

ABM Protocols

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

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BREASTFEEDING MEDICINE PROTOCOL COMMITTEE

A central goal of the Academy of Breastfeeding Medicine is the development of clinical protocols for managing common medical problems that may impact breastfeeding success. These protocols serve only as guidelines for the care of breastfeeding mothers and infants and do not delineate an exclusive course of treatment or serve as standards of medical care. Variations in treatment may be appropriate according to the needs of an individual patient.

PURPOSE

LABOR, BIRTH, AND BREASTFEEDING INITIATION comprise a normal, continuous process. Oxytocin, endorphins, and adrenaline produced in response to the normal pain of labor may play significant roles in maternal and neonatal response to birth and early breastfeeding.¹ Use of pharmacologic agents for pain relief in labor and postpartum may improve outcomes by relieving suffering during labor and allowing mothers to recover from birth, especially Cesarean birth, with minimal interference from pain. However, these methods also may affect the course of labor and the neurobehavioral state of the neonate, and have adverse effects on breastfeeding initiation. Unfortunately, the literature in this area has not addressed the whole integrated process. Very few studies directly address breastfeeding outcomes of various approaches to labor pain management. Randomized controlled trials are rare, and subject to a great deal of crossover, which confounds results. The technology of epidural analgesia in particular is evolving quickly, so studies that are even a few years old may not reflect current practices. This protocol

examines the evidence currently available and makes recommendations for prudent practice.

There is even less information in the scientific literature about anesthesia for other surgery in breastfeeding mothers. Recommendations in this area focus on pharmacologic properties of anesthetic agents and limited studies of milk levels and infant effects.

ANALGESIA AND ANESTHESIA FOR LABOR

Maternity care providers should initiate an informed consent discussion for pain management in labor during the prenatal period before the onset of labor. Risk discussion should include what is known about the effects of various modalities on the progress of labor, risk of instrumented and Cesarean delivery, effect on the newborn, and possible breastfeeding effects.

Unmedicated, spontaneous vaginal birth with immediate, uninterrupted skin-to-skin contact leads to the highest likelihood of baby-led breastfeeding initiation.² Longer labors, instrumented deliveries, Cesarean section, and

separation of mother and baby after birth may lead to higher risks of difficulty with breastfeeding initiation.³⁻⁵ Labor pain management strategies may affect these labor outcomes and secondarily affect breastfeeding initiation in addition to any direct effects of the medications themselves.⁶

Women have differing levels of pain tolerance. Pain that exceeds a woman's ability to cope, or pain magnified by fear and anxiety, may produce suffering in labor. Suffering in labor may lead to dysfunctional labors, poorer psychologic outcomes, and increased risk of postpartum depression, all of which may have a negative effect on breastfeeding.⁷

Continuous support in labor, ideally by a trained doula, reduces the need for pharmacologic pain management in labor, decreases instrumented delivery and Cesarean section, and leads to improved breastfeeding outcomes both in the immediate postpartum period and several weeks after birth.⁸

Nonpharmacologic methods for pain management in labor such as hypnosis, psychoprophylaxis (e.g., Lamaze), intradermal or subcutaneous water injections for back pain, and so on, appear to be safe, have no known adverse neonatal effects, and may reduce the need for pharmacologic pain management. More study of breastfeeding outcomes is needed for these modalities.^{9,10}

Evidence suggests that breastfeeding success is affected by the behavior of the newborn. Depressed or delayed suckling, which can be caused by medications given to mothers, can lead to delayed or suppressed lactogenesis and risk of excess infant weight loss.^{11,12}

Intravenous opiates for labor may block the newborn's normal reflexes to seek the breast, root, and suckle within the first hour after birth.^{13,14}

1. Shorter-acting opiates such as fentanyl are preferred. Remifentanyl is potent and has rapid onset and offset but can be associated with a high incidence of maternal apnea, requiring increased monitoring. Its transfer *in utero* to the fetus is minimal.
2. Meperidine/pethidine generally should not be used except in small doses less than 1 hour before anticipated delivery because of

greater incidence and duration of neonatal depression, cyanosis, and bradycardia.

3. Nalbuphine, butorphanol, and pentazocine may be used for patients with certain opioid allergies or at increased risk of difficult airway management or respiratory depression. However, these medications may interfere with fetal heart rate monitoring interpretation. Observe the mother and infant for psychotomimetic reactions (3%).
4. Multiple doses of intravenous analgesic, and their timing of administration may lead to greater neonatal effects. For example, fentanyl administration within 1 hour of delivery or meperidine administration between 1 and 4 hours before delivery is associated with more profound neonatal effects.
5. When a mother has received intravenous narcotics for labor, mother and baby should be given more skin-to-skin time to encourage early breastfeeding.¹⁴

There is little evidence regarding the effects of epidural analgesia on breastfeeding and the available data are inconclusive. Early studies of epidural analgesia for labor showed neonatal neurobehavioral effects and labor effects that may have had a significant impact on breastfeeding. The few studies that have looked directly at breastfeeding outcomes have suggested poorer outcomes in women who had epidural analgesia.¹⁵⁻¹⁸ These results must be interpreted with caution, however, as most of these studies have been problematic with poor control groups and much crossover between study groups. Furthermore, it is difficult to ascertain whether the effects were caused by the epidural *per se*, or epidural use was a marker for abnormal labor with adverse effects not directly attributable to the epidural. Epidural analgesia also may affect labor outcomes, for example, increasing instrumented delivery, which may secondarily affect breastfeeding outcomes.^{4,5} One study has suggested that when epidural analgesia is commonplace in a hospital supportive of breastfeeding, longer-term breastfeeding outcomes are not adversely affected by epidural analgesia.¹⁹ A recent randomized, double-blind study showed that epidural analgesia with fentanyl in low-to-moderate doses, along with bupivacaine, did

not have any effect on breastfeeding outcomes compared to epidural analgesia using bupivacaine alone. Higher doses of fentanyl ($>150 \mu\text{g}$ total dose) may have had a small negative effect on maternal perception of breastfeeding at 24 hours and breastfeeding continuation at 6 weeks.²⁰

1. If epidural anesthesia is chosen, methods that minimize the dose of medication and minimize motor block should be used. Longer durations of epidural analgesia should be avoided if possible,²¹ and administration should be delayed until necessary to minimize effect on labor outcomes that may secondarily affect breastfeeding. Combined spinal-epidural analgesia and patient-controlled epidural analgesia may be preferable.
2. Infants lose more weight in the first postpartum days when labor medications are used.¹² Some of this weight loss may be a result of mothers receiving an intravenous (IV) fluid load for epidural analgesia. One report notes babies are slightly heavier on average and lose more weight in the first days postpartum when epidural analgesia is used.²² In addition, the use of large volumes of intrapartum IV fluids has been associated with a decrease in plasma oncotic pressure,²³ which may then increase breast engorgement and interfere with subsequent milk production and/or transfer. Conservative use of fluids may mitigate this effect. Definitive studies of these interrelationships are needed in order to better assess first-week weight loss in individual newborns.
3. When epidural analgesia has been used for labor, particular care to provide mothers with good breastfeeding support and close follow-up after postpartum hospitalization should be taken.

There are minimal data concerning the pediatric effects of other labor anesthesia, including inhaled nitrous oxide, paracervical block, pudendal block, and local perineal anesthesia.^{24,25} These modalities do not usually expose the infant to significant quantities of medication. In some situations, these may serve as alternatives to intravenous narcotics or epidural analgesia

for labor. However, their use is limited by several factors, including lack of efficacy, technical difficulties, and a high rate of complications.

ANESTHESIA FOR CESAREAN SECTION

Regional anesthesia (epidural or intrathecal/spinal) is preferred over general anesthesia.^{26,27}

Separation of the mother and baby should be minimized and breastfeeding initiated as soon as feasible. In fact, the baby may go to the breast in the operating room during abdominal closure with assistance to support the infant on the mother's chest. If breastfeeding is initiated in the recovery room, there is the added advantage that the incision is often still under the influence of the anesthetic.

A mother may breastfeed postoperatively as soon as she is alert enough to hold the baby.

POSTPARTUM ANESTHESIA

Nonopioid analgesics

Nonopioid analgesics generally should be the first choice for pain management in breastfeeding postpartum women, as they do not impact maternal or infant alertness.

1. Acetaminophen and ibuprofen are safe and effective for analgesia in postpartum mothers.
2. Parenteral ketorolac may be used in mothers not subject to hemorrhage, and with no history of gastritis, aspirin allergy, or renal insufficiency.
3. Diclofenac suppositories are available in some countries and commonly used for postpartum analgesia. Milk levels are extremely low.
4. Cox-2 inhibitors such as celecoxib may have some theoretic advantages if maternal bleeding is a concern. This must be balanced with higher cost and possible cardiovascular risks, which should be minimal with short-term use in healthy young women.

Both pain and opioid analgesia can have a negative impact on breastfeeding outcomes;

thus, mothers should be encouraged to control their pain with the lowest medication dose that is fully effective. Opioid analgesia postpartum may affect babies' alertness and suckling vigor. However, when maternal pain is adequately treated, breastfeeding outcomes improve.²⁸ Especially after Cesarean birth or severe perineal trauma requiring repair, mothers should be encouraged to adequately control their pain.

Intravenous medications

1. Meperidine should be avoided because of reported neonatal sedation when given to breastfeeding mothers postpartum,²⁹ in addition to the concerns of cyanosis, bradycardia, and risk of apnea, which have been noted with intrapartum administration.^{30,31}
2. The administration of moderate to low doses of IV or IM morphine is preferred as its passage to milk and oral bioavailability in the infant are least with this agent.^{29,32}
3. When patient-controlled IV analgesia (PCA) is chosen after Cesarean section, morphine or fentanyl is preferred to meperidine.³³
4. Although there are no data on the transfer of nalbuphine, butorphanol, and pentazocine into milk, there have been numerous anecdotal reports of a psychotomimetic effect when these agents are used in labor. They may be suitable in individuals with certain opioid allergies or other conditions described in the preceding section on labor (see page 272 #3).
5. Hydromorphone (approximately 7 to 11 times as potent as morphine), is sometimes used for extreme pain in a PCA, IM, IV, or orally. Following a 2-mg intranasal dose, levels in milk were quite low with a relative infant dose of about 0.67%.³⁴ This correlates with about 2.2 $\mu\text{g}/\text{day}$ via milk. This dose is probably too low to affect a breastfeeding infant, but this is a strong opioid and some caution is recommended.

Oral medications

1. Hydrocodone and codeine have been used worldwide in millions of breastfeeding mothers. This suggests they are suitable choices even though there are no data reporting their transfer into milk. Higher doses (10 mg hydrocodone) and frequent

use may lead to some sedation in the infant.

Epidural/spinal medications

1. Single-dose opioid medications (e.g., neuraxial morphine) should have minimal effects on breastfeeding because of negligible maternal plasma levels achieved. Extremely low doses of morphine are effective.
2. Continuous post-Cesarean epidural infusion may be an effective form of pain relief that minimizes opioid exposure. A randomized study that compared spinal anesthesia for elective Cesarean with or without the use of postoperative extradural continuous bupivacaine found that the continuous group had lower pain scores and a higher volume of milk fed to their infants.³⁵

ANESTHESIA FOR SURGERY IN BREASTFEEDING MOTHERS

The implications of drugs used in anesthesia in postpartum mothers depends on numerous factors, including the age of the infant, stability of the infant, stage of lactation (early or late stage), and ability of the infant to handle the clearance of small quantities of anesthetic medications.³⁶ Anesthetic agents will have little or no effect on older infants, but could cause problems in newborn infants, particularly those who are premature or suffer from apnea.

The ability of the infant to clear small amounts of these medications is of primary concern before returning to breastfeeding. Infants subject to apnea, hypotension, or weakness probably should be protected by a few more hours of interruption from breastfeeding before resuming (12 to 24 h) nursing.

Mothers with normal term or older infants generally can resume breastfeeding as soon as they are awake, stable, and alert. Resumption of normal mentation is a hallmark that these medications have left the plasma compartment (and thus the milk compartment) and entered adipose and muscle tissue where they are slowly released. A single pumping and discarding of the mother's milk following surgery will significantly eliminate any drug retained in milk fat, although this is seldom necessary

and not generally recommended. For women who undergo postpartum tubal ligation, breastfeeding interruption is not indicated, as the volume of colostrum is small.³⁷ In addition, the levels of medication in the maternal plasma and milk are low once mothers resume normal mentation. Regional anesthesia is recommended for this procedure in preference to general anesthetic for maternal safety.

Mothers who have undergone dental extractions or other procedures requiring the use of single doses of medication for sedation and analgesia can breastfeed as soon as they are awake and stable. Although shorter-acting agents such as fentanyl and midazolam may be preferred, single doses of meperidine or diazepam are unlikely to affect the breastfeeding infant.³⁶

Mothers who have undergone plastic surgery, such as liposuction, in which large doses of local anesthetics (lidocaine) have been used probably should pump and discard their milk for 12 hours before resuming breastfeeding.

SPECIFIC AGENTS USED FOR ANESTHESIA AND ANALGESIA

Anesthetics

Drugs used for induction such as propofol, midazolam, etomidate, or thiopental enter the milk compartment only minimally, as they have extraordinarily brief plasma distribution phases (only minutes) and hence their transport to milk is low to nil.^{38–41}

Little or nothing has been reported about the use of anesthetic gases in breastfeeding mothers. However, they too have brief plasma distribution phases and milk levels are likely nil.

The use of ketamine in breastfeeding mothers is unreported. Because of its high rate of psychotomimetic effect, including hallucinations and dissociative anesthesia (catalepsy, nystagmus), ketamine is probably not an ideal anesthetic agent for breastfeeding mothers.

Analgesics

Opioid analgesics.

1. Morphine is still considered an ideal analgesic for breastfeeding mothers because of

its limited transport to milk, and poor oral bioavailability in infants.^{29,33}

2. The transfer of meperidine into breast milk is documented, although it is somewhat low (1.7% to 3.5% of maternal dose). However, the administration of meperidine and its metabolite (normeperidine) is consistently associated with neonatal sedation, which is dose related. Transfer into milk and neonatal sedation have been documented for up to 36 hours after the dose.²⁹ Meperidine should be avoided during labor and in postpartum analgesia (except, perhaps, within 1 hour before delivery). Infants of mothers who have been exposed to repeated doses of meperidine should be closely monitored for sedation, cyanosis, bradycardia, and possibly seizures.
2. Although there are no published data on remifentanyl, this esterase-metabolized opioid has a brief half-life even in infants (<10 minutes) and has been documented to produce no fetal sedation even *in utero*. Although its duration of action is limited, it could be used safely, and indeed may be ideal in breastfeeding mothers for short painful procedures.
3. Fentanyl levels in breast milk have been studied and are extremely low to below the limit of detection.^{42,43}
4. Sufentanyl transfer into milk has not been published, but it should be similar to fentanyl.
5. Nalbuphine, butorphanol, and pentazocine levels in breast milk have not been published. At this time they would only be indicated in the specific situations mentioned previously (see page 272 #3). If these agents are used, observe the mother and infant for psychotomimetic reactions (3%).
6. Hydrocodone and codeine have been used in millions of breastfeeding mothers. Occasional cases of neonatal sedation have been documented, but these are rare and generally dose related. Doses in breastfeeding mothers should be kept at the minimum necessary to control pain. Routine, consistent dosing throughout the day may lead to sedative effects in the breastfed infant.

NSAID analgesics.

1. Ibuprofen is considered an ideal, moderately effective analgesic. Its transfer to milk is low to nil.^{44,45}
2. Ketorolac is considered an ideal and potent analgesic in breastfeeding mothers. The transfer of ketorolac into milk is extremely low.⁴⁶ However, its use in patients with hemorrhage is risky as it inhibits platelet function. Other contraindications are noted in the preceding section on postpartum anesthesia (see page 273 #2).
3. Celecoxib transfer into milk is extraordinarily low (<0.3% of the maternal dose).⁴⁷ Its short-term use is safe.
4. Naproxen transfer into milk is low, but gastrointestinal disturbances have been reported in some infants after prolonged therapy. Short-term use (1 week) probably is safe.^{48,49}
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RECOMMENDATIONS FOR FUTURE RESEARCH

Studies of labor analgesia and labor anesthesia should specifically study breastfeeding outcomes.

Specific data is needed about the use of intravenous fluid loading during labor, such as for epidural anesthesia, and its effects on infant birthweight, breast engorgement, milk supply, and neonatal weight loss in order to more appropriately assess early infant feeding and weight loss in these babies.

More study is required of the special needs of premature and unstable babies, including how their ability to clear maternal anesthetic and analgesic drugs may differ from healthy, term babies.

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