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### The OBRC Team

OKLAHOMA BREASTFEEDING RESOURCE CENTER

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## Disclosure

 This class will not refer to products, drugs, or devices of a commercial company with which we have a significant relationship.	 We have not accepted a fee from a commercial company for this class.
 Supported with funding from the Oklahoma State Department of Health.	 Mannel serves as Executive Director of the Oklahoma Mothers' Milk Bank, a statewide nonprofit.

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## Learning Objectives

- Identify how the breast makes milk.
- Explain indications for expression of milk.
- Understand different mechanics of expression.
- Identify milk collection and storage guidelines.
- Explain different ways to troubleshoot common problems.

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# How the Breast Makes Milk

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## Mammogenesis

- Breast development begins during first weeks of fetal gestation
- Next major development during puberty

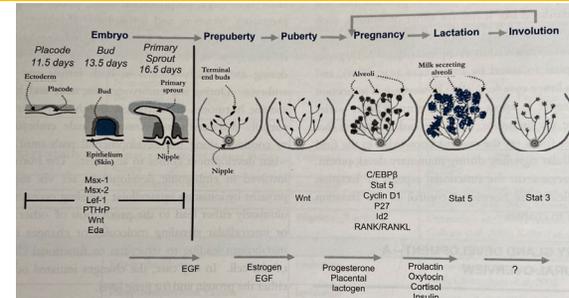


Figure from Hale & Hartmann, 2007

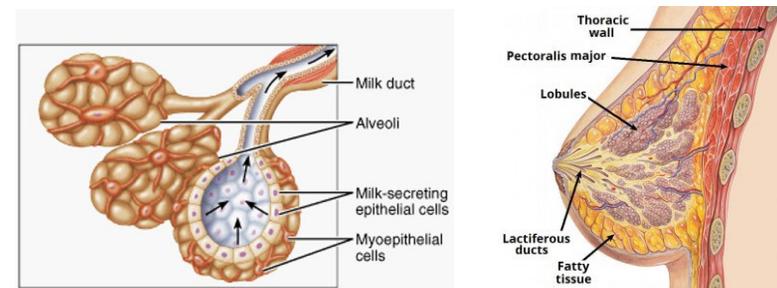
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## Mammogenesis in Early Pregnancy

- Estrogen – ductal system
- Progesterone – lobes and alveoli
- Prolactin – nipple growth
- Placental lactogen – areolar growth

Transition of breast from non-secreting organ to secreting organ

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Medcaretips.com

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## Lactogenesis I

- Lactogenesis I = capacity of mammary gland to secrete milk from mid-pregnancy to late pregnancy
- Lactation occurs after 16 weeks of pregnancy
- Lactogenesis I continues until 2-3 days after birth

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## Colostrum



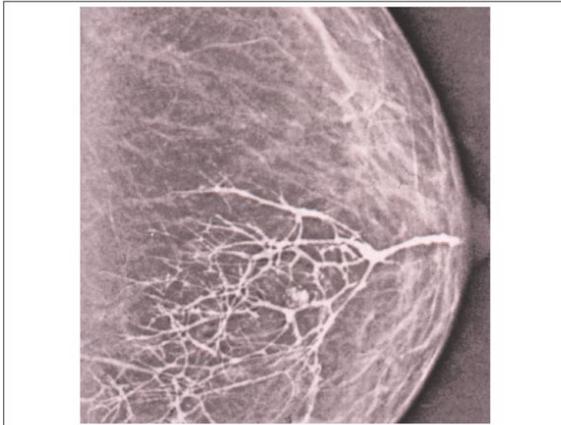
BabyCenter Australia

- Increased protein
  - Higher concentration of immunoglobulins
  - Overall dose to baby = 1 g/day
- Decreased fat
- Decreased lactose
- Low water/fluid volume

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Milk ducts and ductules

Figure A.01



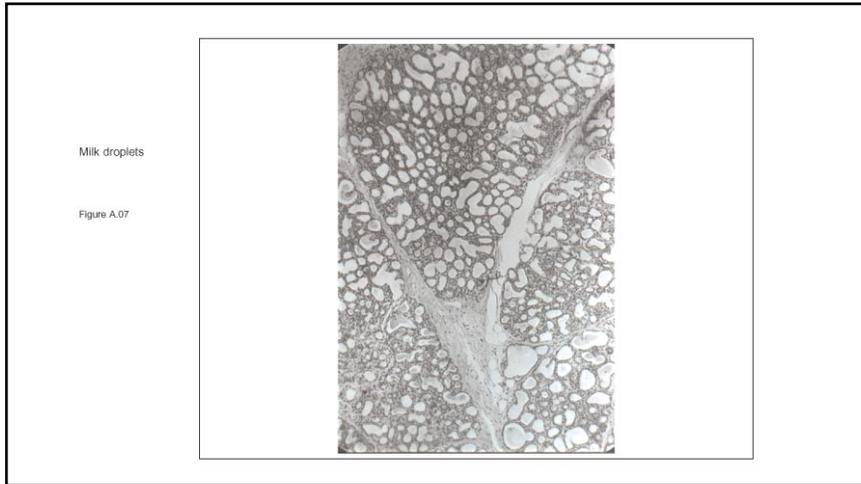
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## Lactogenesis II

- Onset of copious milk secretion after birth
- Milk volume increases rapidly, then abruptly levels off
- Triggered by a rapid drop of progesterone after delivery of placenta
- Occurs 2-3 days after birth

Secretory activation with delivery of placenta

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## Transitional-Mature Milk

- Lower protein concentration
  - Overall dose to baby = 1 g/day
- Higher fat
  - Most recently made milk (end of feeding)
- Higher lactose
  - Less recently made milk (start of feeding)
- Higher water concentration (>85%)

Breastmilk at the beginning and end of a pumping session.  
KellyMom.com. Photo used with permission.

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## Milk is a Bioactive Substance

- Immunoglobulins
  - Secretory IgA, IgG, IgM, IgD, IgE
- White blood cells
  - T & B cells, neuts, lymphs, macrophages
- Enzymes - lactase
- Lactoferrin
- Oligosaccharides
- Hormones

Babbad, MD - Light Microscopy

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## DID YOU EVER WONDER WHAT'S IN... ?

BREASTMILK	FORMULA
<p><b>GLUCOSE</b></p> <p>Glucose is the primary source of energy for the infant. It is the only sugar found in breast milk.</p> <p><b>LACTOSE</b></p> <p>Lactose is a disaccharide sugar composed of glucose and galactose. It is the primary carbohydrate in breast milk.</p> <p><b>PROTEIN</b></p> <p>Protein is essential for growth and development. Breast milk contains a variety of proteins, including casein and whey.</p> <p><b>FAT</b></p> <p>Fat is a source of energy and provides essential fatty acids for brain development.</p> <p><b>IMMUNOGLOBULINS</b></p> <p>Immunoglobulins are antibodies that help protect the infant from infection.</p> <p><b>ENZYMES</b></p> <p>Enzymes are proteins that help break down food into nutrients.</p> <p><b>HORMONES</b></p> <p>Hormones are chemical messengers that regulate various body functions.</p>	<p><b>GLUCOSE</b></p> <p>Glucose is added to formula as a source of energy.</p> <p><b>LACTOSE</b></p> <p>Lactose is added to formula as a source of energy.</p> <p><b>PROTEIN</b></p> <p>Protein is added to formula as a source of amino acids.</p> <p><b>FAT</b></p> <p>Fat is added to formula as a source of energy and essential fatty acids.</p> <p><b>IMMUNOGLOBULINS</b></p> <p>Immunoglobulins are not present in formula.</p> <p><b>ENZYMES</b></p> <p>Enzymes are not present in formula.</p> <p><b>HORMONES</b></p> <p>Hormones are not present in formula.</p>

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## Delayed or Impaired Lactogenesis

Cesarean birth	Diabetes, type I	Obesity	Polycystic Ovary Syndrome (PCOS)
Hypertension	Stress	Retained Placenta	Postpartum Hemorrhage

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## Indications for Expression of Milk

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## Indications for Expression of Milk

- Delayed initiation of breastfeeding
- Interruption of breastfeeding
- Decreased milk supply
- Relief of engorgement
- Donating to a milk bank



Mannel, NICU OU Medical

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## EXPRESSING MILK FOR your premature baby

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## Hand Expression



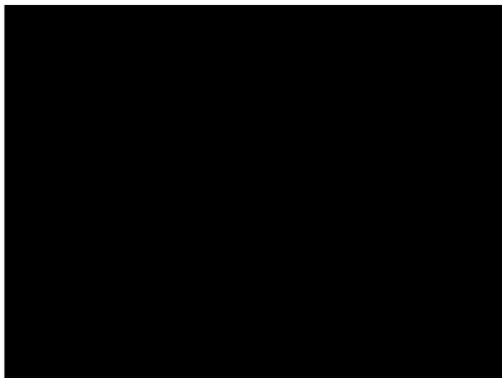
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## Hand Expression

- Most common form of milk expression
- Is more effective for expressing colostrum
- When mechanical breast pump not available
- Useful for stimulating milk ejection reflex (MER) before using mechanical pump
- When used after pumping, more effectively drains the breast: “hands-on pumping”

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## [Early Hand Expression Increases Later Milk Production](#)



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Pumping with hand pump

Figure 1.13



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## Automatic Electric Pumps

- Double-pumping → ↑ milk collection
- Best for mothers working full-time
- Best for sustaining milk production (NICU moms)
- Faster pumping
- Less chance of injury

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## Milk Collection

### Initiating and sustaining milk production for a preterm/sick infant:

- Initiate pumping w/in 6 hours of delivery
  - Consider starting with hand expression
- Double-pump with a hospital grade breast pump
- Stimulate MER (breast massage, heat,...)
- Hands-on pumping!
- Pump 8-10 times/day for 10-15 min each
- Practice kangaroo care daily

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## Pumping FAQs from moms

### • **When do I count the start of a pumping session?**

Pumping time starts from beginning of last session to beginning of next session

### • **How often do I need to clean/sanitize my pump parts?**

Sanitize pump once per day, rinse well after each use during the day

### • **Should I take some type of herbal supplement to increase my milk supply?**

There is no evidence to support, some will exclude you as a milk donor

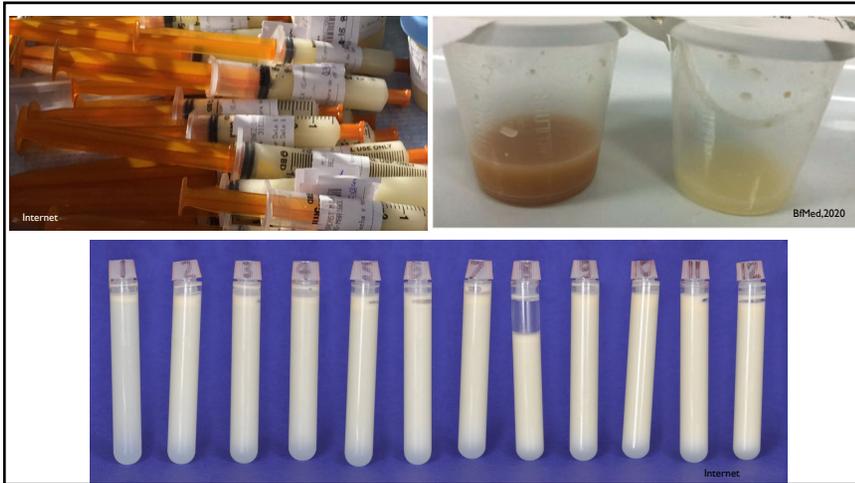
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Rusty pipe syndrome

Figure A.08



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## Average Milk Volumes

- PP Dy 1: 40 - 120 ml
- PP Dy 2: 100 - 200 ml
- PP Dy 3: 200 - 400 ml
- PP Dy 5 - 10: 500 ml (~ 1oz/brst q 3 hrs)

By 1 month postpartum, most mothers are producing 700-800 ml/day.

- ABM Protocol #3: Supplementary Feedings in the Healthy Term Breastfed Neonate 2017

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## Average Infant Intake

- Day 1: 2-10 ml/fdg
- Day 2: 5-15 ml/fdg
- Day 3: 15-30 ml/fdg
- Day 5: 30-60 ml/fdg

- ABM Protocol #3: Supplementary Feedings in the Healthy Term Breastfed Neonate 2017

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**OKLAHOMA mothers' milk bank**

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

**Our New Home!**  
 940 NE 13<sup>th</sup>, Garrison Tower, Ste 1220  
 Oklahoma City  
 405-297-LOVE

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## Donor Mothers



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## Silas Murphy Memorial Wall



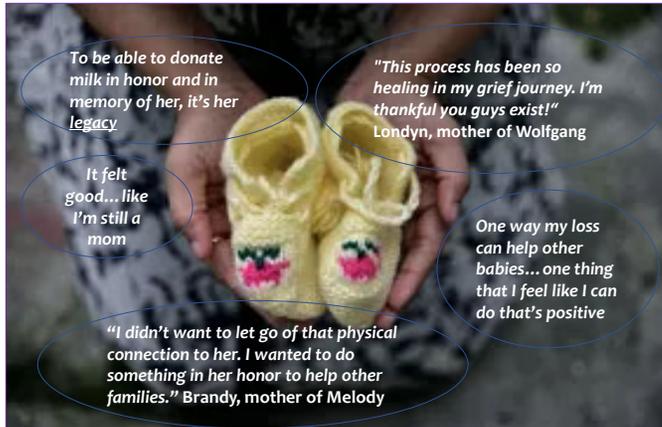
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## Unexpected Death In Utero

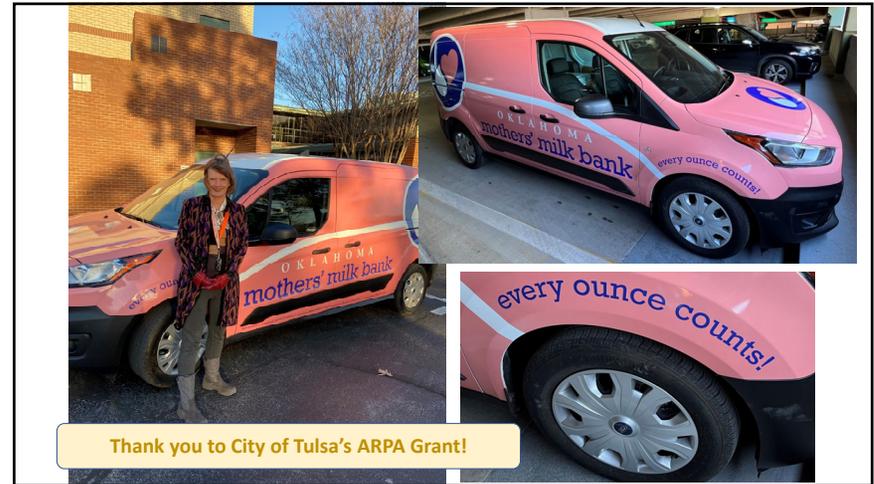


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### Why donate milk after a perinatal or infant loss?



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AGREE OR DISAGREE??



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AGREE

DISAGREE

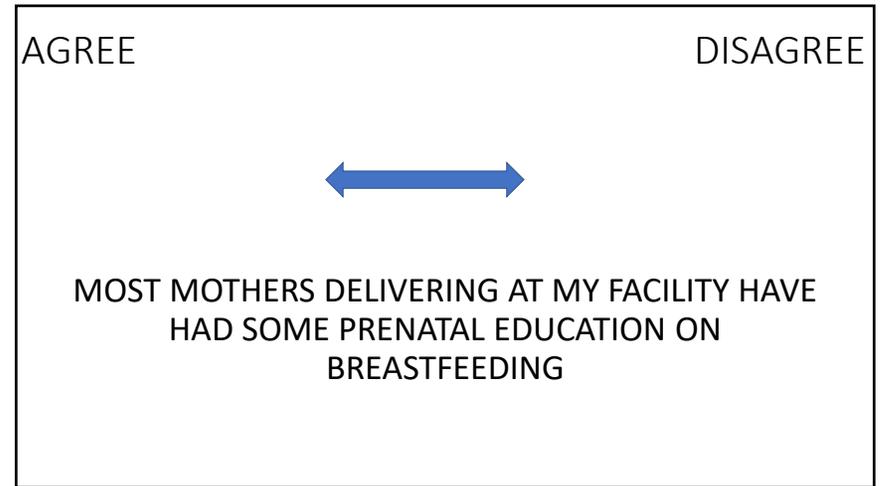


I KNOW MY HOSPITAL'S  
INFANT FEEDING (BREASTFEEDING) POLICY

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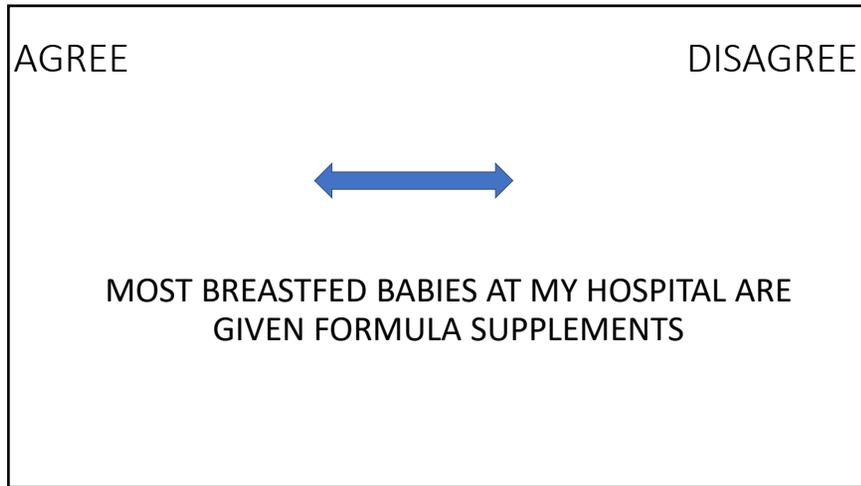
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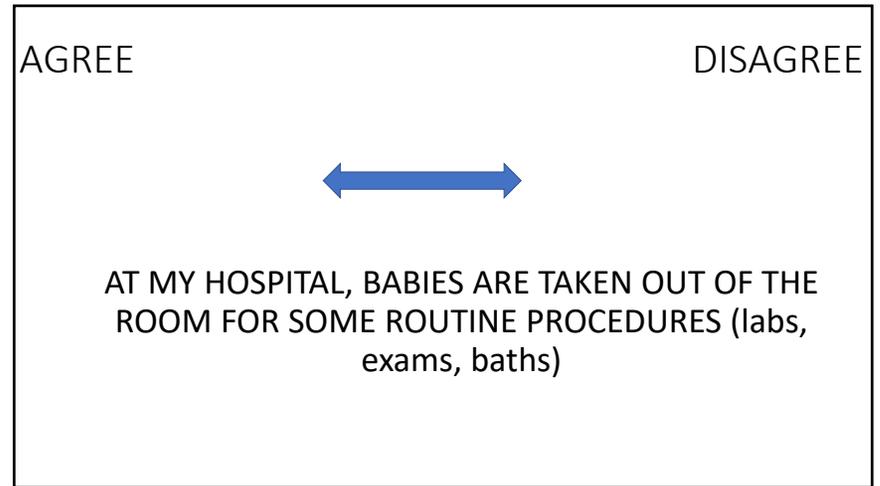
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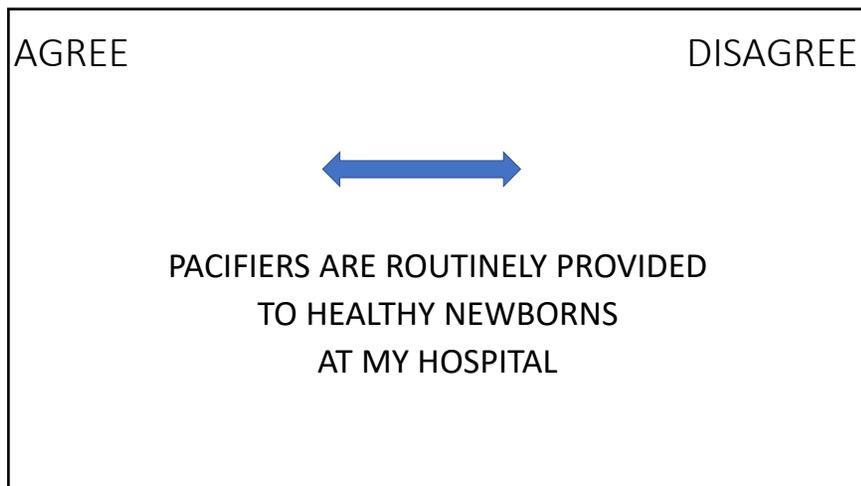
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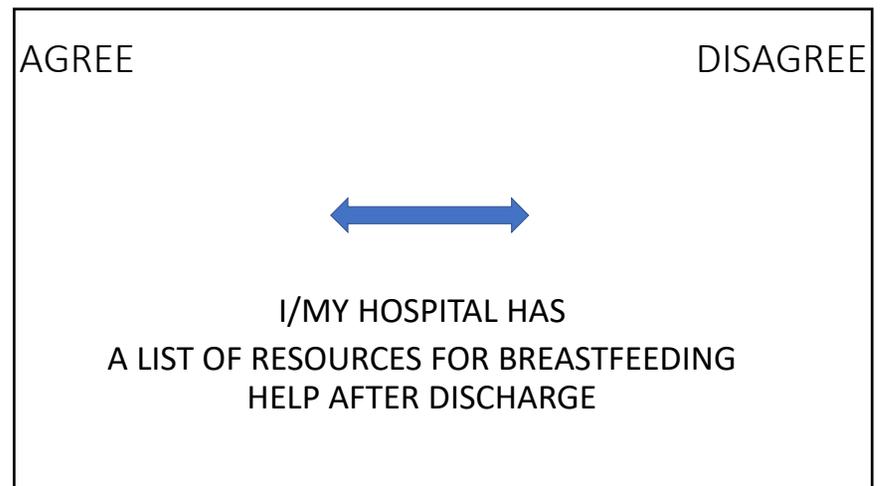
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AGREE DISAGREE

↔

**MANY OF MY COWORKERS THINK  
BABY-FRIENDLY IS MOTHER-UNFRIENDLY**

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## Optimal Breastfeeding Care in the Hospital

Becky Mannel, MPH, IBCLC, FILCA  
Clinical Professor, University of Oklahoma Health Sciences Center  
Director, Oklahoma Breastfeeding Resource Center

OKLAHOMA PERINATAL NURSES FORUM

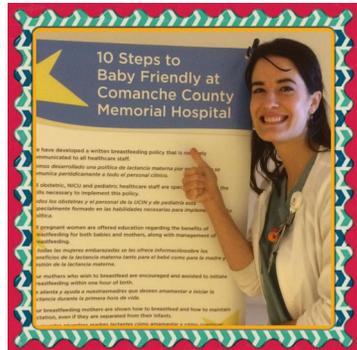
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## Learning Objectives

<b>Identify</b>	Identify at least two of the Ten Steps to Successful Breastfeeding.
↓	
<b>Describe</b>	Describe the International Code of Marketing of breastmilk substitutes.
↓	
<b>List</b>	List two benefits of skin-to-skin contact.
↓	
<b>Name</b>	Name one resource for breastfeeding support after hospital discharge.

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## Baby-Friendly Hospital Initiative = Optimal Breastfeeding Care



- Ten Steps to Successful Breastfeeding
  - How many can you name???
- Elimination of marketing of breastmilk substitutes in the hospital

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Isn't every hospital "baby-friendly"?



## Step 1a

Comply fully with the International Code of Marketing of Breast-milk Substitutes and relevant World Health Assembly resolutions.



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**More than half of parents and pregnant women exposed to aggressive formula milk marketing – WHO, UNICEF**

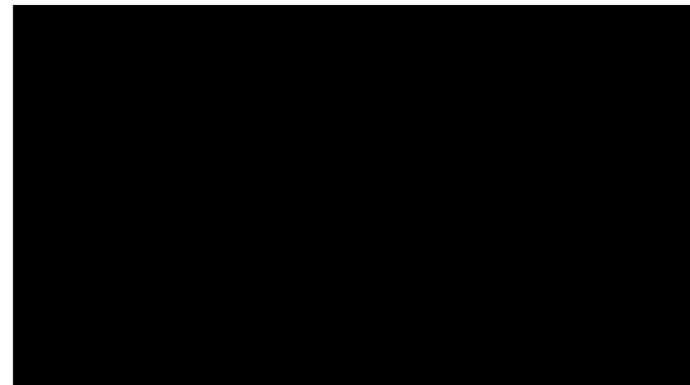
New report details exploitative practices employed by \$55 billion formula industry, compromising child nutrition, violating international commitments

22 February 2022 | News release | Geneva | Reading time: 4 min (1055 words)

It uncovers systematic and unethical marketing strategies used by the formula milk industry – now worth a staggering US\$ 55 billion – to influence parents' infant feeding decisions.

You See, They See: Formula milk marketing and infant feeding

<https://www.who.int/multi-media/details/you-see-they-see-formula-milk-marketing-and-infant-feeding#>



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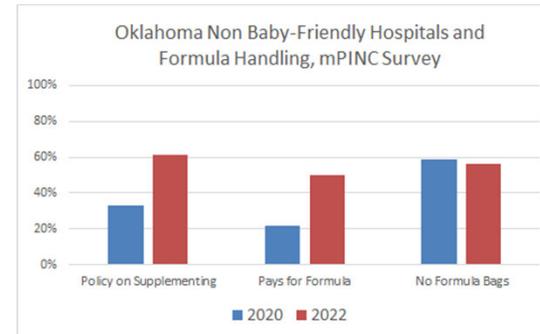
## WHO Code of Marketing of Breast Milk Substitutes



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## Step 1b

*Have a written infant feeding policy that is routinely communicated to staff and parents.*



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## The Chickasaw Nation Medical Center

A place where Native American traditional wisdom meets evidence-based practices. This facility upholds the World Health Organization/UNICEF "Ten Steps to Successful Breastfeeding" published in a joint statement entitled: "Protecting, Promoting and Supporting Breastfeeding: The Special Role of Maternity Services"

### Ten Steps to Successful Breastfeeding

Every facility providing maternity services and care for newborn infants should:

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



The Ten Steps to Successful Breastfeeding from the basis of the Baby-Friendly Hospital Initiative, a worldwide breastfeeding quality improvement project created by the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF).

Baby-Friendly hospitals and birth centers also uphold the International Code of Marketing of Breast Milk Substitutes by offering parents support, education, and educational materials that promote the use of human milk rather than other infant food or drinks, and by refusing to accept or distribute free or subsidized supplies of breastmilk substitutes, nipples, and other feeding devices.

*the Chickasaw Nation*  
Department of Health

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## Step 2

*Ensure that staff have sufficient knowledge, competence and skills to support breastfeeding.*



OB/GW Department, OUHSC 2014

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## Prenatal Education



- Increases initiation rates
- Increases duration rates

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## OBRC's Online Breastfeeding Session for Families

[https://obrc.ouhsc.edu/Families/Online\\_Patient\\_Education](https://obrc.ouhsc.edu/Families/Online_Patient_Education)

- This is an interactive session with all the info you need to know about breastfeeding!
- Move at your own pace and review this session as much as you want!
- Also available in PDF! [Click here for English](#). [Click here for Spanish](#).

The Oklahoma Breastfeeding Resource Center  
invites you to take our FREE online lesson



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## Step 4



*Facilitate immediate and uninterrupted skin-to-skin contact and support mothers to initiate breastfeeding as soon as possible after birth.*

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## [Keep Your Baby With You After Birth](#)



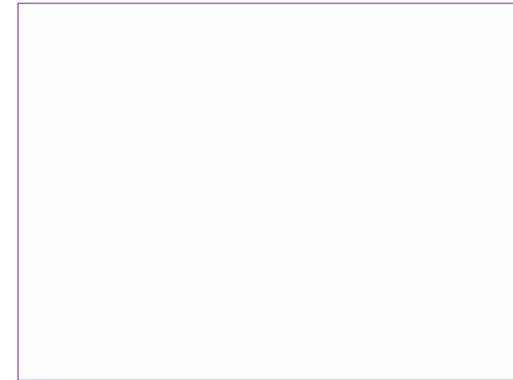
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## Oxytocin-Stress Connection

- Oxytocin has anti-stress-like effects
  - ↓ blood pressure & cortisol levels
  - ↑ pain thresholds
  - Stimulates various types of positive social interaction
  - Promotes growth and healing
- 2005 Uvnas-Moberg & Peterson

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[Teach Me How to Breastfeed](#)



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## Most effective = 1:1 teaching

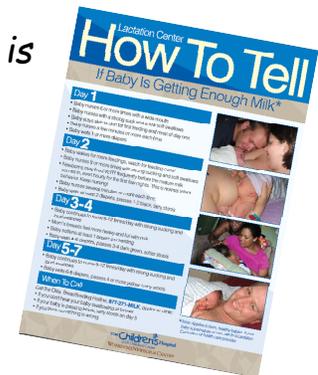
- 1:1 teaching, hands-on
- Videos
- Written information
- Prenatal Education!



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## Postpartum Teaching

- "How do I know if my baby is getting enough milk?"
- S/S adequate intake:
  - Audible swallowing
  - Stool changes!!



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[How to Tell if Your Breastfed Baby Has a Good Latch](#)



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## Step 5 What about formula feeding moms?

Mothers who feed formula should receive written instruction, not specific to a particular brand, and verbal information about safe preparation, handling, storage, and feeding of infant formula.



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*"How did you get the formula for your baby the first time your baby was given formula in the hospital?"*

28.1% - I asked for the formula



23.2% - Formula was in my room **without me asking for it**

28.0% - Staff brought me formula **without me asking for it**

20.8% - Staff fed my baby formula **without me asking for it**

CDC

Texas WIC Infant Feeding Practices Survey 2013

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## Step 7

*Enable mothers and their infants to remain together and to practice rooming-in 24 hours a day.*



Mannell, OUI Medical Center

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## Step 8

Support mothers to recognize and respond to their infants' cues for feeding.



Feed on cue of baby - any sign of hunger cues  
No time limits on breast  
Avoid "scheduled" feeds - baby sets the schedule  
Keep sleepy babies skin to skin

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## Breastfeeding Leads to Self-Regulation

Exclusive breastfeeding at breast → 27%

Expressed breast milk in bottle → 47%

Combination breastfeeding  
Formula feeding,  
Breast/bottle → 56%

All formula in a bottle → 68%

How often does your infant empty the bottle/cup after 7 months of age?

Pediatrics. 2010 Jun;125(6):e1386-93. 2010.

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## Step 9

Counsel mothers on the use and risks of feeding bottles, artificial nipples (teats) and pacifiers.



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## Step 10

*Coordinate discharge so that parents and their infants have timely access to ongoing support and care.*



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The Oklahoma Breastfeeding Resource Center invites you to join | El Centro de Recursos de Lactancia Materna de Oklahoma le invita a unirse al

Moms' Milk Circle  
(Círculo de Leche de Mama)

Moms Milk Circle

Join us on Zoom:  
1st Tuesdays at 12pm  
3rd Thursdays at 12pm



SCAN TO REGISTER

A free virtual breastfeeding support group created to uplift, inform, and inspire nursing moms just like you!

What to Expect:

- Caring, expert-led info from lactation consultants
- Meet fellow moms
- Live, judgment-free zone
- Open Question and Answer time
- Access to free resources



Círculo de la leche de mamá

Unirse en Zoom:

2do Martes del Mes a las 12pm



ESCANEA PARA REGISTRARTE

Un grupo virtual gratuito de apoyo a la lactancia materna creado para elevar, informar e inspirar a mamás lactantes como tú.

Qué puedes esperar:

- Información útil y experta de consultoras de lactancia
- Conoce a otras mamás
- Espacio en vivo y libre de juicios
- Tiempo abierto para preguntas y respuestas
- Acceso a recursos gratuitos

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### Free Breastfeeding Services

From the Oklahoma Breastfeeding Resource Center



#### Oklahoma Breastfeeding Hotline

Call: 1-877-271-6455 (MILK)  
Text: OK2BF to 61222

#### Breastfeeding Telehealth

Monday - Friday

#### Virtual Support Groups

English & Spanish

#### Online Breastfeeding Lesson

English & Spanish

#### Hotline PreCheck

Hotline's "check in" text around your due date!

All services are offered by breastfeeding experts, International Board Certified Lactation Consultants.



### Servicios Gratuitos de Lactancia

Del Centro de Recursos de Lactancia Materna de Oklahoma



#### Línea directa de lactancia materna de Oklahoma

Llamar: 1-877-271-6455 (MILK)  
Texto: OK2BF to 61222

#### Citas Virtuales de Lactancia

Lunes - Viernes

#### Grupos de apoyo virtuales

Inglés y español

#### Lección de lactancia materna en línea

Inglés y español

#### Línea Directa PreCheck

¡Mensaje de "registro" de la línea directa cerca de tu fecha de parto!

Todos los servicios son ofrecidos por expertas en lactancia, consultoras en lactancia certificadas por la Junta Internacional.

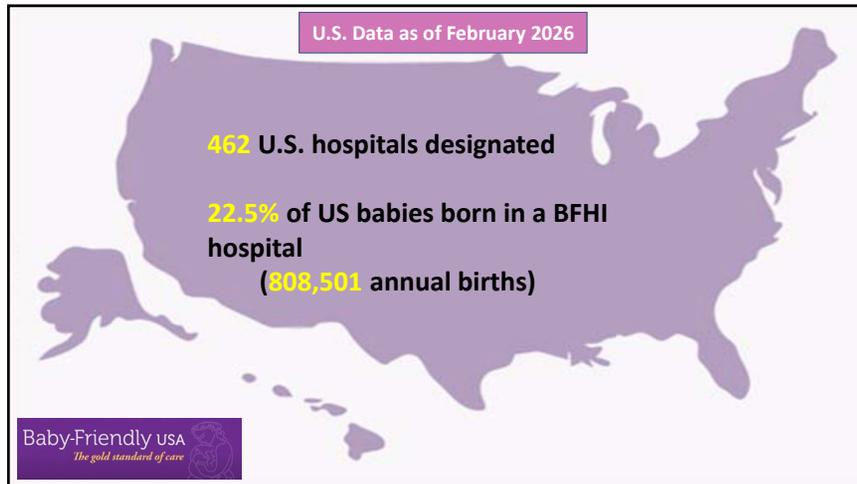


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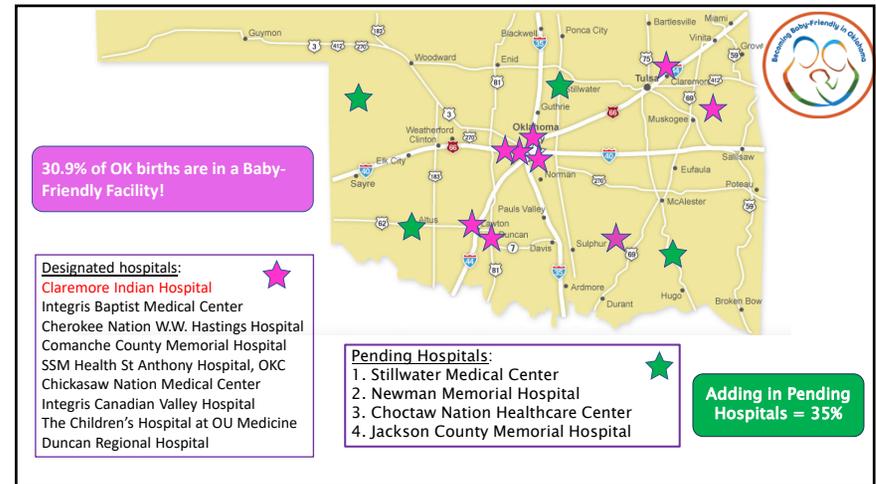
## Oklahoma mPINC 2024 Data

Measure	Oklahoma Hospitals with Ideal Response
Routine newborn exams, procedures, and care occur in the mother's room	39%
When breastfeeding mothers request infant formula, staff counsel them about possible consequences	32%
Few breastfeeding newborns receive infant formula	29%
Nurses are required to demonstrate competency in assessing breastfeeding (milk transfer & maternal pain), assisting with breastfeeding (position & latch), teaching hand expression & safe formula preparation/feeding, & demonstrating safe skin-to-skin practices.	66%
Hospital does NOT give mothers any of these items as free gifts or samples: Infant formula; feeding bottles/nipples, nipple shields, or pacifiers; coupons, discounts, or educational materials from companies that make/sell infant formula/feeding products	58%

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### Baby-Friendly Oklahoma Partners

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### BBFOK Video – Clip #1



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### BBFOK Video – Clip #2



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### Review

- Name 1 of the 10 steps that you think moms would really like.
- Name 1 of the 10 steps that you think is hard to change.



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*Mothers want to breastfeed, and they need all of us to help*



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