



Lactation and Substance Use Guidance for Health Care Professionals



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Summary of Recommendations

1. Center the mother/birth parent's desires. Provide information about benefits and considerations for all feeding options. Offer support for the mother/birth parent's decision.
2. Chest/breastfeeding is good for birth parents and babies, even when there has been recent prenatal substance use.
3. Lactation is safe and recommended with Medications for Opioid Use Disorder (MOUDs).
4. Harm reduction education and strategies are more effective than abstinence only messages and strategies.
5. Using a substance again after a period of reduction or abstinence happens. Parents need information about what they can do to keep their baby safe when this happens.
6. Pumping and discarding milk after substance use can protect infants from substance exposure. It is not necessary to permanently discontinue chest/breastfeeding after substance use.



Overall Guidance

MOUDs are safe in lactation

- Support birth parents/mothers taking medications for opioid use disorder (MOUDs) to chest/breastfeed, which is safe and improves maternal and neonatal outcomes.

Support lactation

- Provide guidance and information during pregnancy and after delivery about lactation.
- Provide lactation-related guidance and information on the risks and benefits that relate to the substance use of the birth parent.
- Encourage chest/breastfeeding initiation and provide lactation support during postpartum hospitalization unless the birth parent does not wish to nurse or another contraindication exists.
 - o Support parents to pump and discard milk to maintain/induce milk supply with recent substance use that isn't compatible with lactation.
 - o Substances that do not require pumping and discarding milk:
 - Medications for opioid use disorder (buprenorphine, buprenorphine-naloxone, methadone, or naltrexone)
 - Tobacco and nicotine
 - Cannabis
 - o Recent substance use that requires pumping and discarding milk:
 - Heroin use within up to 5 days.
 - Fentanyl use within 3-5 days.
 - Methamphetamine use within 48 hours.
 - Cocaine use within 36 hours.
 - Current alcohol intoxication.
 - Other opioid use may or may not require pumping and discarding. See individual substance guidance.
 - Benzodiazepine use may or may not require pumping and discarding. See individual substance guidance.
 - Other stimulant use may or may not require pumping and discarding. See individual substance guidance.

Overall Guidance (continued)

Patient Education

Harm reduction strategies to keep mothers/birth parents and their babies safe and healthy

- Take a multivitamin with iodine and eat brightly colored fruits and vegetables to increase the nutrition in their milk.
- Call their provider if their baby isn't sleeping well, has difficulty eating, is irritable, constipated, shaky, has a fever or isn't gaining weight.
- Always get a babysitter for the time they are intoxicated.
- Don't drive while under the influence of substances.
- Avoid sleeping with their baby. The safest sleep arrangement is to share the same room with their baby in their own crib.
- It is not safe to nurse their baby while combining downers like opioids, benzodiazepines and alcohol.
- They can protect themselves and their baby from secondhand smoke by not smoking/vaping substances near their baby or in their home, and by asking other people not to smoke/vape substances near their baby or in their home.
- They can protect their baby by taking lower amounts of substances, taking substances less often, and waiting until their milk doesn't have substances in it to nurse their baby.
- Store all substances securely. This is especially important if toddlers or other children are in the house.
 - If they think their baby has swallowed any substance, call Poison Control at 800-222-1222.
 - Call 911 if their baby has difficulty breathing, is difficult to wake, has skin or lips that look blue, is lethargic, too sleepy, has a seizure, or has vomiting and/or diarrhea that won't stop.

Information about pumping and strategies to maintain their milk supply

- They can pump and then discard their milk when using substances.
- After using substances, pumping as often as they usually feed their baby is a good way to maintain their milk supply.
- After using substances, they can feed their baby infant formula, donor milk or milk they pumped when they weren't using a substance.
- When applicable, share information about how long they need to pump and discard their milk.

Information about naloxone

- Naloxone (Narcan®) is a medication that reverses opioid overdose. It moves opioids off the receptors in their body for about 30-90 minutes. Naloxone can save their life if they have an opioid overdose and they should always keep some with them.
- If your patient has a history of opioid use or other street drug use, dispense Naloxone at discharge.

Screening Tools and How They Are Used When Providing Lactation Support

We do not recommend universal urine drug testing; verbal screening with a validated screening tool is the standard of care. Drug tests should be done only when they are medically indicated or at the request of the birth parent, with informed written consent. Confirmatory testing should be ordered if urine drug test (UDT) results are inconsistent with the patient's report. **Positive UDTs during pregnancy are not predictive of positive UDTs postpartum.** Drug test results during pregnancy should not be used to inform initiation of lactation after giving birth.

Many validated verbal screening tools exist, such as 5 Ps, ASSIST, SURP-P, NIDA Quick Screen, and CRAFFT, T-ACE and AUDIT-C. Asking about preconception, household, and partner/spouse substance use may help inform harm reduction patient education. Data show that despite equivalent drug use rates, Black birth parents are reported to child welfare at rates 4 times higher than white birth parents when all birth parents undergo universal drug testing.

Human Milk is Best - Usually

Weighing Risks and Benefits

Human milk is the best source of infant nutrition, and chest/breastfeeding has pronounced health benefits for both the birth parent and the infant. Benefits begin at birth, and many health benefits continue throughout the lifespan of parent and child. Chest/breastfeeding also provides financial savings for the family compared to formula feeding. Historically, providers have discouraged parents with past and current substance use from nursing their babies. Parents should be informed and supported to choose how they feed their infant. If they want to chest/breastfeed, providing lactation support so they can nurse safely protects their health and the health of their baby. When birth parents use substances, we recommend weighing the risks of infant exposure to these substances via human milk against these substantial health advantages. Cultural and personal factors also influence choice of infant feeding methods. We recommend always centering the birth parent's bodily autonomy, needs, health, and desires.

Considerations: Benefits of Lactation

Short term and childhood outcomes

Protective effects and benefits of nursing	Odds Ratio (OR) or Relative Risk (RR)
Maternal/Birth parent	
Lower chance of postpartum hemorrhage (PPH)	OR 0.55 (0.41-0.72); reduced estimated blood loss when PPH occurs (728 mL vs. 1149 mL) (both skin-to-skin and breastfeeding)
Infant	
Lower chance of all-cause infant mortality	ORs 0.49-0.81
Lower chance of all-cause neonatal mortality	ORs 0.49-0.60
Lower chance of infant mortality attributable to infection	OR 0.81 (0.69-0.94)
Lower chance of Sudden Infant Death Syndrome (SIDS)	ORs 0.36-0.60, with longer breast/chestfeeding duration associated with greater protection
Lower chance of Lower Respiratory Tract Infections (LRTIs)	RR 0.81 (0.69-0.95)
Lower chance of severe or persistent diarrhea	RR 0.70 (0.52-0.94)
Lower chance of otitis media	ORs 0.57-0.67
Lower chance of asthma	ORs 0.78-0.90
Lower chance of leukemia	ORs 0.81-0.89
Birth parents taking MOUDs: reduced initiation of pharmacologic treatment for Neonatal Abstinence Syndrome (NAS)	0.77 (0.66-0.90)
Birth parents taking MOUDs: reduced duration of pharmacologic treatment for NAS	Mean Difference (MD) -0.43 (-0.68 to -0.17)
Birth parents taking MOUDs: reduced length of stay for NAS treatment	MD -0.47 (-0.75 to -0.18)

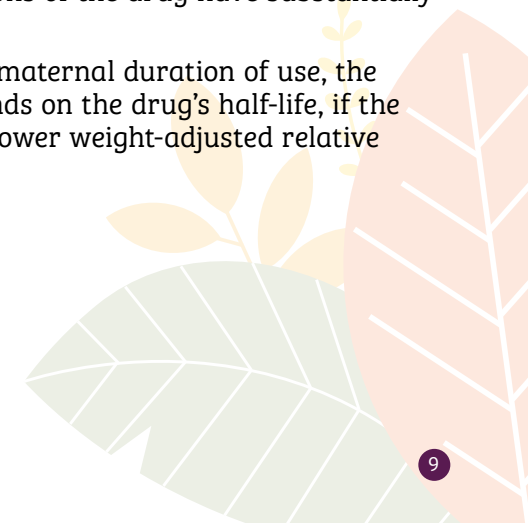
Later life outcomes

Protective effects and benefits of nursing	Odds Ratio (OR) or Relative Risk (RR)
Maternal/Birth parent	
Lower chance of breast/chest cancer	ORs 0.72-0.93, with longer breast/chestfeeding duration associated with greater protection
Lower chance of ovarian cancer	ORs 0.63-0.83, with longer breast/chestfeeding duration associated with greater protection
Lower chance of endometrial cancer	OR 0.89 (0.81-0.98)
Lower chance of thyroid cancer	RR 0.91 (0.83-0.99)
Lower chance of type 2 diabetes	OR 0.68 (0.57-0.82)
Lower chance of hypertension	ORs 0.87-0.92
Infant	
Lower chance of type 1 diabetes	OR 0.43 (0.21-0.90)
Lower chance of type 2 diabetes	OR 0.65 (0.49-0.86)
Lower chance of Crohn's disease	ORs 0.20-0.71, with longer breast/chestfeeding duration associated with greater protection
Lower chance of ulcerative colitis	ORs 0.21-0.78, with longer breast/chestfeeding duration associated with greater protection

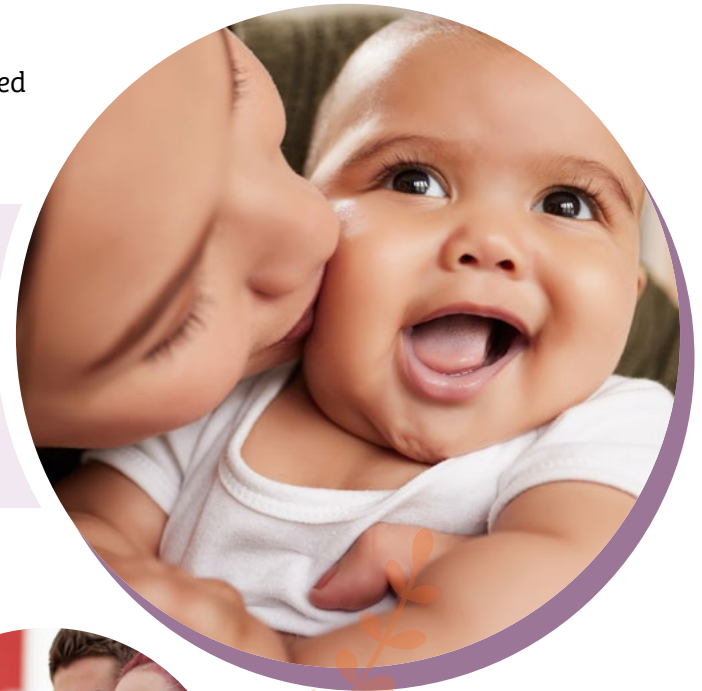
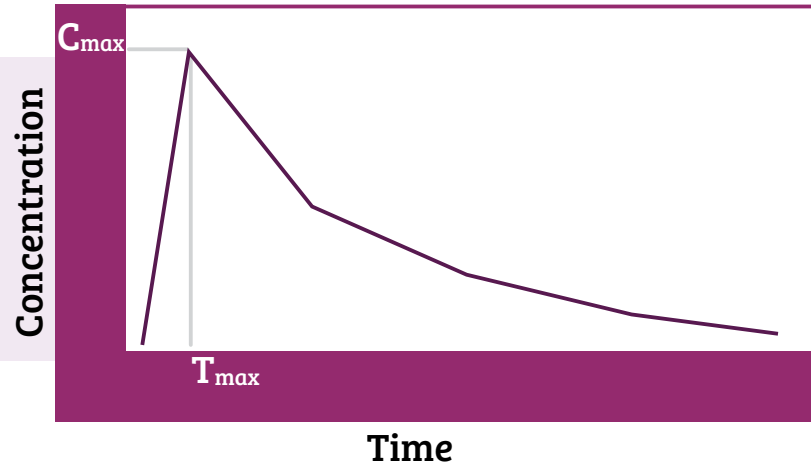


Understanding Risks of Lactation and Substance Use

- Exposure to substances via human milk is typically 10% or less than in utero exposure.
- “Soft” drugs, such as alcohol or cannabis, typically do not carry acute risks for nursing infants. They may carry longer-term development risks.
- Other drugs, such as opioids, methamphetamine, and cocaine, carry risk of life-threatening adverse drug reactions in nursing infants.
 - o Combined central nervous system (CNS) depressants have the highest risk to the infant and birth parent.
 - o Parents can help ensure infant safety by pumping and discarding milk until the breast/chest milk concentrations of the drug have substantially reduced or been eliminated. Parents should pump milk such that they maintain their milk supply.
- An infant’s likelihood of an adverse drug reaction depends on many factors. These factors include maternal dose, maternal duration of use, the infant’s liver and kidney function, and the extent to which the drug partitions into breast/chest milk. It also depends on the drug’s half-life, if the drug has pharmacologically active metabolites, and maternal and infant drug enzyme genetics. Substances with lower weight-adjusted relative infant doses (RID), shorter half-lives, and fewer or no active metabolites are typically safer within drug classes.



- o Infant exposure and the possibility of adverse drug reactions are the highest at t_{max} and decrease after that. Pumping and discarding milk until after t_{max} can substantially reduce infant exposure and risk. Pumping and discarding milk until after the substance is eliminated completely avoids these risks.



- o Please note that the necessary pump and discard interval for most substances varies substantially. It is usually too wide to make a discrete recommendation, particularly without knowing the maternal dose of a substance. The intervals described in this guidance represent approximates.
- o Dose thresholds described in this guidance also represent approximates. Different dyads may tolerate very different levels of substance exposure. We advise closer infant monitoring with higher maternal doses or ongoing maternal medication therapy.
- Illicitly produced and sold substances have a higher potential for contamination with fentanyl or other substances. The substance(s) used and the quantity of those substances used may be unknown. Apart from contamination, there is no increased risk to the infant from substances present in human milk when comparing prescribed drug use (e.g., opioids for postpartum analgesia) and illicit drug use.
- In addition to exposure to substances via human milk, other risks for the infant come from parental substance use, include passive or accidental exposure (e.g., secondhand smoke exposure, or accidental consumption) and parent behavior (e.g., driving under the influence, mental health disturbances, or accidental overlay/suffocation of the infant while sleeping). Injection drug use and shared needles present a risk of infectious diseases. Some of these diseases like HIV can pass through human milk. Note that Hepatitis C is not known to transmit via human milk.
- **You can help substantially reduce these risks by giving parents harm reduction education and strategies.**



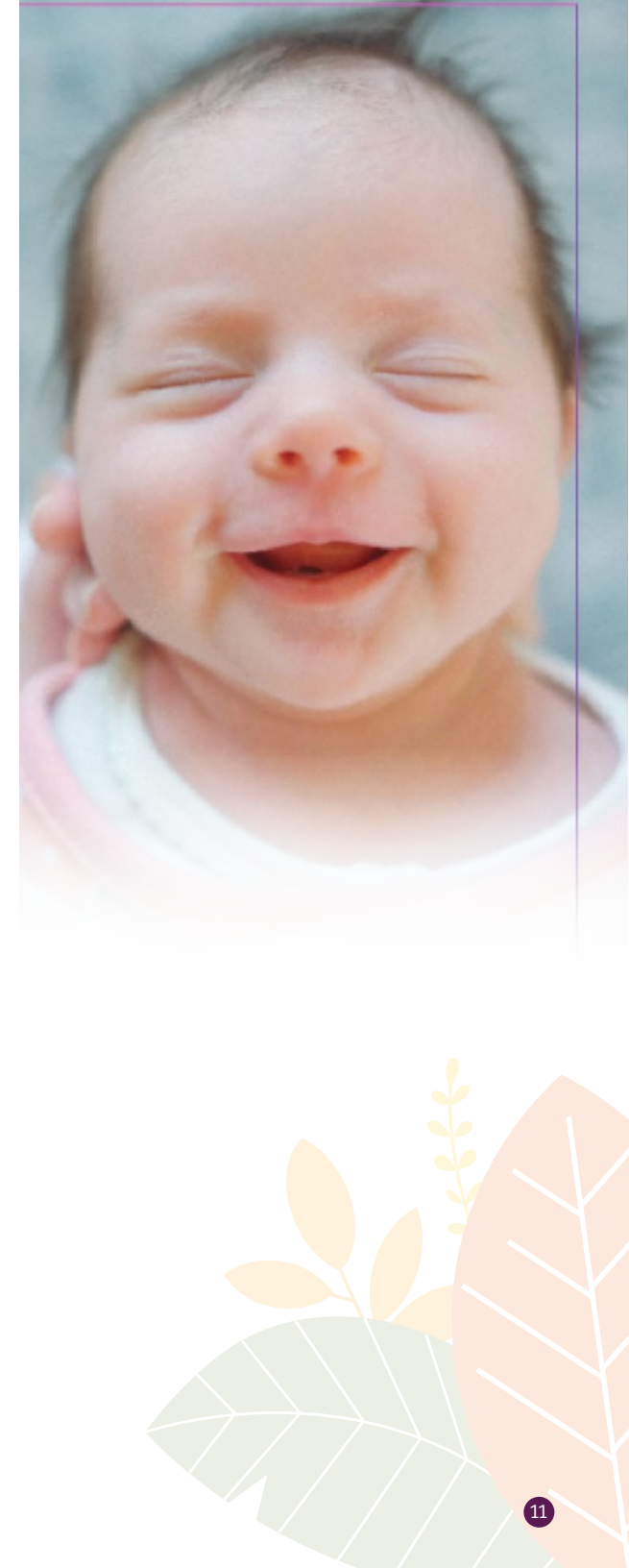
Trauma, Gender, and Racism: Implications for Breast/Chestfeeding

Sexual violence is common. About 1 in 5 U.S. women experience sexual assault in their lifetime. Sexual abuse is more common for those using substances, and some experience ongoing physical, emotional, and sexual abuse throughout pregnancy and parenting. Sexual abuse experiences impact a birth parent's breast/chestfeeding experience. For survivors of sexual abuse, the dual role of breasts -- as sexual and for feeding and caring for their infant -- may be confusing and disturbing, particularly if breast/chestfeeding sensations recall sexual abuse memories. Feelings of shame and dissociation can occur. Peripartum care is particularly challenging for those who have experienced sexual abuse. The lack of privacy, unknown hospital room visitors, body exposure, feeling tied when confined to a hospital bed for a procedure, and lack of control over their experience and circumstances can be difficult. Breast/chestfeeding can also be a healing experience, where survivors experience their body's new purpose as transformative.

For transgender and non-binary birth parents, breast/chestfeeding is a complicated experience. Transgender and non-binary parents may experience dysphoria when breast/chestfeeding. Chest-masculinization surgery, a desire to return to testosterone treatment after birth, and mental health impacts are important factors for this community. Many transgender parents also enjoy breast/chestfeeding their infant.

The cultural legacies of breast/chestfeeding, wet nursing, and formula feeding are important factors to consider. The genocide of the Indigenous peoples of North America has included coerced formula feeding and historical and current high rates of child removal. It has disrupted the passing of cultural knowledge across generations, including breast/chestfeeding. Enslaved Black individuals were forced to provide breast/chest milk for their white owners, which greatly disadvantaged the health of their own children. The practice of Black individuals wet nursing white babies persisted long after the abolition of slavery. The oral history of this practice, and the association of breast/chestfeeding with oppression, lives on today. Racism continues to affect perinatal health care, including outcomes for substance-exposed dyads.

Many factors can influence a birth parent's decision about how to feed their baby. Clinical care and lactation support should center the birth parent's choice and give all parents information on breast/chest and formula feeding benefits. Parents should receive lactation support per their choice and needs. We should not coerce any birth parent out of lactation or coerce them into lactation. **The health and well-being of infants and their parents are inextricably tied to each other -- decisions about feeding methods must consider the needs of both. It is also important to recognize that breast/chest is not best for some dyads, e.g., when the parent's mental health may be impacted.**



Nursing while taking Medications for Opioid Use Disorder is Safe

MOUDs, including buprenorphine, methadone, and naltrexone, are safe and compatible with lactation. Multiple organizations endorse the safety of breast/chestfeeding while taking prescribed MOUDs without other contraindications. These organizations include the Academy of Breastfeeding Medicine, the World Health Organization, the Association of Women's Health, Obstetric, and Neonatal Nurses, the American College of Obstetricians and Gynecologists, the Academy of Perinatal Harm Reduction, and the American Academy of Pediatrics. **We agree and recommend encouraging and supporting breast/chestfeeding for birth parents taking MOUDs.**

Breast/chestfeeding has unique health and well-being benefits for dyads where the birth parent has Opioid Use Disorder (OUD). Breast/chestfeeding is associated with a reduced need for and duration of pharmacologic Neonatal Abstinence Syndrome (NAS)/Neonatal Opioid Withdrawal Syndrome (NOWS) treatment. Lactation is best supported at birthing hospitals by the [Eat, Sleep, Console model of care](#). Postpartum women with OUD report increased confidence in mothering as they see providing milk to their infants as enhancing their infants' well-being. Lactation also imparts a feeling of closeness with their infants when hospitalized and promotes their OUD recovery. Rooming-in, which supports breast/chestfeeding, increases the likelihood of infants being discharged in the custody of their mothers. Lactation and breast/chestfeeding are associated with oxytocin release and reduced stress hormone secretion. This is especially valuable for a population often exposed to extraordinary physical, social, and mental stress.

Have supportive conversations with individuals in your care that include offering encouragement, sharing information and involving their peers and loved ones to support their goals.

SUD and OUD are treatable illnesses and must be managed as health conditions, just as hypertension, diabetes, and sepsis are.



Recommendations When Caring for Patients in OUD Treatment

Support lactation and breast/chestfeeding

- Provide medically accurate information and inform birth parents that breast/chestfeeding while taking MOUDs is safe and beneficial
- Provide anticipatory guidance and education during pregnancy and after delivery. Share information about breast/chestfeeding health benefits, benefits related to opioid-exposed dyads. Share information about technical aspects of breast/chestfeeding, what to expect with NAS and breast/chestfeeding, and breast/chestfeeding with Hepatitis C. Provide educational materials to share with partners, family, and friends.
- Provide logistical and planning support to facilitate continued access to MOUDs during Labor & Delivery (L&D) and postpartum hospitalization, and transportation between treatment center and hospital during NAS treatment.
- Provide person-centered, sensitive, and customized lactation support that helps build practical skills--especially for breast/chestfeeding infants with NAS.
- Institute rooming-in as the default practice and provide alternatives responsive to the mother or lactating parent's needs (e.g., a private and comfortable location to pump breast/chest milk, comfortable bedside seating in the NICU) to support lactation during NAS treatment or if rooming-in is not possible.

Reduce stigma and provide trauma-informed care

- Continue your education to improve relationships with SUD patients with training in Trauma Informed Care (TIC) and/or Motivational Interviewing (MI).
- Develop nonjudgment and compassion as patient care skills. Empower your patients to advocate for themselves, request information and ask for help when they need it.
- Be flexible, especially around scheduling, when caring for pregnant and postpartum patients with OUD.
- Provide trauma-informed peripartum care to all patients, including limiting body exposure, always asking permission before touching, and avoiding having staff present in their room at night or in the dark.
- Provide lactation support as part of everyone's routine care.

Polysubstance Use

Polysubstance use is common and combining certain substances can increase overdose risk, drug poisoning, and death. It can also increase the likelihood of adverse drug reactions in the infant. This document contains information on dose thresholds of different substances above which parents should pump and discard milk. However, the information in this document assumes that an individual is not using any other substances at the same time. We recommend additional caution with polysubstance use.

Parents should avoid combining substances that act synergistically to depress the central nervous system. These are: opioids, multiple opioids, benzodiazepines, multiple benzodiazepines and/or alcohol.

	Alcohol	Cannabis	Tobacco/Nicotine	Opioids	Benzodiazepines	Methamphetamine	Cocaine
Alcohol				Avoid	Avoid		Avoid
Cannabis							
Tobacco/Nicotine							
Opioids	Avoid			Avoid	Avoid	Avoid	Avoid
Benzodiazepines	Avoid			Avoid			
Methamphetamine				Avoid			
Cocaine	Avoid			Avoid			

Substance Specific Guidance

Summary Table

Key: P&D = Pump and discard. BF = breastfeeding/chestfeeding. PP = postpartum. C_{max} = maximum (peak) concentration of drug in milk. T_{max} = amount of time after use when C_{max} is reached. HM = Human milk. CNS depression = Central nervous system depression, i.e., excessive sleepiness, not waking to feed, hypotonia, slow or difficult breathing, apnea, cyanosis. BAC = Blood alcohol content. SIDS (Sudden Infant Death Syndrome). Milk-to-plasma ratio (M:P) is a ratio of the concentration of the drug in maternal/birth parent milk and plasma and does not indicate the level of infant exposure itself. It may be used to approximately estimate milk concentrations when plasma concentrations are known.

Drug	Monitor infant for	Monitor lactating parent for	Pumping and discarding (P&D) milk	Relative infant dose (RID) %	Milk-to-plasma ratio	Additional information
Buprenorphine – Safe (0), Moderate evidence. Doses studied: 2.4-24 mg/d SL	Withdrawal symptoms in an opioid-exposed infant (Buprenorphine-naloxone combination product only)	N/A	No	~<1%, range 0.2%-2.8%	Buprenorphine: ~1, range 0.9-2.8 Norbuprenorphine: 0.4-1.1	Infant outcomes improve when parents taking buprenorphine breast/chestfeed. Buprenorphine-naloxone combination products are OK.
Methadone – Safe (0), Strong evidence. Doses studied: 25-200 mg/d PO	Withdrawal symptoms, sedation	N/A	No	~2.6%, range 0.3%-8.8%	~1, range 0.05-2.3	Infant outcomes improve when parents taking methadone breast/chestfeed. Weaning should be gradual if possible.
Naltrexone – Safe (0), Limited evidence. Dose studied: 50 mg/d PO	Withdrawal symptoms in an opioid-exposed infant	N/A	No	1.1%	Naltrexone: 1.9 6,β-naltrexol: 3.4	

Drug <i>(continued)</i>	Monitor infant for <i>(continued)</i>	Monitor lactating parent for <i>(continued)</i>	Pumping and discarding (P&D) milk <i>(continued)</i>	Relative infant dose (RID) % <i>(continued)</i>	Milk-to-plasma ratio <i>(continued)</i>	Additional information <i>(continued)</i>
<p>Codeine – Elevated concern (3), Moderate evidence. Doses studied: 1-12 PP doses (60-720 mg total) PO</p>	<p>CNS depression, poor feeding/weight gain, constipation, pinpoint pupils, especially at maternal/birth parent dose >1.4-1.6 mg/kg/day or any dose >4 days</p>	<p>CNS depression</p>	<p>P&D if maternal/birth parent sedation occurs. P&D if infant sedation occurs. P&D likely not necessary <0.9-1.0 mg/kg/d for ≤4 days. Highest codeine concentration at 1-2 hours after use. P&D for 8.5-9.5 hours after use reduces codeine levels to 1/8 of C_{max}. Longest time to elimination from HM is 48 hours.</p>	<p>0.6%-12.3%</p>	<p>Codeine: 1.3-2.5, Morphine: 1.1-4.1</p>	<p>Codeine metabolism to morphine is highly variable. Increased SIDS risk when sedated parents sleep with their infant.</p>

Drug <i>(continued)</i>	Monitor infant for <i>(continued)</i>	Monitor lactating parent for <i>(continued)</i>	Pumping and discarding (P&D) milk <i>(continued)</i>	Relative infant dose (RID) % <i>(continued)</i>	Milk-to-plasma ratio <i>(continued)</i>	Additional information <i>(continued)</i>
<p>Oxycodone – Elevated concern (3), Moderate evidence.</p> <p>Doses studied: 15-90 mg/day PO</p>	<p>CNS depression, poor feeding/weight gain, constipation, pinpoint pupils, especially at maternal/birth parent dose >0.4 mg/kg/day</p>	<p>CNS depression</p>	<p>P&D if maternal/birth parent sedation occurs. P&D if infant sedation occurs. P&D likely not necessary <0.15 mg/kg/d. Highest oxycodone concentration at 1-2 hours after use. P&D for 10.6-11.6 hours after use reduces oxycodone levels to 1/8 of C_{max}. Longest time to elimination from HM is 37 hours.</p>	<p>1.8%-8%</p>	<p>3.4, range 2.6-4.5</p>	<p>Increased SIDS risk when sedated parents sleep with their infant.</p>
<p>Hydrocodone – Moderate concern (2), Limited evidence.</p> <p>Doses studied: 10-120 mg/day PO</p>	<p>CNS depression, poor feeding/weight gain, constipation, pinpoint pupils, especially at maternal/birth parent dose >80 mg/d</p>	<p>CNS depression</p>	<p>P&D if maternal/birth parent sedation occurs. P&D if infant sedation occurs. P&D likely not necessary <25 mg/d. Highest hydrocodone levels 0.5-3 hours after use. P&D for 11.9-14.4 hours after use reduces hydrocodone levels to 1/8 of C_{max}</p>	<p>2.5%, range 0.1%-9.9%</p>	<p>No evidence</p>	<p>Increased SIDS risk when sedated parents sleep with their infant.</p>

Drug <i>(continued)</i>	Monitor infant for <i>(continued)</i>	Monitor lactating parent for <i>(continued)</i>	Pumping and discarding (P&D) milk <i>(continued)</i>	Relative infant dose (RID) % <i>(continued)</i>	Milk-to-plasma ratio <i>(continued)</i>	Additional information <i>(continued)</i>
<p>Hydromorphone – Moderate concern (2), Limited evidence.</p> <p>Doses studied: 2 mg IN</p>	<p>CNS depression, poor feeding/weight gain, constipation, pinpoint pupils</p>	<p>CNS depression</p>	<p>P&D if maternal/birth parent sedation occurs. P&D if infant sedation occurs. P&D likely not necessary <24 mg/day. Highest hydromorphone levels 2 hours after use. P&D for 33.5 hours after use reduces hydromorphone levels to 1/8 of C_{max}</p>	<p>0.7%</p>	<p>2.6</p>	<p>Increased SIDS risk when sedated parents sleep with their infant.</p>
<p>Morphine – Low concern (1), Limited evidence.</p> <p>Doses studied: 4 mg/d-1.1 mg/kg/d intrathecally, PO, IV, and PO+IV</p>	<p>CNS depression, poor feeding/weight gain, constipation, pinpoint pupils, especially at maternal/birth parent dose >1.1 mg/kg/day.</p>	<p>CNS depression</p>	<p>P&D if maternal/birth parent sedation occurs. P&D if infant sedation occurs. P&D likely not necessary with usual clinical doses. Highest morphine levels 0.5-2 hours after use. P&D for 9.5-11 hours after use reduces morphine levels to 1/8 of C_{max}</p>	<p>0.5-5.8%</p>	<p>0.32-3.6</p>	<p>Increased SIDS risk when sedated parents sleep with their infant.</p>

Drug <i>(continued)</i>	Monitor infant for <i>(continued)</i>	Monitor lactating parent for <i>(continued)</i>	Pumping and discarding (P&D) milk <i>(continued)</i>	Relative infant dose (RID) % <i>(continued)</i>	Milk-to-plasma ratio <i>(continued)</i>	Additional information <i>(continued)</i>
<p>Fentanyl – Low concern (1), Limited evidence.</p> <p>Doses studied: 2-6 µg/kg IV, epidurally, and 34 µg/kg/day transdermal</p>	<p>CNS depression, poor feeding/weight gain, constipation, pinpoint pupils.</p>	<p>CNS depression</p>	<p>P&D if maternal/birth parent sedation occurs. P&D if infant sedation occurs. P&D likely not necessary with usual clinical doses. Highest fentanyl levels within 1 hour after use. P&D for 7-13 hours after use reduces fentanyl levels to 1/8 of C_{max}.</p>	<p>0.8%, range 0.02%-2.8%</p>	<p>2.1 or greater</p>	<p>Fentanyl is a potent opioid common in illicit drugs and increases overdose risk. Available evidence is on use in clinical settings. Increased SIDS risk when sedated parents sleep with their infant.</p>
<p>Heroin – Highest concern (4), No direct evidence during lactation (N).</p> <p>Doses studied: 2.6-690 mg IV, IM, PO, IN, INH, and rectally in non-lactating adults</p>	<p>CNS depression, poor feeding/weight gain, constipation, pinpoint pupils.</p>	<p>CNS depression</p>	<p>P&D necessary after use. Highest heroin, 6-monoacetylmorphine and morphine levels within 3 hours of use. P&D for minimum 1.5 days after use. Longest possible P&D interval calculated to 104 hours, or almost 5 days.</p>	<p>No evidence</p>	<p>No evidence</p>	<p>Increased SIDS risk when sedated parents sleep with their infant. Ensure infant is not exposed to fumes from smoked heroin.</p>

Drug <i>(continued)</i>	Monitor infant for <i>(continued)</i>	Monitor lactating parent for <i>(continued)</i>	Pumping and discarding (P&D) milk <i>(continued)</i>	Relative infant dose (RID) % <i>(continued)</i>	Milk-to-plasma ratio <i>(continued)</i>	Additional information <i>(continued)</i>
Naloxone – Low concern (1), No direct evidence during lactation (N).	Opioid withdrawal symptoms	N/A	P&D necessary for substance causing overdose/ necessitating maternal/birth parent naloxone use.	No evidence	No evidence	Naloxone has minimal oral bioavailability. It's unlikely to be absorbed by an infant exposed via human milk. Naloxone reverses opioid overdose but does not remove opioids from body or HM.
Lorazepam – Low concern (1), Limited evidence. Doses studied: 0.5-7.5 mg/d	CNS depression, poor feeding/ weight gain	N/A	P&D if infant sedation occurs. P&D likely not necessary <2 mg/day. Highest lorazepam levels within 2 hours after use. P&D for 38-47 hours after use reduces levels to 1/8 of C _{max}	2.4%, range 2.0%-2.7%	0.64, range 0.15-1.4	Benzodiazepines with shorter half-lives are preferred in lactation, e.g., midazolam or oxazepam. Increased SIDS risk when sedated parents sleep with their infant.

Drug <i>(continued)</i>	Monitor infant for <i>(continued)</i>	Monitor lactating parent for <i>(continued)</i>	Pumping and discarding (P&D) milk <i>(continued)</i>	Relative infant dose (RID) % <i>(continued)</i>	Milk-to-plasma ratio <i>(continued)</i>	Additional information <i>(continued)</i>
<p>Alprazolam – Moderate concern (2), Limited evidence.</p> <p>Doses studied: 0.5-2.4 mg/d</p>	CNS depression, poor feeding/weight gain	N/A	P&D if infant sedation occurs. P&D likely not necessary within typically prescribed doses (3 mg/day). Highest alprazolam levels 0.5-2 hours after use. P&D for 36.5-47 hours after use reduces alprazolam levels to 1/8 of C _{max}	3.7%	0.37, range 0.11-0.52	<p>Benzodiazepines with shorter half-lives are preferred in lactation, e.g., midazolam or oxazepam.</p> <p>Increased SIDS risk when sedated parents sleep with their infant. Weaning should be gradual if possible.</p>
<p>Clonazepam – Moderate concern (2), Limited evidence.</p> <p>Doses studied: 0.25-4 mg/d</p>	CNS depression, poor feeding/weight gain	N/A	P&D if infant sedation occurs. P&D likely not necessary within typically prescribed doses (4 mg/day). Highest clonazepam levels 1-4 hours after use. P&D for 91-124 hours after use reduces clonazepam levels to 1/8 of C _{max}	1.7-4.0%	0.3-0.4	<p>Clonazepam has an extremely long half-life, especially in newborns. Benzodiazepines with shorter half-lives are preferred in lactation, e.g., midazolam or oxazepam.</p> <p>Increased SIDS risk when sedated parents sleep with their infant.</p>

Drug <i>(continued)</i>	Monitor infant for <i>(continued)</i>	Monitor lactating parent for <i>(continued)</i>	Pumping and discarding (P&D) milk <i>(continued)</i>	Relative infant dose (RID) % <i>(continued)</i>	Milk-to-plasma ratio <i>(continued)</i>	Additional information <i>(continued)</i>
<p>Diazepam – Moderate concern (2), Limited evidence.</p> <p>Doses studied: 2.5-1.5 mg IV, 6-80 mg/d PO</p>	<p>CNS depression, poor feeding/weight gain, neonatal jaundice</p>	<p>N/A</p>	<p>P&D if infant sedation occurs. P&D likely not necessary for single doses or short courses. Highest diazepam levels 1-2 hours after use. P&D for 73-146 hours after use reduces levels to 1/8 of C_{max}. Some researchers recommend P&D for 24 hours after high dose.</p>	<p>5.8%, range 2.5%-13.4%</p>	<p>2.8, range 0.14-7.65</p>	<p>Diazepam and its metabolite <i>N</i>-desmethyldiazepam have extremely long half-lives, especially in newborns. Benzodiazepines with shorter half-lives are preferred in lactation, e.g., midazolam or oxazepam. Increased SIDS risk when sedated parents sleep with their infant.</p>
<p>Methamphetamine – Highest concern (4), Limited evidence.</p> <p>Doses studied: unknown doses.</p>	<p>Poor weight gain, irritability/inconsolability, insomnia, dilated pupils, vomiting, diarrhea, hyperthermia, hyperactive startle reflex, tremor, tachycardia, shallow respirations, seizure, cyanosis.</p>	<p>Mental health disturbances, psychosis, aggression</p>	<p>P&D necessary after use. High methamphetamine levels within 24 hours of use. P&D for minimum 48 hours after use. Small amounts of methamphetamine may be present up to 100 hours after use. Negative UDT indicates methamphetamine undetectable in HM.</p>	<p>No evidence</p>	<p>No evidence</p>	<p>Ensure infant is not exposed to fumes from smoked methamphetamine.</p>

Drug <i>(continued)</i>	Monitor infant for <i>(continued)</i>	Monitor lactating parent for <i>(continued)</i>	Pumping and discarding (P&D) milk <i>(continued)</i>	Relative infant dose (RID) % <i>(continued)</i>	Milk-to-plasma ratio <i>(continued)</i>	Additional information <i>(continued)</i>
<p>Amphetamine, Dextroamphetamine, and Lis-dexamphetamine – Low concern (1), Limited evidence. Doses studied: 15-45 mg/d.</p>	<p>Poor weight gain, irritability/inconsolability, insomnia, dilated pupils, vomiting, diarrhea, hyperthermia, hyperactive startle reflex, tremor, tachycardia, shallow respirations, seizure, cyanosis.</p>	N/A	<p>P&D if infant adverse effects occur. P&D likely not necessary <45 mg/d. Highest amphetamine concentration at 1-2 hours after use. P&D for 25-44 hours after use reduces amphetamine levels to 1/8 of C_{max}.</p>	<p>7.5%, range 1.0-13.8%</p>	<p>3.4, range 2.2-7.5</p>	
<p>Methylphenidate – Low concern (1), Limited evidence. Doses studied: 15-80 mg/d</p>	<p>Poor weight gain, irritability/inconsolability, insomnia, dilated pupils, vomiting, diarrhea, hyperthermia, hyperactive startle reflex, tremor, tachycardia, shallow respirations, seizure, cyanosis.</p>	N/A	<p>P&D if infant adverse effects occur. P&D likely not necessary <80 mg/d. Highest methylphenidate concentration within 4 hours after use. P&D for 10.3-14.5 hours after use reduces methylphenidate levels to 1/8 of C_{max}. Longest time to elimination from HM is 21 hours.</p>	<p>0.4%, range 0-0.7%</p>	<p>2.4, range 0.8-2.7</p>	

Drug <i>(continued)</i>	Monitor infant for <i>(continued)</i>	Monitor lactating parent for <i>(continued)</i>	Pumping and discarding (P&D) milk <i>(continued)</i>	Relative infant dose (RID) % <i>(continued)</i>	Milk-to-plasma ratio <i>(continued)</i>	Additional information <i>(continued)</i>
<p>Cocaine – Highest concern (4), Limited evidence.</p> <p>Dose studied: 0.5 g IN</p>	<p>Poor weight gain, irritability/inconsolability, insomnia, dilated pupils, vomiting, diarrhea, hyperthermia, hyperactive startle reflex, tremor, tachycardia, shallow respirations, seizure, cyanosis.</p>	N/A	<p>P&D necessary after use. P&D for minimum 36 hours after use. Small amounts of cocaine may be present up to 6 days after use.</p>	No evidence	No evidence	<p>Ensure infant is not exposed to fumes from smoked cocaine. Never apply to nipples/breast.</p>
<p>Alcohol – Low concern (1), Strong evidence.</p> <p>Doses studied: most studies 0.3-0.4 g/kg ethanol, up to 8 drinks/occasion</p>	<p>CNS depression, abdominal distension, bloating, vomiting, constipation, pseudo-Cushing's syndrome</p>	<p>Adequate vitamins B1, B6, and B12, iron, folic acid, zinc, magnesium, and choline levels.</p>	<p>P&D necessary particularly following >1 drink. Highest alcohol concentration 30-60 minutes after intake. P&D for 2-3 hours per drink depending on bodyweight. Resume BF when BAC = 0%</p>	0.4-1.8%	1	<p>Alcohol has negative effects on lactation performance. Pumping and eating before alcohol intake reduces alcohol absorption. Alcohol exposure causes fussiness in infants and less coordinated interactions between infants and parents.</p> <p>Increased SIDS risk when sedated parents sleep with their infant.</p>

Drug <i>(continued)</i>	Monitor infant for <i>(continued)</i>	Monitor lactating parent for <i>(continued)</i>	Pumping and discarding (P&D) milk <i>(continued)</i>	Relative infant dose (RID) % <i>(continued)</i>	Milk-to-plasma ratio <i>(continued)</i>	Additional information <i>(continued)</i>
<p>Cannabis – Low concern (1), Inadequate evidence Doses studied: 23.2 mg THC, INH</p>	<p>Normal development, adequate weight gain, drowsiness.</p>	<p>N/A</p>	<p>Highest THC concentration around 1 hour after intake (smoked cannabis). P&D unlikely to eliminate THC exposure. Half-life ranges 27 hours-17 days. Longest known time to elimination of THC from HM is 6 weeks.</p>	<p>THC 0.4%-1.5%</p>	<p>THC: 6.8, range 1.8-34.6 CBD: 2.6 11-OH-THC: 0.14</p>	<p>Increased SIDS risk when sedated parents sleep with their infant. Increased SIDS risk with paternal cannabis use. Long-term effects on neurodevelopment are understudied but biologically plausible. Encourage parents to discontinue/reduce cannabis use and continue to breast/chestfeed.</p>



Drug <i>(continued)</i>	Monitor infant for <i>(continued)</i>	Monitor lactating parent for <i>(continued)</i>	Pumping and discarding (P&D) milk <i>(continued)</i>	Relative infant dose (RID) % <i>(continued)</i>	Milk-to-plasma ratio <i>(continued)</i>	Additional information <i>(continued)</i>
<p>Tobacco – No concern (0), Strong evidence</p> <p>Doses studied: up to 40 cigarettes/d</p>	<p>Insomnia and reduced sleep, vomiting, diarrhea, tachycardia, muscle spasms, tremors.</p>	<p>Adequate iodide, calcium, vitamins A, B12, C, E, iron, zinc, carotene, and folate levels.</p>	<p>P&D not typically necessary. P&D if infant adverse effects occur. Highest nicotine concentration immediately after intake. Space nicotine intake and feeding as far as possible.</p>	<p>0.5%</p>	<p>2.8, range 0.3-9.6</p>	<p>Tobacco/nicotine use is harmful to maternal/birth parent and child health. However, breast/chestfeeding gives substantial protection against its negative effects. Encourage parents to discontinue/reduce tobacco use and to breast/chestfeed.</p> <p>Roomsharing without bedsharing is especially important for these dyads.</p>

Drug <i>(continued)</i>	Monitor infant for <i>(continued)</i>	Monitor lactating parent for <i>(continued)</i>	Pumping and discarding (P&D) milk <i>(continued)</i>	Relative infant dose (RID) % <i>(continued)</i>	Milk-to-plasma ratio <i>(continued)</i>	Additional information <i>(continued)</i>
<p>Nicotine replacement therapy – No concern (0), Limited evidence</p> <p>Doses studied: 7-21 transdermal patch</p>	<p>Insomnia and reduced sleep, vomiting, diarrhea, tachycardia, muscle spasms, tremors.</p>	N/A	<p>P&D not typically necessary. P&D if infant adverse effects occur. Space short-acting NRT intake (gum, spray) and feeding as far as possible. Remove TD patch at night.</p>	2.4%	No evidence	<p>NRT is safer than cigarette smoking at comparable nicotine intake.</p> <p>HM nicotine concentration: 17 daily cigarettes ≈ 21 mg patch</p>
<p>Bupropion – Moderate concern (2), Limited evidence</p> <p>Doses studied: 150-300 mg/d</p>	Afebrile seizure	N/A	<p>P&D not typically necessary. P&D if infant adverse effects occur.</p>	0.6%	2.6, range 0.1-8.6	

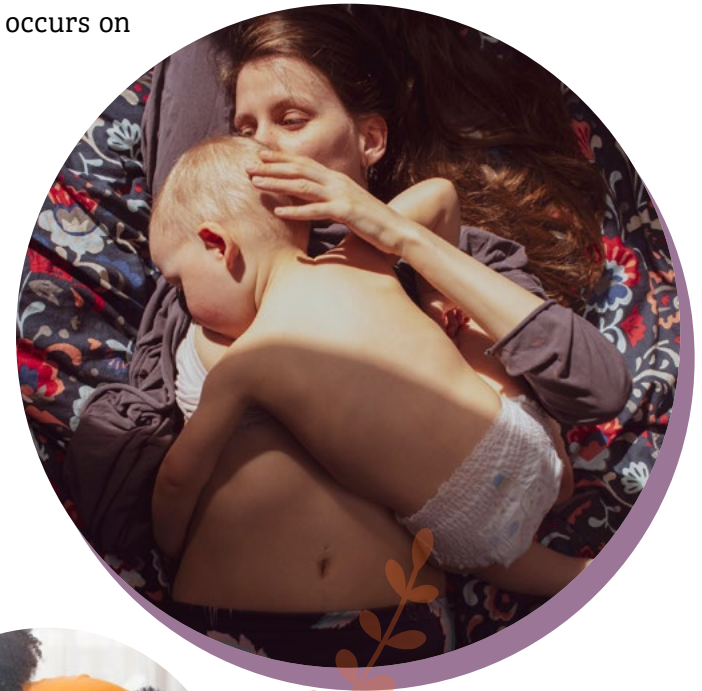


Levels of concern. Each substance is graded according to the following thresholds. Note that use occurs on a spectrum, and very high levels of even low concern drugs may be dangerous:

- **Safe (0):** If a birth parent uses this substance or medication, encourage them to breast/chestfeed as it improves health outcomes for the infant.
- **Low concern (1):** Using substance while breast/chestfeeding has no documented adverse drug reactions in the infant, or only relatively mild adverse drug reactions, i.e., those that resolved spontaneously or with supportive care only. No infant deaths are associated with use of this substance while breast/chestfeeding, nor any life-threatening harmful drug reactions. Use of this substance during breast/chestfeeding may have effects on long-term development, i.e., cognitive or academic outcomes.
- **Moderate concern (2):** Using this substance while breast/chestfeeding has documented adverse drug reactions. Reactions may be serious or life-threatening, though this outcome is rare and unlikely. This category also includes substances with serious adverse drug reactions, but only in combination with other drugs or partly attributable to prenatal exposure. Drugs with very prolonged half-lives are also included in this category.
- **Elevated concern (3):** Using this substance while breast/chestfeeding has documented adverse drug reactions, including serious or life-threatening ones. Substances in this category while breast/chestfeeding may be associated with infant deaths, though this outcome rare and unlikely.
- **Highest concern (4):** These substances pose a high level of risk to the infant and a high chance of causing a potentially life-threatening adverse drug reaction or significant damage. This substance may only exist as an illegal drug and therefore have an increased contamination risk with fentanyl or other contaminants.

Evidence Quality and Completeness. Each substance is graded according to the following thresholds. Note that randomized or experimental studies are extremely rare in perinatal populations due to ethical concerns.

- **No direct evidence during lactation (N).** There is no direct evidence for this substance during lactation. Recommendations are based on the drug's pharmacologic and biological properties in non-lactating adults and/or of its metabolite(s) during lactation.
- **Inadequate (I).** The evidence is not adequate to determine if the risks associated with use of these substances during lactation outweigh the benefits of breast/chestfeeding or vice-versa.
- **Limited (L).** Evidence is limited to case reports and small pharmacokinetic studies. Alternatively, there are poor-quality pharmacokinetic studies and larger observational studies.
- **Moderate (M).** The evidence base for this substance includes case reports, pharmacokinetic studies, and some controlled observational studies.
- **Strong (S).** The evidence base for this substance is strong, including controlled observational studies related to infant/child outcomes.



Individual Substance Specific Guidance

How to Read this Section:

Be sure to read classification sections as well as individual substances (e.g., Opioids as well as Codeine).

Safety: The safety of breast/chestfeeding while taking this drug.

Human Milk: The extent to which this drug partitions into human milk and infant levels if known.

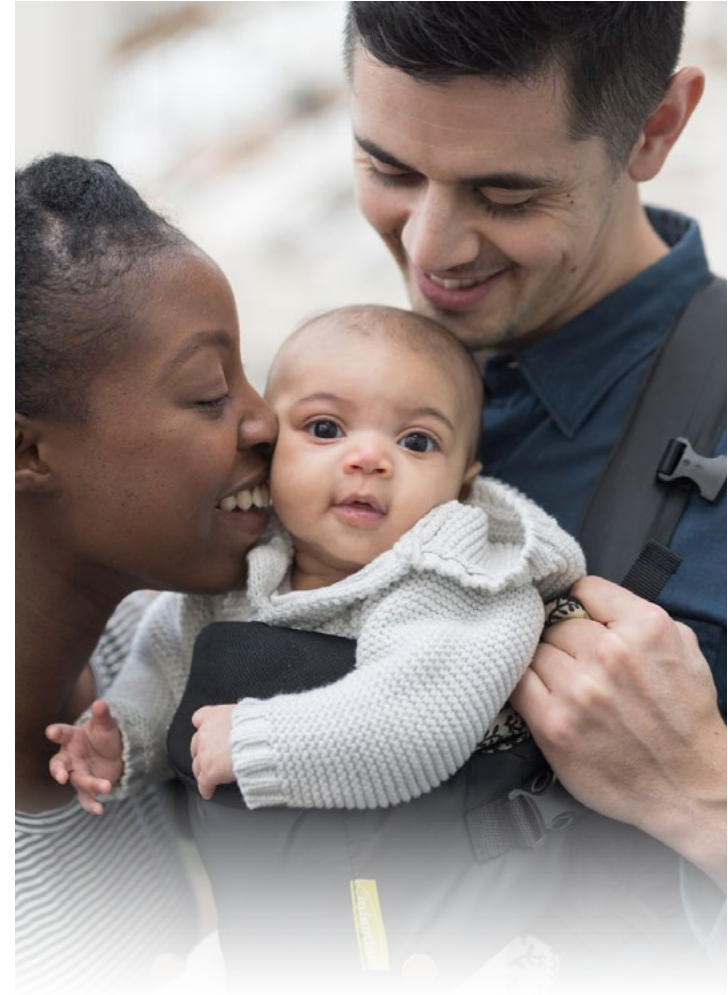
Adverse Effects: Adverse effects reported in literature due to infant exposure via human milk.

Monitor for: Possible adverse effects to monitor an infant for. Relevant maternal/birth parent effects also noted.

Considerations: Additional relevant information.

Harm Reduction: Strategies to reduce parental substance use harms during lactation.

Pumping and Discarding Human Milk: Information on whether pumping and discarding milk is necessary and how long to pump and discard milk after use of substance. Please note that variation exists between individuals, and some dyads may tolerate higher maternal/birth parent doses than described here.



MOUDs

MOUDs, including buprenorphine, methadone, and naltrexone, are safe and compatible with lactation. Refer to Page 12 for recommendations when caring for patients in OUD treatment

Buprenorphine

Safety: Safe (0); evidence level Moderate (M), Doses studied: 2.4-24 mg/d SL. Breast/chestfeeding improves outcomes for infants of birth parents taking this medication. Encourage and support lactation for mothers and birth parents taking buprenorphine or buprenorphine-naloxone.

Human Milk: Maternal/birth parent buprenorphine intake transfers in small amounts to breast/chest milk or human milk (RID <1%). Infant intake via human milk is lower than levels needed to treat NAS. Infant levels of buprenorphine are low or undetectable.

Adverse Effects: No adverse drug reactions are reported in the literature.

Monitor for: Withdrawal symptoms in an opioid exposed infant (theoretically plausible, though not observed in buprenorphine-naloxone combination product).

Methadone

Safety: Safe (0); evidence level Strong (S), Doses studied: 25-200 mg/d PO. Breast/chestfeeding improves outcomes for infants of birth parents taking this medication. Encourage and support lactation for mothers and birth parents taking methadone.

Human Milk: Maternal/birth parent methadone intake transfers in small amounts to breast/chest milk/human milk (RID 2.6%). Infant intake via human milk is typically lower than levels needed to treat NAS. Infant levels of methadone are low or undetectable and do not differ between breast/chest fed and non-breast/chest fed infants at 96 hours and 14 days of life.

Adverse Effects: There are no adverse drug reactions in nursing infants attributable to methadone taken as prescribed for OUD. CNS depression when maternal/birth parent methadone was combined with other opioids or cocaine.

Monitor for: Withdrawal symptoms, sedation.

Considerations: If possible, infants should be weaned gradually.



Naltrexone

Safety: Safe (0) – evidence level Limited (L), dose studied: 50 mg/d PO. Encourage and support lactation for mothers and birth parents taking naltrexone. Naltrexone does not carry opioid toxicity risk as it is an opioid antagonist.

Human Milk: Maternal/birth parent naltrexone intake transfers in small amounts to breast/chest milk/human milk (RID 1.1%). Infant levels of naltrexone its metabolite 6,β-naltrexol are low or undetectable.

Adverse Effects: No adverse drug reactions are reported in the literature.

Monitor for: Withdrawal symptoms in an opioid exposed infant.

Opioids

Safety: Variable, low to high concern (1-4). All opioids pose some risk of toxicity and central nervous system depression to the breast/chestfed infant.

Human Milk: All opioids transfer to breast/chest milk/human milk to an extent.

Adverse Effects: CNS depression, constipation, pinpoint pupils; rarely, respiratory failure, and death.

Monitor for:

Infant: Constipation, excessive drowsiness, difficulty rousing the infant, not waking to feed, slow or difficult breathing, pinpoint pupils, hypotonia, pallor/cyanosis, poor weight gain, withdrawal symptoms

Birth parent: Sedation or excessive drowsiness

Considerations:

- Health care professionals should treat postpartum pain. Use acetaminophen and NSAIDs as first-line pain relief medications, and limit opioids to the lowest effective dose and shortest necessary duration to manage pain.
- Genetic variation and other individual factors influence opioid metabolism. Some dyads may tolerate much higher maternal/birth parent opioid doses than others.
- Smaller doses for shorter durations are safer. Longer durations of opioid use with breast/chestfeeding may cause opioid accumulation in the infant and cause an adverse drug reaction.
- Multiple opioids or other CNS depressants has increased risks for the parent and infant.
- Cocaine causes changes in the metabolism of opioids. It can extend the time certain metabolites circulate and increase overdose likelihood.



Harm Reduction Strategies for Parents:

- Pump and store milk before taking opioids.
- Pump and discard milk around t_{max} (1-2 hours after use for most opioids) to reduce infant exposure.
- Know and recognize signs of infant opioid toxicity. Seek emergency medical care, particularly if the infant has slowed breathing or cyanosis.
- Roomshare but not bedshare. SIDS risk is elevated when parents under the influence of sedating substances sleep with infants.
- Avoid overdose. Use one substance at a time and avoid hazardous combinations like opioids with alcohol, benzodiazepines, other sedatives, or cocaine. Never using alone, always keeping naloxone at hand, using less and going slow (especially after a period of not using) also reduce the risk of overdose and death.
- Avoid infectious diseases by not sharing injection equipment and using syringe exchange programs.
- Avoid driving.
- Get childcare for the time parents are intoxicated.

Pumping and Discarding Milk:

- Infant exposure and the likelihood of adverse drug reaction are highest if breast/chestfed at t_{max} (1-2 hours after use for most opioids) and decrease after that. Opioids decline to low or zero levels over the 1-5 days following use.
- Pumping and discarding milk after using opioids in higher doses may be advisable.
- Evidence indicates that infant opioid sedation often occurs when maternal/birth parent opioid sedation occurs. If maternal/birth parent sedation is found, we advise closely monitoring infant and/or pumping and discarding milk until maternal/birth parent sedation resolves and opioid levels reduce.
- Following an infant's adverse drug reaction, we recommend pumping and discarding milk until infant effects resolve, maternal/birth parent dose and concentration of substance in milk fall. Most opioids will fall to a small fraction of previous levels within 24 hours.

Codeine

Safety: Elevated concern (3), Evidence level Moderate (M), Doses studied: 1-12 60 mg doses (60-720 mg total) PO.

Human Milk: Maternal/birth parent codeine intake transfers in moderate but highly variable amounts to breast/chest milk/human milk (RID 0.6-12.3%).

Adverse Effects: CNS depression (any severity) occurs in 16.7-23% of infants whose parent takes codeine for postpartum analgesia. One death due to maternal/birth parent codeine is reported in the literature. Associated with neuroblastoma development.

Considerations: Codeine is a largely inactive prodrug that is metabolized to morphine. Substantial genetic variation in this metabolic process exists between individuals.

Pumping and Discarding Milk: Maternal/birth parent codeine may not require pumping and discarding milk, depending on dose and individual factors. Pumping and discarding milk likely not necessary at maternal/birth parent doses of <0.9-1.0 mg/kg/d for ≤4 days. Pumping and discarding may be needed with maternal/birth parent doses >1.4-1.6 mg/kg/day or any dose >4 days. The longest reported interval for codeine elimination from milk is 48 hours after the last dose.

Highest level of codeine in human milk	Codeine levels drop to 1/2 of maximum concentration	Codeine levels drop to 1/4 of maximum concentration	Codeine levels drop to 1/8 of maximum concentration
1-2 hours after intake	3.5-4.5 hours after intake	6-7 hours after intake	8.5-9.5 hours after intake

Oxycodone

Safety: Elevated concern (3), Evidence level Moderate (M), Doses studied: 15-90 mg/day PO.

Human Milk: Maternal/birth parent oxycodone intake transfers in small amounts to breast/chest milk/human milk (RID 3.4%). Infant levels of oxycodone are undetectable in most infants, up to half of maternal/birth parent levels.

Adverse Effects: CNS depression (any severity) occurs in 20.1% of infants whose parent takes oxycodone for postpartum analgesia. One reported death with multiple combined maternal/birth parent opioids, including oxycodone.

Pumping and Discarding Milk: Maternal/birth parent oxycodone may not require pumping and discarding milk, depending on dose and individual factors. Pumping and discarding milk is likely not needed at maternal/birth parent doses of <0.15 mg/kg/d. Pumping and discarding milk may be needed with maternal/birth parent doses >0.4 mg/kg/day. Oxycodone is detectable in milk when lactating parents have taken any dose in the past 24 hours. The longest reported interval for oxycodone elimination from milk is 37 hours after the last dose but it is often shorter (e.g., 4 hours for total 20 mg, 12 hours for total 45 mg).

Highest level of oxycodone in the body	Oxycodone levels drop to 1/2 of maximum concentration	Oxycodone levels drop to 1/4 of maximum concentration	Oxycodone levels drop to 1/8 of maximum concentration
1-2 hours after intake	4.2-5.2 hours after intake	7.4-8.4 hours after intake	10.6-11.6 hours after intake

Hydrocodone

Safety: Moderate concern (2), Evidence level Limited (L), Doses studied: 10-120 mg/day PO.

Human Milk: Maternal/birth parent hydrocodone intake transfers in small but highly variable amounts to breast/chest milk/human milk (RID 1.5%, range 0.1-9.9%).

Adverse Effects: CNS depression.

Pumping and Discarding Milk: Maternal/birth parent hydrocodone may not require pumping and discarding milk, depending on dose and individual factors. Pumping and discarding milk is likely not needed at maternal/birth parent doses of <25 mg/d. Pumping and discarding milk may be needed with maternal doses >80 mg/d.

Highest level of hydrocodone in the body	Hydrocodone levels drop to 1/2 of maximum concentration	Hydrocodone levels drop to 1/4 of maximum concentration	Hydrocodone levels drop to 1/8 of maximum concentration
0.5-3 hours after intake	4.3-6.8 hours after intake	8.1-10.6 hours after intake	11.9-14.4 hours after intake

Hydromorphone

Safety: Moderate concern (2), Evidence level Limited (L), Doses studied: 2 mg IN.

Human Milk: Maternal/birth parent hydromorphone intake transfers in very small amounts to breast/chest milk/human milk (RID 0.67%).

Adverse Effects: CNS depression.

Pumping and Discarding Milk: Maternal/birth parent hydromorphone may not require pumping and discarding milk, depending on dose and individual factors. Pumping and discarding milk likely not needed at maternal/birth parent doses of <24 mg/day. We advise pumping and discarding with high doses.

Highest level of hydromorphone in the body	Hydromorphone levels drop to 1/2 of maximum concentration	Hydromorphone levels drop to 1/4 of maximum concentration	Hydromorphone levels drop to 1/8 of maximum concentration
2 hours after intake	12.5 hours after intake	23 hours after intake	33.5 hours after intake

Morphine

Safety: Low concern (1), Evidence level Limited (L), Doses studied: 4 mg/d-1.1 mg/kg/d intrathecally, PO, IV, and PO+IV.

Human Milk: Maternal/birth parent morphine intake transfers in small but variable amounts to breast/chest milk/human milk (RID 0.5-5.8%).

Adverse Effects: Possibly attributable to morphine: apnea.

Pumping and Discarding Milk: Maternal/birth parent morphine may not require pumping and discarding milk, depending on dose and individual factors. Pumping and discarding may be needed with maternal/birth parent doses >1.1 mg/kg/d.

Highest level of morphine in the body	Morphine levels drop to 1/2 of maximum concentration	Morphine levels drop to 1/4 of maximum concentration	Morphine levels drop to 1/8 of maximum concentration
0.5-2 hours after intake	3.5-5 hours after intake	6.5-8 hours after intake	9.5-11 hours after intake

Fentanyl

Safety: Low concern (1), Evidence level Limited (L), Doses studied: 2-6 µg/kg IV, epidurally, and 34 µg/kg/day transdermal.

Human Milk: Maternal/birth parent fentanyl intake transfers in minimal but highly variable amounts to breast/chest milk/human milk (RID 0.02-2.8%). Undetectable in the infant studied.

Adverse Effects: No adverse drug reactions are reported in the literature.

Considerations: Evidence is limited to clinical fentanyl administration, usually single doses of 2-6 µg/kg, up to long-term therapy of 34 µg/kg/day. Fentanyl is a potent opioid that raises the risk of overdose and is common in illicit drug supply. High fentanyl doses would pose a risk of opioid toxicity to the infant. Long-term, ongoing fentanyl use may lead to prolonged elimination.

Pumping and Discarding Milk: Maternal fentanyl may not require pumping and discarding milk, depending on dose. Single clinical administrations of fentanyl, e.g. for cesarean section or tubal ligation, do not require pumping and discarding milk. Pumping and discarding may be needed with maternal/birth parent doses >34 µg/kg/d. With ongoing fentanyl use in the context of OUD, we recommend a pump and discard interval of 3-5 days following last use. If milk concentration is sufficiently low, a shorter timeline is acceptable. Fentanyl is unlikely to affect an infant at concentrations <6.7 µg/L in breast/chestmilk.

Highest level of fentanyl in the body	Fentanyl levels drop to 1/2 of maximum concentration	Fentanyl levels drop to 1/4 of maximum concentration	Fentanyl levels drop to 1/8 of maximum concentration
Within 1 hour after intake	3-5 hours after intake	5-9 hours after intake	7-13 hours after intake

Heroin

Safety: Highest concern (4), No direct evidence during lactation (N), Doses studied: 2.6-690 mg IV, IM, PO, IN, INH, and rectally in non-lactating adults.

Human Milk: No direct evidence of heroin in human milk. Morphine (a heroin metabolite) is known to transfer in small but variable amounts to breast milk/human milk.

Adverse Effects: CNS depression, dependence, and subsequent withdrawal symptoms.

Considerations: Given that heroin exists only as an illegal drug, it is likely to be contaminated with other substances.

Pumping and Discarding Milk: Pumping and discarding milk is very important following heroin use. Heroin (diacetylmorphine) is rapidly de-acetylated to 6-monoacetylmorphine (6-AM) and morphine. Heroin and 6-AM are typically undetectable by 3 hours after administration, but morphine may persist for much longer. Estimates based on non-lactating adult heroin pharmacokinetics and lactating adult morphine pharmacokinetics show that in most cases, morphine falls to levels that are unlikely to affect an infant (3.25 µg/L plasma; 13.3 µg/L breast/chest milk) by 36 hours after use. However, it could take up to 104.3 hours.

Highest level of heroin, 6-AM, and morphine in the body	Morphine levels low enough to resume breast/chestfeeding in most cases	Morphine levels low enough to resume breast/chestfeeding regardless of dose or route
First 3 hours after intake	1.5 days after intake	5 days after intake

Naloxone

Safety: Low concern (1), No direct evidence during lactation (N).

Human Milk: No evidence.

Adverse Effects: No adverse drug reactions are reported in the literature.

Monitor for: Withdrawal symptoms in an opioid-exposed infant.

Considerations: As an opioid antagonist, naloxone does not carry the risk of opioid toxicity.

Harm Reduction Strategies: Parents who use opioids should carry naloxone.

Pumping and Discarding Milk: Naloxone blocks opioid receptors but does not remove opioids from the body or human milk. If naloxone is administered to the lactating parent for overdose, the lactating parent should pump and discard milk until the concentration of the substance causing the overdose decreases.

Benzodiazepines

Safety: Variable, low to moderate concern (1-2).

Human Milk: All benzodiazepines transfer to breast/chest milk/human milk to an extent.

Adverse Effects: CNS depression, neonatal jaundice. Infant adverse effects occur in 1.6% of infants whose lactating parents take prescribed benzodiazepines. Adverse effects are more likely when parents take more than one benzodiazepine.

Monitor for: Excessive drowsiness, difficulty rousing the infant, slow or difficult breathing, and pallor/cyanosis. Withdrawal symptoms. Inadequate feeding/weight gain. Neonatal jaundice.

Considerations: Benzodiazepines with shorter half-lives and without active metabolites (e.g., midazolam or oxazepam) are preferred in lactation. Long-term benzodiazepines use may result in accumulation in the infant. Smaller doses for shorter durations are safer. Limit benzodiazepines to the lowest effective dose and shortest necessary duration. Infants are most vulnerable to adverse effects within the first 4 days of birth. Unlike opioids, maternal/birth parent sedation do not predict infant sedation. Benzodiazepine use is not ideal but not necessarily contraindicated in lactation so long as the infant is monitored for sedation and appropriate weight gain. If possible, discontinuing benzodiazepine use and/or discontinuing breast/chestfeeding should be done gradually. Studies on benzodiazepines in lactation are relatively poor quality compared to other substances.

Harm Reduction Strategies for Parents:

- Pump and store milk before taking benzodiazepines.
- Pump and discard milk around t_{max} (0.5-4 hours after use for most benzodiazepines) to reduce infant exposure.
- Know and recognize the signs of infant sedation. Seek medical care if detected. Seek emergency medical care if the infant has slowed breathing or cyanosis.
- Roomshare but not bedshare as the risk of SIDS is elevated when parents under the influence of sedating substances sleep with infants.
- Avoid hazardous combinations (benzodiazepines with opioids, alcohol, or other sedatives).
- Avoid driving.
- Get childcare for the time they are intoxicated.

Pumping and Discarding Milk:

- Pumping and discarding milk following benzodiazepine use may or may not be necessary. We recommend pumping and discarding milk in case of high doses or adverse infant reactions. The needed pump and discard interval for benzodiazepines varies substantially and is often too wide to make a discrete recommendation. Please note that the intervals described in this guidance represent approximates. Infant exposure and the likelihood of adverse drug reaction are highest if breast/chestfed at t_{max} (0.5-4 hours after use for most benzodiazepines) and decrease after that.



Lorazepam

Safety: Low concern (1), Evidence level Limited (L), Doses studied: 0.5-7.5 mg/d.

Human Milk: Maternal/birth parent lorazepam intake transfers in small amounts to breast/chest milk/human milk (RID 1.98-2.7%).

Adverse Effects: CNS depression.

Pumping and Discarding Milk:

- Maternal/birth parent lorazepam may not require pumping and discarding milk at <3 mg/day. We advise pumping and discarding with high doses.

Highest level of lorazepam in the body	Lorazepam levels drop to 1/2 of maximum concentration	Lorazepam levels drop to 1/4 of maximum concentration	Lorazepam levels drop to 1/8 of maximum concentration
2 hours after intake	14-17 hours after intake	26-32 hours after intake	38-47 hours after intake

Alprazolam

Safety: Moderate concern (2), Evidence level Limited (L), Doses studied: 0.5-2.4 mg/d.

Human Milk: Maternal/birth parent alprazolam intake transfers in small amounts to breast/chest milk/human milk (RID 3.7%).

Adverse Effects: CNS depression possibly attributable to maternal/birth parent alprazolam, taken with other CNS depressant drugs. Withdrawal symptoms, partly attributable to prenatal exposure.

Considerations: If lactating parents taking alprazolam want to discontinue breast/chestfeeding and/or alprazolam use, they should do so slowly to reduce the risk of withdrawal symptoms.

Pumping and Discarding Milk:

- Maternal/birth parent alprazolam may not require pumping and discarding milk, particularly <2 mg/day. We advise pumping and discarding with high doses.

Highest level of alprazolam in human milk	Alprazolam levels drop to 1/2 of maximum concentration	Alprazolam levels drop to 1/4 of maximum concentration	Alprazolam levels drop to 1/8 of maximum concentration
0.5-2 hours after intake	12.5-17 hours after intake	24.5-32 hours after intake	36.5-47 hours after intake

Clonazepam

Safety: Moderate concern (2), Evidence level Limited (L), Doses studied: 0.25-4 mg/d.

Human Milk: Maternal/birth parent clonazepam intake transfers in small amounts to breast/chest milk/human milk (RID 1.7-4.0%). Infant levels of clonazepam (maternal/birth parent dose 0.25-1.5 mg/day) are low or undetectable.

Adverse Effects: CNS depression attributable to maternal/birth parent clonazepam and to combined clonazepam/flurazepam. Developmental delay due to maternal/birth parent sertraline, valproate, thioridazine, droperidol, and olanzapine in addition to clonazepam.

Considerations: Clonazepam has a long half-life in adults (30-40 hours) and an even longer half-life in newborns (up to 140 hours). It poses an accumulation risk, especially with long-term use. We advise limiting the duration of clonazepam use as much as possible.

Pumping and Discarding Milk:

- Maternal/birth parent clonazepam may not require pumping and discarding milk, particularly <4 mg/day. We advise pumping and discarding with high doses.

Highest level of clonazepam in the body	Clonazepam levels drop to 1/2 of maximum concentration	Clonazepam levels drop to 1/4 of maximum concentration	Clonazepam levels drop to 1/8 of maximum concentration
1-4 hours after intake	31-44 hours after intake	61-84 hours after intake	91-124 hours after intake

Diazepam

Safety: Moderate concern (2), Evidence level Limited (L), Doses studied: 2.5-1.5 mg IV, 6-80 mg/d PO

Human Milk: Maternal/birth parent diazepam intake transfers in small-moderate but variable amounts to breast/chest milk/human milk (RID 2.5-13.4%).

Adverse Effects: CNS depression, hyperbilirubinemia, weight loss.

Considerations: Diazepam and its primary metabolite N-desmethyldiazepam have long terminal elimination half lives in adults of 24-48 hours and 40-100 hours, respectively. These are prolonged in the first few days of life up to 200 hours and 140 hours, respectively. Long term use poses risk of accumulation. Limit the duration and use of diazepam as much as possible.

Pumping and Discarding Milk:

- Maternal/birth parent diazepam may not require pumping and discarding milk, particularly for single doses or short treatment courses. Ongoing maternal/birth parent diazepam use may be compatible with mixed feeding, e.g., pumping and discarding for ~8 hours after use. There is contradictory evidence about doses leading to adverse drug reactions, and we cannot make a discrete dose recommendation. We advise pumping and discarding with high doses or if there is infant sedation. Some researchers recommend discarding human milk for 24 hours after a high dose of diazepam, e.g., for acute seizure treatment.

Highest level of diazepam in the body	Diazepam levels drop to 1/2 of maximum concentration	Diazepam levels drop to 1/4 of maximum concentration	Diazepam levels drop to 1/8 of maximum concentration
1-2 hours after intake	25-50 hours after intake	49-98 hours after intake	73-146 hours after intake



Stimulants

Safety: Variable, low to high concern (1-4).

Human Milk: Amphetamine-type stimulants and cocaine all transfer to breast/chest milk/human milk to an extent.

Adverse Effects: CNS stimulation, insomnia, agitation, irritability, vomiting, diarrhea, hyperthermia, poor appetite, neurologic symptoms, tremor, seizure.

Monitor for: Appropriate weight gain, irritability/inconsolability, insomnia, dilated pupils, vomiting, diarrhea, hyperthermia, hyperactive startle reflex, tremor, tachycardia, shallow respirations, seizure, cyanosis.

Considerations: Stimulant use may reduce serum prolactin and affect milk supply.

Harm Reduction Strategies for Parents:

- Pump and store milk before taking stimulants.
- Pump and discard milk around t_{max} (within 2-4 hours after use for most stimulants) to reduce infant exposure.
- Know and recognize the signs of infant stimulant toxicity. Seek medical care if detected. Seek emergency medical care in the case of seizure or cyanosis.
- Avoid infant exposure to secondhand stimulant smoke, such as from smoked methamphetamine or cocaine.
- Avoid overdose. Use only one substance at a time. Avoid hazardous combinations like cocaine with opioids or alcohol. Never use alone, use less and go slow especially after a period of not using.
- Avoid infectious diseases by not sharing injection equipment and using syringe exchange programs.
- Avoid driving.
- Get childcare for the time parents are intoxicated.

Pumping and Discarding Milk:

- Pumping and discarding milk after cocaine (36 hours) or methamphetamine (48+ hours) use is very important. Pumping and discarding after other stimulant may or may not be necessary, depending on dose. We recommend pumping and discarding in case of high doses or adverse infant reactions. Infant exposure and the likelihood of adverse drug reaction is highest if breast/chestfed at t_{max} (within 2-4 hours after use for most stimulants) and decreases after that.



Methamphetamine

Safety: Highest concern (4), Evidence level Limited (L), Doses studied: unknown doses.

Human Milk: Maternal/birth parent methamphetamine intake transfers into breast/chest milk/human milk. The extent of methamphetamine transfer is not known, as the maternal/birth parent dose is typically unknown.

Adverse Effects: CNS stimulation, cardiac arrhythmia, hyperthermia, and death are possibly attributable to methamphetamine in milk or other exposure routes.

Considerations: Methamphetamine use may cause behavioral changes and psychiatric effects, such as psychosis and aggression, posing a danger to infants. Since methamphetamine exists only as an illegal drug, it is likely to be contaminated with other substances.

Pumping and Discarding Milk:

- Pumping and discarding milk is very important following methamphetamine use. We advise that lactating parents pump and discard for at least 48 hours after use.
- Methamphetamine becomes undetectable in urine after it becomes undetectable in human milk. A negative UDT result indicates methamphetamine has been eliminated from milk.

High levels of methamphetamine in milk

Methamphetamine levels drop enough to resume nursing

Small amounts of methamphetamine may remain in milk

First 24 hours after intake

48 hours after intake

48-100 hours after intake

Amphetamine, Dexamphetamine and Lisdexamphetamine

Safety: Low concern (1), Evidence level Limited (L), Doses studied: 15-45 mg/d.

Human Milk: Maternal/birth parent amphetamine intake transfers in small-moderate amounts into breast/chest milk/human milk (RID 1.0-13.8%). Infant levels of amphetamine are usually low or undetectable, up to 14% of maternal/birth parent plasma levels.

Adverse Effects: No adverse drug reactions are reported in the literature.

Pumping and Discarding Milk:

- Maternal/birth parent amphetamine may not require pumping and discarding milk, particularly for doses below 45 mg/day. We advise pumping and discarding with high doses.

Highest level of amphetamine in the body	Amphetamine levels drop to 1/2 of maximum concentration	Amphetamine levels drop to 1/4 of maximum concentration	Amphetamine levels drop to 1/8 of maximum concentration
1-2 hours after intake	9-16 hours after intake	17-30 hours after intake	25-44 hours after intake





Methylphenidate

Safety: Low concern (1), Evidence level Limited (L), Doses studied: 15-80 mg/d.

Human Milk: Maternal/birth parent methylphenidate intake transfers in very small amounts into breast/chest milk/human milk (RID 0-0.7%). Infant levels of methylphenidate are undetectable with maternal/birth parent doses of 80 mg/day or less.

Adverse Effects: No adverse drug reactions are reported in the literature.

Pumping and Discarding Milk:

- Maternal/birth parent methylphenidate may not require pumping and discarding milk, particularly for doses below 80 mg/day. We advise pumping and discarding with high doses. Methylphenidate becomes undetectable in human milk within 20-21 hours after intake of usual prescribed doses.

Highest level of methylphenidate in human milk

Within 4 hours after intake

Methylphenidate levels drop to 1/2 of maximum concentration

6.1-7.5 hours after intake

Methylphenidate levels drop to 1/4 of maximum concentration

8.2-11 hours after intake

Methylphenidate levels drop to 1/8 of maximum concentration

10.3-14.5 hours after intake

Cocaine

Safety: - Highest concern (4), Evidence level Limited (L), dose studied: 0.5 g IN.

Human Milk: Maternal/birth parent cocaine intake transfers into breast/chest milk/human milk. The extent of cocaine transfer is not known, as maternal/birth parent dose is typically not known.

Adverse Effects: Vomiting, diarrhea, dilated pupils, irritability, tremulousness, neurologic symptoms. More severe adverse drug reactions, including seizure, status epilepticus, and brain death, have occurred from other routes of exposure (accidental ingestion of cocaine, passive exposure to smoked cocaine fumes).

Considerations:

- Concomitant cocaine and alcohol consumption results in production of the metabolite cocaethylene, which has similar pharmacologic activity to cocaine with a longer half-life.
- Cocaine causes changes in opioid metabolism that can extend the circulation time of certain metabolites and increase overdose risk.
- Given that cocaine exists only as an illegal drug, it is likely to be contaminated with other substances.

Harm Reduction Strategies:

- Ensure the infant is not exposed to fumes from smoked cocaine.
- Ensure the infant does not directly ingest cocaine (never apply to nipples/breast).

Pumping and Discarding Milk:

- Pumping and discarding milk is very important following cocaine use. We recommend that lactating parents pump and discard for at least 36 hours after use.

High levels of cocaine in milk	Cocaine levels drop enough to resume nursing	Small amounts of cocaine may remain in milk
Within 1 hour after intake	36 hours after intake	36 hours-6 days hours after intake

Alcohol

Safety: Low concern (1), Evidence level Strong (S), Doses studied: most studies 0.3-0.4 g/kg ethanol, up to 8 drinks/occasion.

Human Milk: Maternal/birth parent alcohol intake transfers in small amounts to breast/chest milk/human milk (RID 0.4-1.8%).

Adverse Effects:

Short term, infant: Fussiness, frequent behavioral state changes, increased crying, less coordinated dyadic interaction, CNS depression (8+ drinks/sitting), pseudo-Cushing syndrome (7+ drinks/day), abdominal distension, bloating, constipation, acute gastritis.

Short term, maternal/birth parent: Reduced lactational performance, less coordinated dyadic interaction.

Long term, infant: Possible subtle neurodevelopmental impacts. Worsening Fetal Alcohol Spectrum Disorder (FASD) outcomes.

Monitor for:

Infant: Sedation, gastrointestinal symptoms.

Birth parent: Adequate vitamin B1 (thiamin), vitamin B6, vitamin B12, iron, folic acid, magnesium, zinc, and choline levels.

Considerations:

- Alcohol levels in human milk are approximately the same as bloodstream levels.
- Heavy, chronic alcohol use is linked to many nutritional deficiencies. The need for many of these nutrients is increased during lactation. Birth parents with a recent history of heavy, chronic alcohol consumption may require nutritional support.
- Pumping milk and eating a meal prior to alcohol intake reduce systemic alcohol availability by 58%.
- Alcohol reduces milk yield and disrupts the hormonal milieu of lactation; persons with a low supply should be advised to abstain from alcohol.
- Breast/chestfeeding promotion can support recovery from problem alcohol use.
- Medications for Alcohol Use Disorder:
 - There is no evidence on acamprosate, disulfiram or nalmefene use in lactation.
 - Naltrexone is compatible with lactation.

Harm Reduction Strategies for Parents:

- Get childcare for the time the parent is intoxicated.
- Pump and store milk before drinking alcohol. This makes sure the infant has an alcohol-free meal and reduces maternal/birth parent alcohol absorption.
- Eat before drinking. Eating also reduces maternal/birth parent alcohol absorption.
- Avoid driving.
- Roomshare but not bedshare as the SIDS risk is elevated when parents under the influence of sedating substances sleep with their infants.

Pumping and Discarding Milk: Pumping and discarding milk may not be necessary with light alcohol use (≤ 1 drink), depending on how often the infant feeds. We advise pumping and discarding milk until alcohol is eliminated from milk.

Highest alcohol level in human milk

Milk is alcohol free

0.5-1 hours after intake

2-3 hours per drink after intake

Maternal/birth parent body weight	Time per standard drink until breast/chest milk is clear of alcohol
40.8 kg (90 lb)	2 hours 50 minutes (170 minutes)
52.2 kg (120 lb)	2 hours 30 minutes (150 minutes)
68.0 kg (150 lb)	2 hours 14 minutes (134 minutes)
81.6 kg (180 lb)	2 hours 1 minute (121 minutes)
95.3 kg (210 lb)	1 hour 51 minutes (111 minutes)

A standard drink contains 14 grams of pure alcohol: 1.5 ounces vodka, whiskey, rum, or gin; 5 ounces of 12% alcohol wine; 8 ounces of strong (8% alcohol) beer; 12 ounces regular beer (5% alcohol); or 34-150 ounces (1-4.4 L) nonalcoholic beer (0.4-1.8% alcohol).

OR:

when breast/chest milk alcohol test strips indicate that milk is alcohol free,

OR:

when blood alcohol is 0%,
whichever happens first

Cannabis

Safety: Low concern (1), Evidence level Inadequate (I), Dose studied: 23.2 mg THC, INH. We recommend promoting lactation while encouraging parents to discontinue or reduce cannabis use.

Human Milk: Maternal cannabis intake transfers in small amounts to breast milk/human milk (RID for THC 0.4-1.5%).

Adverse Effects: No acute adverse drug effects are reported in the literature. Possible but understudied adverse long-term impacts on neurodevelopment including infant motor development, toddler problem behavior, attention, and memory.

Monitor for: Normal development, adequate weight gain, and drowsiness.

Considerations:

- Cannabis is commonly used for symptom management in the perinatal period, including mental health, pain, and gastrointestinal symptoms. Healthcare providers should inquire into reasons for use and provide alternatives or substitutes with safety data in lactation.
- Paternal cannabis use at conception, during pregnancy, and postpartum is associated with an elevated risk of SIDS.
- Postpartum cannabis use is linked with lower education levels, lower income, mental health symptoms, and recent history of physical abuse.
- Cannabis may exacerbate or precipitate certain mental health conditions, specifically schizophrenia, psychosis, and bipolar disorder.

Harm Reduction Strategies for Parents:

- Pump and store milk before using cannabis.
- Pump and discard milk around t_{max} (1 hour after smoking cannabis) to reduce infant exposure.
- Smoke cannabis outdoors/outside the home.
- Use cannabis with lower THC concentrations, less often, in smaller amounts.
- A sober adult should be present to ensure good infant care.
- Switch from smoking to edible preparations. Consuming cannabis PO reduces bioavailability and eliminates smoke exposure to parent and infant.
- Avoid driving.
- Roomshare but not bedshare as the risk of SIDS is increased when parents under the influence of sedating substances sleep with their infants.
- Store cannabis products safely to avoid accidental ingestion by toddlers and children.

Pumping and Discarding Milk: THC is highly lipophilic and has a very long half-life in human milk. Studies have found THC present up to 6 days or 6 weeks after last use. Pumping and discarding milk is unlikely to eliminate infant exposure to THC, particularly with chronic use. Spacing feeds and cannabis use as far as possible and avoiding feeding around t_{max} (around 1 hour after smoking cannabis use) can reduce exposure.

Highest level of THC in human milk

1 hour after smoking cannabis

Tobacco and Nicotine

Safety: Safe (0), Evidence level Strong (S), Doses studied: up to 40 cigarettes/d. Breast/chestfeeding improves outcomes for infants of birth parents who use tobacco/nicotine products, e.g., less colic and fewer and less severe respiratory infections. We recommend promoting lactation while encouraging parents to discontinue or reduce tobacco/nicotine use.

Human Milk: Maternal/birth parent nicotine intake transfers in small amounts to breast milk/human milk (RID 0.5%). Infant nicotine levels are higher in nursing newborns of smokers than those of nonsmokers. Infant nicotine levels are not different between nursing and formula-fed older infants of smokers. Among SIDS victims, higher nicotine levels are found in formula fed vs. breast/chest fed infants of smokers.

Adverse Effects: Insomnia and reduced sleep, vomiting, diarrhea, tachycardia, muscle spasms, and tremors.

Note: *parental smoking and exposure to environmental tobacco smoke are related to many short- and long-term negative health outcomes for the child, independent of infant feeding method. Negative outcomes include: altered vital signs and cardiovascular function (temperature, respiration rate, oxygen saturation, heart rate variability), infant/child sleep problems, respiratory infections, asthma, dental caries, ear infections and hearing problems, acute lymphocytic leukemia, colic/excessive crying, reduced cognitive ability, behavior problems, overweight, worsened cardiovascular health, IBS and Crohn's, and endometriosis. They also include adverse maternal/birth parent health outcomes like breast cancer and postpartum depression. Nicotine itself has negative health impacts, such as accelerated lung aging, effects on hormones, and decreased immune response. It promotes carcinogenesis via increased oxidant levels and carcinogens like nicotine-derived nitrosamine ketone (NNK). We recommend encouraging breast/chestfeeding as it offers substantial protection to infants exposed to maternal/birth parent or household smoking.*

Monitor for: Persistent vomiting or diarrhea, insomnia, muscle spasms, tremor.

Considerations:

- Negative impacts of tobacco/nicotine use are stronger with heavier use, e.g., more cigarettes smoked per day. Negative impacts of direct maternal/birth parent tobacco/nicotine use are stronger compared to maternal/birth parent secondhand smoke exposure.
- Breast/chestfeeding may protect against postpartum relapse to cigarette smoking.
- Cigarette smoking, vaping, and to a lesser extent, secondhand smoke exposure, are associated with lower rates of breast/chestfeeding intention, lower rates of breast/chestfeeding initiation, and shorter duration of breast/chestfeeding.
- Smoking negatively affects the birth parent's nutritional status. Nutrients of concern include iron, vitamin B12, vitamin A, sulfur-containing amino acids, zinc, carotene, folate, and Vitamin C. Smoking also negatively affects human milk composition. It impacts the caloric, fat, protein, micronutrient, and heavy metal content and the antioxidant/oxidant balance. Smoking leads to reduced levels of iodide, calcium, vitamins A, E, and C, and increased levels of cadmium and lead in human milk.





- Postnatal maternal/birth parent smoking is linked with doubled odds of SIDS. Maternal/birth parent smoking while bedsharing increases SIDS risk of (OR 6.3). Sleeping in a separate room with parental smoking (OR 12.2) further increases SIDS risk.
- Medications for Nicotine Use Disorder:
 - o There is no evidence on varenicline use in lactation. Varenicline is a partial acetylcholine receptor agonist with a similar structure to nicotine. Thus, it is likely to have similar risks as Nicotine Replacement Therapy (NRT) in lactation. Infants should be monitored for seizures and vomiting.
 - o Bupropion may be compatible with lactation. The RID is very low (mean 0.6%), and infant levels are low or undetectable. There are rare adverse drug reactions (afebrile seizure) possibly attributable to bupropion in human milk. Infants should be monitored for seizures.
 - o NRT is compatible with lactation and safer than cigarette smoking. We recommend minimizing nicotine intake and monitoring infants for persistent vomiting or diarrhea, insomnia, muscle spasms, and tremor.
- Birth parents who smoke, recently quit, or are exposed to household smoking may need more lactation support.

Harm Reduction Strategies for Parents:

- Seek health care for their infant if tremors, muscle spasms, persistent vomiting or persistent diarrhea occur.
- Reduce smoking/nicotine intake – smoke fewer cigarettes per day or reduce vaping.
- Switch to a lower-harm alternative:
 - o NRTs are less harmful than cigarettes as they eliminate the infant's secondhand smoke exposure and the parent's firsthand smoke exposure.

- 21 mg transdermal patch/day ≈ 17 cigarettes/day
- 2 mg gum ≈ 1 cigarette
- o Vaping is less harmful than cigarette smoking but more harmful than NRTs. Vaping aerosols contain lower toxin levels (VOCs, heavy metals, etc.) than cigarette smoke
- Reduce levels of nicotine in milk. Space smoking/nicotine use (including vaping or short-acting NRTs) as far from feeding as possible and avoid smoking while feeding the infant. Remove the transdermal patch at night. **Note:** *human milk is preferable to formula regardless of the time since last cigarette/nicotine intake.*
- Reduce infant exposure to environmental tobacco smoke (both second and thirdhand smoke).
 - o Only smoke outdoors.
 - o Avoid smoking in the home or enclosed spaces like the car. Do not allow others to smoke in the home.
 - o Avoid smoking in the infant’s presence or while holding the infant.
 - o Avoid taking the infant into smokey environments.
 - o Change clothes after smoking--wear a jacket or similar covering while smoking and remove it after. Wash hands after smoking.
 - o Wash surfaces and launder fabrics to reduce thirdhand smoke contamination in the home.
 - o Use a HEPA filter in the home in the room where the infant spends the most time.
- Eat an antioxidant-rich diet with high intakes of fresh fruits and vegetables, continue a prenatal vitamin that contains iodide throughout lactation, and use iodized salt at home.
- Roomshare but don’t bedshare.

Pumping and Discarding Milk: Pumping and discarding milk is not necessary with tobacco/nicotine use, except in cases of extraordinarily high use. We advise spacing smoking/nicotine use as far from feeding as possible. Alternatively, pumping and storing milk before smoking/nicotine use can provide the infant a low- or no-nicotine feeding.

Highest level of nicotine in human milk	Nicotine levels drop to 1/2 of maximum concentration	Nicotine levels drop to 1/4 of maximum concentration	Nicotine levels drop to 1/8 of maximum concentration
Immediately after intake	1.6 hours after intake	3.2 hours after intake	4.8 hours after intake

