

Breastfeeding the Medically Complex Infant



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Healthy Infant

- Rewarding Birth Experience , Proud
- Baby is beautiful!!
- Little fear of danger to their infant
- Growing confidence in their ability to care for and breastfeed their new baby, Identifies with peers
- Feels pleasure and satisfaction when the baby latches on and feeds at her breast

Medically Complex

- Disappointment, Sense of Failure, Guilt
- May be shocked by appearance of infant
- Great fear of danger to infant, Anxiety
- Mother is uncertain what her role is - other mothers are different. Lacks confidence in care-taking role
- May be told she cannot breastfeed - Frustration and disappointment if infant cannot feed at her breast

Disclosure

I have no conflicts of interest or financial relationships with commercial entities.

Mention of specific products does not represent endorsement of those products.

Breastmilk is Best!

- NOT an issue of making mothers feel GUILTY!
- Family Centered Care – share the decision making
- Informed decision making

(Miracle DJ - JOGNN, 2004 Nov-Dec; 33(6):692-703)

Learning Objectives

- Identify three potential barriers to breastfeeding in the hospitalized infant
- Identify three techniques to facilitate breastfeeding in a medically complex infant
- Describe creative feeding plans for the medically complex infant

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“Human Milk is an Evidenced Based Health Issue”

- It is not a “gift”
- It is not an “art”

(Rodriguez N, Miracle D, Meier P. *Sharing the Science on Human Milk Feedings with Mother of VLBW Infants.* JOGNN 34: 109-119, 2005)

Benefits of Breastmilk

- Immune properties (Secretory IgA)
- Decreased infection
 - Gastrointestinal
 - Respiratory
- Decreased Otitis Media
- Decreased Asthma and Allergy (Atopy)
- Decreased Obesity and Overweight
- Decreased Diabetes
- Decreased Leukemia and lymphoma
- Neuro-developmental and cognitive benefits
- Maternal Benefits

AAP Policy Statement, Pediatrics 2012 – www.aap.org

Benefits of human milk for hospitalized neonates: reduced sepsis

- Late onset sepsis
 - >7 days of life
 - Nosocomially acquired
- Incidence ~60% lower for human milk vs. formula fed infants
- Intake >50 ml/kg/day may be needed

Schanler et al. Pediatrics 1999, Furman et al. Arch Pediatr Adolesc Med 2003

Benefits of Breastmilk

- 64% reduction in GI infections
- 72% reduction in URIs
- Improved neurodevelopment
 - Visual acuity (LCPUFAs)
 - Cognition

Ip et al. AHRQ meta-analysis 2007

Benefits of human milk for hospitalized neonates: reduced sepsis

- Dose related response!**
- First 14 days – no fortification
- 14 days of Human Milk increases chance of survival and discharge
- Decreases risk of late sepsis, NEC, death
- Dose and exposure period: How much over what period of time?
- Each 100ml/kg HM decreases risk by 0.93 for sepsis (Multiple sources: Meinzen-Derr – Patel A– Sisk P)

Benefits of human milk for hospitalized neonates: NEC

- Necrotizing enterocolitis (NEC)
 - Serious, acquired GI disorder
 - Preterm, CHD infants
 - Cause unclear
- Human milk highly protective
 - Incidence ~60% lower for infants fed human milk vs. formula
- Intake >50 ml/kg/day may be needed for protective effects
- Exclusive human milk provides maximum benefit

Ip et al. AHRQ meta-analysis 2007

Benefits of human milk for hospitalized neonates: better feeding tolerance

- Achieve full enteral feeds with human milk 2-7 days sooner than with formula
- Fewer days on parenteral nutrition
- Shorter length of stay

Schanler et al. Pediatrics 1999

Benefits of human milk for hospitalized neonates: **cost savings**

- NEC (vlbw)
 - Medical \$144,497 per case
 - Surgical \$265,945 per case
- Sepsis
 - \$10,440 per case
- Parenteral nutrition
 - \$500 to \$1000/day

Bartick, M - 2010

Human Milk Benefits

- Sensory Stimulation
 - skin to skin contact
 - olfactory (smell) input
 - neurological development

Human Milk Benefits

Tolerance of enteral feedings

- ease of digestion
- high incidence of GERD
- breastmilk is less irritating –complex infants are at increased risk for aspiration and intolerance to formulas

Maternal Health Benefits

- Increased **Lifetime** lactation duration decreases risk of Type II Diabetes
- Never Breastfeeding increases risk of Type II DM by 40% (even 1-6 months showed benefit)
- Women with Gestational Diabetes – Breastfeeding provided 86% decrease risk of progressing to metabolic syndrome
- Longer lactation decreased risk factors for Cardiovascular diseases – difference equivalent to 30 minutes of vigorous activity in the Gym per day!
(Dr. Alison Steube. MD, MSc – University of North Carolina)

Human Milk Benefits

- Maternal Attachment
 - this is ONE thing **only mom** can do for baby
 - long separations from infant, often can't even hold baby
 - enhanced bonding, psychological benefits

Maternal Health Benefits

- Women's Health Initiative
<http://www.nhlbi.nih.gov/whi/>
- Nurses Health Study I and II
<http://www.nurseshealthstudy.org/>

Schwarz EB, Brown JS, Creasman JM, et al. Lactation and Maternal Risk of Type 2 Diabetes: A Population-based Study. *The American journal of medicine.* 2010;123(9):863.e861-863.e866.

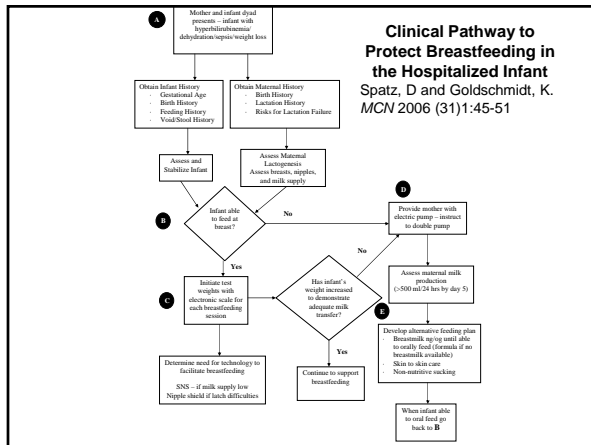
Schwarz EB, Ray RM, Stuebe AM, et al. Duration of lactation and risk factors for maternal cardiovascular disease. *Obstetrics and gynecology.* 2009;113(5).

Potential Barriers to Breastfeeding

- Delayed first feeding at breast
 - reduced frequency of feeding
- Often made to bottle feed first
- Increased use of supplemental feedings with formula

Prenatal Support

- Advantages of breastmilk
- Preliminary discussion of milk expression with breast pump
- Arrange equipment
 - Check Insurance Benefits
 - Provide prescription
- Provide written information



Perinatal Support

- Initiate breastfeeding in delivery room if infant stable – colostrum
- Imprinting: Mom and Baby!
- If unable to feed, encourage skin to skin
- Immediate separation: Take a photo before tubes!



Prenatal Support

- Fetal Diagnosis by ultrasound
 - Congenital Heart Disease (CHD)
 - Gastroschisis
 - Omphalocele
 - Congenital Diaphragmatic Hernia (CDH)
 - Craniofacial Anomalies
 - Congenital anomalies

Hand Expression

- Increased stimulation to breast (milk comes in faster)
- Increased later milk production
- More milk to the baby – colostrum averages a few drops to 1 teaspoon...



Frequency of HEx >5 times per day in first 3 days postpartum correlated with increased milk volume by 2 weeks J Morton et al 2009

Jane A. Morton, M.D. FAAP

- <http://newborns.stanford.edu/Breastfeeding/>
- <http://newborns.stanford.edu/Breastfeeding/HandExpression.html>
- <http://newborns.stanford.edu/Breastfeeding/MaxProduction.html>

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RPS – Reverse Pressure Softening



- Triggers Milk ejection
- Reduces resistance of subareolar tissue
- Shifts edema back into breast to soften areola and facilitate latch or pumping

Cotterman, KJ 2004

Postpartum 24-48 hrs

- Teach proper storage and handling of expressed breast milk
- Early frequent stimulation to encourage onset of milk production
- Milk Onset Day 3-7, gradual increase in volume – prepare mothers for minimal output day 1-3 to decrease frustration

RPS – Reverse Pressure Softening

Basic principles for applying RPS

1. Clean hands and fingernails.
2. Choose one method described, depending on fingernail length.
3. Exert steady, gentle, but firm positive pressure.
4. Press on a 1- to 2-cm radius of the whole central areola, right at its junction with the base of the nipple.
5. Press inward perpendicular to the mother's chest wall, for 1 to 3 full minutes
6. Repeat once (or more), depending on severity of swelling.
7. Perform immediately before each attempt to latch until engorgement has resolved well enough for easy latching.



Cotterman, KJ. 2004.

Week One

- Engorgement vs. Normal Fullness
- Anticipatory guidance – “This is what will happen over the next few days”
- ice/cold packs,
- areolar compression/RVP

Week One

- Early, frequent, complete milk removal to protect volume
- Pumping logs or journaling
- Intervene early! Review pumping history



Week Two

- Volume goals by Week 2
 - Ideal >750ml per day (>25oz/day)
 - Average 500ml/day (16-20 oz/day)
 - Borderline /low production <350ml/day (<12oz/day)
- Ideas for increasing supply
- Galactogogues

Initiation of Breastfeeding

- Breast before bottle is significant
- Re-direct mother/staff expectations of baby
 - initial familiarity with breast
 - lick nipple, taste milk
 - attempts to latch

Volume not the goal here!

Maternal Recovery

- Pain management
- Wound healing
- Rest
- Complications – UTI, Dehiscence, Mastitis

Breastfeeding Support

- Continue use of feeding tube (NGT) to provide supplemental feeds
 - partial volumes by tube after breastfeed
- Creative feeding plans to meet common goals of healthcare team
 - every other feed, alternating breast/bottle
 - breastfeed exclusively during day or night, or when mother is available

Initiation of Breastfeeding

- Help parents to separate the defect or illness from other aspects of their baby's behavior - this is still a NEW BABY, with the same needs as other babies
- Model behaviors for parents
- Encourage them to talk to baby!

Breastfeeding Support

- Goal: promote slow, steady gain
- Daily weights reflect fluid balance too
- Assure adequate nutrition with supplements/complements
 - Fortified breastmilk feeds
 - Maximum calories in minimum volume
 - Consider hind milk feeds/pumping

Weighing In....



- Test Weight Procedure
 - Pre and Post feed weights
 - Volume/Fluid Restrictions
 - Accurate Intake and Output (weigh diapers)
 - Increase maternal and Staff confidence

Positioning Strategies

- No rules apply and all ideas are fair game!
- Hypotonic infants need extra support to decrease energy use trying to support head/body - blanket rolls, wedges
- Restricted positioning
 - Get Mom in the crib!
 - Adjust traction to top of bed
 - Move baby on a pillow

What about Mom?

- Privacy curtains, signs on the door
- Accommodate wires, intravenous lines, incisions - makes mothers nervous
- Many pillows needed to support infant to allow mother to have her hands free to position breast, infant head and shoulders

Positioning at the Breast

- Position baby above/below the breast
 - direction of milk flow can be changed according to rate of flow, baby's suckle/swallow sequence,
 - angle breast to prevent milk from flowing directly into pharynx
- Suck/Swallow/Breathe coordination: infant controls pace of feed

What about Mom?

- Teach relaxation skills
- Teach how to elicit MER
 - massage breasts before and during feeds to stimulate MER and flow
 - breast compression technique
 - manual expression
- Support the weight of the breast
 - rolled towels
 - "breast billow"

Positioning at the Breast

- Modified Clutch - baby sits in upright position to decrease choking, leakage through the nose, or to improve airway
- Modified Transitional Hold – infant head and shoulders slightly higher than hips for "reflux" positioning

Support the Latch

- **DO NOT grab back of head!**
 - apply gentle, steady pressure toward breast at the base of baby's head/shoulders to facilitate suckling,
 - increase area of areola drawn into mouth, and
- **Support the breast**
 - reduce degree of exhaustion baby may experience from trying to hold head to breast and suckle

Nipple Shield Use

- Gets the baby on the breast
- "Feel" like a breastfeeding mother
- Increased ability to sustain latch
- Increased milk transfer
- Anatomical concerns
 - Palate/oral/facial – infant
 - Flat/short/inverted nipples



Support the Latch

- **Dancer hand position / dancer chin hold**
 - help support jaw and hold baby onto breast
 - to reduce the pressure of the breast on the baby's chin
 - Decrease intraoral space, increase intraoral pressure



Danner S, and Cerutti, ER

Nipple Shields - When

- Flat, short or inverted nipples with breast tissue that does not stretch well
- Mismatch between larger nipple and smaller baby mouth
- Transition baby from bottle to breast (artificial nipple preference)
- Severe nipple damage or pain
- When mother is frustrated and wants to give up unless baby latches

Depressed, Weak or Uncoordinated Suck

- provide positive oral stimulation
- discuss pacifier use for non-nutritive suckling
- nipple shield use
- alternative feeding methods

Nipple Shields -Who

- Infant with weak or disorganized suckle (preterm, neurological problem)
- Premature infants
- Infants with complex medical problems
- Problems with the baby's mouth or oral cavity
- Infant does not latch well, or stay latched after the first 24 hours of breastfeeding

Nipple Shields - Why

- Gives the baby oral stimulation not provided by mother's nipple
- Holds the shape of the nipple in the baby's mouth to help sustain latch, even when the baby pauses to rest
- Helps the baby to drink more milk from the breast
- **GETS the BABY on the BREAST**

Bottle Supplements

- Special Needs Feeder (formerly Haberman)
- Pigeon Nipple $\dot{\gamma}$ (Cleft palate nipple system)
- Nipple choices: Wide base, rounded tip, slow flow, silicone material that is soft pliable
- Gradual angle from nipple to base to promote flange of lips similar to infant latch

Nipple Shields – so What?

- Nipple shields will not fix breastfeeding problems that caused sore nipples or low milk supply
- Baby may refuse to breastfeed without the shield in place
- May contribute to low milk supply, weaning(??)

- Nipple shields should be used with instruction from a lactation consultant. If Mom is nursing with a nipple shield, arrange to have baby's weight checked as needed (once or twice per week).

Meier PP, Brown L, Hurst N – *Journal of Human Lactation* 2000

Bottle Supplements

- Nipple Preference vs. Nipple Confusion
- "Finish at the Breast Method" of Supplementation – Dr. Christina Smillie
- <http://www.lowmilksupply.org/finishatthebreast.shtml> (Excerpted from "The Breastfeeding Mother's Guide to Making More Milk" by Diana West, IBCLC, and Lisa Marasco, IBCLC)

Alternative feeding methods

- Bottles
- Cup feeding/finger feeding
- SNS/Lact-Aid trainer

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Additional Considerations


- Decrease environmental stimuli
 - Do not do procedures BEFORE feed
- Teach parents patience – redefine “breastfeeding success”
- Encourage short, frequent learning sessions, giving opportunity to rest and burp during feed
- Teach family to recognize quality of feed, swallowing, milk transfer

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Additional Considerations

- Consider Donor Milk
 - As standard of care for Preterm infants
 - Less than 1500 grams
 - Less than 32 weeks gestation
 - At risk for ischemic bowel, NEC recovery
 - before milk comes in - “Bridge” Milk
 - To augment low maternal supply



Mothers' Milk Bank Northeast
Share the Health

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Additional Considerations

- Loss of infant
 - grief counseling applies
 - weaning advice
 - comfort measures
 - Cabo-Cream™
 - written information
 - milk donation – simplify process
 - www.hmbana.org
 - www.milkbankne.org

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