# BREASTFEEDING: THE BASICS AND BEYOND

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# Objectives

1. Discuss health benefits for the lactating parent and infant, including the cost of suboptimal breastfeeding rates
2. Review the current state of breastfeeding in Idaho and the United States
3. Review the WHO 10 Steps to successful breastfeeding
   * Highlight the role of skin to skin and donor milk in the newborn nursery
4. Review Steps to support breastfeeding initiation and continuation
5. Discuss common misconceptions by health care providers

# Recognition of the importance of language and inclusivity

- Terms such as
  - Paternal
  - Father
  - Women
  - Mother
- Goal is to be inclusive and to report studies and findings accurately.
  - Example: If fathers were studied, may not be applicable to all partners in the gender spectrum

Image: https://www.linkedin.com/pulse/gender-inclusive-design-creating-spaces-all-nicole-wasuna/

# Health Benefits for Lactating Parent

- Uterine involution
- Less postpartum bleeding
- Less menstrual blood loss
- Natural child spacing
- Postpartum weight loss **(600cal/day)**
- Reduction of postmenopausal hip fracture
- Reduced risk of ovarian cancer
- Reduced risk of breast cancer
- Reduced risk of cardiovascular disease and stroke

Image: https://photos.hq.who.int/galleries/137

# Health Benefits for Infant

- Reduced risk of:
  - Allergies
  - Asthma
  - Diabetes
  - Obesity
  - Ear infections
  - Vomiting + diarrhea
  - Pneumonia
  - Leukemia + Lymphoma
  - Sudden Infant Death (SIDS)
  - Necrotizing Enterocolitis (NEC)

Image: https://www.healthychildren.org/English/ages-stages/baby/breastfeeding/Pages/Breastfeeding-Benefits-Your-Babys-Immune-System.aspx

# Surgeon General Call to Action 2011

## Appendix 2. Excess Health Risks Associated with Not Breastfeeding

| Outcome | Excess Risk* (%)(95% CI†) | Comparison Groups |
|---|---|---|
| *Among full-term infants* | | |
| Acute ear infections (otitis media)[2] | 100 (56, 233) | EFF‡ vs. EBF§ for 3 or 6 mos |
| Eczema (atopic dermatitis)[11] | 47 (14, 92) | EBF <3 mos vs. EBF ≥3 mos |
| Diarrhea and vomiting (gastrointestinal infection)[3] | 178 (144, 213) | Never BF¶ vs. ever BF |
| Hospitalization for lower respiratory tract diseases in the first year[4] | 257 (85, 614) | Never BF vs. EBF ≥4 mos |
| Asthma, with family history[2] | 67 (22, 133) | BF <3 mos vs. ≥3 mos |
| Asthma, no family history[2] | 35 (9, 67) | BF <3 mos vs. ≥3 mos |
| Childhood obesity[7] | 32 (16, 49) | Never BF vs. ever BF |
| Type 2 diabetes mellitus[6] | 64 (18, 127) | Never BF vs. ever BF |
| Acute lymphocytic leukemia[2] | 23 (10, 41) | Never BF vs. >6 mos |
| Acute myelogenous leukemia[5] | 18 (2, 37) | Never BF vs. >6 mos |
| Sudden infant death syndrome[2] | 56 (23, 96) | Never BF vs. ever BF |
| *Among preterm infants* | | |
| Necrotizing enterocolitis[2] | 138 (22, 2400) | Never BF vs. ever BF |
| *Among mothers* | | |
| Breast cancer[8] | 4 (3, 6) | Never BF vs. ever BF (per year of breastfeeding) |
| Ovarian cancer[2] | 27 (10, 47) | Never BF vs. ever BF |

* The excess risk is approximated by using the odds ratios reported in the referenced studies.
† CI = confidence interval.
‡ EFF = exclusive formula feeding.
§ EBF = exclusive breastfeeding.
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2. Ip S, Chung M, Raman G, Chew P, Magula N, DeVine D, et al. Breastfeeding and maternal and infant health outcomes in developed countries: evidence report/ technology assessment no. 153. Rockville, MD: Agency for Healthcare Research and Quality; 2007. AHRQ Publication No. 07-E007.

8. Collaborative Group on Hormonal Factors in Breast Cancer. Breast cancer and breastfeeding: collaborative reanalysis of individual data from 47 epidemiological studies in 30 countries, including 50302 women with breast cancer and 96973 women without the disease. Lancet 2002;360:187–195.


PennState Health Children's Hospital

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# Risks of Formula Feeding

Increased Risk of:

- Gastrointestinal illness
- Respiratory illness
- Otitis Media
- Bacteremia & Meningitis
- Juvenile Diabetes
- Childhood Obesity


Family deserve information to make an informed decision about how to feed their infant

Image: http://harmsprogram.ca/harms-program/9-managing-udt-results
https://www.stockvault.net/c/objects/money


Children who are
EXCLUSIVELY BREASTFED
for the first 6 months of life
are
14 times
more likely
TO SURVIVE
than
NON-BREASTFED
CHILDREN.
It's a BABY's
FIRST
IMMUNIZATION.
unicef
#BREASTFEEDING
Source: Source: A Promise Renewed, 2012

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™

Organizational Principles to Guide and Define the Child Health Care System and/or Improve the Health of all Children

CLINICAL PRACTICE GUIDELINE

# The Diagnosis and Management of Acute Otitis Media

**Key Action Statement 6C**

**Breastfeeding: Clinicians should encourage exclusive breastfeeding for at least 6 months. (Evidence Quality: Grade B, Rec. Strength: Recommendation)**

*Key Action Statement Profile: KAS 6C*

| Aggregate evidence quality | Grade B |
|---|---|
| Benefits | May reduce the risk of early AOM. Multiple benefits of breastfeeding unrelated to AOM. |
| Risk, harm, cost | None |
| Benefit-harm assessment | Preponderance of benefit. |
| Value judgments | The intervention has value unrelated to AOM prevention. |
| Intentional vagueness | None |
| Role of patient preferences | Some parents choose to feed formula. |
| Exclusions | None |
| Strength | **Recommendation** |

# Breastfeeding protects infants from antibiotic-resistant bacteria

*Date:* October 17, 2018

*Source:* University of Helsinki

*Summary:* A new study shows that infants that are breastfed for at least six months have less antibiotic-resistant bacteria in their gut compared with babies breastfed for a shorter time. On the other hand, antibiotic use by mothers increases the number of antibiotic-resistant bacteria in infants.

*Share:*

# Breastfeeding protects infants from antibiotic-resistant bacteria

Date:

Source:

Summary:

Share:

BJOG. 2016 May;123(6):983-93. doi: 10.1111/1471-0528.13601. Epub 2015 Sep 28.

## Impact of maternal intrapartum antibiotics, method of birth and breastfeeding on gut microbiota during the first year of life: a prospective cohort study.

Azad MB[1,2], Konya T[3], Persaud RR[4], Guttman DS[5], Chari RS[6], Field CJ[7], Sears MR[8], Mandhane PJ[1], Turvey SE[9], Subbarao P[10], Becker AB[2], Scott JA[3], Kozyrskyj AL[1]; CHILD Study Investigators.

⊕ Collaborators (35)

⊕ Author information

**Abstract**

**OBJECTIVE:** Dysbiosis of the infant gut microbiota may have long-term health consequences. This study aimed to determine the impact of maternal intrapartum antibiotic prophylaxis (IAP) on infant gut microbiota, and to explore whether breastfeeding modifies these effects.

**DESIGN:** Prospective pregnancy cohort of Canadian infants born in 2010-2012: the Canadian Healthy Infant Longitudinal Development (CHILD) Study.

**SETTING:** General community.

**SAMPLE:** Representative sub-sample of 198 healthy term infants from the CHILD Study.

**METHODS:** Maternal IAP exposures and birth method were documented from hospital records and breastfeeding was reported by mothers. Infant gut microbiota was characterised by Illumina 16S rRNA sequencing of faecal samples at 3 and 12 months.

**MAIN OUTCOME MEASURES:** Infant gut microbiota profiles.

**RESULTS:** In this cohort, 21% of mothers received IAP for Group B Streptococcus prophylaxis or pre-labour rupture of membranes; another 23% received IAP for elective or emergency caesarean section (CS). Infant gut microbiota community structures at 3 months differed significantly with all IAP exposures, and differences persisted to 12 months for infants delivered by emergency CS. Taxon-specific composition also differed, with the genera Bacteroides and Parabacteroides under-represented, and Enterococcus and Clostridium over-represented at 3 months following maternal IAP. Microbiota differences were especially evident following IAP with emergency CS, with some changes (increased Clostridiales and decreased Bacteroidaceae) persisting to 12 months, particularly among non-breastfed infants.

**CONCLUSIONS:** Intrapartum antibiotics in caesarean and vaginal delivery are associated with infant gut microbiota dysbiosis, and breastfeeding modifies some of these effects. Further research is warranted to explore the health consequences of these associations.

**TWEETABLE ABSTRACT:** Maternal #antibiotics during childbirth alter the infant gut #microbiome.


# Breastfeeding Support and Promotion as a form of ANTIBIOTIC STEWARDSHIP!

Image: https://www.racp.edu.au/docs/default-source/events/congress-2019-presentations/racp-mon-6-natalie--morgan.pdf?sfvrsn=1496181a_2

# Breastfeeding is the foundation of primary prevention

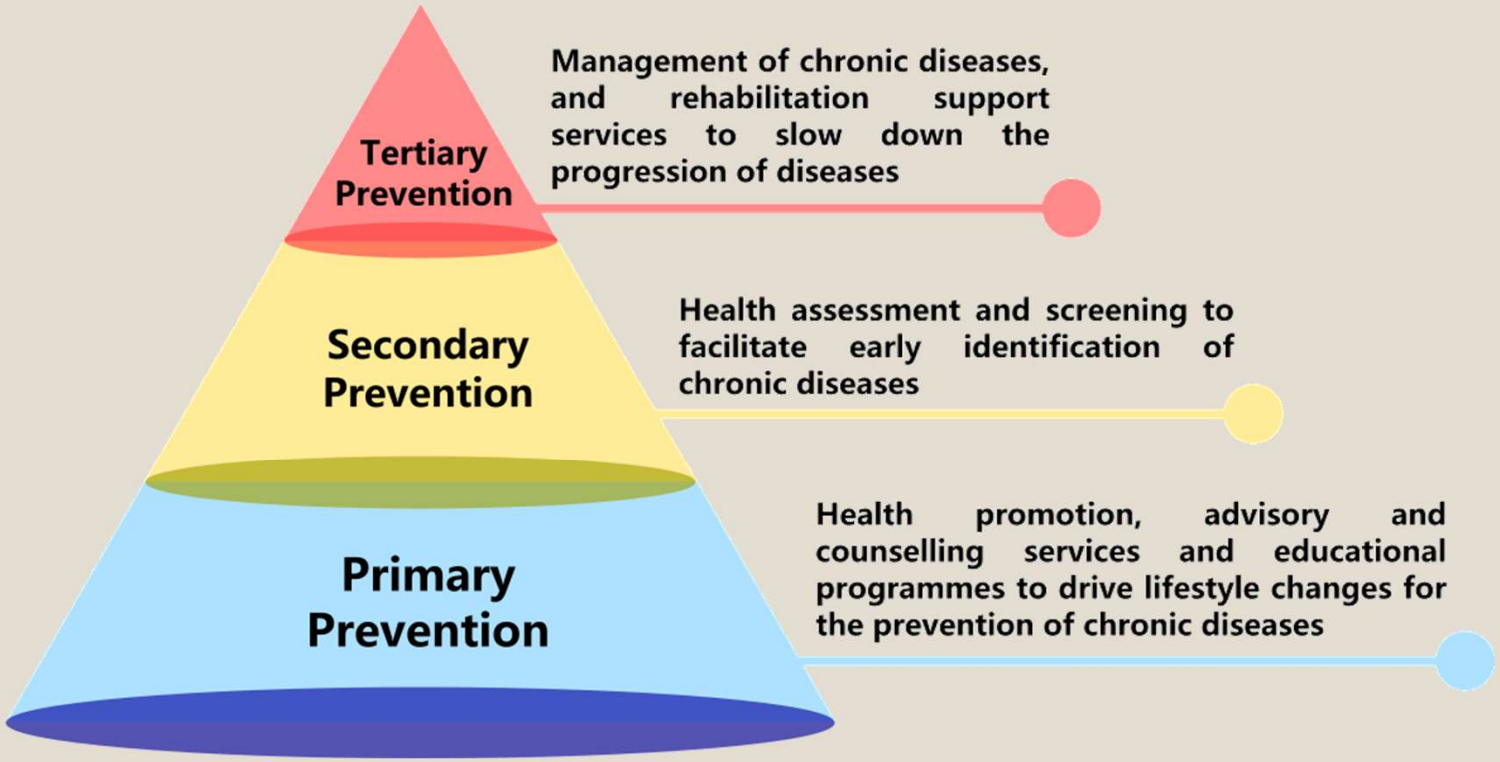


Image credit: https://www.dhc.gov.hk/en/what_is_primary_healthcare.html

# Cost of Suboptimal Breastfeeding

**98,000+**

**cases of diarrhea and pneumonia.**

Children who are not breastfed are more likely to drink unclean water (in formula) and have less developed immune systems. This means they are more prone to contracting diarrhea-causing pathogens and pneumonia. The effects can be life-long.

**$28M+**

**in health care system treatment costs.**

When children are not breastfed, both children and mothers are more likely to get sick and need to seek out treatment. This results in significant treatment costs for health systems.

**Health Systems**

In USA, health systems incur costs when treating illnesses that could have been prevented by breastfeeding.

| | |
|---|---|
| Type II diabetes in mothers | Not Available |
| Diarrhea in children | $1,826,502 |
| Acute respiratory infection/pneumonia in children | $26,443,932 |
| Total in USD | $28,270,434 |

**Formula**

When families do not breastfeed their children, they need to purchase formula. This results in the following household costs.

| | |
|---|---|
| In USD | $214,471,201 |

https://www.aliveandthrive.org/en/country-stat/usa




## *Breastfeeding Rates*

See how Idaho breastfeeding rates and other measures compare to national rates and targets set by the Healthy People 2030 (HP2030) initiative.

| | Breastfeeding Initiation Rate | Largest Disparity Between Racial/Ethnic Groups |
|---|---|---|
| **Idaho** | 92.2% | 18.7% |
| **U.S. National** | 84.1% | 16.7% |

*Source: National Vital Statistics System birth certificate data, a census of all 2019 births and the largest collection of breastfeeding data. Breastfeeding initiation is measured as a percentage. Largest disparity in breastfeeding initiation between racial/ethnic groups is measured as a percentage difference.*

| | Exclusive Breastfeeding at 6 Months | Any Breastfeeding at 12 months | Formula Supplementation at 2 Days |
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| **Idaho** | 30.4% | 40.7% | 15.9% |
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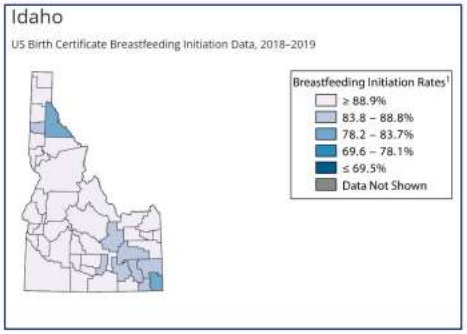
| **HP2030 Target** | 42.4% | 54.1% | N/A |

*Source: CDC Breastfeeding Report Card, a biannual publication highlighting progress towards breastfeeding goals in the United States. Breastfeeding and supplementation rates are measured as a percentage.*

State and territorial breastfeeding rates provide important insights about how families are supported, but data shows that there are significant disparities across counties.

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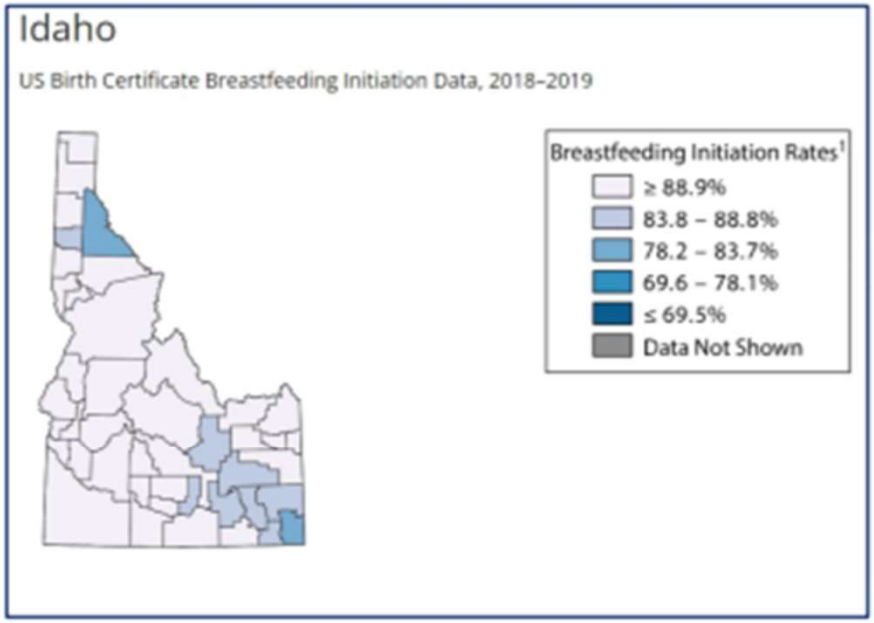


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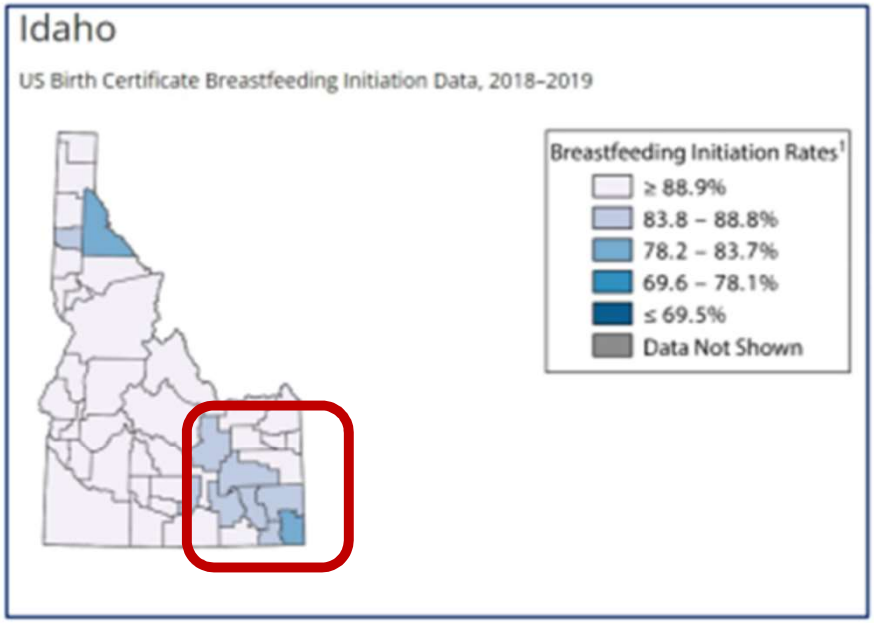


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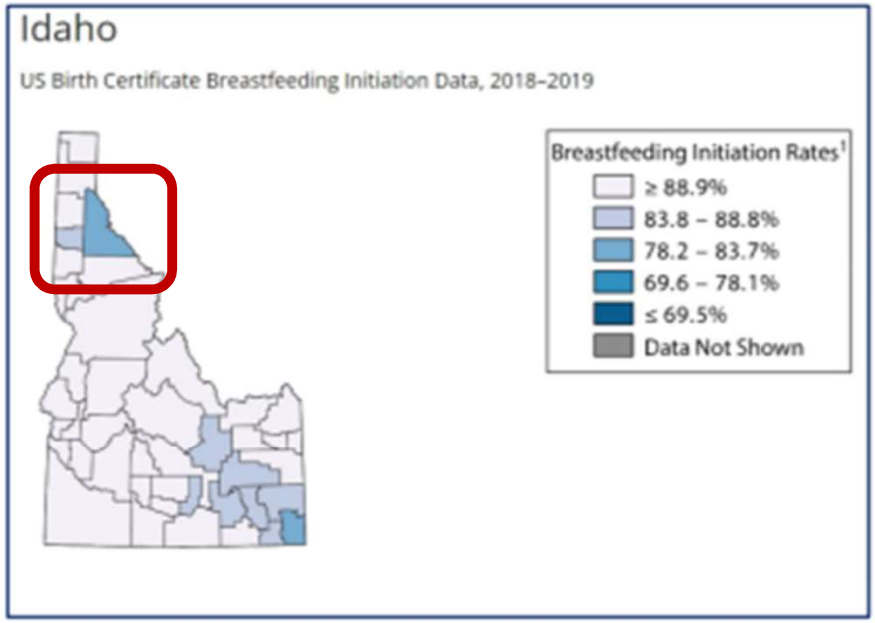


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# HOW CAN YOU HELP?

# The TEN STEPS to Successful Breastfeeding







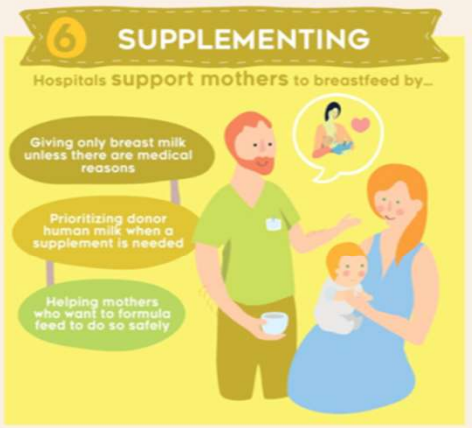




World Health Organization

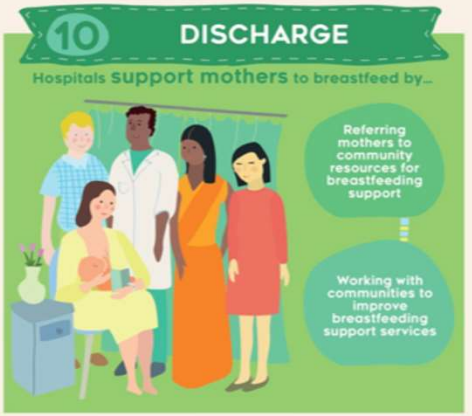
unicef


https://www.who.int/teams/nutrition-and-food-safety/food-and-nutrition-actions-in-health-systems/ten-steps-to-successful-breastfeeding








World Health Organization

unicef

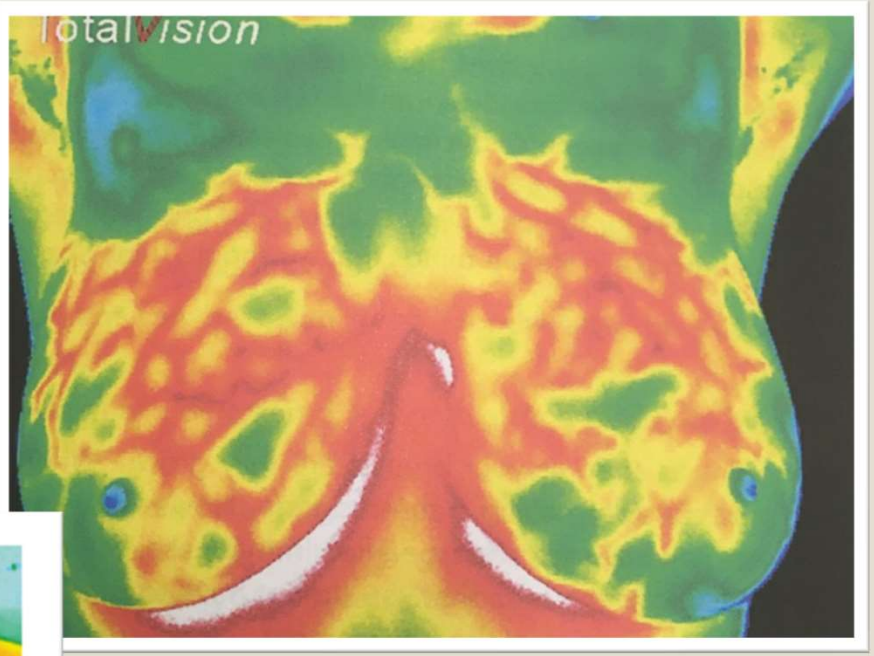
# Evidence behind WHO recommendations # 4: Skin to Skin

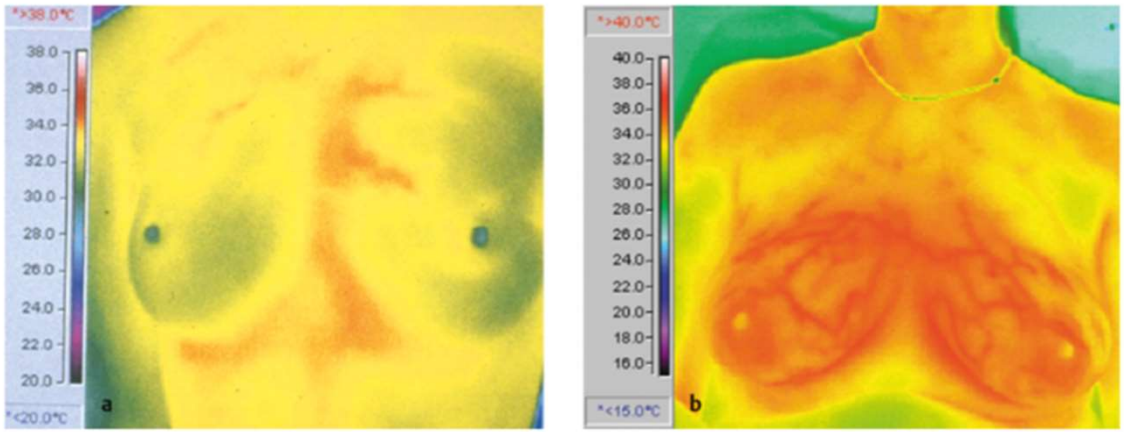
**Goal is uninterrupted skin to skin for at least one hour after delivery until the end of the first breastfeeding session**

- Stabilizes infant blood glucose, temperature, heart rate, breathing rate
- Triggers infant feeding instincts and helps enable the first breastfeeding session
  - Infants allowed to remain in skin to skin more likely to breastfeed successfully during first feed[1,2]
- Skin-to-skin contact increases breastfeeding duration and exclusivity, even after Cesarean deliveries[1,3]
- Paternal Skin-to-Skin contact after Cesarean Delivery[4]
  - Stabilized newborn heart rate, temperature, reduced crying, started feeding behavior at earlier timepoint and had longer breastfeeding duration
  - Lower scores for anxiety, depression and better role attainment than control group
- Cochrane Review (2016): Infants had higher blood glucose levels
  - The mean blood glucose mg/dL at 75 to 180 minutes post birth in the intervention group was 10.49 mg/dL more (8.39 more to 12.59 more)
    - "Our review found evidence for a clinically meaningful increase in blood glucose in infants who received SSC."[1]
- Reduction in NICU admission for hypoglycemia management[5]

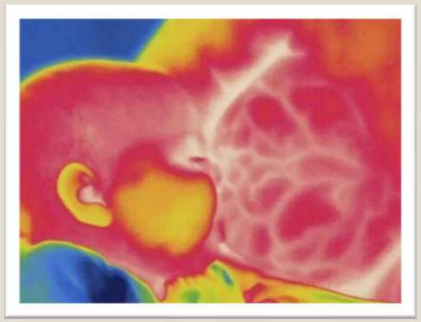
[1]Moore ER, Bergman N, Anderson GC, Medley N. Early skin-to-skin contact for mothers and their healthy newborn infants. Cochrane Database of Systematic Reviews 2016, Issue 11. Art. No.: CD003519. DOI: 10.1002/14651858.CD003519.pub4.
[2]https://www.unicef.org.uk/babyfriendly/baby-friendly-resources/implementing-standards-resources/skin-to-skin-contact/#:~:text=calms%20and%20relaxes%20both%20mother,regulates%20temperature
[3]Li et al. (2020). Assn between early essential newborn care and breastfeeding outcomes in eight countries in Asia and the Pacific: A cross-sectional observational study. *BMJ Global Health*, *5*(8),e002581.
[4] Huang et al. Effects of Paternal Skin-to-Skin Contact in Newborns and Fathers After Cesarean Delivery. The Journal of Perinatal & Neonatal Nursing 33(1):p 68-73, January/March 2019. | DOI: 10.1097/JPN.0000000000000384
[5]Chiruvolu A, Miklis KK, Stanzo KC, Petrey B, Groves CG, McCord K, Qin H, Desai S, Tolia VN. Effects of Skin-to-Skin Care on Late Preterm and Term Infants At-Risk for Neonatal Hypoglycemia. Pediatr Qual Saf 2017;2:e030

# Skin to Skin – Thermal Imaging




Thermal images of the breasts of (a) non-lactating and (b) lactating women (red 38 °C, green 31 °C). (from Kent J.C., Hartmann, P.E. 1995 Unpublished data.)



- **Biologic nurturing/laid back breastfeeding**
  - Stimulants newborn reflexes
  - Baby lead latch
    - Improved latch
    - Reduce breast problems (sore nipples)
    - Facilitates initiation of exclusive BF

**At discharge from Italian Maternity ward biological nurturing [2]**

1. Reduced risk of breast problems
2. Reduced cracked nipples
3. Reduced sore nipples
4. No adverse events

Image: https://llli.org/breastfeeding-info/positioning/

- **Impact of swaddling on feeding[1]**
  - Infants swaddled immediately after birth show a delay in initial breastfeeding
  - Less successful suckling at the breast
  - Reduced intake of breastmilk and greater weight loss compared to un-swaddled babies.
  - Swaddling visually obscures feeding cues and reduces crying, thereby eliminating two key feeding prompts

[1] Dixley A, Ball HL. The impact of swaddling upon breastfeeding: A critical review. Am J Hum Biol. 2023 Jun;35(6):e23878. doi: 10.1002/ajhb.23878. Epub 2023 Feb 14. PMID: 36787374; PMCID: PMC10909524.
[2] Milinco, M., Travan, L., Cattaneo, A. *et al.* Effectiveness of biological nurturing on early breastfeeding problems: a randomized controlled trial. *Int Breastfeed J* **15**, 21 (2020). https://doi.org/10.1186/s13006-020-00261-4
Image: https://www.breastmilkcounts.com/breastfeeding-basics/skin-to-skin/

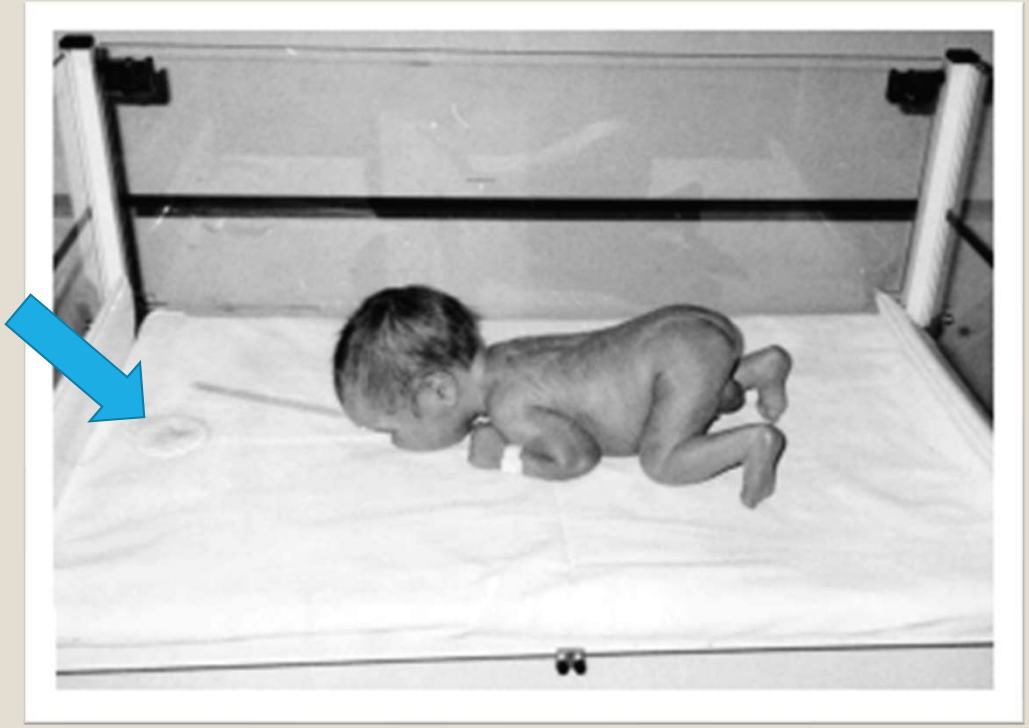
# Smell and breastfeeding

- "Odors emanating from the breasts of lactating women appear to function as general attractants for babies, (Porter et al., 1992)"
- The smell of mother's breastmilk reduced newborn pain during heel-stick blood sampling compared to formula fed infants[1]
  - Odor of breastmilk reduced the impact of stress on heartrate and oxygen saturation
- The smell of breastmilk also reduces transition time to oral feeding in premature infants and shortens duration of parenteral (tube feeding) nutrition[2]


[1]Tasci. (2020) The calming effect of maternal breast milk odor on term infant. *Breastfeeding Medicine*. 15(11).
[2]Qin, Y., Liu, S., Yang, Y. *et al.* Effects of human milk odor stimulation on feeding in premature infants: a systematic review and meta-analysis. *Sci Rep* **14**, 8964 (2024). https://doi.org/10.1038/s41598-024-59175-4
Image: https://www.breastmilkcounts.com/breastfeeding-basics/skin-to-skin/

# Smell and breastfeeding

- Newborns preferentially move toward a mother's unwashed breast rather than a washed/rinsed breast
- Lipoid fluid secreted by areolar (Montgomery glands) has certain smell that attracts the baby
- Composition similar to amniotic fluid "chemo signaling"

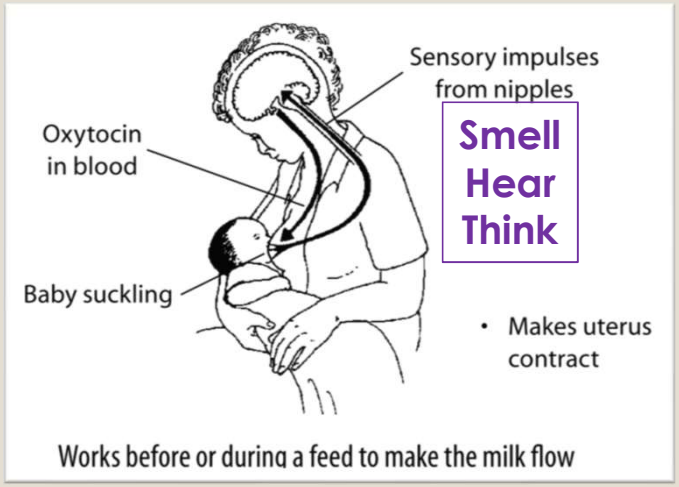


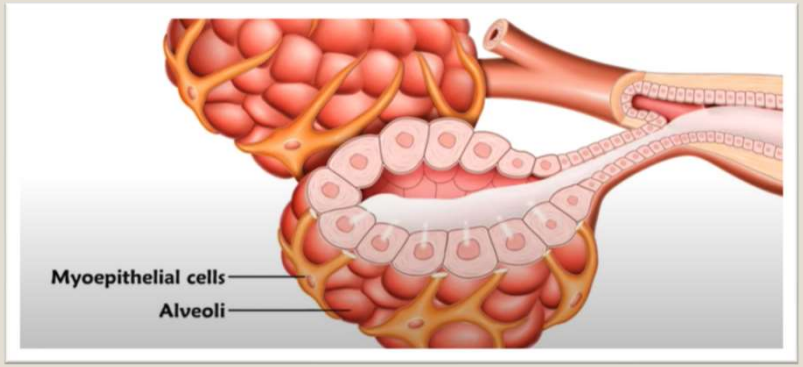
Varendi H, Porter RH. Breast odour as the only maternal stimulus elicits crawling towards the odour source. Acta Paediatr. 2001 Apr;90(4):372-5. PMID: 11332925.

# Smell and Breastfeeding

- Why do mother's smell their baby?
  - Trigger release of oxytocin
  - Promotes uterine contraction
  - Promotes milk ejection (contracts myoepithelial cells)
  - Reduces anxiety, depression and stress

- Activates dopamine pathways
  - Stimulate reward centers of their brain




Infant and Young Child Feeding: Model Chapter for Textbooks for Medical Students and Allied Health Professionals. Geneva: World Health Organization; 2009. SESSION 2, The physiological basis of breastfeeding. Available from: https://www.ncbi.nlm.nih.gov/books/NBK148970/

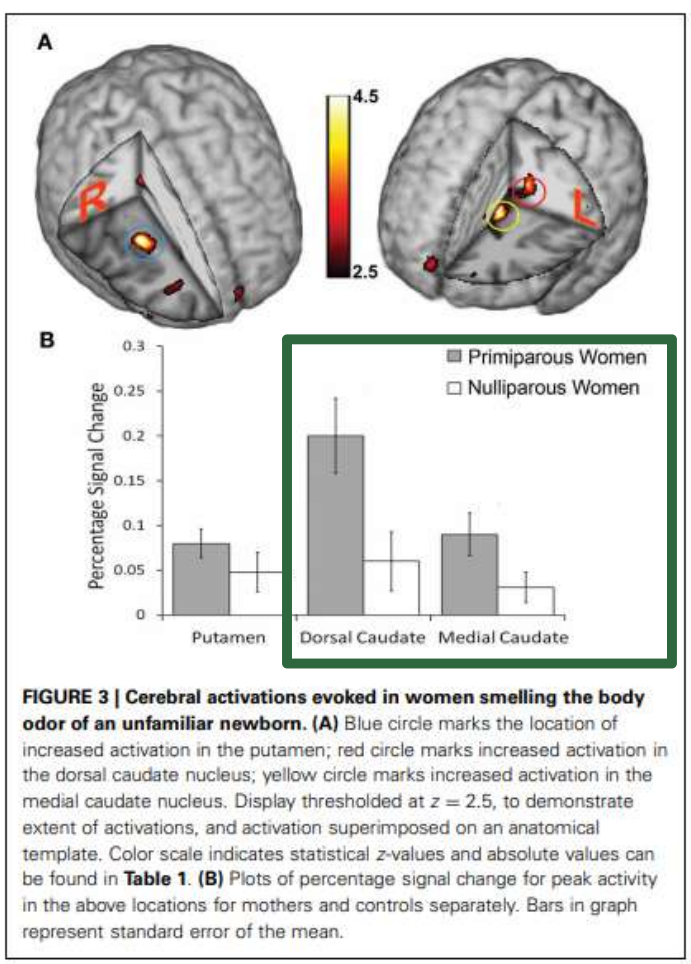



**FIGURE 3 | Cerebral activations evoked in women smelling the body odor of an unfamiliar newborn. (A)** Blue circle marks the location of increased activation in the putamen; red circle marks increased activation in the dorsal caudate nucleus; yellow circle marks increased activation in the medial caudate nucleus. Display thresholded at $z = 2.5$, to demonstrate extent of activations, and activation superimposed on an anatomical template. Color scale indicates statistical $z$-values and absolute values can be found in **Table 1**. **(B)** Plots of percentage signal change for peak activity in the above locations for mothers and controls separately. Bars in graph represent standard error of the mean.

*a 2 day-old newborn infant's body odor may convey cues that can motivate affect in parent or non-parent females to care for unrelated and unfamiliar infant alike

*cerebral reward learning networks are activated by the detection of an infant's body odor

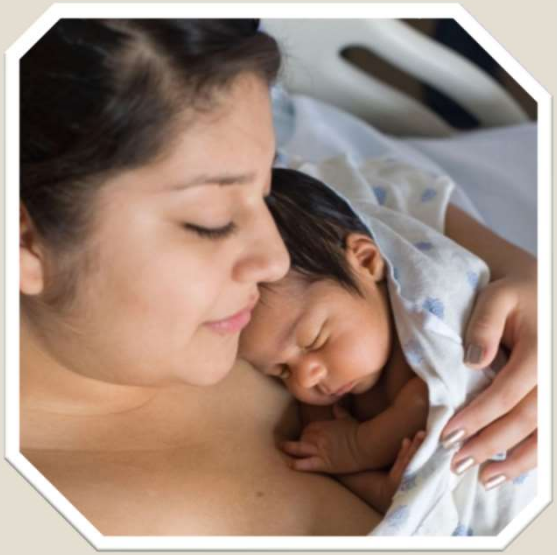
*higher response in dorsal caudate may ~ enhanced reward learning mechanism (aka mothers more tuned into the reinforcement process from interactions with their infants)

Lundström JN, Mathe A, Schaal B, Frasnelli J, Nitzsche K, Gerber J, Hummel T. Maternal status regulates cortical responses to the body odor of newborns. Front Psychol. 2013 Sep 5;4:597. doi: 10.3389/fpsyg.2013.00597. PMID: 24046759; PMCID: PMC3763193.

# Smell and Breastfeeding

- **World Health Organization[1]:**
  - Bathing should be delayed until 24 hours after birth.
  - ~vernix caseosa intact allowing it to wear off with normal care and handling

- **Delay of first bath from 2hr to >12hr[2]**
  - Increased in-hospital exclusive BF
  - Increase in use of human milk in post-discharge feeding plan



[1]WHO recommendations on postnatal care of the mother and newborn. https://apps.who.int/iris/bitstream/handle/10665/97603/9789241506649_eng.pdf
[2]DiCioccio HC, Ady C, Bena JF, Albert NM. Initiative to Improve Exclusive Breastfeeding by Delaying the Newborn Bath. J Obstet Gynecol Neonatal Nurs. 2019 [4]Mar;48(2):189-196. doi: 10.1016/j.jogn.2018.12.008. Epub 2019 Jan 21. PMID: 30677407.

# Evidence behind WHO recommendations

## #6 Supplementation

- In-hospital formula feeding linked to greater than 2.5 to 6x increase in risk of early cessation of BF[1]
- Role for donor milk in medically necessary supplementation[2]
  - May improve glucose level more than formula
  - Reduce formula exposure and health risks
  - Improve breastfeeding exclusivity
    - Donor milk had 5x odds of exclusive BF at 6 months


**The impact on the exclusive breastfeeding rate at 6 months of life of introducing supplementary donor milk into the level 1 newborn nursery**

Nawal Merjaneh[1] · Patty Williams[1] · Sandy Inman[1] · Mandy Schumacher[1] · Anuta Ciurte[1] · Carmen Smotherman[1] · Rana Alissa[1] · Mark Hudak[1]

Received: 19 July 2019 / Revised: 16 February 2020 / Accepted: 11 March 2020 / Published online: 30 March 2020


**Abstract**

**Objectives** This study explored whether donor-milk supplementation increases breastfeeding exclusivity at 6 months of life. In 10/2015, we implemented donor milk for breastfed newborns who needed nutritional supplements for hypoglycemia, hyperbilirubinemia, and >8% weight loss at 40 h of life.

**Study design** We conducted a retrospective chart review on 122 qualified neonates admitted to newborn nursery at University of Florida Jacksonville 4 months before donor-milk implementation and 6 months after.

**Results** 73 (60%) of the neonates received formula and 49 (40%) received donor milk. 39 (54%) in the formula group and 33 (46%) in the donor-milk group were surveyed after 6 months of life. Multivariate logistic regression showed that newborns who received donor milk had five times greater odds of being exclusively breastfed at 6 months of life.

**Conclusions** Donor milk as feeding supplementation for newborns is associated with increased exclusive breastfeeding at 6 months of life.

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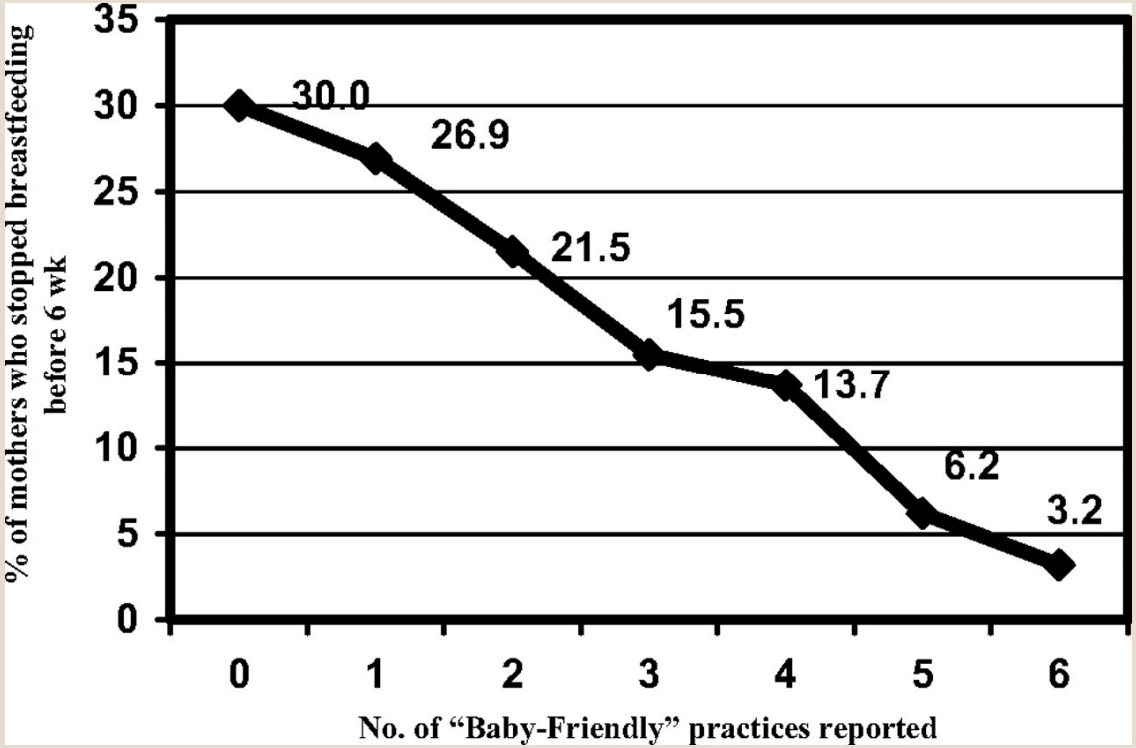
**Conclusions** Donor milk as feeding supplementation for newborns is associated with increased exclusive breastfeeding at 6 months of life.

[1]Feldman-Winter. In-Hospital Formula Feeding and Breastfeeding Duration. *Pediatrics* 2020. and In-Hospital Formula Feeding and Breastfeeding Duration," (McCoy MB, Heggie P. *Pediatrics*. June 9, 2020, https://doi.org/10.1542/peds.2019-29
[2]Merjaneh, N., Williams, P., Inman, S. *et al*. The impact on the exclusive breastfeeding rate at 6 months of life of introducing supplementary donor milk into the level 1 newborn nursery. *J Perinatol* **40**, 1109–1114 (2020). https://doi.org/10.1038/s41372-020-0657-6

# Best Practices to Support BF initiation + continuation




**Among women who initiated breastfeeding and intended to breastfeed for >2 months, percentage who stopped breastfeeding before 6 weeks according to the number of Baby-Friendly Hospital Initiative practices they experienced.**

**Ann M. DiGirolamo et al. Pediatrics 2008;122:S43-S49**

# Evidence based strategies

- **Promote safe skin to skin**
  - As much as possible after delivery, during hospital stay and at home
  - For infants on blood glucose monitoring protocols
  - During painful procedures such as Hep B injection and heel-stick blood sampling
- **Refer to lactation consult in hospital and resources for when home**
- **Make donor breastmilk available in your newborn nursery**
- **Avoid unnecessary supplementation with formula**
- **Consider the role that smell plays in infant feeding**
  - Avoid bathing the newborn until 24hr (per WHO)
  - Counsel post-partum lactating parents about bathing techniques for their chest wall

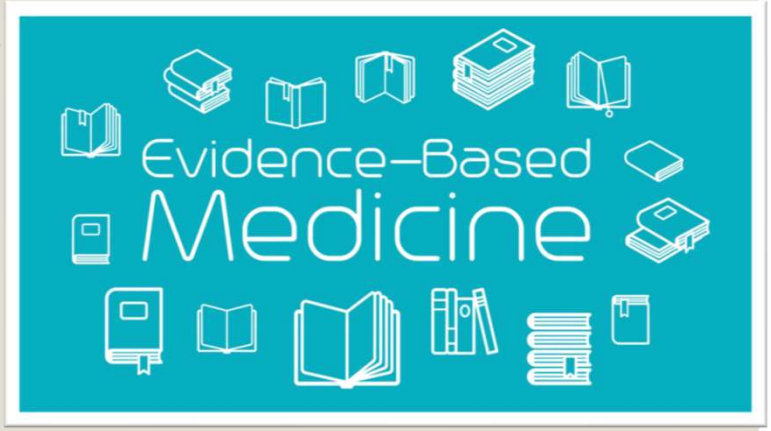
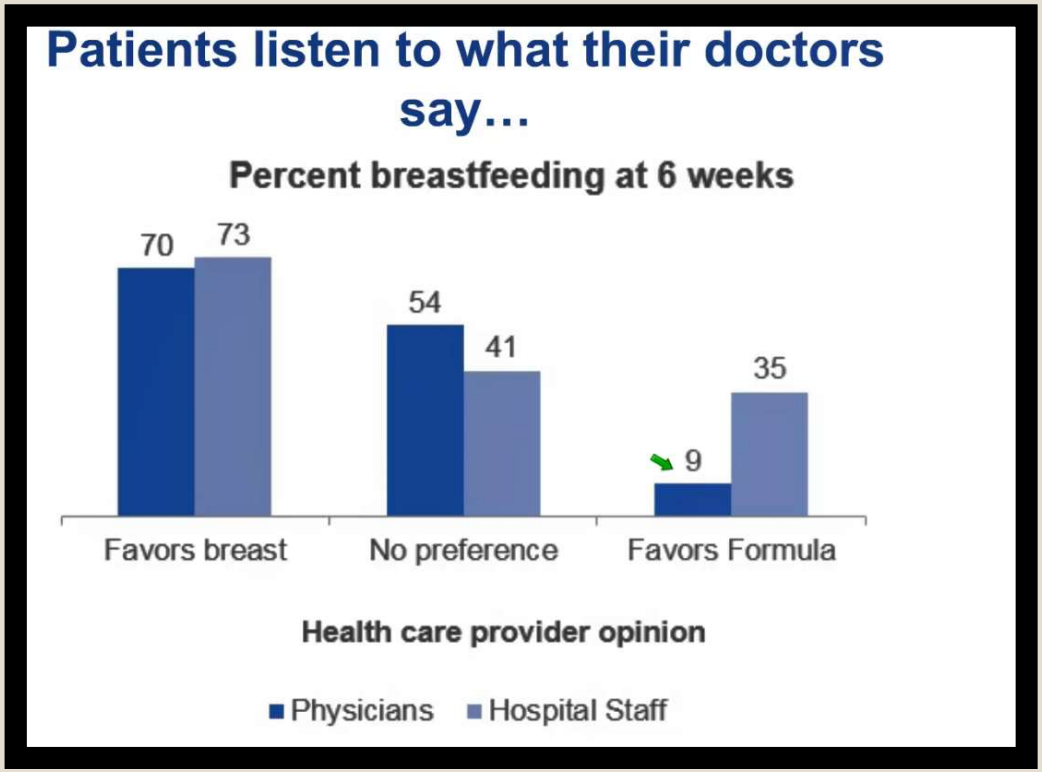



Image: https://www.vectorstock.com/

# SPEAK UP!
# WHAT YOU SAY MATTERS….




Stuebe AM. *Optimizing Support for Breastfeeding as Part of Obstetric Practice.* Albany School of Public Health May 2016
Summarizing DiGirolamo et al *Birth* 2003.

# Your recommendation is powerful

- Women who were encouraged to breast-feed were more than four times (relative risk 4.39) to initiate breast-feeding

- In populations traditionally less likely to breast-feed, provider encouragement significantly increased breast-feeding initiation,
  - more than 3-fold among low-income, young, and less-educated women
  - nearly 5-fold among black women
  - nearly 11-fold among single women

- Conclusion: "Provider encouragement significantly increases breast-feeding initiation among American women of all social and ethnic backgrounds."

Lu MC, Lange L, Slusser W, Hamilton J, Halfon N. Provider encouragement of breast-feeding: evidence from a national survey. Obstet Gynecol. 2001 Feb;97(2):290-5. doi: 10.1016/s0029-7844(00)01116-9. PMID: 11165597.
Image: https://www.cdc.gov/pregnancy/infections.html

# COMMON MISCONCEPTIONS OF HEALTHCARE PROVIDERS

# Common Misconceptions of Healthcare providers

- Safe formula prep advice: WHO vs. CDC and risk of bacterial contamination
- Contraindications to breastfeeding
- Parent living with HIV (detectable vs undetectable viral loads)
- Medications
- Anesthesia
- Cows Milk Protein Intolerance management

# Preparing formula in care settings

For infants at greatest risk, use sterile liquid infant formula.

## Clean & sterilize

Clean and sterilize all feeding and preparation equipment before using it.

**Why?** Cleaning and sterilizing kills harmful bacteria on equipment that may grow in the feed once it is prepared.


## Use water no cooler than 70°C

Use water that is no cooler than 70°C to prepare feeds from powdered infant formula.

**Why?** This temperature will kill harmful bacteria that may be present in powdered formula.

## Cool quickly and feed immediately

Once a feed is prepared, quickly cool to feeding temperature and feed immediately.

**Why?** The longer a feed is kept after it is prepared, the greater the chance that harmful bacteria will grow in it.

## Refrigerate feeds you want to use later

If you need to store feeds for use later - put them in the refrigerator (5°C or less).

**Why?** Low temperatures (5°C or less) will slow down or stop the growth of harmful bacteria.

## Throw out left-overs

Throw out feed that has not been consumed within two hours.

Throw out refrigerated feed that has not been used within 24 hours.

**Why?** The longer a feed is kept after it is prepared, the greater the chance that harmful bacteria will grow in it. Storing feeds in the refrigerator means that you can store them for a little bit longer.

World Health Organization

This document is published by the Department of Food Safety, Zoonoses and Foodborne Diseases, WHO, in collaboration with the Food and Agriculture Organization of the United Nations (FAO). E-mail: foodsafety@who.int, Web site: www.who.int/foodsafety



This poster was prepared in collaboration with the Food Safety Authority of Ireland.

# HOW TO PREPARE AND STORE **POWDERED INFANT FORMULA**

**ARE YOU FEEDING YOUR BABY POWDERED INFANT FORMULA?**

**Follow these steps** to prepare and store your infant formula safely and correctly


**STEP 1**

Make sure the formula is **not expired** and the container is **in good condition** (no dents, puffy ends, or rust spots).

**STEP 2**

**Clean the countertops and wash your hands** with soap and warm water before preparing bottles. Use a clean bottle and nipple.

**STEP 3**

**Use water from a safe source to mix with formula.** Tap water is usually safe, but contact your local health department if you are not sure.


**STEP 4**

Use the exact amount of water and formula listed on the instructions of the infant formula container. **Always measure the water first and then add the infant formula powder. NEVER dilute formula** by adding extra water. This can make your baby sick.

**STEP 5**

**Shake infant formula in the bottle to mix.** Do not stir.

**STEP 6**

**You do not need to warm infant formula before feeding.** If you decide to warm the formula, place the bottle under running warm water or into a bowl of warm water for a few minutes. Avoid getting water into the bottle or nipple. This could contaminate the prepared formula. Test the temperature of the formula before feeding it to your baby by putting a few drops on the inside of your wrist. **It should feel warm, not hot.**

***Never warm infant formula in a microwave. Microwaving creates hot spots, which can burn your baby's mouth.***

**STEP 7**

After feeding, be sure to **thoroughly clean the bottle and nipple before the next use.**

# Contraindications to Breastfeeding

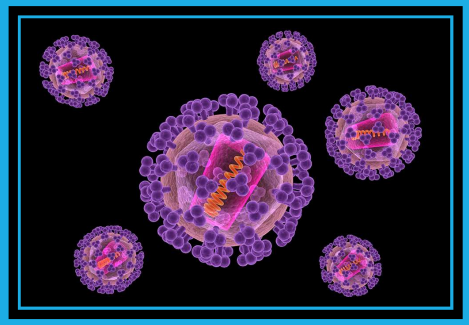
- Infant w galactosemia
- Mother (lactating parent) living with human T-cell lymphotropic virus type I or type II
- Illicit drug use/ marijuana?
- **HIV (in the United States) – no longer absolute contraindication**

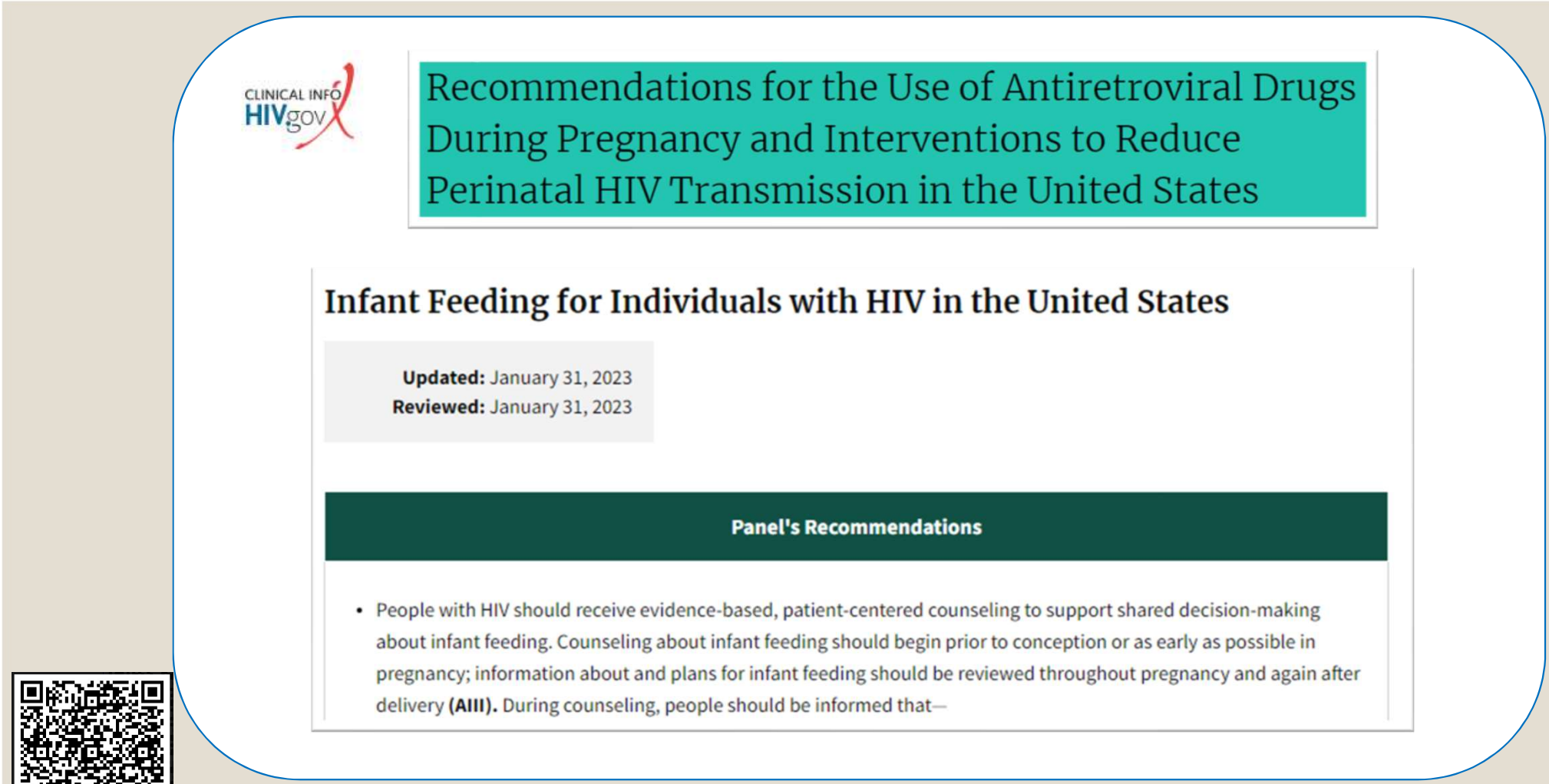
HIV+ status no longer an absolute contraindication to Breastfeeding!!

- Viral load must be undetectable
- Close follow up with their infectious disease team
- Able to take antiretrovirals

**Risk to infant – is low (<1%) but not zero**

Patient centered counseling about infant feeding options and shared decision making






https://clinicalinfo.hiv.gov/en/guidelines/perinatal/infant-feeding-individuals-hiv-united-states?view=full

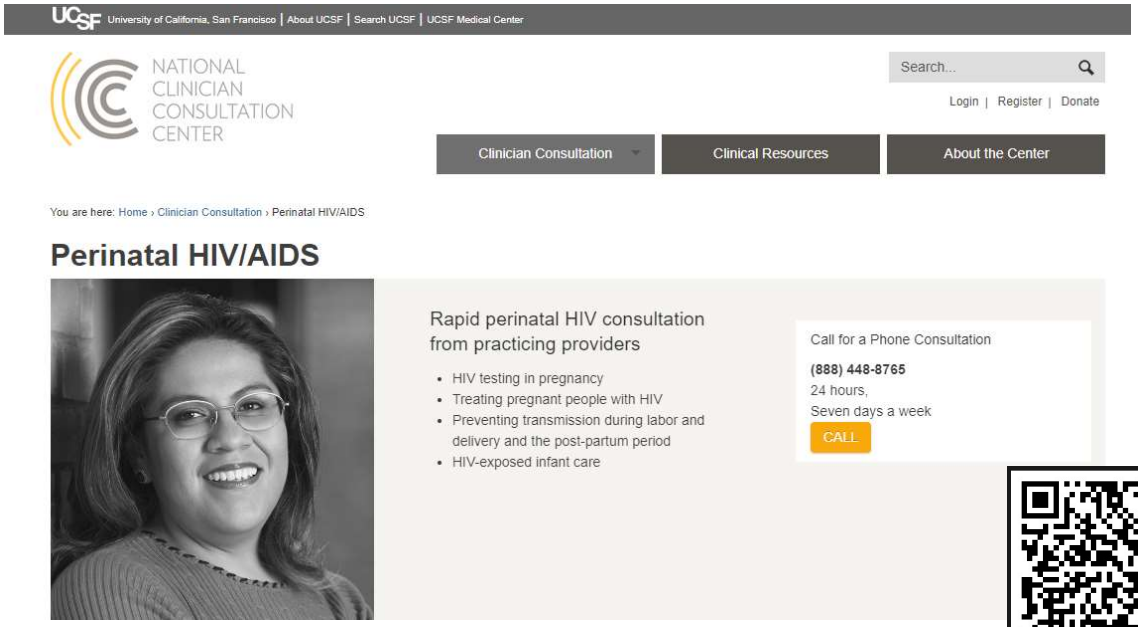
# Recommendations for the Use of Antiretroviral Drugs During Pregnancy and Interventions to Reduce Perinatal HIV Transmission in the United States

- Achieving and maintaining viral suppression through antiretroviral therapy (ART) during pregnancy and postpartum decreases breastfeeding transmission risk to less than 1%, but not zero **(AI).**
- Replacement feeding with formula or banked pasteurized donor human milk is recommended to eliminate the risk of HIV transmission through breastfeeding when people with HIV are not on ART and/or do not have a suppressed viral load during pregnancy (at a minimum throughout the third trimester), as well as at delivery **(AI).**
- Individuals with HIV who are on ART with a sustained undetectable viral load and who choose to breastfeed should be supported in this decision **(AIII).**
- Individuals with HIV who choose to formula feed should be supported in this decision. Providers should ask about potential barriers to formula feeding and explore ways to address them **(AIII).**

https://clinicalinfo.hiv.gov/en/guidelines/perinatal/infant-feeding-individuals-hiv-united-states?view=full

# Recommendations for the Use of Antiretroviral Drugs During Pregnancy and Interventions to Reduce Perinatal HIV Transmission in the United States

Clinicians are encouraged to consult the national Perinatal HIV/AIDS hotline (1-888-448-8765) with questions about infant feeding by individuals with HIV **(AIII).**



# Contraindications to Breastfeeding

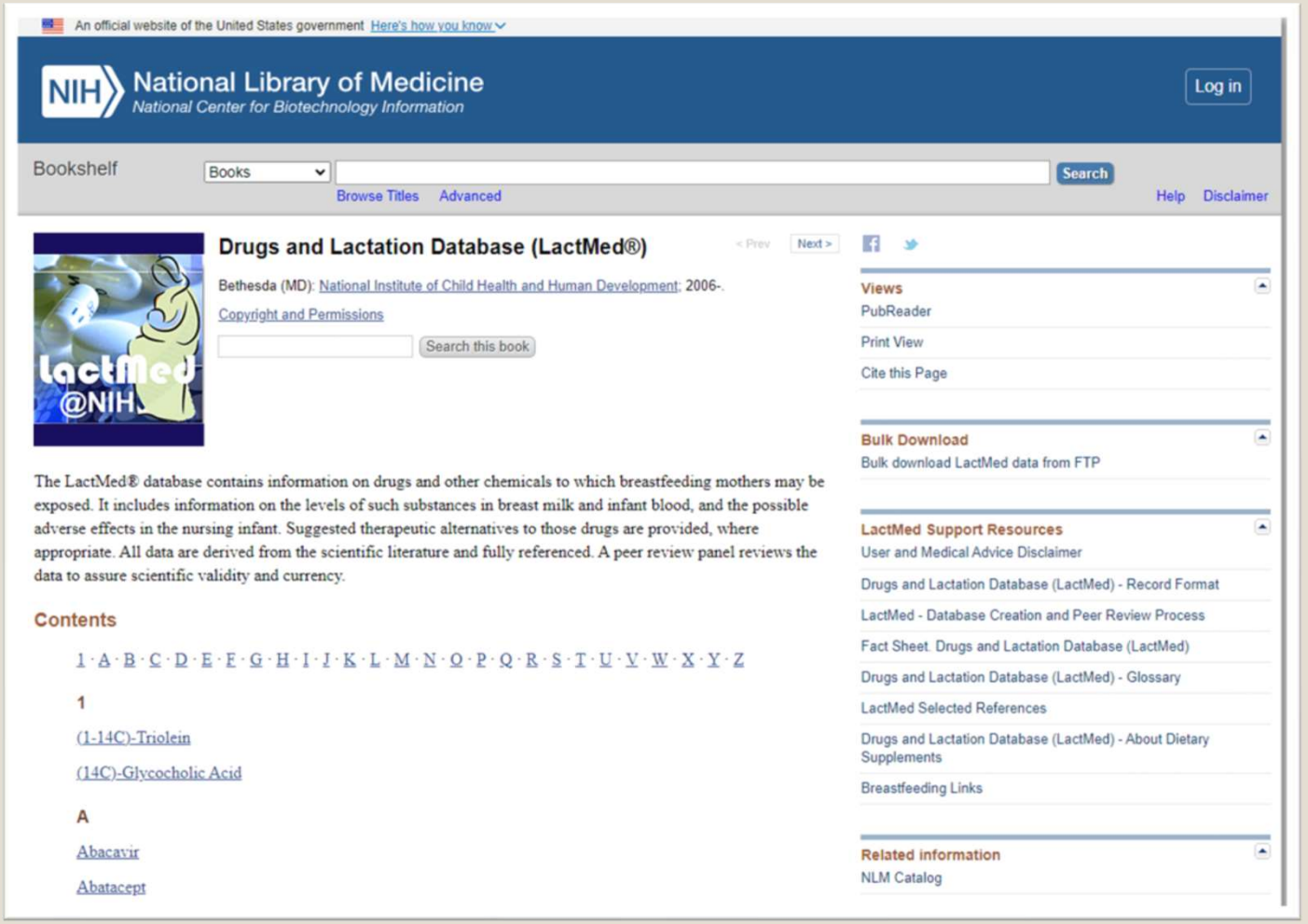
- **Unable to directly breastfeed, but expressed breastmilk can be provided**
  - Active tuberculosis
  - Varicella infection 5 days before through 2 days after delivery
  - Active herpes lesions on the breast (discard milk from affected side until healed)
- **Temporary cessation of breastfeeding/do not use expressed breastmilk**
  - Radiation therapy
  - Radioactive isotopes
  - Chemotherapy
  - Active brucellosis
  - Hepatitis C if bleeding at nipples?

**Can women with hepatitis C breastfeed their babies?**

Yes. There is no evidence that breastfeeding spreads hepatitis C, so infected women can safely breastfeed their babies. However, women with cracked or bleeding nipples should stop nursing temporarily until their nipples have healed. Hepatitis C is spread through contact with blood, and not enough is known about whether this practice is safe.

https://www.cdc.gov/knowmorehepatitis/HepatitisC-FAQ.htm


lactMed
@NIH


An official website of the United States government Here's how you know
NIH National Library of Medicine
National Center for Biotechnology Information
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The LactMed® database contains information on drugs and other chemicals to which breastfeeding mothers may be exposed. It includes information on the levels of such substances in breast milk and infant blood, and the possible adverse effects in the nursing infant. Suggested therapeutic alternatives to those drugs are provided, where appropriate. All data are derived from the scientific literature and fully referenced. A peer review panel reviews the data to assure scientific validity and currency.
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LactMed Selected References
Drugs and Lactation Database (LactMed) - About Dietary Supplements
Breastfeeding Links
Related information
NLM Catalog

BREASTFEEDING MEDICINE
Volume 12, Number 9, 2017

DOI: 10.1089/bfm.2017.29054.srt

***ABM Protocol***

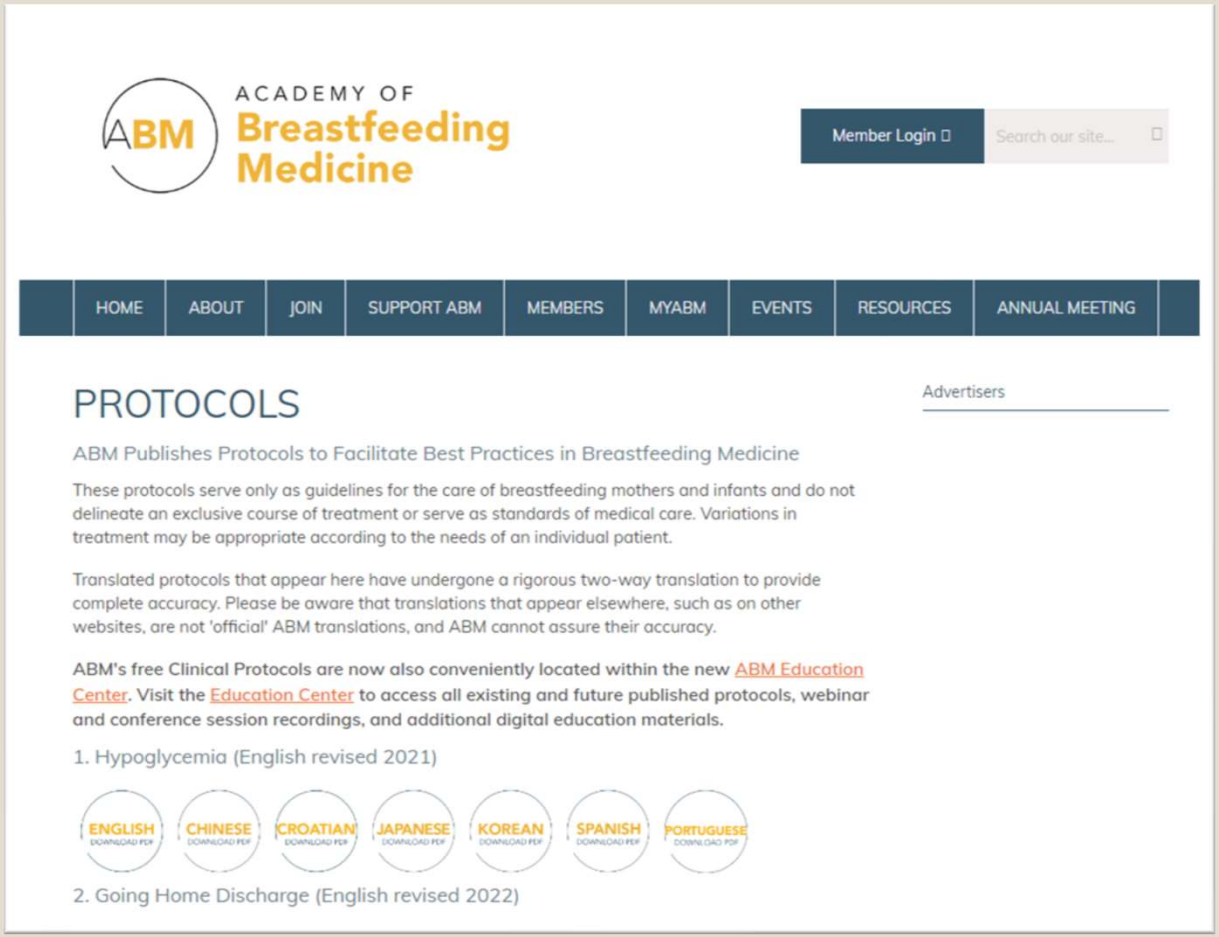
# ABM Clinical Protocol #15: Analgesia and Anesthesia for the Breastfeeding Mother, Revised 2017

Sarah Reece-Stremtan,[1] Matilde Campos,[2] Lauren Kokajko,[1] and The Academy of Breastfeeding Medicine

TABLE 1. RESOURCES OF INFORMATION ABOUT MEDICATIONS

| *Resource* | *Sponsor* | *Website and contact information* |
|---|---|---|
| LactMed | U.S. National Library of Medicine | https://toxnet.nlm.nih.gov/newtoxnet/lactmed.htm |
| E-Lactancia | Association for Promotion and Cultural and Scientific Research of Breastfeeding, Spain | www.e-lactancia.org |
| Infant Risk Center | Texas Tech University Health Sciences Center, TX | www.infantrisk.org and +1 806-352-2519 |
| Breastfeeding and Human Lactation Study Center | University of Rochester, NY | +1 585-275-0088 |
| Mother to Baby | Organization of Teratology Information Specialists | https://mothertobaby.org and +1 866-626-6847 |
| Motherisk | Hospital for Sick Children, Toronto Canada | www.motherisk.org and +1 877-439-2744 |

https://www.bfmed.org/protocols



# Breastfeeding after Anesthesia? YES

- ABM Clinical Protocol #15
  - **Lactating parent with healthy term or older infants can generally resume breastfeeding as soon as they are awake, stable, and alert. – might need access to breast pump in recovery room**
  - Infants at risk for apnea, hypotension, or hypotonia may benef from a brief interruption of breastfeeding (6– 12 hours) after maternal anesthesia
    - In this situation, mothers can express and store her milk in small amounts to be used when the infant is older, or it can be mixed with fresh milk containing no medications to dilute the milk with medications present.
  - **The most concerning class of medications used for anesthesia and analgesia in breastfeeding parents is opioids**, as these medications transfer into breast milk and may cause infant sedation or apnea.
    - Judicious use of opioids for short periods is likely to be safe for most breastfeeding mothers and infants

# Cows Milk Protein Intolerance (CMPI)

- Common: 2-3% of infants <1 yr of age, 50% resolve by 1 year of age.
- Breastfeeding protects infants from developing CMPI, but 0.5% of breastfed infants will still have CMPI[1]
- At risk to develop if parent or sib w asthma, eczema or seasonal allergies or sib with hx of CMPI
- Meta-analysis found increased risk of cow's milk allergy if BF infants were given cow's milk formula supplementation in first few weeks of life (risk ratio 1.75 (95% 1.30-2.27), P=0.0001[2]
- 2019 analysis in Ireland found BF infants given formula supplements were[3]…
  - **7 times more likely to exhibit CMPA** than those who were exclusively breastfed
  - **16 times more likely to exhibit CMPA** than those who were exclusively bottle-fed

[1]https://www.childrensnational.org/get-care/health-library/cows-milk-protein-intolerance
[2] Smith. Formula supplementation and risk of cow's milk allergy. B J of Midwifery. 2013;20(5)
[3]Kelly et al. Formula supplementation remains a risk for cow's milk allergy in breast-fed infants. Pediatr Allergy Immunol. 2019 Dec;30(8):810-816. doi: 10.1111/pai.13108. Epub 2019 Aug 29. PMID: 31297890.
Image: https://www.medicalnewstoday.com/articles/dairy-allergy-rash-newborn#pictures

# CMPI Presentation

- Symptoms:
  - Multiple loose stools
  - Blood or mucus in stool
  - Vomiting
  - Abdominal pain
  - Irritability
  - Poor growth
  - Skin rash/eczema

Image: https://www.istockphoto.com/

# CMPI Management

- "**Conclusions and relevance:** The evidence suggests that sensitization to cow's milk and food allergy, including CMA and anaphylaxis, are primarily preventable by avoiding CMF supplementation for at least the first 3 days of life."[1]

- All guidelines recommend continued breastfeeding[2]
  - 2-4 week maternal elimination diet
  - If breastmilk not available or insufficient volumes need extensively hydrolyzed formula or amino acid-based formula
    - Cost 2-3x that of standard cow's milk formulas

- **Breast milk remains the gold standard source of nutrition in all children, including those with CMA.[2]**

[1]Urashima Primary Prevention of Cow's Milk Sensitization and Food Allergy by Avoiding Supplementation With Cow's Milk Formula at Birth: A Randomized Clinical Trial. JAMA Pediatr. 2019 Dec 1;173(12):1137-1145. doi: 10.1001/jamapediatrics.2019.3544. PMID: 31633778; PMCID: PMC6806425.
[2]Vandenplas Y, Brough HA, Fiocchi A, Miqdady M, Munasir Z, Salvatore S, Thapar N, Venter C, Vieira MC, Meyer R. Current Guidelines and Future Strategies for the Management of Cow's Milk Allergy. J Asthma Allergy. 2021 Oct 21;14:1243-1256. doi: 10.2147/JAA.S276992. PMID: 34712052; PMCID: PMC8548055.
Image: https://www.freepik.com/

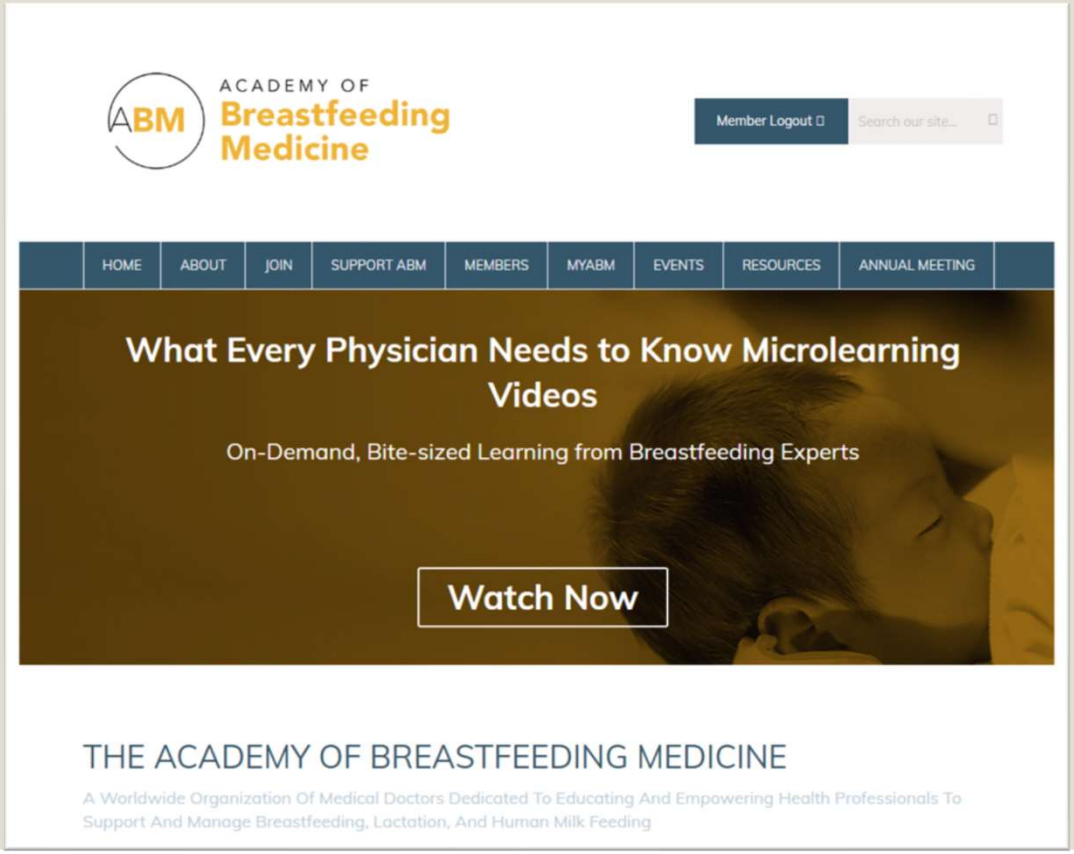
# Learn more!


https://lacted.org/shop/crs-allergic-gi-disorders/

# RESOURCES FOR PROVIDERS

# Academy of Breastfeeding Medicine

https://www.bfmed.org/



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# WHAT EVERY PHYSICIAN NEEDS TO KNOW

## Get Instant Evidence-Based Breastfeeding Education at Your Fingertips: Microlearning Videos on the Foundation of Breastfeeding Support, Management, and Clinical Problem Solving.

This innovative library of videos offers on-demand, just-in-time access to bite-sized learning covering ke
Adapted from the full-day, in-person course, What Every Physician Needs to Know About Breastfeeding
healthcare providers who serve lactating and breastfeeding persons to confidently and effectively addre
issues.

Why Breastfeed? Risks of not Breastfeeding
Gail M Herrine, MD IBCLC FABM

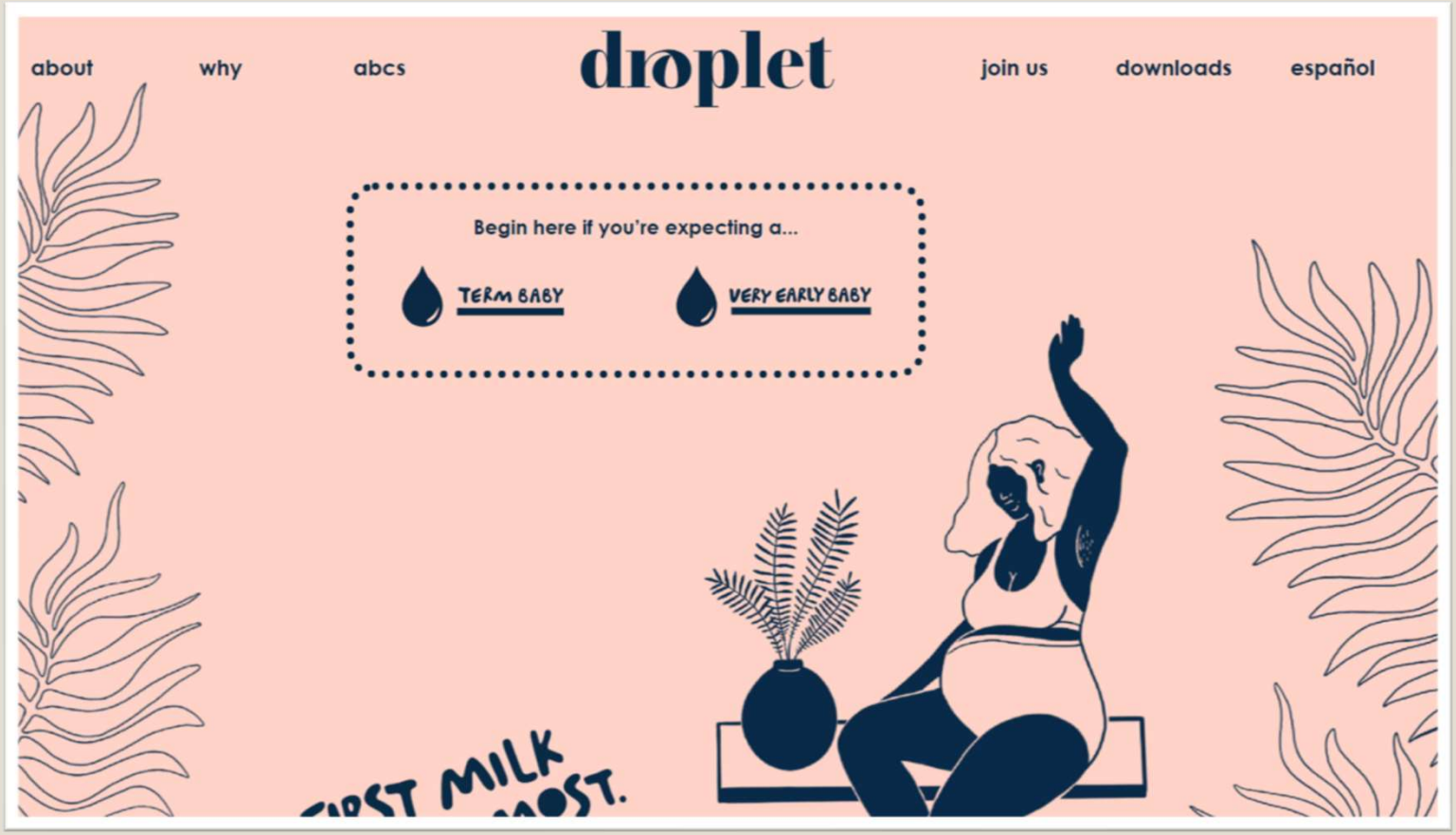
Process of Breastfeeding: Anatomy and Physiology
Karen Bodnar, MD IBCLC FABM FAAP

Management of Breastfeeding in Labor and Delivery
Alison Stuebe, MD MSc FABM FACOG

Breastfeeding and the Preterm Infant
Eyla Boies, MD FABM FAAP


Medications and Human Milk
Bobbi Philipp, MD FABM FAAP

Breastfeeding Technology and Resources
Kristina Lehman, MD IBCLC FABM NABBLM-C




https://firstdroplets.com/


https://vimeo.com/348861789

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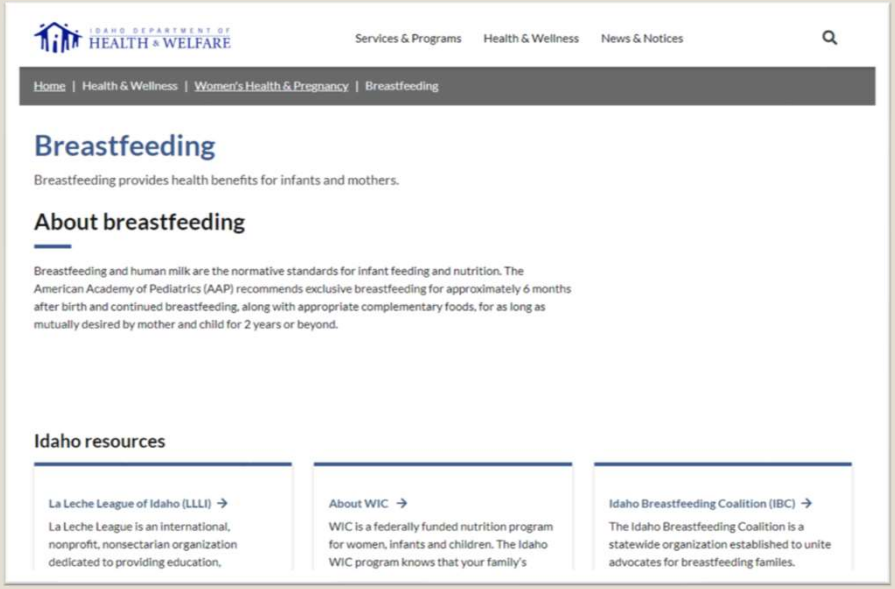
# Idaho Breastfeeding Resources




https://healthandwelfare.idaho.gov/health-wellness/womens-health-pregnancy/breastfeeding


https://www.idahobreastfeeding.org/

# Thank You!

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