

Managing the Breastfeeding Patient in the Emergency Department



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INTRODUCTION

Breast milk is widely endorsed as the ideal food for infants,¹ but physicians receive little formal education in human lactation.² Breastfeeding is a difficult task,³ made more difficult by receipt of conflicting and confusing advice from medical professionals.⁴ Surveys show that physicians are lacking in knowledge of normal lactation,⁵ so it is not surprising that their advice to women can reflect this lack of training.

Emergency physicians do not need to become lactation consultants to avoid doing harm to the nursing infant or the breastfeeding relationship.

There are medications that should be avoided in lactation, but they are more the exception than the rule. Physicians may believe that they are protecting the infant with a conservative recommendation that a woman “pump and dump”—express and discard her milk—for a medication or a diagnostic study. When this interruption is not indicated, it is an intervention with potential harm only. Even a brief interruption in breastfeeding can lead to early weaning.⁶ Prescribing medications that are not directly harmful to the infant, but which cause a decrease in milk production, is a more insidious harm.

Throughout this article, unless otherwise specified, the term “breastfeeding” is inclusive of bottle feeding of expressed breast milk, as well as direct feeding at the breast. Likewise, although there are trans men who nurse their children (“chestfeeding”), for simplicity this article will use female terms to refer to the lactating patient.

BACKGROUND: LACTATION 101

The transformation of the breast from an inert secondary sex characteristic to a functional organ begins in

early pregnancy. The initial changes that allow milk to be produced are completed by midpregnancy, but high progesterone levels during pregnancy inhibit milk production⁷; it is the gradual decrease in progesterone after delivery that triggers it.⁷

The first milk that is produced for 24 to 48 hours after delivery is called colostrum; its quantity is scant, but it is rich in secretory immunoglobulin A.⁸ By the third or fourth day after delivery, more abundant and mature milk is produced. The exact composition of human milk varies even within a feeding, with more lactose in the watery “foremilk” and more fat in the thicker “hind milk.”⁸

The normal newborn feeds frequently, nursing every 2 to 3 hours, or 10 to 12 times a day. This literally and figuratively draining process is necessary to stimulate continued production. Nipple stimulation, through suckling or through pumping, is necessary for continued milk production through its stimulation of prolactin release and, more important, through its stimulation of local factors.⁷ Thus, there is a feedback loop in which nipple stimulation and milk removal are necessary to spur further milk production.

A breast pump both empties the breast and provides stimulation analogous to suckling, and can maintain milk supply when a mother is separated from her infant,⁹ such as when she is a patient in the emergency department (ED). To maintain a woman’s normal milk supply, pumping must occur at a frequency similar to the frequency at which the infant would nurse.⁹ There are also adverse health consequences to the woman of not emptying the breasts at the usual frequency, including painful clogged milk ducts and increased risk of mastitis.¹⁰

THE BREASTFEEDING PATIENT IN THE ED

To highlight some of the situations in which an ED patient is vulnerable to interrupting breastfeeding, this article will consider 3 topics: medication selection, diagnostic imaging, and maternal infectious disease.

For all, the information is ED focused rather than exhaustive.

SAFE SELECTION OF MEDICATIONS

This brief review focuses on medication that might raise concerns when given to a breastfeeding patient: analgesics and procedural sedation agents. References for further information are listed in [Table 1](#). A selection of other common ED medications is included in [Table 2](#).

When the safety of a given drug in lactation is being determined, a few parameters merit consideration. First, consider the concentration of the substance in breast milk relative to maternal blood, which is a product of lipid solubility, protein binding, and molecular weight. Second, the toxicity of a given substance to an infant may differ from that to adults in significant pharmacokinetic and pharmacodynamic respects. Third, a medication that is otherwise safe to the infant may disrupt or discontinue breastfeeding by imparting a foul taste to breast milk or decreasing milk supply.

A common source of confusion is assuming that any medication contraindicated in pregnancy is contraindicated in lactation. On the contrary, the breast is not a placenta.¹¹ Among the safety considerations for a particular medication are its molecular size, whether the substance concentrates in breast milk or diffuses in and out, and whether it is capable of being absorbed orally by the infant.¹² For example, insulin and heparin are not found in breast milk because of their size¹²; tetrahydrocannabinol (the psychoactive alkaloid in cannabis) concentrates in breast milk,¹³ whereas ethanol is found at a concentration equal to the maternal blood alcohol level.¹⁴

Physicians who have become used to giving pregnant women nothing but acetaminophen for pain may expect that the same restrictions apply to someone who is breastfeeding. Analgesic options are actually much more

expansive in lactation. Although acetaminophen is still acceptable, nonsteroidal anti-inflammatory drugs are also considered safe; ibuprofen is the most thoroughly studied of these.¹⁵ Local anesthetics are also a very safe option.¹⁵

The concern about opioids in lactation is sedation and respiratory depression in the infant,¹⁵ but this is more common with high doses during a prolonged course, as with patient-controlled analgesic infusions,¹⁶ not with single doses in the ED. More cautious prescribing is warranted for mothers of preterm infants, neonates, and infants with preexisting respiratory disorders.¹⁵

Fentanyl and morphine are the preferred intravenous opioids when used as single doses.¹⁶ Fentanyl levels in breast milk are nearly undetectable after only 2 hours.¹⁵ Morphine has a breast milk half-life of 3 hours, but it is poorly absorbed orally by the child.¹⁶

Hydromorphone has a half-life in breast milk of 10.5 hours and should be avoided.¹⁵ Hydrocodone is the preferred oral agent of the Academy of Breastfeeding Medicine, with a recommended daily dose of 30 mg or less to decrease the risk of sedation and apnea in the infant¹⁵; short-term use of oral morphine, given its poor oral availability to the infant, is also a reasonable choice.¹⁷

Oxycodone should not be used because it concentrates in the milk.¹⁵ Codeine is also contraindicated because its metabolism by both the mother and the infant is unpredictable.¹⁶ Likewise, 2 other analgesics that are slowly falling out of favor, tramadol and meperidine, are contraindicated for breastfeeding patients. Tramadol is similar to codeine in being dangerous to ultrarapid metabolizers.¹⁸ The rationale against meperidine is that it may cause apnea or seizures.¹⁵

With procedural sedation, the general rule is that once the mother has recovered and is awake enough to hold the baby, she is awake enough to breastfeed.¹⁶ The common combination of fentanyl and midazolam is also considered safe, given their short duration of action. Propofol and

Table 1. References for further information.

Reference	Available	Comments
<i>Medications & Mothers' Milk</i> ¹⁸	Published by Springer; also available online at https://medsmilk.com/ for a fee	Extensive introductory material, as well as alphabetic listing of medications
<i>Drugs in Pregnancy and Lactation</i> ²⁵	Published by Lippincott Williams & Wilkins	Sparser breastfeeding information than Hale ¹⁸
LactMed	https://toxnet.nlm.nih.gov/newtoxnet/lactmed.htm	Online database; also available in free application form; includes detailed references to primary literature
InfantRisk app	https://www.infantrisk.com/apps	Paid application; includes medication safety in pregnancy
Academy of Breastfeeding Medicine	http://www.bfmed.org	Clinical policy statements on varying breastfeeding-related topics, including medication safety
e-Lactancia	http://www.e-lactancia.org/	Searchable database, available in English and Spanish

Table 2. Focused review of safe medications for select conditions common in ED patients.

	Safest	Generally Safe	Avoid
Antibiotics	Penicillins Cephalosporins Vancomycin	Doxycycline (<3 wk) ^{26,27} Metronidazole Fluoroquinolones Gentamicin Clindamycin Linezolid	Trimethoprim-sulfamethoxazole* Nitrofurantoin* Azithromycin*
Analgesics	Ibuprofen Acetaminophen Local anesthetics	Other nonsteroidal anti-inflammatory drugs (NSAIDs) Morphine Fentanyl Hydrocodone	Oxycodone Codeine Tramadol Meperidine
Diabetes	Insulin	Metformin Glyburide	Glimepiride
Gastrointestinal	Calcium, magnesium, or aluminum-based antacids Famotidine Ranitidine Proton-pump inhibitors Sucralfate Loperamide	Ondansetron Metoclopramide Cimetidine Octreotide	Dicyclomine Hyoscyamine-atropine- scopolamine-phenobarbital (Donnatal)
Obstetrics and gynecology	Magnesium Levonorgestrel (as Plan B) Misoprostol	Methotrexate (single dose) Mifepristone (single dose)	Estrogen-progestin combination OCPS [†]
Anticoagulation/antiplatelet	Warfarin Heparin Low-molecular-weight heparins	Rivaroxaban Aspirin [†]	Dabigatran Apixaban Aspirin Clopidogrel
Substance use disorders	Methadone Buprenorphine		
Head, ears, eyes, nose, throat	Nasal saline solution Nasal oxymetazoline ¹⁸	Dextromethorphan Guaifenesin Fexofenadine [†] Loratadine [†]	Codeine Benzonatate Promethazine [†] Pseudoephedrine [†] Diphenhydramine [†]
Asthma/chronic obstructive pulmonary disease	Albuterol Ipratropium Prednisone (short term) Magnesium Inhaled corticosteroids	Terbutaline	
Seizures	Phenytoin	Levetiracetam [†]	Valproic acid Phenobarbital
Acute agitation	Midazolam Lorazepam Olanzapine	Haloperidol Risperdal Ketamine	
Headache		Sumatriptan	Acetaminophen-butalbital-caffeine (Fioricet)
Rapid sequence intubation	Etomidate Propofol Succinylcholine Rocuronium	Ketamine	

Unless otherwise stated, information is adapted from LactMed and the InfantRisk application.

*Avoid in women nursing neonates.

[†]Safe but can decrease milk supply.^{18,28,29}

[‡]Theoretic risk of Reye's syndrome if used by the mother during the child's viral illness.

etomidate are also safe and do not require any interruption in breastfeeding except during the actual procedure.¹⁶ Ketamine is the only common agent in the ED sedation armamentarium without sufficient data to support its use in breastfeeding, although it is probably compatible because of its rapid redistribution from plasma.¹⁸

DIAGNOSTIC IMAGING

As with medication safety, the nuances of diagnostic imaging in breastfeeding are quite different from those in pregnancy. First, radiographs of the mother do not convey any risk to the breastfeeding infant. There are theoretic concerns about radiation to the biologically active tissue of lactating breasts, but no clear evidence of increased risk.

Computed tomography with contrast requires no interruption in breastfeeding. There has historically been concern about direct toxicity or allergic reaction in the infant because some iodinated contrast does enter breast milk, but no actual adverse events have occurred.¹⁹ A combination of low level in breast milk and low oral bioavailability results in a dose of iodinated contrast to the infant that is less than 0.01% of the maternal dose.²⁰ Magnetic resonance imaging with gadolinium is also considered safe by the American College of Radiology; the infant dose is less than 0.0004% of the maternal dose.²¹

Nuclear studies present more challenges, with the level of risk and thus the recommendations varying by the specific isotope involved. Even here, most radioisotopes do not require that a woman express and discard milk (“pump and dump”), but pumping and holding milk until the radioactivity has dissipated from it is recommended. The US Nuclear Regulatory Commission has produced evidence-based recommendations that give the amount of time until the level of radiation in breast milk is less than 1 mSv.²²

The most commonly ordered nuclear studies in the ED are likely the hepatobiliary iminodiacetic acid scan, which requires no interruption in breastfeeding, and the ventilation-perfusion scan, which requires a 13-hour interruption, because of differences in their radioactive half-lives.¹⁸ For other studies, the time recommended to abstain from feeding varies from 4 hours for technetium Tc 99m pertechnetate to 96 hours for thallium 201,²³ so it is important to confirm the isotope with radiology and then use LactMed or another resource²² to give an accurate recommendation.

MATERNAL INFECTIOUS DISEASE

Maternal illness is almost never a reason to disrupt breastfeeding. As a general rule, for the ordinary infections

Table 3. Maternal infections.

Direct Breastfeeding Allowed	Pump and Feed	Pump and Discard
Mastitis	Active pulmonary tuberculosis	Ebola
Hepatitis B	Varicella	Marburg
Hepatitis C		Lassa
Herpes zoster (unless lesions on breast)		Smallpox
		African sleeping sickness
		Rabies
		HTLV-1
		Brucellosis*
		Breast abscess†
		HIV‡

*May resume breastfeeding after the woman has received 48 hours of antibiotic treatment.

†May resume breastfeeding after the woman has received 24 hours of antibiotic treatment.

‡In developed settings with safe water for formula.

that emergency physicians regularly diagnose and treat, the woman may continue to breastfeed. In contrast, the few true indications to stop entirely are uncommon (eg, Ebola virus) (Table 3).

For patients with infectious diseases with potential airborne exposure, such as acute varicella infection or active pulmonary tuberculosis, direct feeding at the breast should be avoided, but pumped milk is safe for another caregiver to feed to the infant.²⁴ Direct breastfeeding while wearing a mask is another option for diseases in which airborne precautions, droplet precautions, or both

- Even a brief interruption in breastfeeding can lead to early weaning.
- Indiscriminate advice to “pump and dump” is not always in the best interest of the mother and baby.
- The breast is not a placenta: a medication’s safety profile in pregnancy and lactation may not be identical.
- There are free and low-cost references for medication safety that work on a smartphone and can be easily used on shift.
- Most common imaging modalities used in the ED require either no interruption in breastfeeding or a brief interruption.
- Obtaining a breast pump from labor and delivery or central supply can help preserve a woman’s supply while she is in the hospital.

Figure. Key points.

are advised. Zoster, on the other hand, is a contraindication only if the mother is unfortunate enough to have lesions on her breast. Simple mastitis is also not a contraindication unless there is an associated abscess. In fact, frequent emptying of the breasts is a necessary part of treatment of mastitis and breast abscess.¹⁰ With an abscess, expressing and discarding milk for the first 24 hours of antibiotics is recommended.¹⁰

ADMITTING A BREASTFEEDING PATIENT

If the emergency physician needs to admit a patient who is breastfeeding, it is important to empower her to question well-intentioned but excessively cautious advice, especially advice to pump and discard milk. If she did not bring her own pump and has no one who can bring it to her, ED staff can obtain a pump for her. Although not frequently stocked in the ED, breast pumps can usually be found on mother-baby units or ordered from the hospital's central supply. Although most women can manage with a manual pump during their time in the ED, an electric pump would be more appropriate for anyone who is admitted.⁹ Refrigerated storage for expressed breast milk should also be arranged, with patient labels affixed to the containers to avoid confusion.

CONCLUSION

Emergency physicians may be inadvertently harming breastfeeding patients when good intentions collide with lack of training. Health care systems can fix this problem by providing enhanced resources and education for clinicians to avoid unnecessary interruptions in breastfeeding, choosing medications that are safe in breastfeeding, and encouraging the breastfeeding patient in the ED to pump and save her milk. For key points, see [Figure](#).

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