Medications and Breastfeeding

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Take-Home Message

- The vast majority of medications are safe during lactation, and if not, most have an alternative that is safe
- If you're unsure – have mom pump and SAVE, and look it up (or ask us!)

Why Most Meds are Safe…

- In order for medication to get into baby:
  - Absorbed into bloodstream
    - *Topicals, eyedrops, eardrops have very little if any absorption*
  - Pass from bloodstream to milk space
    - *Molecules that are large or highly protein bound cannot get into milk*
  - Ingested by baby
  - Orally absorbed by baby
    - *Medications that are typically given IM/IV/SubQ that have poor oral bioavailability*

L-ratings

- Only take into account research and data (case studies) on its safety
- Does NOT take into account factors of the drug itself

This system categorizes medications from L1 (Safest) to L5 (Hazardous) based on evidence of their impact on breastfeeding infants.

- L1 (Safest): Extensive studies show no negative effects on the infant. Controlled studies in breastfeeding women reveal no risks, or the product is not orally bioavailable to the infant.
- L2 (Safer): Limited studies indicate no increase in adverse effects on the infant. Studies in a small number of breastfeeding women show no increased adverse effects, and/or the evidence of demonstrated risk is minimal.
- L3 (Probably Safe/Moderately Safe): While no controlled studies exist, experts suggest safety. There's a potential risk to the infant, requiring careful consideration of individual circumstances. New medications without published data are automatically placed in this category.
- L4 (Possibly Hazardous): Evidence or expert opinion suggests a risk to the infant or milk production. However, the benefits of using the medication might outweigh the risk in specific situations (e.g., life-threatening conditions where safer options are ineffective).
- L5 (Hazardous/Contraindicated): Significant, documented risk to the infant based on human experience or the high probability of causing substantial harm. The risks clearly outweigh any potential benefits of breastfeeding. The drug is contraindicated in breastfeeding women.

Other Factors to Consider

- Relative Infant Dose:

Relative Infant Dose (RID): This calculates the amount of medication the infant receives through breast milk, relative to the mother's dose. An RID of 10% or less is generally considered relatively safe.

Other factors to consider

- Infant's Age and Health: An infant's ability to take in and process medication is important.
  - Newborns and premature infants may have limited clearance abilities, and those with kidney or liver issues may have difficulty clearing certain medications.
- Individualized Assessment: A healthcare provider should assess each specific situation to recommend the safest option, considering the infant's needs and the mother's health.
- Maternal milk supply
  - Colostrum vs mature milk
  - Low supply

Why does it matter?

Risks of "pumping and dumping"

- Issues with direct nursing after return to breastfeeding – even after one day or breastfeeding interruption
- Introduction of unnecessary formula and associated risks
  - Even one bottle of formula has been shown to alter infant's gut microbiome
- Risks associated with pumping
  - Inflammation, clogged ducts, mastitis, lowered supply, premature cessation of breastfeeding

Public Health Concern

Oot et al., Global Policy Brief

- Improving breastfeeding practices has been shown to be one of the best investments a country can make.
  - Protects infants against infections → less utilization of healthcare system
  - Less sick days parents take off from work
  - Reducing maternal diseases, assists in birth spacing
  - Improves social and economic development → translates to greater economic productivity
- Environmentally friendly, reducing resources used to produce, transport, and market substitutes

Globally

The Cost of Not Breastfeeding Tool

Print Exit

Globally, not breastfeeding according to WHO recommendations results in more than US$507 billion in economic losses each year.

More than half of children in the world are not breastfed according to WHO recommendations. The current global breastfeeding rates are 48% for Early Initiation of Breastfeeding (EiBF), 44% Exclusive Breastfeeding 0-5 months (EBF), and 65% Continued Breastfeeding at 12-23 months (CBF).

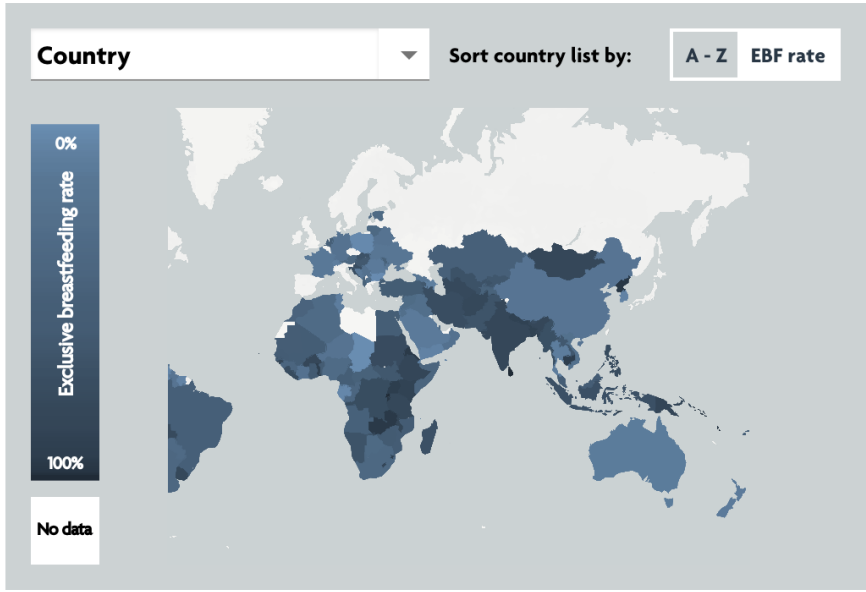
Not breastfeeding according to the recommendations results in annual global health, human capital and economic costs of approximately:

- **$507B total economic cost (0.6% of global income)**
- **$23.94B in health system costs**
- **195M IQ points lost**
- **4.6M child obesity cases**
- **93,863 maternal deaths**
- **424249 child deaths**

However, these costs vary by country and region. The Cost of Not Breastfeeding Tool provides advocates and policymakers with data to inform decision-making and influence investments.

The Cost of Not Breastfeeding Tool was first developed between 2017 and 2019 by Dr. Dylan Walters and Alive & Thrive, with funding from the Bill & Melinda Gates Foundation. In 2022, Nutrition International updated and developed the second version of the tool in partnership with Alive & Thrive and Limestone Analytics, with funding from the Government of Canada.

How to use The Cost of Not Breastfeeding Tool:



NUTRITION INTERNATIONAL alive&thrive nourish. nurture. grow.

For more information or support in using the tool, please contact:

healthecon@nutritionintl.org

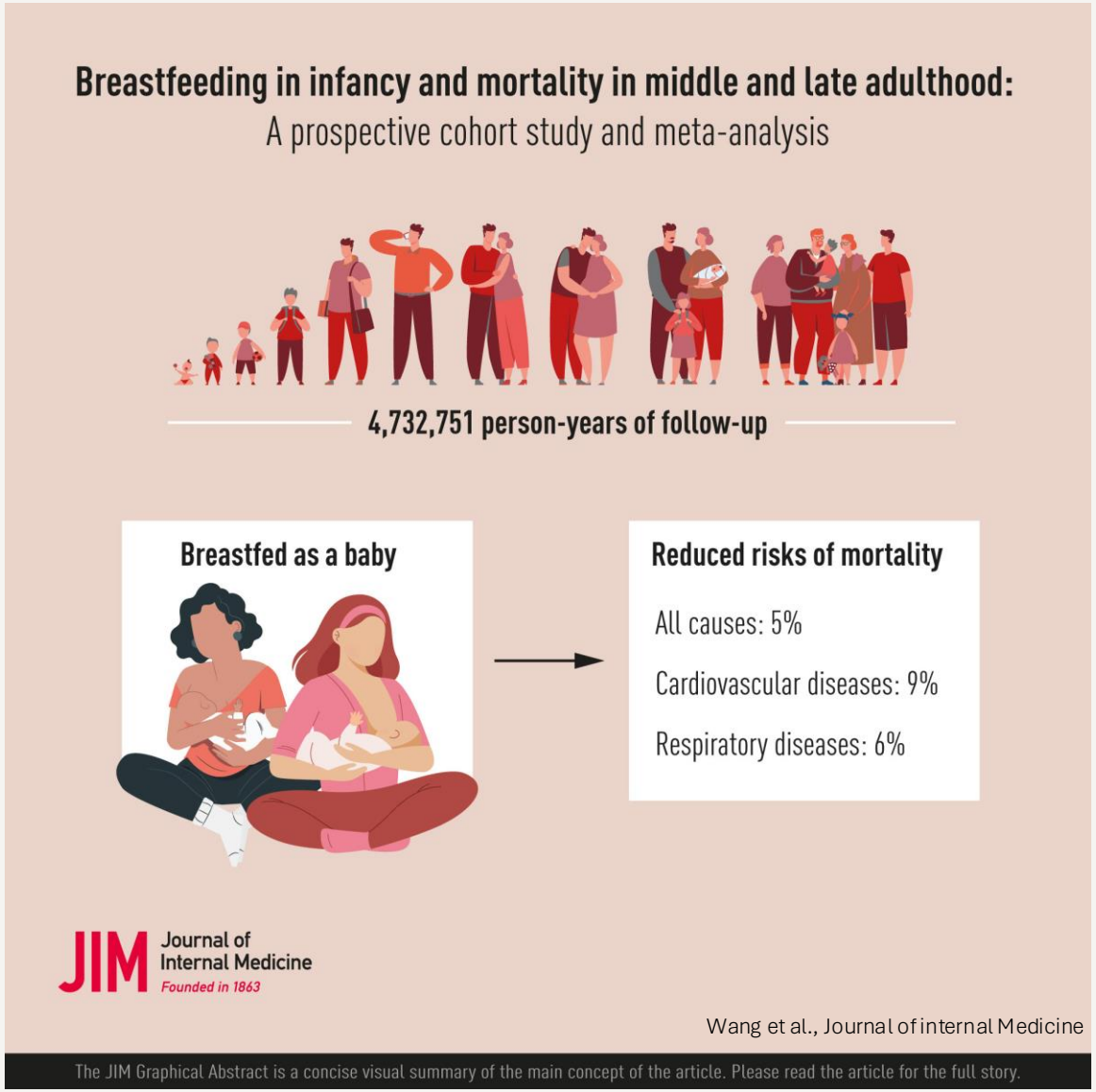
Data updated 2022-12-14

Developed in partnership with Limestone analytics

THE BENEFITS OF BREASTFEEDING ≠ THE RISKS OF NOT BREASTFEEDING

RISKS OF NOT BREASTFEEDING

- Infant
  - Short Term
    - Infection rate (respiratory, GI)
    - Hospital admissions
    - NEC
    - SIDS
  - Long Term
    - Malignancy
    - Obesity
    - Diabetes
    - Asthma
    - UC/Crohn's Disease
- Maternal
  - Short Term
    - Postpartum bleeding
    - Contraception
    - Postpartum depression
    - Bonding
    - Weight loss
  - Long Term
    - Type II Diabetes
    - Hypertension
    - Malignancies
    - All cause mortality

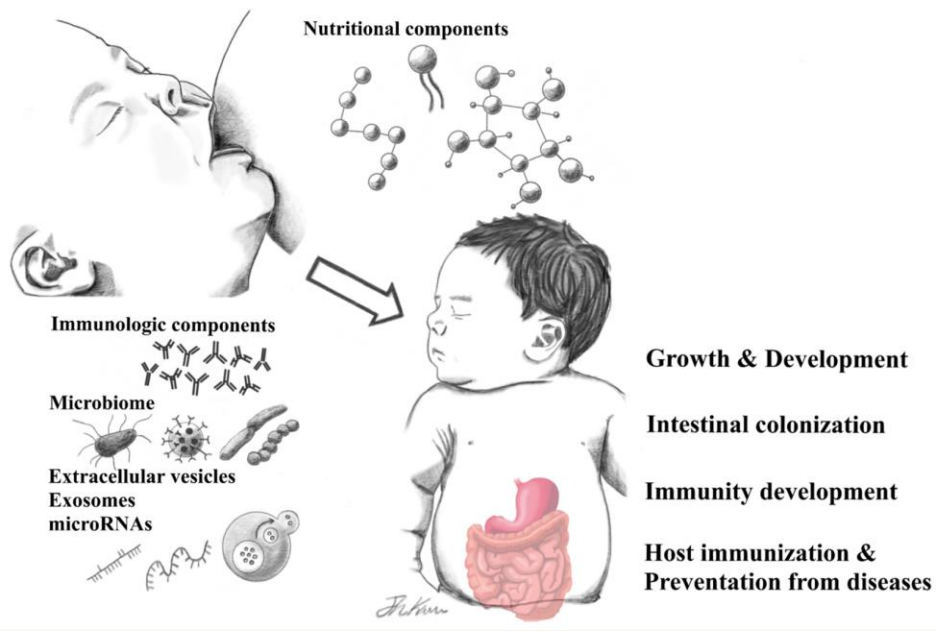


Long Term Benefits

- Prospective study in the UK of 383,627 participants aged 40-73
- Meta analysis of 4 cohort studies
- Breastfeeding associated with lower risk of mortality in middle and late adulthood

- WHO and AAP :
  - Recommend exclusive breastfeeding for 6 months
  - Continued breastfeeding with complimentary foods as long as mutually desired by mother and child for 2 years or beyond

Breastmilk



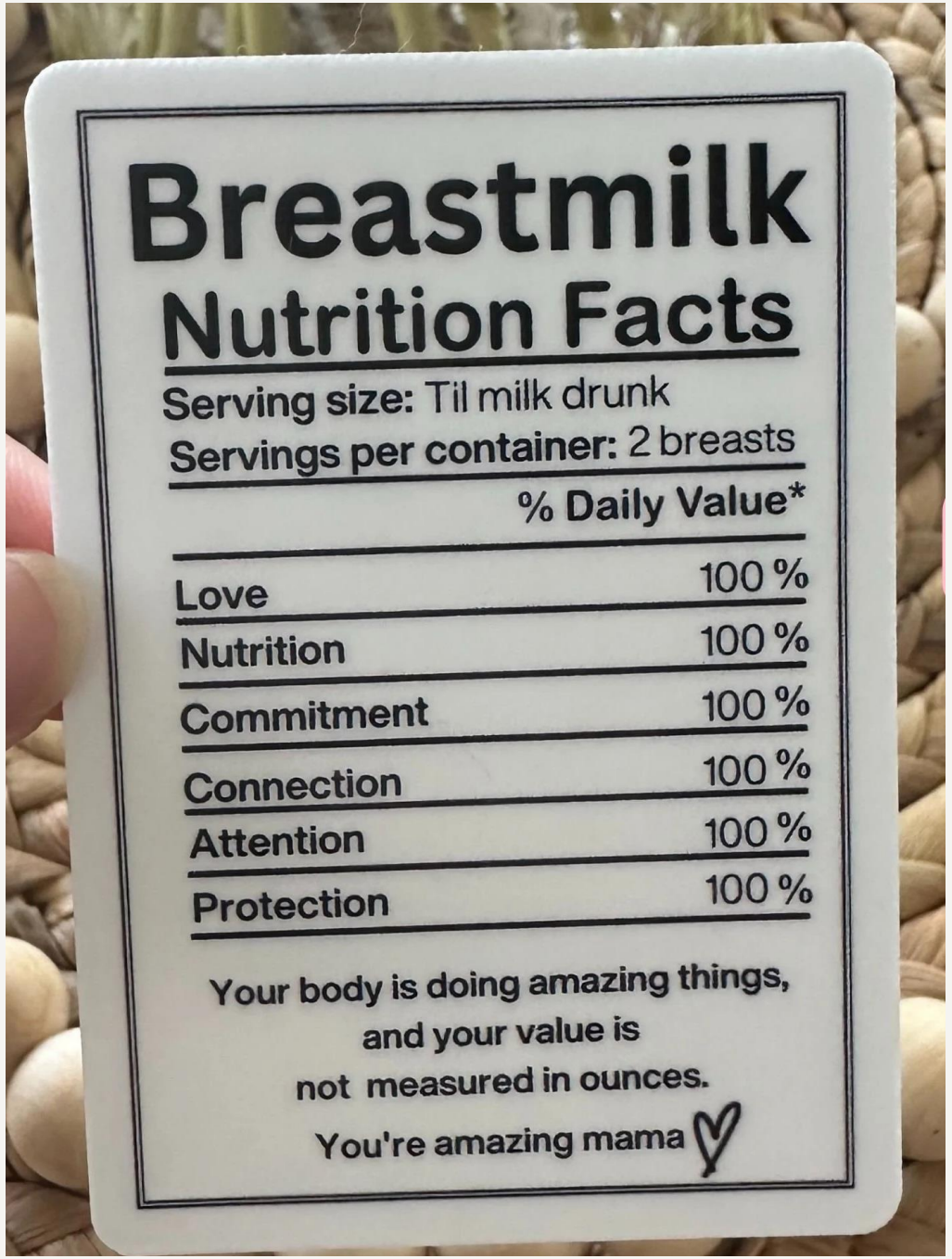
Yi et all., Nutrients

- Provides nutrition
- Direct immunologic protection
- Moderates inflammation
- Shapes the gut microbiome
- Matures organs

NUTRITION – WHAT'S IN IT?

- Water
- Carbohydrates
- Fat
- Protein
- Vitamins
- Minerals

- Antibodies
- Anti-viral proteins
- Antibacterial agents
- Active white blood cells
- Microorganisms
- Oligosaccharides
- Enzymes
- Hormones
- Prostaglandins
- Cytokiness



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

BREASTMILK

WATER

CARBOHYDRATES

PROTEINS

FATS

VITAMINS

MINERALS

PEPTIDES

HORMONES

ENZYMES

FORMULA

WATER

CARBOHYDRATES

PROTEIN

FATS

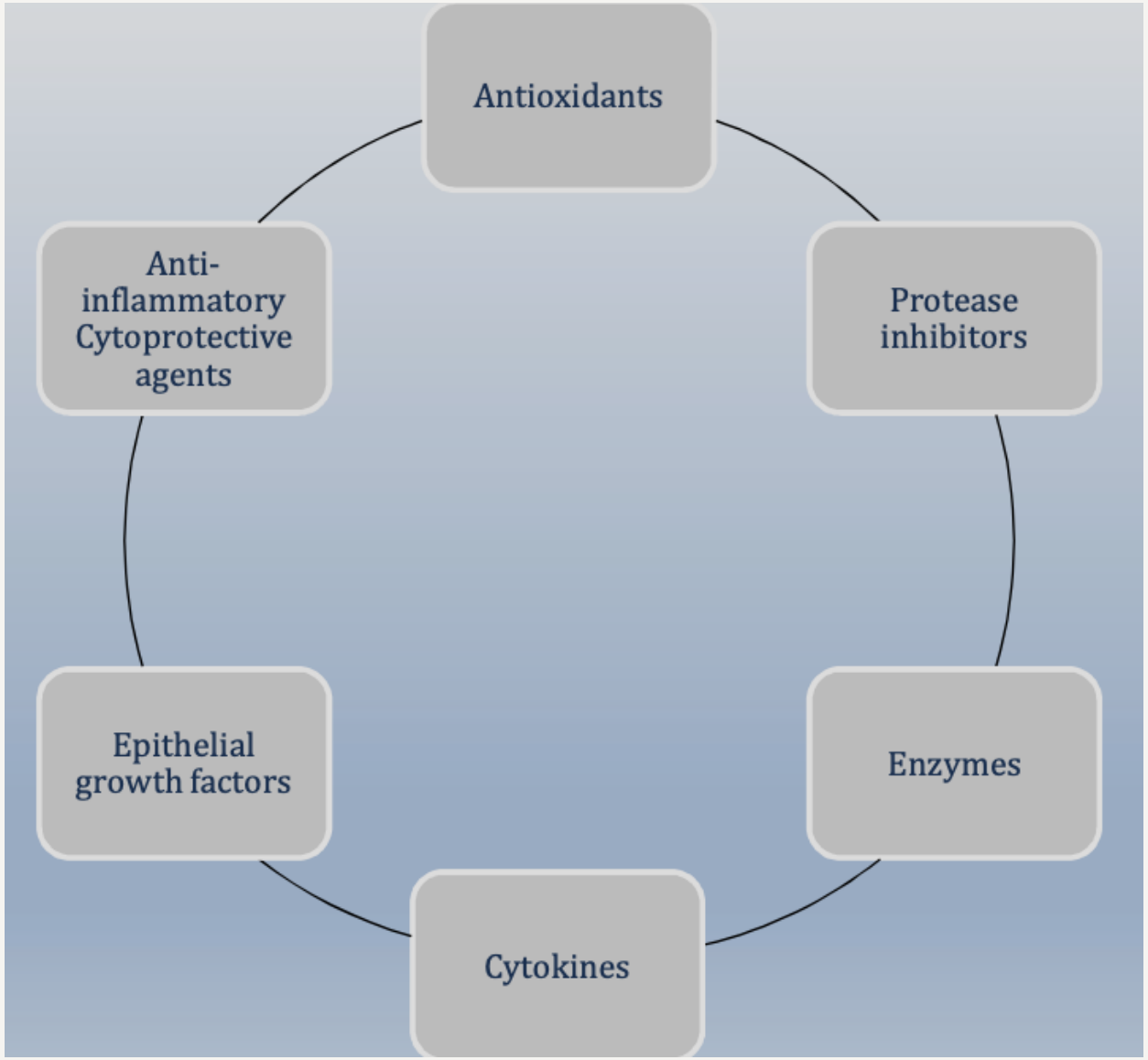
MINERALS

VITAMINS

Immune properties

- Shapes the development of the immune system
- 10000 to 350 million leukocytes from breastmilk daily
- sIGA binds pathogens and prevents an inflammatory response
- Leukocytes, lactoferrin, lysozyme

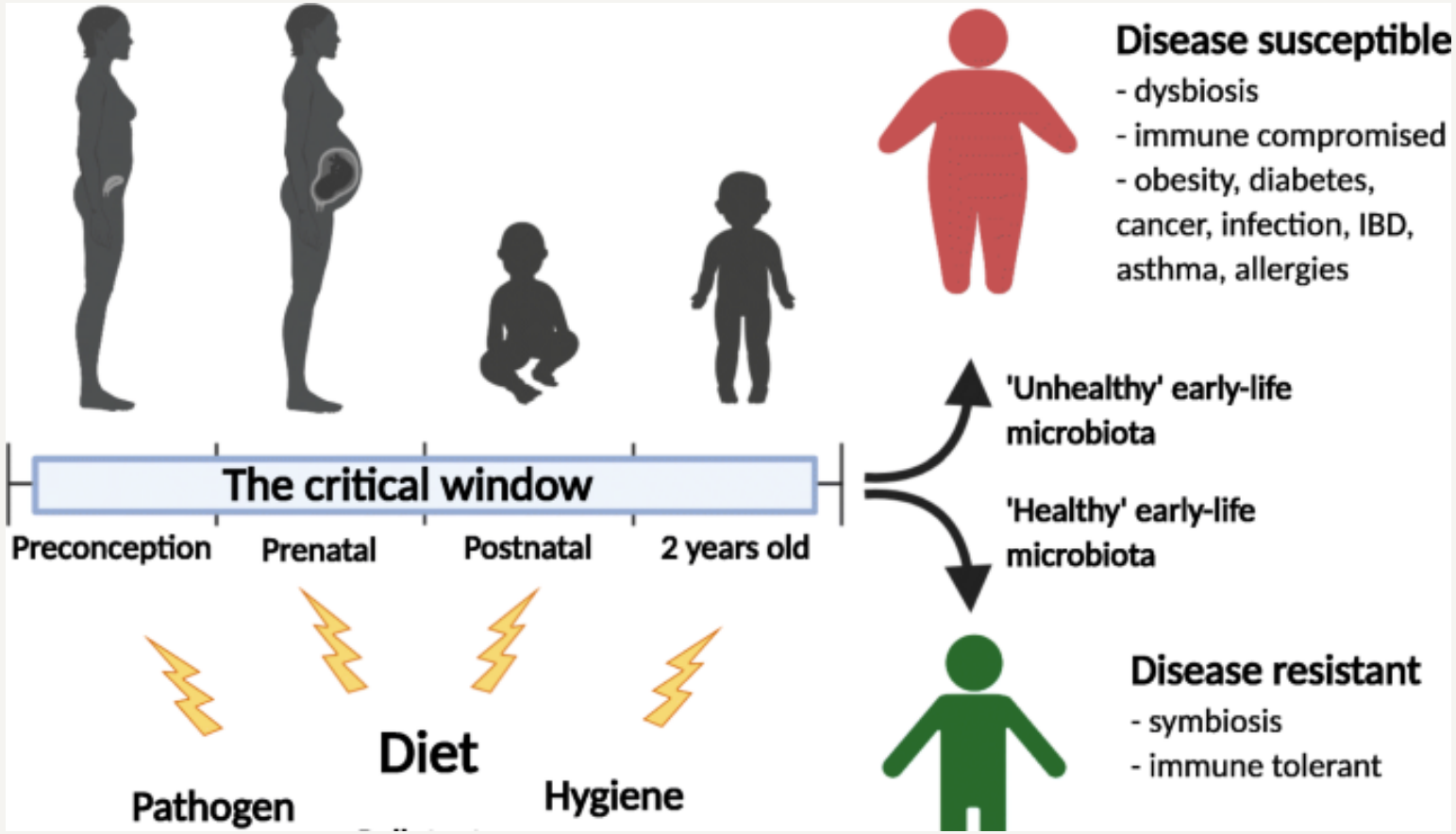
Image from the Daily Mail



Inflammation - Human milk homeostasis

- Antioxidants in human milk : vitamin A, E, C, lactoferrin, lysozyme
- Contains growth factors and hormones act to proliferate and differentiate immune cells and IECs

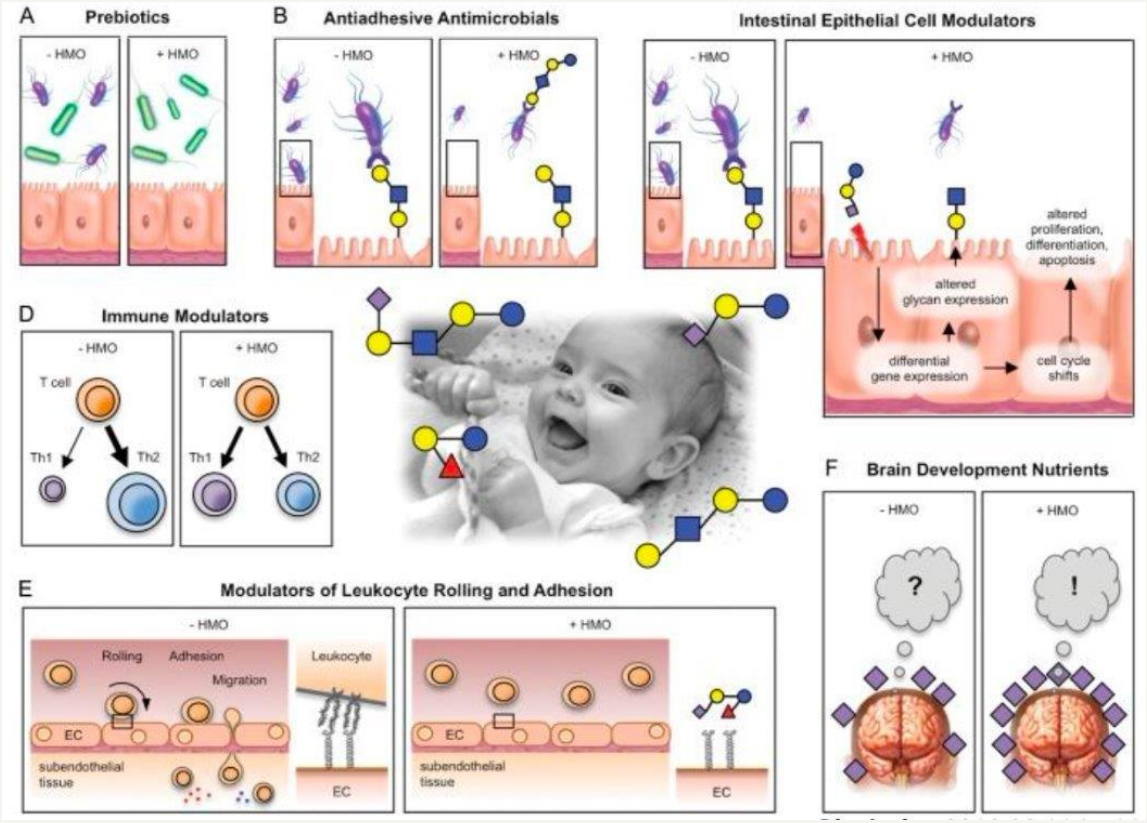
Human Milk MicrobioME



Forgie et al., BMC Medicine

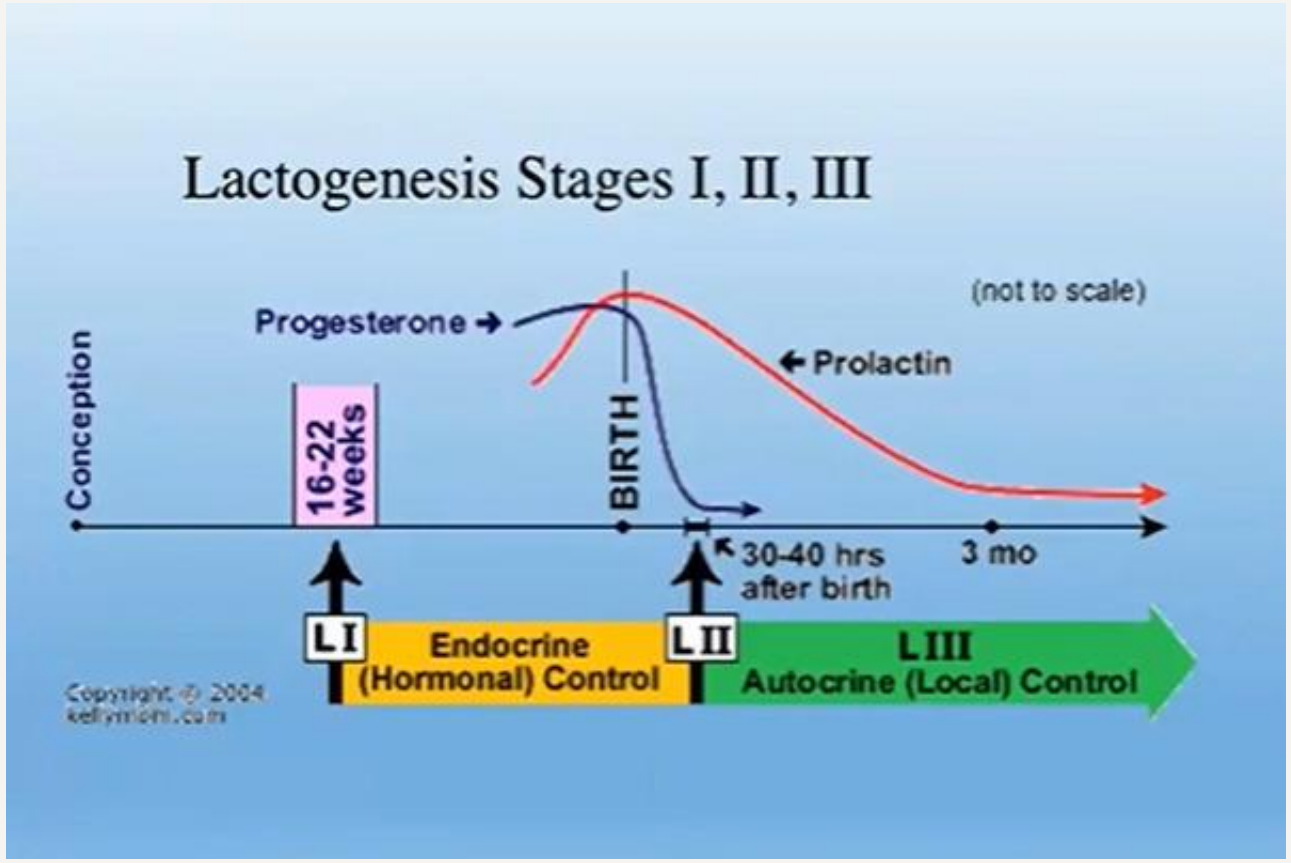
- Gut microbiome differs in breastfed vs formula infants
- Oligosaccharides are the “fertilizer” for beneficial bacteria
- Early-life critical window from conception to ~2 years of age for microbiome maturation

Oligosaccharides



How does it work?

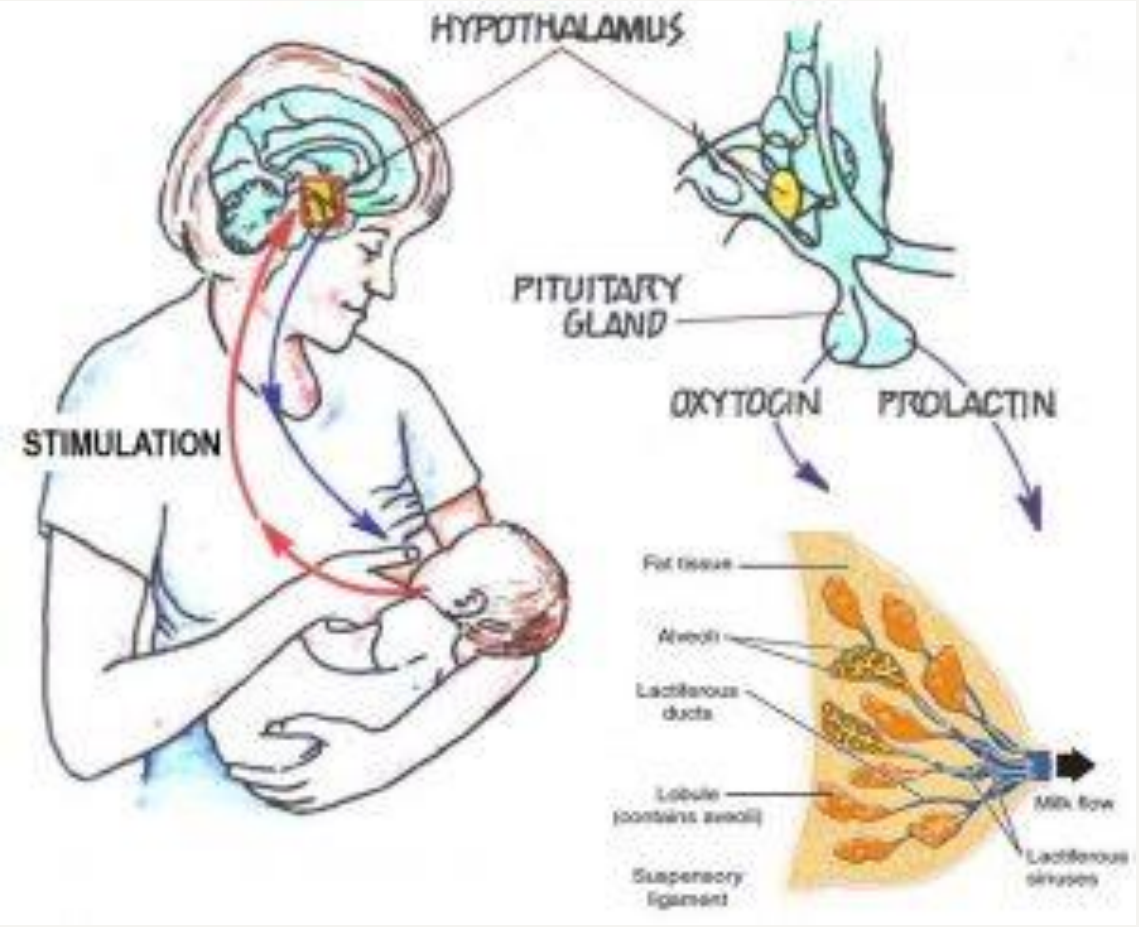
Lactation Physiology



Medela University

- Lactogenesis I (secretory differentiation)
  - Prenatal onset of milk production
- Lactogenesis II (secretory activation)
  - Onset of copious milk production
  - Rapid decline in progesterone after delivery of placenta necessary
  - Endocrine control
  - Occurs approx. 30 – 72 hrs postpartum
- Galactopoiesis
  - Ongoing milk production
  - Autocrine control from continued milk removal

PERFECT ECOSYSTEM



Meds that are Safe but May affect Supply

- **sudafed (pseudoephedrine)
- Some antipsychotics, particularly abilify
  - Even taken prenatally may have an effect on lactation

Antidepressants

- Rule of thumb is generally to restart what worked best for them in the past
- If new medication: prefer short-acting
- Zoloft best studied in lactation (L2) and generally well-tolerated
- The risk of untreated mental health symptoms >>>>> risk of medication

Antianxiety Medications

- Also generally considered safe
- Some may be very sedating (eg benzos) so monitor baby for sedation if using several doses, but also ensure another caregiver is present

Antibiotics

- All considered safe with some specific exceptions:
  - Doxycycline safe up to 21 days
  - Bactrim not ideal if infant <1 mo or premature (increased risk of bilirubin) - not a true contraindication, use with caution

Pain Management

- Pain should be treated in breastfeeding mothers!
- Like all pain management – optimize non-opioid medications, but opioids are safe to use in typical doses
- Generally up to 30mg of oxycodone is considered safe
- Ideally would avoid meperidine (can be sedating for the infant) and codeine (because or differences in metabolism)
- Monitor infants for sedation
- Careful of bedsharing

Specific Opioids

- Morphine, hydromorphone: possible safer choices for breastfeeding women over other opioids – poor oral bioavailability
- Fentanyl: very low levels in breast milk after 2 hours
  - Same for remifentanil, sufentanil
- Meperidine/pethidine: low transfer into milk, but consistently associated with dose-related neonatal sedation à avoid in breastfeeding mothers; monitor for sedation, cyanosis bradycardia in infants with repeated exposures
- Butorphanol: Very low milk levels, not usually part of periop regimens – AAP suggests as a reasonable choice for breastfeeding mother

Opioids to Limit or Avoid

- Hydrocodone: Neonatal sedation rare, generally dose-limited – limit maternal doses to 30mg/day • Oxycodone: RID up to 8% - monitor infants for drowsiness – max daily maternal dose 30mg (LactMed) or avoid use (AAP) • Codeine: FDA advisory in 2017 against use in breastfeeding mothers in US – potential for unexpected significant elevated levels of morphine in rapid metabolizers • Tramadol: Previously considered a safe choice for breastfeeding mothers (RID <1%); FDA now advises against use in US breastfeeding mother

Anesthesia

- Anesthesia is considered safe during lactation
- Once the lactating parent is awake, they are safe to nurse or pump and use that milk
- Statement on Resuming Breastfeeding after Anesthesia -"sleep and keep"

Radiographic studies

- MRI and CT with contrast are safe, no interruption necessary
- Breast imaging during lactation is safe and screenings should not be delayed, would just make sure breast is empty
- Thyroid imaging, VQ scan
- Some PET scans and other radioactive elements – pump and let milk sit so tracer can decay
- Some require separation from infant because breast tissue is radioactive but the milk itself is fine
- ABM Clinical Protocol #31: Radiology and Nuclear Medicine Studies in Lactating Women

Resources

- **Lactmed
- Infant risk app

Questions?