* Assists with attainment of maternal role

10. Long-term health advantages for those breast-fed
  - \* Less celiac disease, Chron's disease, and H. pylori
  - \* (2-26%) IDDM attributed to not having been breast-fed
  - \* Lower incidence of child lymphomas, leukemia and Hodgkins disease
  - \* Lower rates of schizophrenia, MS, liver disease
  - \* Less malocclusion of teeth
  - \* Enhances visual development
  - \* Less hypercholesterolemia
  
11. Risks of NOT being breast-fed (Naylor, 2005)
  - \* Obesity ↑ 25%
  - \* Recurrent otitis media ↑ 60%
  - \* Serious respiratory infection ↑ 250%
  - \* Diarrhea ↑ 100%
  - \* Type I diabetes ↑ 40%
  - \* Leukemia ↑ 30%

## V. Barriers to Breastfeeding

1. Mom is the only one who can feed
  - \* Employment
  - \* Co-parenting
  - \* Mother's nutrition
  - \* Substance use/abuse
2. Can't see how much the baby is getting
3. Baby eats more frequently and takes longer to sleep thru noc
4. Concerns about how BF affects woman's sexuality and body image
5. Fear that BF will hurt
6. Concerns about necessity of breast exposure
7. Some find it distasteful
8. Can be difficult to initiate

## **VI. Contraindications to Breastfeeding**

1. Maternal HIV
2. Maternal HTLV-1 and HTLV-2
3. Maternal metabolic disease: Wilson's disease
4. Infant Galactosemia
5. Maternal Drugs: generally, far less than 1% of maternal dose finds its way to baby
6. Drugs of Abuse; Chemotherapy/Radiation

### ***Case 1: Prenatal Question***

You are teaching an early prenatal class to a group of healthy women. Knowing that most women make their decisions about infant feeding before pregnancy or very early in pregnancy, what is a good way to approach this issue in a manner that will encourage the mothers to consider breastfeeding?

## **VII. Anatomy of the lactating breast**

1. Breast is a modified gland that proliferates and becomes more specialized and under the hormonal influence of pregnancy.
2. In pregnancy
  - a. Breast size increases
  - b. Areola gets darker
  - c. Montgomery glands become more pronounced
  - d. Increased vascularization
  - e. Ducts are lined with colostrum: a thick yellowish mixture of materials present in the mammary glands and ducts, high in lactose, protein, IgA
3. Breast composed of many individual glands or lobules each made up of 10 to 100 milk-producing alveoli. Lobules connected by a duct system. Milk collects behind the areola. Each nipple contains 10 - 25 nipple pores (only 6 or 7 function at one time).
4. Breast size is not a factor in milk production.

## VIII. Physiology of Lactation

1. **Estrogen** from ovaries and placenta causes growth of duct work and connective tissue of breast.
2. **Progesterone** from ovaries and placenta responsible for specialization of alveoli (milk-secreting cells of breast).
3. **Prolactin** from placenta and anterior pituitary
  - a. causes alveolar growth during pregnancy
  - b. large amounts produced in response to sudden sharp drop in estrogen and progesterone when placenta is delivered, and when infant suckles
  - c. signals alveoli to extract specific substances from blood stream in order to produce milk
  - d. responsible for feelings of maternal well-being and longing for infant
4. Suckling also stimulates **oxytocin** produced in hypothalamus and released from the posterior pituitary
  - a. stimulates contraction of muscles surrounding alveoli causing milk to "let down" and making fat-rich hind milk available to baby
5. Efficacy of milk removal regulates volume of milk produced
  - a. *milk inhibiting factor*, a protein in the whey fraction of milk inhibits lactose and casein synthesis via a concentration-dependent negative feedback mechanism
  - b. infant's suckling at the breast stimulates neuro-hormonal pathways in a way that a breast pump may not

While lactogenesis is an endocrine process, galactopoeisis is an autocrine process. Once milk production begins, *the frequency and degree of breast emptying is the most powerful regulator of volume*. Caveat: Lactation works by supply and demand; the more the baby suckles, the more milk will be produced

**Video: Delivery Self Attachment**

## **IX. Practices that Promote Breastfeeding: The Baby Friendly Hospital Initiative**

An international WHO/UNICEF program to encourage and recognize hospitals and birthing centers that offer an optimal level of care for lactation. Includes the **Ten Steps to Successful Breastfeeding**:

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

### **Also known to benefit breastfeeding:**

1. Minimal use of analgesics and anesthetics, and minimal intervention in Labor.
2. Discharge packs for breastfeeding mothers that do not contain Formula.
3. Home health visit on day 3 or so for early discharge families
4. First well child visit at 7 days of age

## **X. Positioning and Latch**

1. Assist the mother to a comfortable position
  - a. Provide for privacy
  - b. Turn off the TV
  - c. Pain meds before feeding prn
  - d. Be sure she is comfortably supported with extra pillows, a footstool, etc
  
2. Baby's position
  - a. Cradle
  - b. Cross cradle
  - c. Side-Lying
  - d. Football hold
  - e. Tummy to tummy
  - f. Nose to nipple
  - g. Ear, shoulder and hip are aligned
  
3. Breast support
  - a. Lift breast from below, forming a "C" with hand
  - b. Keep fingers on chest wall, well away from areola
  - c. Avoid scissor or cigarette hold
  
4. Latch
  - a. Wake the baby
  - b. Lightly tickle baby's mouth with nipple
  - c. Wait for a wide open mouth: be patient
  - d. When the baby roots, center nipple and quickly pull baby onto breast
  - e. Nose and chin should touch breast
  - f. Baby latches to all of nipple and about an inch of areola

	0	1	2
<b>L</b> Latch	Too sleepy or reluctant No latch achieved	Repeated attempts Holds nipple in mouth Stimulate to suck	Grasps breast Tongue down Lips flanged Rhythmic sucking
<b>A</b> Audible swallowing	None	A few with stimulation	Spontaneous and intermittent <24 hrs Spontaneous and frequent >24 hrs
<b>T</b> Type of nipple	Inverted	Flat	Everted (after stimulation)
<b>C</b> Comfort of breast/nipple	Engorged Cracked, bleeding, large blisters or bruises Severe discomfort	Filling Reddened/small blisters or bruises Mild/moderate discomfort	Soft Non-tender
<b>H</b> Hold (positioning)	Full assist (staff holds infant at breast)	Minimal assist (i.e., elevate head of bed; place pillows for support) Teach one side; mother does other Staff holds and then mother takes over	No assist from staff Mother able to position/hold infant

### Feeding not observed

- L: Latch: "How easily did your infant grasp your breast? Did it take several attempts?"
- A: "Did you hear your infant swallow? How frequently did you hear it?"
- T: "Did your nipples stand out or do they flatten easily?"
- C: "Are your nipples tender? Are your breasts becoming heavy?"
- H: "Did someone help you put the infant to breast? Would you like help with the next feeding?"

## Video: A Guide to Successful Positioning

### XI. Nursing Twins and Higher Order Multiples

1. Benefits of breastfeeding multiples
  - a. All the benefits of nursing singletons are doubled!
  - b. Often preterm
  - c. Economic advantages
  - d. Bonding time with each baby assured
  
2. Producing adequate volumes of milk
  - a. Increased rate of milk removal increases production
  - b. Given proper support, most healthy women can produce 100% of two babies' needs
  
3. Challenges for MOMs
  - a. Mother recovering from more demanding pregnancy and birth
  - b. Ongoing maternal fatigue
  - c. >50% are preterm, many significantly so
  - d. Mother must learn to adapt to each infant's style of nursing and needs
  - e. Nurslings develop their own interactive behavior
  - f. Difficulty with nursing discretely
  
4. Interventions for MOMs
  - a. Encourage adequate wt gain during pregnancy
  - b. Avoid separation
  - c. Help with positioning
  - d. Identify who can help with household chores
  - e. Early and frequent f/u
  - f. Consider rotating babies
  - g. Encourage flexibility
  - h. Refer for group support

## **XII. Maternal Nutrition for Lactation**

### **1. Basic Principles**

- a. Pregnancy and lactation may motivate women to have healthier lifestyle
- b. Nutritional counseling must take into account family's cultural heritage, food beliefs, and preferences
- c. Spending time teaching about nutritional can give the illusion that bf is difficult

### **2. Breast milk composition is remarkably independent of maternal intake**

- a. Exceptions: Very thin women have milk with less fat
- b. Reflect intake to some degree: amino acids, some fatty acids, vitamins B&C

### **3. Nutritional risk factors that should prompt a referral to dietician**

- a. BMI <19.9 or >26
- b. Teens < 4 yrs from menarche
- c. IDDM
- d. GI malabsorption syndromes
- e. Metabolic disorders
- f. Higher order multiples
- g. Closely spaced pregnancies
- h. Exclusionary diets

### **4. Nutritional recommendations during pregnancy**

- a. 300 kcal
- b. 20 g protein
- c. 20% increase in all vitamins and minerals
- d. 100% increase in folic acid
- e. 33% increase in calcium, phosphorous, and magnesium

5. Institute of Medicine's Subcommittee on Nutrition During Lactation of the Food and Nutrition Board Recommendations:

- a. Avoid diets and meds that promise rapid weight loss
- b. Eat a variety of foods
- c. Take 3 or more servings of milk products daily
- d. Make a greater effort to eat vitamin A-rich vegetables and fruits often
- e. Drink to thirst
- f. Limit caffeine beverages to 2 per day

6. Calories

- a. 940 kcal required to produce 1 L of milk
- b. 2-4 kg of extra tissue stored for BF
- c. 500 kcal required from diet
- d. Total RDA is 2700 kcal, but many women consume substantially less

7. Vegetarian Recommendations

- a. Supplement with soy flour, molasses, and nuts
- b. Use complementary protein combinations
- c. Avoid excessive phytates and bran
- d. Watch protein and iron intake
- e. Supplement calcium prn
- f. Supplement vitamin D with sunshine (mom only)
- g. Supplement vitamins B12 and B2

8. Do breast-fed babies need extra vitamins?

- a. **Vitamin D**
  - \* No known safe level of sun exposure for infants
  - \* Recent increase in vitamin D deficiency diseases, esp rickets
  - \* Highest risk infants are those with dark skin in climates with less sun

\* AAP recommendation for all infants to receive supplemental vitamin D  
200 IU per day  
Beginning by 2 months of age  
Tri-Vi-Sol has A, C and D: Give 1.0 ml daily  
Continue until 16 oz of vitamin D supplemented cow milk product consumed/d

**b. If Mother is a Vegan**

\* Vitamin B12 up to 4 mg/d

**c. Fluoride at 6 Months**

\* If local water supply has less than .03 ppm

**Case 2: Maternal nutrition - gassy baby**

Mrs. Nguyen is a multiparous, monolingual Vietnamese woman who is recovering well from her vaginal delivery of the prior day. She is drinking water but has refused all hospital food. Through an interpreter, you determine that she feels the food is too "hot" for her. Also, she has noticed that her baby seems to pass a lot of gas, and asks you if she should avoid foods like broccoli and cabbage?

**XIII. Neonatal Hypoglycemia**

1. Maternal glucose metabolism provides steady state of glucose for fetus
2. Post-natal glucose availability results from exogenous sources (milk) and endogenous mechanisms
  - a. Gluconeogenesis
    - \* Enhanced by glucagon, catecholamines, and counter-regulatory hormones
    - \* Normal rate dependant upon decrease in the insulin-glucagon ratio
  - b. Glycogenolysis
  - c. Ketogenesis
  - d. Tissue glucose oxidation
3. Babies at risk for hypoglycemia
  - a. Preemies, SGA, LGA, LBW <2500 gms
  - b. Discordant twin (wt <10% larger twin)
  - c. Infant of an insulin dependant diabetic mother
  - d. S/p asphyxia with 5 min Apgar < 7 or cord pH < 7.2

- e. Suspected infection
  - f. Respiratory distress
  - g. Polycythemia
  - h. Hypothermia
  - i. Erythroblastosis fetalis
  - j. Beckwith-Wiedemann syndrome
  - k. Microphallus or midline defect
4. Symptoms of hypoglycemia
- a. Irritability, tremors, jitters
  - b. Exaggerated Moro reflex
  - c. High-pitched cry
  - d. Seizures
  - e. Lethargy, limpness, hypotonia
  - f. Apnea or irregular breathing
  - g. Cyanosis
  - h. Temperature instability, including hypothermia <35
  - i. Vasomotor instability
  - j. Inadequate or poor sucking reflex
5. Breastfeeding and hypoglycemia
- a. BF babies have lower blood sugar than do formula fed infants
  - b. Healthy term infants can tolerate lower blood glucose concentrations without any deleterious effect given their inherent compensatory mechanisms
  - c. NO ROUTINE MONITORING OF GLUCOSE FOR TERM ASYMPTOMATIC INFANTS
  - d. Facilitate euglycemia in BF infants by
    - \* Early BF
    - \* Frequent BF
    - \* No supplements
    - \* Skin to skin contact
    - \* Assist mother w/positioning and latch to ensure optimal feeding

- e. Healthy term infants exhibiting signs of hypoglycemia should
  - \* Have glucose checked at bedside
  - \* Maximize nursing
  - \* Recheck blood glucose in 2 hrs:
    - If normal, monitor clinically and continue nursing.
    - Transient single episodes of hypoglycemia not thought to be harmful
    - If low, continue nursing, begin IV glucose and investigate for concurrent illness (Eidelman, 2001)

#### **XIV. Assessment and Management Hyperbilirubinemia in the Breast-fed Newborn**

1. Hyperbili occurs more frequently and with greater severity in BF infant
2. Two diagnostic entities:
  - a. (Lack of) "Breastfeeding Jaundice"
    - \* A form of exaggerated physiologic hyperbilirubinemia
    - \* Usually peaks between days 3 and 5
    - \* Associated with inadequate breast milk intake  
Less frequent feeds, excess wt loss, decreased stooling
    - \* Management includes optimizing breastfeeding techniques and routines to maximize infant intake
    - \* *No advantage* to discontinuation of breastfeeding
    - \* May require supplementation to avoid hospitalization
  - b. "Breast milk Jaundice"
    - \* Jaundice is likely due to a human milk factor that increases intestinal absorption of bilirubin
    - \* Elevated bili usually occurs after first week of life (peaks day 5-15), may persist for 3 - 12 weeks
    - \* Bili is indirect
    - \* Infant is thriving, with adequate wt gain and stooling  
Temporary interruption of nursing for 12-24 hours will result in rapid decline of bili level. Resumption

of breastfeeding may cause bili to increase again, but usually not to prior levels. This is not necessary unless bili reaches 20

- \* No documented cases of kernicterus
- \* Mother needs information provided in a sensitive manner that is supportive of her breastfeeding. Provide pump with instructions.

### ***Case 3: Bili***

The family of a 3 day old infant is re-admitted to the hospital with jaundice. The baby is the full-term product of a normal pregnancy and NSVD to a healthy primiparous B+ mother who is trying to wake the baby every 3 or 4 hours. She is often difficult to fully arouse and tends to fall asleep at the breast. The mother's milk is not yet "in." The newborn has had 4 wet diapers but no stool in the past 24 hrs. Physical exam of the infant is remarkable only for moderate icterus to the umbilicus: she responds to handling appropriately. Latch is good with rare swallow. Weight today is 8% below birth weight. Total bili is 20.1, with an indirect of 1.8. What breastfeeding advice do you offer the family?

## **Section C: Case Studies**

Instructions: Please discuss case studies 4-11 as a group, considering the following questions:

- a. What further information (if any) would you like to have to address this issue?
- b. What is your assessment?
- c. Outline a detailed plan of action

### ***Case 4: Sleepy Newborn***

A mother in the postpartum unit is 12 hours post NSVD at term of a healthy boy. She is in tears because she cannot get her sleepy baby to begin nursing, and no one has had the time to help her. Won't he get hypoglycemic?

### ***Case 5: Nursing post C-section***

You are caring for a 36 year old primiparous woman who underwent a Cesarean delivery for failure to progress/arrested second stage after 28 hours of labor, including 2 hours of pushing. Pain management has been challenging. She is having a difficult time finding a comfortable position to nurse, and asks you if it might not be better to give the baby a bottle until she is off her pain meds?

### ***Case 6: Breast discomfort***

You are discharging a woman four days post-Cesarean. She is concerned about her baby, who had latched on well the first few days, but he has refused her last 2 attempts to nurse. She can feel that her milk has "come in" and her breasts are very swollen and tender. She is quite uncomfortable, but afebrile. The baby is pink, active and alert, and has had 2 transitional stools in the past 12 hours. His discharge weight is 5% below birth weight.

### ***Case 7: Sore Nipples***

The mother of a one day old infant complains of nipple pain. Her nipples have been getting progressively more tender with each breastfeeding session: both look dry, and the left is abraded at the tip. She wants to know if there is some kind of cream she can apply to heal her nipples. Also, her nipple is bleeding a little bit: is this harmful to the baby?

***Case 8: Difficult Latch***

A one day old 37 week gestation newborn girl is actively rooting at the breast, but cannot sustain a deep latch: she seems to be pushing the nipple too far forward, and then out of her mouth. The baby is crying and the mother is sore and frustrated. Several nurses have tried to help her but nothing works.

***Case 9: Supplements***

The mother of a healthy term infant states that he is both breast- and bottle-fed because she wants to be sure he gets enough milk. Plus, she likes that Dad can feed, and giving a bottle now will avoid bottle refusal when she goes back to work in a few weeks. How do you counsel this mother?

***Case 10: Constant nursing***

A term infant boy nursed on the delivery table and almost continuously since: he is now 30 hours post-delivery. If not nursing, he fusses. The latch is good, and the mother only has minimal soreness and no nipple breakdown. The mother's breasts are filling. She asks for a bottle to feed the baby, assuming that he must be hungry since he is nursing all the time. The newborn is pink, active and alert with good tone and a lusty cry. He has had 3 wet diapers and has passed 2 meconium stools. Vitals are normal.

***Case 11: Nighttime feeding***

A well multiparous breastfeeding mother asks that her full-term, healthy newborn be kept in the nursery for the night so she can get some rest.

**Please do not turn the page until instructed to do so. Thank you!**

## XV. Insufficient Milk Syndrome

1. Defined as maternal perception that breast milk is inadequate to satisfy infant or to support appropriate infant weight gain.
2. Most common cause for early termination of breastfeeding worldwide.
  - a. Early termination (ET): mom weans before she had intended. Occurs in about *30% of nursing women in US*, most commonly in the first postpartum month.
  - b. True lactation failure has been estimated to occur less than one (Lawrence) to five percent (Niefert)
    - \* Hypoplastic breast
    - \* Insufficient mammary glandular tissue
    - \* Disrupted neuro-hormonal pathways
    - \* Prolactin deficiency
3. What contributes to IMS in women who are physically capable of producing milk?
  - a. *Inappropriate breastfeeding behaviors* due to
    - \* Inexperience of the mother and or/baby
    - \* Inappropriate hospital routines and lack of knowledge among health care providers
    - \* Lack of appropriate support from partners, mothers, society, employers
4. Evaluating Intake
  - a. In the first 5 days or so, infant is adequately nourished if
    - \* Nurses well (5 mins +) at least 8 times in 24 hours
    - \* Is pink, vigorous, active and alert
    - \* Is having wet diapers at least equal to days of age plus one
    - \* Is having at least 2 stools per day that are lightening in color
    - \* Weight loss is not greater than 7-8% of birth weight

- b. After 5 days or so, infant is adequately nourished if mom's milk in and
  - \* All of the above, but don't expect more than 8 wet diapers/d
  - \* Should not have urate crystals in diaper (red-orange brick dust)
  - \* Suck:swallow ratio is 1:1 - 3:1 for several mins
  - \* Back to birth weight by 2 weeks of age, and gaining about 20 to 30 gms/d+
  
- 5. Intervening in cases of IMS
  - a. Observe the feeding, or refer to a lactation specialist
  - b. Correct inappropriate breastfeeding behaviors
    - \* Feed q 2-3 hrs/d and q 3-4 hrs/noc
    - \* Stimulate awake for feeds and be sure babe is sucking nutritively  
Undress, burp and switch
  - c. Provide confident, knowledgeable reassurance
  - d. Community resources, i.e., La Leche League and/or Nursing Mothers' Council
  - e. Print resources, i.e., Nursing Mothers' Companion by Kathleen Huggins
  - f. Close follow-up
  
- 6. If weight loss is significant (8%+) and breastfeeding is clearly inadequate
  - a. All of the above. Definitely needs a lactation specialist.
  - b. Careful maternal history: breast surgery, wt gain in pgy, breast changes in pgy, smoking, metabolic disorders, retained placenta
  - c. Supplement each feeding with one oz of EBM or formula per feeding
  - d. Very close follow-up. Catch-up weight gain should be at rate of 2 - 3 oz/day for the first several days

## **XVI. Supplementing a Breast-fed Infant**

1. Problems with supplements
  - a. Interferes with supply and demand
  - b. Undermines the mother's confidence
  - c. Overwhelming evidence that it is directly responsible for majority of lactation failure/IMS
  - d. Nipple confusion vs. nipple preference
  
2. Medical Indications for Supplementation
  - a. Premature or ill newborn
  - b. Evidence of persistent inadequate milk transfer
  - c. Significant hyperbilirubinemia
  - d. Persistent hypoglycemia
  
3. Consider protein hydrolysate formula for supplements
  - a. Tastes terrible
  - b. Reduces exposure to cow milk proteins
  - c. Decreases bilirubin faster
  - d. Are expensive so less likely to be considered routine by parents
  - e. Conveys message that supplement is different and temporary
  
4. Limit volume of supplement to maximum of 30 mls per feeding
  
5. Method of supplementation is by parental preference
  - a. Bottle
  - b. Cup
  - c. Dropper/syringe
  - d. Finger
  - e. Supplemental Nursing System
  
6. Supplemental Nursing Device (SNS or Lact-Aid)
  - a. Feeding tube is connected to a bottle or bag that hangs around mother's neck. Tube is taped in place so that distal end is at tip of mother's nipple. Flow adjusted by changing size of tubing, raising or lowering or squeezing bottle.

- b. Advantages of SNS over bottle-fed supplements
  - \* Message to mom from provider is that we value BF
  - \* Stimulates breast to maintain/increase milk supply
  - \* Baby learns that feedings occur at breast
  - \* Avoids nipple confusion/preference
  
- c. Drawbacks of SNS
  - \* May be overwhelming
  - \* Baby has to be willing and able to latch-on to breast
  - \* Some seek out and suck on the tube

***Case 11: Weight Loss***

The single teen mother of an 11 day old infant is readmitted to the hospital after a home health nurse who is made a routine visit and found the infant to be dehydrated. The mother states that the baby hasn't had a stool for 4 or 5 days. The infant is being breast-fed every 3-4 hours and the mom thinks he does well. Physical exam reveals a normal, alert, slightly icteric newborn with dry skin. Birth weight was 6 pounds 6 ounces: weight today is 5 pounds 8 ounces. When put to breast the newborn latches appropriately but falls asleep after only a few audible swallows. What feeding advice do you give this mother?

***Case 12: Separation***

You are caring for a well woman whose 27 week baby has just been transported to the regional level III NICU. She had planned to breastfeed, and is even more motivated now that her baby so desperately needs her milk. When should she start pumping? How often? How does she store and transport the milk? What kind of pump should she buy?

## **XVII. Expressing Breastmilk When Mother and Infant are Separated**

### **1. Benefits and principles**

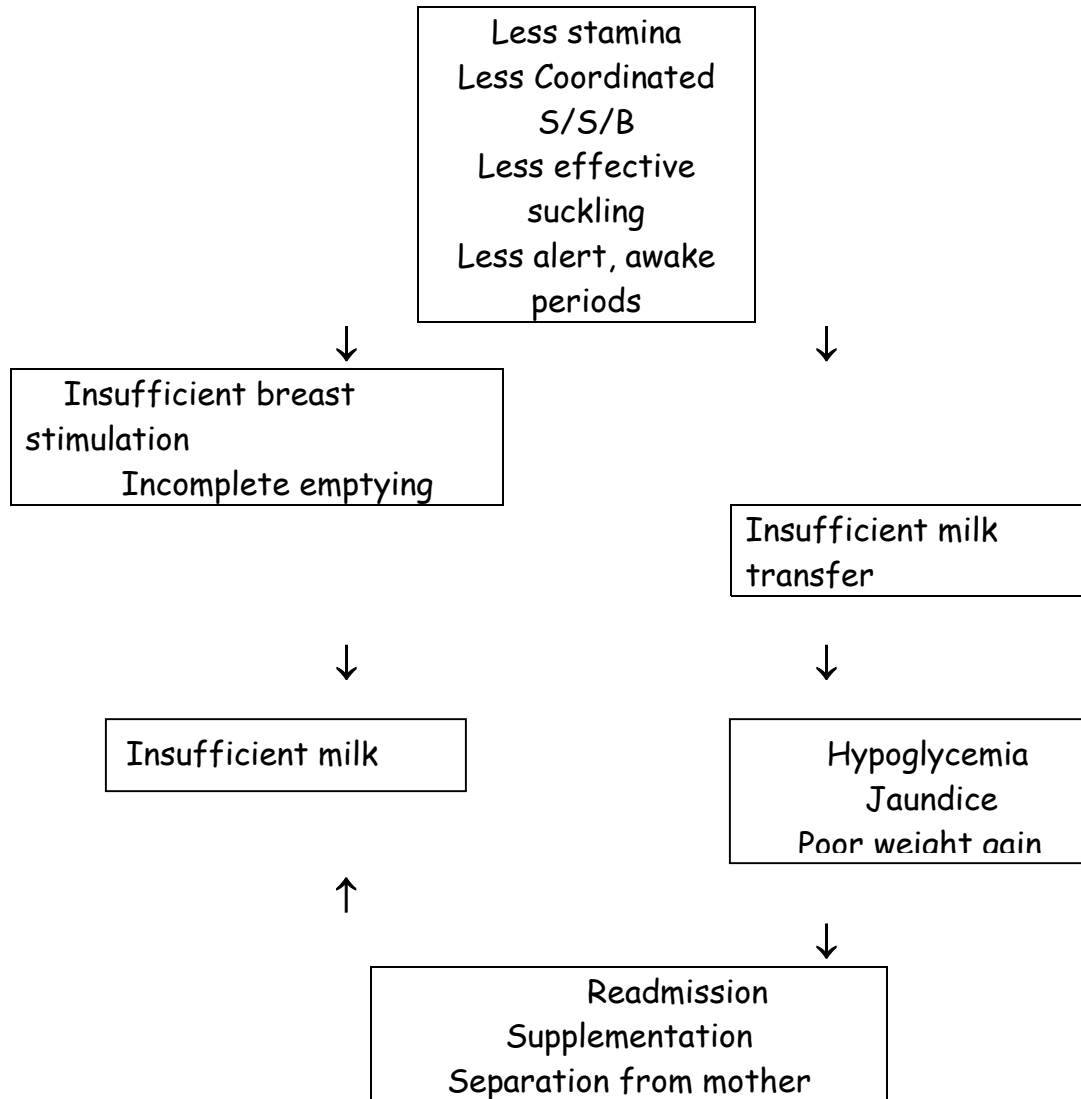
- a. 40% of low-income women decided to provide milk after a HCP discusses benefits
- b. Affords mother opportunity to participate in care, decreases her stress
- c. Premature human milk is uniquely suited for premature babies
- d. All advantages of human milk are magnified for premies, and for sick infants
- e. To maintain optimal rates of growth, human milk should be fortified for hospitalized premature infants
- f. Premies are more physiologically stable at breast- than at bottle-feedings

### **2. Instructions**

- a. Provide the mother with a hospital grade electric breast pump
- b. Begin pumping within 12 hours of delivery (6 is better)
- c. Pump 8-12 times per day for 10-15 mins in first 2 weeks to establish an abundant supply. Once milk is in, time pumping can remain 10-15 mins or may be best to pump for an additional 2 mins after she thinks breast is emptied
- d. Tell mother she may only have a few drops in the first few days
- e. Mother should keep a pumping log with time and volume
- f. Mother may experience a decrease in supply at about 6 weeks
- g. Mom should visit baby as soon and as much as possible, hold
- h. First p.o. feed at breast if at all possible

## XVIII. Nursing the Borderline Premature Infant

### 1. Near-Term Breastfeeding Cascade (from Wight, 2003)



### 2. Principles in breastfeeding borderline pre-term infants

- a. Feed the baby
- b. Establish and maintain the mother's milk supply

### 3. At delivery

- a. Quickly dried and assessed
- b. Placed immediately in skin-to-skin contact with mother until first feeding accomplished

4. Kangaroo care provides
  - a. Warmth
  - b. Opportunities for feeding
  - c. Improves oxygen saturation and gas exchange
  - d. Decreases crying
  - e. Enhances entero-mammary immune system
  - f. Improves breast milk production
  - g. Lengthens the times of exclusive and total breastfeeding post-discharge
  
5. After initial feeding
  - a. Complete exam
  - b. Gestational age assessment
  - c. Admission procedures
  - d. Glucose screening only if risk factors identified
  - e. If stable, no routine separation
  
6. Breastfeeding Advice
  - a. Goal is 8-12 feedings in 24 hours, and a full milk supply by the end of the first wk
  - b. Breast milk expression within 12-24 hrs postpartum unless babe nursing **very** well
  
7. Supplements
  - a. May require pc supplements of 5-10 mls on day one, and 10-30 mls subsequent days
  - b. Consider pre- and post-weights
  - c. Consider protein hydrolysate formula for supplements
  
8. Follow up
  - a. 24-48 hrs after discharge
  - b. Weekly until fully and exclusively breastfeed or to at least 40 weeks corrected age

**Video: A Premie Needs His Mother, part 2**

### ***Case 13: 35 Weeker***

You are caring for a well primiparous mother and her newborn son now 8 hours postpartum. The 2.7 kg baby was born after a 35 week gestation uncomplicated pregnancy, labor and delivery: Apgars were 7 & 8. Until now he has been observed in the newborn nursery, where he has demonstrated normal oxygen saturation in room air and a stable temperature in an open crib. At two hours of age he nippedled an ounce of dextrose water, and at 5 hours of age he took 45 mls of formula. The mother is anxious to begin breastfeeding but is very nervous.

### **XIX. Conclusion: Back to Brofenbrenner/Phillip: A Call to Action**

1. Provider must develop expertise, and enthusiastically support and promote BF that instills confidence in breastfeeding mothers
  - a. Include significant others
  - b. Support and advocate for public policy that extends maternity leave and allows for childcare and milk expression in the workplace
  - c. Support the WHO code: be aware of the influence formula industry has on pediatric community. Refuse free products, don't keep formula literature in clinic/hospital
  - d. Encourage media to portray BF as positive and the norm
  - e. Know when and how to refer to a lactation consultant
  - f. Educate colleagues
  - g. Take advantage of health plan's DME benefit when appropriate. Encourage insurance companies to cover lactation related services and supplies

## XX. Resources

### Information for Providers

Baby Friendly USA (508) 888-8092 [www.bfusa.com](http://www.bfusa.com)  
Wellstart International (619) 295-5192 [www.wellstart.org](http://www.wellstart.org)  
La Leche League International (800) LA LECHE [www.lalecheleague.org](http://www.lalecheleague.org)  
Center for Breastfeeding Information (847) 519-7730 X 245 or 241  
University of Rochester Lactation Study Center (716) 275-0088  
Rocky Mountain Drug Consultation Center (900) 370-3784

### Lactation Texts

Lawrence, R. (1999). *Breastfeeding: A Guide for the Medical Profession (5th Ed.)*  
Riordan, J. ( ). *Breastfeeding and Human Lactation.*  
Hale, T. (2004). *Medications and Mothers' Milk: A Manual of Lactational Pharmacology.*

### Lactation Courses for Providers

UCLA Extension, Division of Nursing (310) 825-8425  
[www.ucla.edu/healthsci/lactate.htm](http://www.ucla.edu/healthsci/lactate.htm)  
Evergreen Healthcare Basic Course for Lactation Specialists  
[www.evergreenhealthcare.org](http://www.evergreenhealthcare.org)

### Information for Nursing Mothers

La Leche League International (800) LA LECHE [www.lalecheleague.org](http://www.lalecheleague.org)  
Nursing Mothers' Council (415) 386-2229  
[www.breastfeeding.com](http://www.breastfeeding.com)  
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## Post-Partum as a Specialty: Excellence in Breastfeeding Post-Test

Instructions: Circle the best answer:

1. Healthy People 2010 goals for breastfeeding are for
  - a) 100% breastfeeding initiation, 75% for 6 months, 50% for 12 months
  - b) 75% breastfeeding initiation, 50% for 6 months, 25% for 12 months
  - c) 65% breastfeeding initiation, 30% for 6 months, 18% for 12 months
  - d) 18% for 12 months
  
2. The American Academy of pediatrics recommends
  - a) Exclusive breastfeeding for 4 months, then add food supplements
  - b) Exclusive breastfeeding for a year
  - c) Any amount of breastfeeding is good
  - d) No recommendation: it is a personal choice
  - e) Exclusive breastfeeding for 6 months, then with supplemental foods for a year or longer
  
3. Because it is less physiologically stressful, pre-term infants should be established on bottle feedings before attempting to nurse at the breast
  - a) True
  - b) False
  
4. The contraindications to breastfeeding a term infant include
  - a) History of maternal drug abuse with negative toxicology screening and smoking
  - b) Poor maternal diet, smoking, maternal CMV
  - c) Infant or maternal PKU
  - d) Infant galactosemia, maternal chemotherapy
  
5. Studies show that childhood and adult obesity rates can be decreased by breastfeeding
  - a) 10 - 15%
  - b) 12-22%
  - c) 15-25%
  - d) 21-34%

6. The breast is a mature gland, capable of producing and secreting milk, by approximately what week of gestation?
- a) at conception
  - b) by 12 weeks
  - c) by 18 weeks
  - d) by 32 weeks
7. Medications used during labor, including epidural anesthesia, have a significant effect on the newborn's ability to breastfeed effectively
- a) True
  - b) False
8. The term healthy infant is most likely to breastfeed effectively if s/he
- a) Is put to breast immediately after having Apgars assigned, weight and measurements are taken, and eye prophylaxis and vitamin K are given
  - b) Is put to breast after the mother has had a chance to recover from delivery
  - c) Is not separated from the mother until the first feeding is accomplished
  - d) Effective breastfeeding is multifactorial: time to breast after delivery is not a significant predictor of breastfeeding "success"
9. A term healthy newborn should nurse how many times in 24 hours?
- a) 6 or more
  - b) 8 or more
  - c) As often as the mother feels able
  - d) Whenever the baby cries
10. Supplements for breastfed infants should be given
- a) Never, since it will interfere with the mother's milk supply and undermine her confidence
  - b) When medically indicated and ordered by a physician
  - c) To prevent hyperbilirubinemia
  - d) When the mother requests it
11. Breastfed infants have lower blood sugar than bottle-fed infants
- a) True
  - b) False

12. Breastfed infants are more likely to have exaggerated physiologic hyperbilirubinemia than are bottle-fed infants.
- a) True
  - b) False
13. Nursing mothers should be advised to
- a) Drink lots of water and avoid gas-producing foods such as broccoli and cabbage
  - b) Drink lots of water and avoid smoking and drinking
  - c) Eat a variety of foods with extra calcium, avoid smoking and drinking
  - d) Limit alcoholic beverages to 2 per day
14. Lactating mothers who don't like milk
- a) Should drink it anyway so their baby gets enough calcium
  - b) Should be advised not to breastfeed
  - c) Can be reassured that a woman doesn't have to drink milk to make milk
  - d) Should be counseled regarding other sources of calcium, including supplements such as calcium carbonate (eg Tums)
15. "Breast milk jaundice" is
- a) A common reason for readmission of term infants
  - b) A relatively rare condition that has never been associated with kernicterus
  - c) Associated with decreased feeding, decreased stooling, and decreased weight
  - d) A form of exaggerated physiologic hyperbilirubinemia
16. The most common reason for early termination of breastfeeding (when mothers wean their infants before they had planned or wanted to stop breastfeeding) is
- a) Sore nipples
  - b) Maternal plans for return to employment
  - c) Lack of infant weight gain
  - d) Insufficient milk syndrome: the mother thinks she does not have enough milk

17. Approximately what percentage of women are physiologically incapable of producing adequate milk for their infants?
- a) 25-30%
  - b) 5-10%
  - c) 1-5%
  - d) None: All women are capable of producing an adequate milk supply if they receive proper support
18. Breast pumps are available to families who have Durable Medical Equipment (DME) coverage for the following medical conditions
- a) Separation of the mother and infant due to a medical condition
  - b) Maternal medication use that prohibits nursing
  - c) Infant oral-motor dysfunction
  - d) All of the above
19. The treatment for sore nipples includes all of the following EXCEPT
- a) Assessment and correction of the infant's latch at breast
  - b) Limiting nursing time
  - c) Lanolin
  - d) Breast milk applied to nipples after feeding
20. A new mother reports that her one-day old, term infant is nursing constantly. The baby is pink and vigorous, with normal vital signs, and he has had 3 stools: the last was transitional. The mother should be advised
- a) To wait until the baby is truly hungry before feeding, about every 2-3 hours
  - b) To give a pacifier so that she can get some rest
  - c) To give a formula supplement so that she can get some rest
  - d) That her baby is normal and all is well. Does she have adequate support at home?



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