Breastfeeding and Substance Use

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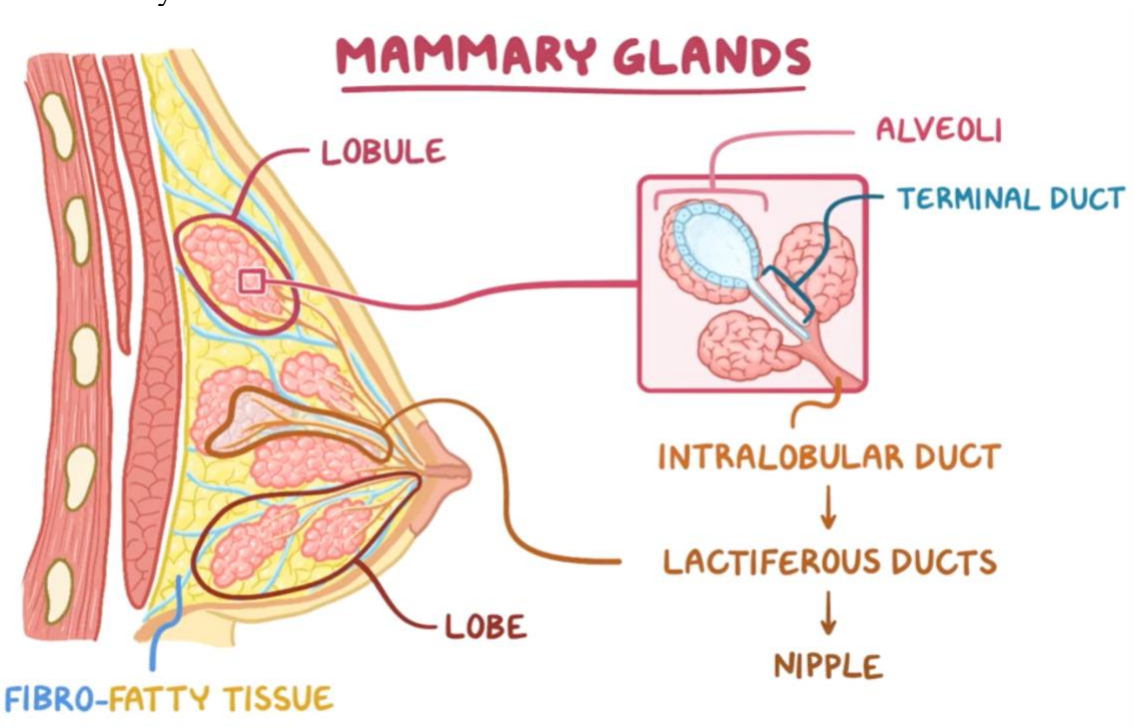
Introduction

Breastmilk is the preferred source of nutrition for virtually all infants worldwide. Occasionally, breastmilk may not be safe for an infant to consume, either due to infant factors (e.g., an infant with a rare metabolic disease (body has trouble turning food into energy) that causes them to be unable to metabolize certain components of human milk) or lactating parent factors, which can include exposure to certain medications and other substances. Historically, professional medical societies such as the Academy of Breastfeeding Medicine had previously recommended that parents with nonprescribed substance use in the 30-90 days prior to delivery be discouraged from breastfeeding. However, this timeframe was arbitrary, and the most recent guidelines have been updated to state that "women who discontinue nonprescribed substance use by or during the delivery hospitalization can be supported in breastfeeding initiation."

This short guide will begin by covering the basics of normal human lactation and then will discuss substances/substance classes individually with respect to feeding safety. For the purposes of this guide, there is no distinction made between feeding the infant human milk at the breast/chest vs expressed breast milk (EBM, pumped breast milk) from a bottle.

Normal lactation

Breast Anatomy:



https://www.osmosis.org/learn/Mammary_gland_histology

Mammary glands consist of alveoli (clumps of milk-secreting cells) surrounded by skin cells which are organized into lobules (milk containers) that drain into ducts that carry the milk and then open at the nipple (think of a pipe system).

Hormonal Control & Lactogenesis (initiation of milk production):

- During pregnancy, prolactin rises. This is a hormone made in the brain that aids in breast development and milk production
- Estrogen, progesterone, and human placental lactogen (also hormones) prevent milk production until after delivery (inhibitory hormones)
- After birth, these inhibitory hormone levels fall, so prolactin drives milk production while oxytocin (another hormone) enables milk release

Milk Ejection (let-down) Reflex:

- Suckling stimulates nerves → specific brain areas are activated (hypothalamus, a brain structure important in hormone balance) → hormones are released (prolactin and oxytocin)
- Oxytocin contracts breast tissue → pushes milk to the ducts and out the nipple
- Prolactin increases after suckling/feeding → a positive feedback loop that results in a steady and increased milk supply
- Let-down can be triggered by physical or psychological/emotional cues and inhibited by stress or fatigue
    - Some cues: baby sucking at the breast, nipple stimulation, hearing the baby cry, thinking about the baby or anticipating feeding

<u>Stages of Milk Production</u>

- Colostrum (Days 1-3): Thick and yellow. Low volume (not very much gets made), but rich source of nutrition (high in protein)
- Transitional milk (Days 4-14): Volume increases, bluish-white in color, rich in calories and nutrients
    - Milk typically "comes in" between day 2 and 6 after delivery
- Mature milk (After ~2 weeks): complete nutrition

<u>Timing of Breastfeeding Initiation</u>

- Many public health organizations recommend initiation of breastfeeding within 1 hour of delivery, because in population studies around the world, earlier initiation of breastfeeding is linked to lower infant mortality and longer duration of breastfeeding throughout infancy.
- Studies have shown that delaying initiation of breastfeeding decreases the likelihood of successful initiation of breastfeeding. Though rare cases exist of mothers successfully initiating breastmilk production several weeks after delivery, in most cases, it is highly unlikely that a parent will successfully develop a milk supply if breastfeeding is not initiated within the first few days after delivery; again, the sooner breastfeeding is initiated after birth, the higher the chances of establishing a successful milk supply.
- Factors that can impact milk production/delay milk coming in:
    - Cesarean section delivery
    - Stress

    - Medical complications (i.e. post-partum hemorrhage)
    - Medical conditions (i.e. pre-eclampsia, gestational diabetes mellitus)
    - Prematurity
- The development of a milk supply is dependent on many factors but notably requires both physical triggers (e.g., infant sucking at the breast) and hormonal triggers (e.g., oxytocin release). Physical triggers like an infant sucking at the breast can be artificially simulated with breast pumps or hand expression, but hormonal triggers, which are released in part in response to physical contact between the lactating parent and the infant, cannot be entirely artificially simulated. As such, if a birthing parent wishes to establish a milk supply but is separated from the infant (for any reason, including medical or social reasons), using a pump or hand expression as soon as possible is necessary, but may or may not be sufficient, to establish a milk supply.

Maintenance of Milk Supply

- Once breastfeeding and/or pumping is initiated, it must be maintained at a robust frequency (typically 8-12 times within 24 hours) for the first several weeks (6-8 weeks) to establish a full milk supply. There can be only one 5 hours stretch without breast feeding or pumping in a 24-hour period when establishing a milk supply.
- Even once fully established, milk supply can drop for a number of reasons (illness, dehydration, stress, etc.), but notably will decrease if/when feeding and/or pumping frequency decreases.
- If feeding and/or pumping completely stop for more than a few days, in most cases the breast will stop producing milk entirely, or at minimum the supply of milk will fall considerably (and will continue to fall as time from last feed/pump increase, until eventually milk production does completely stop.)

Stopping Milk Supply if Desired

- Engorgement is part of the process of decreasing the breast milk supply. The body senses the breast is full and that more milk is not needed.
- Do not pump or hand express too much milk (typically only 0.5 – 1 oz). Express just enough to relieve pressure/discomfort.
- Do NOT fully drain/empty the breast (this will encourage further milk production)
- Wear supportive bra/sports bra
- Avoid stimulation to the breast and nipple
- Avoid hot showers on the breasts (stimulating)
- Supportive measures:
    - Ice packs
    - Washed leaves of green cabbage placed on the breast (change every few hours). Can put them in the fridge to cool prior to administration
    - Peppermint or sage tea
- It typically takes 2 to 6 weeks to shut down milk supply post-delivery

Breastfeeding Initiation after Substance Use

- Prescribed and nonprescribed substances vary considerably in their pharmacology. As such, it is imperative to consult the infant's medical provider any time there is a question about breastmilk safety for infant consumption. The following information is meant to

serve as a general guide and is not intended to supersede a medical provider's recommendations for any specific infant.

- The below recommendations refer to individuals with *ongoing* use of these medications and/or substances. Individuals who have discontinued medication/substance use during pregnancy or during the delivery hospital stay and who do not have other contraindications to breastfeeding are encouraged to breastfeed. This is because the vast majority of pharmaceuticals and nonprescribed substances are cleared from the body within hours to days (relatively quickly), and the human milk supply takes weeks to become fully established (relatively slow), so in people *without* ongoing use, it makes sense to initiate breastfeeding as early as possible (the substance from last use/exposure will get cleared long before the milk supply gets fully established, so the amount of exposure to the baby will be negligible.)

Substance/Category	Breastfeeding Safe or Not Safe?	Notes
Nonprescribed opioids, sedatives, and stimulants (e.g., non-prescribed fentanyl, benzodiazepines, cocaine, methamphetamine)	Not safe with ongoing use.	Risks to infant outweigh the benefits of human milk consumption. Risks include not waking appropriately, not breathing normally, not feeding normally, and seizures, among others.
Medications to treat opioid use disorder (e.g., methadone, buprenorphine)	Safe and encouraged with ongoing use.	Infants exposed to these medications were usually exposed to opioids in utero. Breastfeeding while on these medications can decrease the severity of neonatal opioid withdrawal syndrome (NOWS); also, using these medications significantly decreases the breastfeeding parent's likelihood of using a non-prescribed opioid. Hence, using these medications while breastfeeding is encouraged.
Other prescribed opioids, sedatives, and stimulants (e.g., prescribed fentanyl, benzodiazepines, amphetamines)	May be safe with ongoing use, but requires discussion with infant's medical provider.	Risk/benefit decision is dependent on many factors including prescribed dose and frequency and infant's current health status.
Cannabis	Safe with ongoing use, but cessation or decreasing use is encouraged	Risks to infant are more long-term (concerns about long term development) rather than short term. Risks are higher with more significant use (higher dose/frequency); providers should educate parents on risks vs benefits of breastfeeding with ongoing use.

Tobacco/nicotine	Safe with ongoing use, but cessation or decreasing use is encouraged	Nicotine (from tobacco or other sources like vapes or pouches) is transmitted to infants via breastmilk and can cause symptoms like decreased appetite and disrupted sleep. Infants exposed to secondhand tobacco smoke have a significantly higher risk of sudden unexplained infant death (SUID), but breastfeeding appears to lessen this risk somewhat. Hence, while using tobacco/nicotine products, breastfeeding is encouraged, while tobacco/nicotine product cessation is also encouraged.
Treatment to aid in tobacco/nicotine cessation	Nicotine replacement therapy (patch, gum): Safe Bupropion: Safe Varenicline: Insufficient data, recommend discussion with infant's medical provider	There is some data from animals suggesting varenicline might interfere with normal lung development in infants, but no human data exists to inform risk.
Alcohol (ethanol)	Not safe after moderate-to-high consumption (more than 1 standard drink per day)	Alcohol reaches peak concentration in milk about 30-60 min after consumption and remains detectable for 2-3 hours. If a parent chooses to consume alcohol, some sources advise feeding formula or previously expressed breast milk and "pumping and dumping" for one feed after consumption to minimize infant exposure to alcohol. Parents should not breastfeed if consuming >1 standard drink per day.
Medications to treat alcohol use disorder (naltrexone, acamprosate, disulfiram)	Naltrexone: Safe Acamprosate: Insufficient data, but likely safe Disulfiram: Insufficient data, but likely the least safe choice	Disulfiram itself does not harm infants, but if a breastfeeding parent relapses and uses alcohol while on disulfiram and then breastfeeds, that combination could cause symptoms in the infant. Hence, use of either naltrexone or acamprosate is preferred.