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ABM Clinical Protocol #28, Peripartum Analgesia and Anesthesia for the Breastfeeding Mother

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A central goal of the Academy of Breastfeeding Medicine is the development of clinical protocols, free from commercial interest or influence, 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.

Background

The World Health Organization recommends exclusive breastfeeding for 6 months followed by a continuation of breastfeeding with the introduction of complementary foods for 2 years or longer as mutually desired by mother and infant.[1] This recommendation is supported by a growing body of evidence for both the short- and long-term health benefits to infants and mothers.[2] Despite its large public health impact, the study of breastfeeding initiation and continuation beginning in the peripartum phase is methodologically complex, lacking in scientific rigor, and sparse. There are several external factors such as maternal intention to breastfeed, community traditions and support, level of education, maternal age, race, and social class that influence breastfeeding outcomes.[3,4] Many intrapartum interventions also have the potential to impact breastfeeding outcomes.[5] Oxytocin, endorphins, and adrenaline produced in response to the physiological pain of labor may play significant roles in maternal and neonatal responses to birth and early breastfeeding.[6] The use of pharmacologic and nonpharmacologic agents for pain relief in labor and postpartum may improve outcomes by relieving suffering during labor; however, some of these methods may affect the course of labor and the neurobehavioral state of the neonate.

Few studies directly address the impact of various approaches to peripartum anesthesia and analgesia on breastfeeding outcomes. While a Cochrane review evaluated 38 studies published before 2011 on epidural analgesia compared with other pain management options, it is notable that only one assessed breastfeeding outcomes.[7]

This protocol will examine the evidence currently available, make recommendations for prudent practice regarding peripartum analgesia and anesthesia for the breastfeeding mother and offer suggestions for future research. Quality of evidence (levels of evidence: IA, IB, IIA, IIB, III, and IV) is based on levels of evidence used for the National Guidelines Clearinghouse and is noted in parentheses.[8] The first part of the protocol will discuss the use of analgesia during labor and anesthesia for operative deliveries, and the second half will discuss specific medications used for postpartum pain relief. Note that some medications will be mentioned in both situations as infant effects may be different with medication through placental transfer versus colostrum and milk intake.

Recommendations

Analgesia for labor pain

Women experience labor pain in different ways and have differing levels of pain tolerance. Labor pain may exceed a woman's ability to cope or be magnified by fear and anxiety. Suffering in labor may lead to dysfunctional labors, poorer psychological outcomes, delayed secretory activation, and increased risk of postpartum depression, all of which may have negative effects on breastfeeding.[9–11] In addition, severe maternal physiologic stress in labor also causes in utero fetal stress as well as increased physiologic stress for infants, which may affect their readiness to breastfeed at birth[3] (III).

Maternity care providers should discuss labor pain management options during the prenatal period, before the onset of labor. This discussion should include what is known about the association of various modalities on the progress of labor, risk of instrumented and cesarean delivery, effects on the newborn, and possible breastfeeding effects (IV).

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Regardless of the modality used for labor analgesia, comprehensive patient and provider education, early and uninterrupted initiation of maternal–infant skin-to-skin contact, continuing lactation support in the postpartum phase, and identifying and actively addressing barriers to breastfeeding improve outcomes[12–14] (IIA-IV).

Neuraxial labor analgesia

- Neuraxial analgesia continues to be the most commonly used modality in many countries and the most effective pain management option available to parturients.[5,7] There are no studies comparing breastfeeding outcomes according to neuraxial technique (i.e., epidural, combined spinal-epidural, spinal, and continuous spinal), therefore these will all be discussed together under the method of neuraxial analgesia.
- The effect of neuraxial analgesia on breastfeeding outcomes continues to be inconclusive due to inconsistent reporting, differences in study design and end points, and mixed results. A 2016 systematic review found 23 studies examining the association between neuraxial analgesia and breastfeeding outcomes. These were mostly observational studies. Twelve found negative associations, 10 found no effect, and 1 found positive association between neuraxial analgesia and breastfeeding success[5] (IIA-III). In addition, Lee et al. in 2017 reported no association between the cumulative fentanyl dose and rate of breastfeeding at 3 months postpartum[15] (IB).
- Opioids are commonly used in combination with local anesthetics in neuraxial solutions for labor analgesia. There are three prospective randomized studies evaluating the effect of epidural fentanyl dose on breastfeeding success, and the results differ. Beilin et al. reported that in mothers who had previously breastfed a child, those randomized to receive a high dose of epidural fentanyl (cumulative dose greater than or equal to 150 mcg) were more likely to stop breastfeeding 6 weeks postpartum when compared with mothers receiving no fentanyl or low dose of fentanyl (cumulative dose less than 150 mcg)[16] (IB). Wilson et al. reported that neuraxial analgesia, with or without epidural fentanyl, did not impact breastfeeding up to 12 months postpartum[17] (IIA). The third study was that by Lee et al., a randomized controlled trial (RCT) with objective measures of maternal and umbilical cord venous fentanyl and bupivacaine concentrations in multiparous mothers with previous breastfeeding experience. Of note, only 19% of participants in this trial received greater than or equal to 150 mcg cumulative dose of epidural fentanyl, which has been the suggested cutoff for breastfeeding effects[15] (IB).
- The association between neuraxial analgesia and neonatal neurobehavioral organization is also controversial and inconclusive in its long-term effects on breastfeeding outcomes. There may be depressed hand massage and suckling behavior in neonates exposed to neuraxial analgesia, but some of the neonates studied were also exposed to oxytocin and/or meperidine/pethidine during the course of labor, which were not accounted for in statistical analysis. There were no long-term differences in breastfeeding outcomes or these outcomes were not reported[18–20] (III).
- Like many other aspects of breastfeeding, neuraxial labor analgesia likely has minimal effects on women who strongly intend to breastfeed and have good support but may present one more subtle challenge to women whose intention to breastfeed is more vulnerable.
  - When neuraxial labor analgesia has been used, particular care should be taken to provide mothers with good breastfeeding support and close postpartum follow-up. Zuppa et al., in a retrospective cohort study, reported that in the case of partial rooming-in, the rate of exclusive or predominant breastfeeding was higher in mothers who did not receive epidural analgesia, although this may be a casual association rather than a causal one; in the case of full rooming-in, there was no difference in breastfeeding rates between mothers who did or did not receive neuraxial labor analgesia[21] (III).
  - While there is currently no recommendation to encourage intrapartum fluid administration before neuraxial analgesia placement,[22] intravenous fluids are still often provided as a bolus to mothers receiving epidural analgesia as a way to increase the intravascular volume and offset sympathetic blockade. Excessive fluid can potentially lead to maternal engorgement and affect birth weight and newborn weight loss[23,24] (IIA).

Systemic pain medications in labor

- All opioids easily cross the placenta. In utero, this may affect fetal heart rate variability. Once delivered, opioids are associated with varying degrees of neonatal respiratory depression and neurobehavioral changes that may impact latching. Long-term effects are unclear.[25] When a mother has received intravenous or intramuscular narcotics for labor, mother and infant should be given more skin-to-skin time to encourage early breastfeeding, with appropriate supervision if any concerns exist over maternal or infant sedation (IV).
- Short-acting opioids such as fentanyl or remifentanil may be preferred when compared with longer-acting opioids with active metabolites. Remifentanil is potent and has rapid onset and offset, but can be associated with a high incidence of maternal apnea, requiring increased monitoring[26] (IIB-III). Remifentanil has also been shown to result in a number of cases of neonatal depression in a recent survey in academic centers across the United States.[27] Evidence on breastfeeding outcomes is lacking.
- Longer-acting opioids with active metabolites such as meperidine/pethidine or morphine should be used with caution and administered less than 1 hour or more than 4 hours before anticipated delivery because of greater incidence and duration of respiratory depression, cyanosis, and bradycardia in neonates. When compared with intranasal or subcutaneous fentanyl, mothers receiving intramuscular meperidine/pethidine reported greater difficulties in establishing breastfeeding at 6 weeks postpartum[28,29] (IIB).

- Partial opioid agonists such as nalbuphine, butorphanol, and pentazocine are used during labor at some institutions, particularly for patients with certain opioid allergies or for other indications. Data on breastfeeding outcomes for exposed dyads are lacking.

Nitrous oxide for labor analgesia

- There are minimal data concerning the effects on the neonate of inhaled nitrous oxide. In some institutions, where nitrous oxide is available, it may serve as an alternative to parenteral opioids or neuraxial analgesia for labor. One recent study reported a positive relationship between its use and breastfeeding rates at 7 days and 1 and 3 months postpartum, and a review article reported no apparent adverse effect on suckling[30,31] (III-IV).

Other nonopioid systemic medications for labor analgesia

- Nonopioid medications such as nonsteroidal anti-inflammatory drugs (NSAIDs), acetaminophen/paracetamol, antispasmodics, sedatives, and antihistamines have insufficient evidence to support their role in managing labor pain. There is little to no evidence on breastfeeding outcomes.[32–34] Further study is needed (III-IV).

Nonpharmacologic pain relief

- In a 2016 Cochrane review, when compared with other care models, midwife-led continuity models led to decreased use of regional analgesia and instrumental vaginal birth and led to increased length of labor and rate of spontaneous vaginal birth. There were no differences in cesarean births, induction of labor, augmentation/oxytocin in labor, opioid analgesia, postpartum hemorrhage, 5-minute Apgar score less than or equal to seven, and admission of infant to special care or the neonatal intensive care unit. There were no differences in breastfeeding initiation and no data on long-term breastfeeding outcomes[35] (IIA-III).
- Continuous support in labor, ideally by a doula, reduces the need for pharmacologic pain management in labor and decreases the rates of instrumented delivery and cesarean section. The most recent review did not find statistical differences in breastfeeding outcomes, which were neither comprehensive nor consistent in their reporting[36] (IIA-III). In socially disadvantaged mothers, those who worked with a certified doula in the antenatal period was more likely to initiate breastfeeding compared with matched controls. No longevity data on breastfeeding were reported[37,38] (III).
- Nonpharmacologic methods for pain management in labor such as hypnosis, massage, psychoprophylaxis, intradermal/subcutaneous water injections, and acupuncture have varying results in reducing labor pain.[39–41] These methods appear to be safe and have no known adverse neonatal effects. In reviews of hypnosis for pain management in labor, there were no significant differences in breastfeeding at hospital discharge in hypnosis groups compared with control groups[39,42] (III). Additional study of breastfeeding outcomes in various nonpharmacologic methods is needed.

Anesthesia for cesarean delivery

- The decision to use a particular anesthetic technique for cesarean delivery (i.e., neuraxial versus general anesthesia) should be individualized based on anesthetic, obstetric, maternal, and fetal risk factors. There is a preference for neuraxial anesthesia over general anesthesia for most cesarean deliveries, but general anesthesia may be most appropriate in certain circumstances such as profound fetal bradycardia, ruptured uterus, severe maternal hemorrhage, and severe placental abruption[22] (IB-IV). These recommendations do not address implications for breastfeeding initiation or outcomes in these emergent situations. Note that neuraxial anesthesia allows for administration of neuraxial preservative-free morphine, which will reduce postoperative systemic opioid consumption.
- Separation of a mother and her infant should be minimized and skin-to-skin contact should be initiated in the operating room as soon as feasible. The infant may go to the breast in the operating room during abdominal closure with supervision and support after maternal and infant stability is established[43,44] (III).
- General anesthesia may be associated with delayed secretory activation and greater reported difficulties with breastfeeding,[45,46] although confounding medical factors related to the underlying need for general anesthesia may impact breastfeeding too (III). A mother who has had general anesthesia may breastfeed postoperatively as soon as she is alert enough to hold the infant and is not sedated[47,48] (III-IV). Please refer to ABM clinical protocol #15: Analgesia and Anesthesia for the Breastfeeding Mother, Revised 2017, and the U.S. National Library of Medicine website LactMed for greater details on specific medications for breastfeeding mothers.[48,49] Small doses of intravenous ketamine, opioids, and midazolam used to supplement regional anesthesia during cesarean delivery should not preclude breastfeeding once the mother is stable and alert (IV).
- Multimodal analgesic modalities with opioid-sparing effects, such as a transverse abdominis plane block, particularly if the cesarean delivery required general anesthesia, or the use of wound infiltration with a local anesthetic, may decrease systemic opioid consumption, provide better comfort during breastfeeding, and decrease time to first breastfeed[50,51] (IIA).

Postpartum pain management

In addition to evaluating the effects of analgesia used during labor—or in the subset of women who may have had an intrapartum cesarean delivery after neuraxial labor analgesia was provided—on the establishment and continuation of breastfeeding, the safety of analgesic medications used during breastfeeding immediately postpartum needs to be considered.

Most medications transfer easily into colostrum because the intracellular junctions between lactocytes only start to close during the first 48–72 hours after delivery. However, because colostrum volume and initial milk intake are low, total medication dose ingested by neonates is typically

minimal until milk volume increases.[52] Intracellular junctions do not fully close until ≈ 7–10 days postpartum,[53] however, indicating that infant exposure to maternal medications may actually be highest during days 3–10 of life.

Opioids are the most concerning class of medication that may be used in the postpartum period, and medication dosing and requirements may vary considerably between patients. Concerns over breastfeeding safety need to be weighed with opioid effects because when maternal pain is adequately treated, breastfeeding outcomes improve[54–56] (III-IV).

Current recommendations insist on multimodal analgesia being offered in a tiered manner after delivery. Nonopioid analgesics should be the first choice for pain management in breastfeeding postpartum women as they do not impact maternal or infant alertness or respiratory drive.

- Acetaminophen/paracetamol is widely used for analgesia. It may be given orally, rectally, and through the intravenous route; transfer into milk is low and appears to be less than the dosage given to infants[57] (III).
- NSAIDs are commonly used for postpartum analgesia. While transfer of these medications into breast milk is low, this class of medications should be avoided in mothers of infants with ductal-dependent cardiac lesions[57] (IV).
  - Aspirin in a dose of 81 mg daily results in undetectable levels in human milk, with subclinical levels of its metabolite.[58] Its use as chronic antiplatelet therapy is considered safe (III), but variable transfer into milk with higher analgesic dosing may reflect nonlinear metabolism; other medications are preferred when chronic higher dosing is required[49] (IV).
  - Ibuprofen has a very short half-life with little to no milk transfer[59] (III).
  - Ketorolac is commonly used for postpartum analgesia, especially after cesarean delivery or when stronger analgesia is required (IV). Milk levels after oral administration are quite low, but levels have not been measured after parenteral administration.[60]
  - Diclofenac is administered as a suppository, orally, intramuscularly, and intravenously. There are limited studies on breast milk levels and effects on the infant. Available studies show undetectable levels following intramuscular or oral administration[49] (III).
  - Naproxen transfer into milk is low, but gastrointestinal disturbances have been reported in some infants after prolonged maternal therapy. Short-term use (1 week) is likely safe[61] (III).
  - Indomethacin demonstrates low transfer into milk and is considered a safe option for pain in the postpartum period[49] (III).

Postvaginal delivery analgesia

Nonopioid analgesics should be the first choice for pain management in breastfeeding postpartum women as they do not impact maternal or infant alertness or respiratory drive. These medications alone are sufficient analgesia for most women after uncomplicated vaginal delivery and they can be safely dosed on an as-needed basis or as scheduled around-the-clock medications for more significant pain.

After uncomplicated vaginal delivery in women who delivered with labor epidural analgesia, postpartum administration of a single epidural dose of preservative-free morphine has been shown to reduce the use of oral pain medication[62] (IB), which may be very useful after severe perineal tear.

Postcesarean delivery analgesia

Most women will have received neuraxial anesthesia for their cesarean delivery, which allows for administration of single or repeated dosing of neuraxial opioids and/or the maintenance of epidural infusion of local anesthesia solution. This forms the basis of multimodal analgesia as it should provide some pain relief for 18–24 hours and will reduce systemic opioid consumption.

Neuraxial (epidural/spinal) medications

- Continuous postcesarean epidural infusion may be an effective form of pain relief that minimizes systemic maternal use and hence opioid exposure. A randomized study that compared combined spinal-epidural anesthesia for elective cesarean with or without the use of postoperative epidural continuous bupivacaine found that the continuous group had lower pain scores and a higher volume of milk fed to their infants.[54] This option may limit postpartum mobility and increase healthcare costs, but its use may be considered in mothers with chronic pain or for whom systemic opioids should be limited (IV).
  - Local anesthetics are large polarized molecules that do not cross easily into milk. They also have a low oral bioavailability. The transfer of epidural local anesthetics and their metabolites to breast milk is low and they can be safely administered during breastfeeding.[47,48,63]
- Single-dose, long-acting opioid medications (e.g., neuraxial morphine or hydromorphone) have minimal effects on breastfed infants because of negligible maternal plasma levels achieved. Extremely low doses are effective and may be repeated if epidural catheters are kept in place postpartum. These opioids typically last ≈ 24 hours, and this approach has become standard of care at many hospitals.[64,65]

In addition to neuraxial analgesia and the use of acetaminophen and NSAIDs, a short course of systemic opioids may be required for pain relief. As with opioids needed for any acute problem, their use should be limited to the lowest effective dose for the shortest possible duration. When opioids are needed, a multimodal approach is suggested and the use of other analgesic medications such as acetaminophen/paracetamol and NSAIDs should be maximized[64,65] (IV).

All opioids are present in human milk. Information on risks of various opioid medications is largely derived from case reports, skewing comparisons between more commonly and less commonly prescribed opioids. Regardless of the opioid prescribed, it is recommended that patients be counseled about the risk of sedation for both the mother and the breastfed infant. If the mother is experiencing central nervous system (CNS) depression symptoms, the infant should be evaluated for CNS depression as well. At least one article recommends limiting

opioid medications to 4 days for breastfeeding mothers to minimize risk to the breastfeeding infant[66] (IV).

- Parenteral (IV/IM) opioids may be required for women with severe pain or who are not tolerating oral intake. Patient-controlled analgesia using a pump may be used for dosing convenience in some institutions, although there are no clear advantages or risks identified for breastfeeding mothers with this modality.
  - Meperidine/pethidine should be avoided where possible due to reported neonatal sedation when given to breastfeeding mothers postpartum[67] (IV). Meperidine and its metabolite normeperidine have variable half-lives, which make estimating breast milk levels difficult, and the American Academy of Pediatrics (AAP) recommends against use of this medication in breastfeeding mothers[57] (IV).
  - Morphine remains a reasonable option for use when intravenous medications are required. Administration of moderate to low doses of intravenous or intramuscular morphine is preferred to meperidine/pethidine as passage to milk and oral bioavailability are low.[57,67] Its oral dose is approximately three times greater than the intravenous dose, indicating low oral availability.
  - Fentanyl transfer into breast milk is quite low and it has very limited oral availability. One study showed peak colostrum levels of 0.4 mcg/L after a maternal 2 mcg/kg intravenous dose.[68] This is a negligible infant dose for oral intake. These attributes make it an ideal opioid for use in breastfeeding mothers, but it is often restricted in the hospital to the crit- ical care unit, operating room, and emergency room settings because of its rapid onset and short duration of action.
  - There are no data available regarding intravenous hydromorphone use, although one report of its use through intranasal administration noted a relative infant dose (RID) of 0.67% after a single maternal dose of 2 mg.[69] Oral availability of this medication is low, with the equianalgesic oral dose approximately five times greater than the intravenous dose.
  - Levels of nalbuphine in human milk are quite low and its metabolites are inactive. In one study, the levels of nalbuphine in milk average only 42 1g/L with an estimated RID of 0.59%[70] (III).
  - Levels of butorphanol in human milk following an intramuscular dose were reported as very low, with an RID of 0.08% to 0.11%[71] (III). It has inactive metabolites and poor oral bioavailability, and there are limited data on prolonged or higher dosages. The AAP has identified this as a reasonable choice when mothers require opioids.[57]
- Oral opioids are generally preferred over intravenous formulations when mothers are tolerating oral intake.
  - Codeine is no longer recommended for use in breastfeeding mothers.[72] As a prodrug, its analgesic effect is dependent upon metabolism to morphine through the CYP2D6 pathway, and it may variably cause either inadequate pain relief or a relative overdose of the active metabolite morphine. There have been case reports of significant infant sedation and one report of infant death after routine maternal intake; the mother was subsequently identified to be an ultrarapid metabolizer and infant an extensive metabolizer after the breastfeeding infant's death.[73]
  - Tramadol is another weak opioid that is no longer recommended in the United States for use in breastfeeding mothers. While there are no reports of ill effects in breastfeeding infants, the U.S. Food and Drug Administration has issued a warning against its use, similar to codeine, based on its CYP2D6 metabolism.[72] It continues to be used frequently in other areas of the world where it is considered safe for breastfeeding mothers.[56,74]
  - Hydrocodone has been used frequently in breastfeeding mothers worldwide. Like all opioids, it should be used with caution and breastfeeding babies should be observed for sedation and respiratory depression. The recommended maximum daily dose of 30 mg should not be exceeded[49] IV).
  - Oxycodone is the most commonly used opioid for cesarean delivery pain in North America. Up to 8.5% of the weight-adjusted maternal dose (RID) transfers into human milk.[75] Prolonged and frequent administration may lead to neonatal sedation, and a maximum daily dose of 30 mg should not be exceeded[49] (IV).
  - Hydromorphone and morphine may be used for oral opioid analgesia, although they have relatively poor oral availability and there is little data available on breastfeeding when mothers use these medications orally. The AAP recommends cautious use of these medications instead of other opioid options[57] (IV). Subsequent to publication of AAP recommendations, there has been one case report of a 6-day-old infant exposed to hydromorphone through breast milk who presented to the emergency room with respiratory depression that required naloxone. The mother had been taking oral hydromorphone, 4 mg, every 4 hours around the clock since birth.[76]
- Chronic opioid therapy
  - In the United States, in particular, pregnant women may be prescribed methadone or buprenorphine for maintenance as part of the medication-assisted treatment for opioid use disorder. Some women may be taking high doses of oxycodone or other opioids for chronic pain issues. Infants of these patients are at significant risk of developing opioid withdrawal syndrome (OWS) shortly after birth. Labor and postpartum analgesic approaches should be tailored to the woman's specific condition and infants closely observed for development of symptoms of withdrawal. Breastfeeding is encouraged for patients on stable doses of methadone or buprenorphine[77] (IV), and safety of breastfeeding should be determined on an individual basis for patients chronically taking other opioids (IV).
- Analgesic adjuncts
  - Ketamine has not been well examined with regard to breastfeeding. A single study on its use as a low-dose infusion for 24 hours postcesarean delivery did not demonstrate any effects on duration of breastfeeding[78] (III). However, transfer of ketamine into

milk is relatively unknown, and concerns exist over its use during anesthesia for infants and young children based on some evidence of neurotoxicty[79] (III). There is insufficient evidence of long-term safety to the infant for this medication to be used as an infusion for pain control for breastfeeding mothers (IV).

- Gabapentin and pregabalin may be useful additions to pain management strategies for certain mothers with chronic pain syndromes or for whom opioid use should be minimized. Gabapentin likely has less transfer to milk and is considered the safer option[48,49] (IV).
- Dexmedetomidine has been examined in a single study in which it was used as an adjunct infusion during cesarean delivery. It was determined that a breastfeeding infant would receive an RID of 0.04–0.098%, a negligible dose[80] (III).
- Clonidine used as a neuraxial adjunct may decrease the use of systemic opioids immediately postpartum. Specific effects on breastfeeding have not been examined, but its use as a single neuraxial dose is unlikely to affect breastfeeding (IV).

- Other medications may be needed to treat side effects of opioids. Antinausea medications are considered safe, with ondansetron and other 5HT-3 blockers, dexamethasone, and metoclopramide preferred over more sedating medications, although prochlorperazine and promethazine are likely to be safe as well[48,49] (III-IV). Stool softeners and laxatives, such as docusate, senna, and bisacadoyl, are minimally absorbed from the gastrointestinal tract and are also considered safe for breastfeeding mothers[49] (III-IV).

Recommendations for Future Research

Research on evaluating labor analgesia, anesthesia for cesarean delivery and postcesarean analgesia, and nonobstetric pain management in the breastfeeding mother needs to include breastfeeding outcomes more consistently. Greater standardization is required in the way we measure breastfeeding outcomes as many studies do not address the same breastfeeding end points. For example, the time to first breastfeed, number of feeds in the first 24 hours, rate of exclusive breastfeeding at discharge, exclusive breastfeeding at 6 weeks, and any breastfeeding at 6 and 12 months are all important indicators of breastfeeding attainment, yet each may be a separate outcome measured in different studies; it remains unclear which end point may be most important in determining effects of labor interventions on overall breastfeeding success.

Much of the literature on systemic opioid use, especially fentanyl and remifentanil, in labor does not include breastfeeding outcomes. Research on ketamine use, both intra- and postoperatively, and its implications for neonatal safety and breastfeeding outcomes is lacking and requires further investigation. Breast milk levels of ketamine after maternal administration have not been measured or reported to date, which would be an important starting point for guidelines on its use in lactating women. Additional gaps in knowledge exist with medication adjuncts, such as gabapentin, clonidine, and dexmedetomidine, as well as in more comprehensive evaluation of milk levels of different opioids that are commonly used postdelivery in breastfeeding patients. In addition to specific medications, research on postpartum pain control should also include evaluation of patient counseling approaches that support women to both attain adequate pain control and minimize adverse effects of opioid medication on themselves and their infants. With better data and consistent reporting, practitioners will be able to provide more comprehensive and informed consent regarding peripartum pain management.

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ABM protocols expire 5 years from the date of publication. Content of this protocol is up-to-date at the time of publication. Evidence-based revisions are made within 5 years or sooner if there are significant changes in the evidence.

This protocol is a new expansion of the previous 2012 protocol on Analgesia and Anesthesia for the Breastfeeding Mother, authored by Anne Montgomery and Thomas Hale.

The Society for Obstetric Anesthesia and Perinatology (SOAP) fully endorses the content of this ABM Clinical Protocol #28 entitled ''ABM Clinical Protocol #28, Peripartum Analgesia and Anesthesia for the Breastfeeding Mother.''

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