Step 7: Educates Staff in Nondrug Methods of Pain Relief and Does Not Promote Use of Analgesic, Anesthetic Drugs

The Coalition for Improving Maternity Services:

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ABSTRACT

Step 7 of the *Ten Steps of Mother-Friendly Care* insures that staff are knowledgeable about nondrug methods of pain relief and that analgesic or anesthetic drugs are not promoted unless required to correct a complication. The rationales for compliance and systematic reviews are presented on massage, hypnosis, hydrotherapy, and the use of opioids, regional analgesia, and anesthesia.

Journal of Perinatal Education, 16(1–Supplement), 65S–73S, doi: 10.1624/105812407X173191

Keywords: hypnosis and labor, hypnotherapy and labor, massage and labor, complementary therapies and labor, hydrotherapy and labor, waterbirth, water and birth, nonpharmacological pain management, analgesia and labor, nurses and pain labor, back pain and therapy and labor, movement and labor, posture and labor, maternal satisfaction, complementary therapy, opioids, epidural analgesia

Step 7: Educates staff in nondrug methods of pain relief and does not promote the use of analgesic or anesthetic drugs not specifically required to correct a complication.

Step 7: Educates staff in nondrug methods of pain relief: massage, hypnosis, hydrotherapy.

Nondrug Pain Relief

Rationale for Compliance	Evidence Grade
In contrast to medication, there is minimal to no risk of adverse side effects from nondrug methods of pain relief. Massage, hypnosis, and hydrotherapy have been shown to provide significant benefits. ^a In addition, the implementation of comfort measures, cognitive strategies, and other self-efficacy techniques can contribute to a woman's sense of mastery over the birth experience and, therefore, her satisfaction with herself and that experience (Lowe, 2002). Nondrug pain relief methods can be used alone or in conjunction with medicinal modes of pain relief and, as such, should be available to all laboring women in all settings.	NEH

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For a description and discussion of the methods used to determine the evidence basis of the Ten Steps of Mother-Friendly Care, see this issue's "Methods" article by Henci Goer on pages 5S–9S.

(Continued)
Nondrug Pain Relief

Rationale for Compliance	Evidence Grade
When compared with similar populations receiving comparable clinical care, massage and encouraging touch had the following benefits:	
<ul style="list-style-type: none"> reduced maternal pain (Huntley, 2004; Simkin, 2002). 	Quality: A Quantity: A Consistency: A
<ul style="list-style-type: none"> reduced maternal stress and anxiety (Huntley, 2004; Simkin, 2002). 	Quality: A Quantity: B Consistency: A
<ul style="list-style-type: none"> women stated that the touch or massage helped them cope with labor, ease their pain, and feel comforted, reassured, accepted, and encouraged (Huntley, 2004; Simkin, 2001). 	Quality: A Quantity: A Consistency: A
When compared with similar populations receiving comparable clinical care, hypnosis during labor had the following benefits:	
<ul style="list-style-type: none"> reduced need for analgesia (Cyna, 2004; Huntley, 2004; Smith, 2003). 	Quality: A Quantity: A (2 meta-analyses) Consistency: B (The Smith meta-analysis found no difference in pain relief, although 2 of the 3 individual studies did.)
<ul style="list-style-type: none"> pain less severe than those not using hypnosis (Cyna, 2004; Huntley, 2004). 	Quality: A Quantity: A Consistency: A
<ul style="list-style-type: none"> greater maternal satisfaction with pain relief (Smith, 2003). 	Quality: A Quantity: A (meta-analysis) Consistency: A
<ul style="list-style-type: none"> shorter duration of labor (Cyna, 2004). 	Quality: A Quantity: A (meta-analysis) Consistency: B
<ul style="list-style-type: none"> reduced need for augmentation of labor with oxytocin (Cyna, 2004; Smith, 2003). 	Quality: A Quantity: A (meta-analysis) Consistency: A
<ul style="list-style-type: none"> increased incidence of spontaneous births (Cyna, 2004; Smith 2003). 	Quality: A Quantity: B Consistency: A
Use of hypnosis had no reported adverse effects in any study.	NEH
When compared with similar populations, women who used hydrotherapy (warm-water immersion in a tub) had the following results:	
<ul style="list-style-type: none"> reduced maternal blood pressure (Cluett, 2004, <i>Cochrane</i>). 	Quality: A Quantity: B Consistency: NA**
<ul style="list-style-type: none"> reported less anxiety during early labor (Benfield, 2001). 	Quality: A Quantity: C Consistency: NA*
<ul style="list-style-type: none"> reported less pain during the first stage of labor (Benfield, 2001; Cluett, 2004, <i>Cochrane</i>; Simkin, 2002). 	Quality: A Quantity: A Consistency: A

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For more information on the Coalition for Improving Maternity Services (CIMS) and copies of the Mother-Friendly Childbirth Initiative and accompanying Ten Steps of Mother-Friendly Care, log on to the organization's Web site (www.motherfriendly.org) or call CIMS toll-free at 888-282-2467.

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(Continued)**Nondrug Pain Relief**

Rationale for Compliance	Evidence Grade
<ul style="list-style-type: none"> reduced need for analgesia and/or anesthesia (Cluett, 2004, <i>BMJ</i>; Cluett, 2004, <i>Cochrane</i>). 	Quality: A Quantity: A Consistency: B
<ul style="list-style-type: none"> reduced need for augmentation in women with slow labors (Cluett, 2004, <i>BMJ</i>). 	Quality: A Quantity: A Consistency: NA*
<ul style="list-style-type: none"> reported feeling they coped better with pushing efforts (Cluett, 2004, <i>Cochrane</i>). 	Quality: B Quantity: B** Consistency: NA**
<ul style="list-style-type: none"> fewer fetal malpresentations such as occiput posterior and deep occiput transverse positions (Simkin, 2002). 	Quality: A Quantity: A Consistency: A
<ul style="list-style-type: none"> reported that hydrotherapy gave them more satisfaction with freedom of movement and with experience of privacy (Cluett, 2004, <i>BMJ</i>). 	Quality: A Quantity: B Consistency: NA*
<ul style="list-style-type: none"> reported that hydrotherapy gave them more control over the labor process, which was highly valued (Hall, 1998). 	Quality: A Quantity: B Consistency: NA*
The use of hydrotherapy had no adverse effects with respect to:	NEH
<ul style="list-style-type: none"> duration of labor, method of delivery, infection in mother or baby, or umbilical cord pH, including when rupture of membranes occurred or admission to the neonatal intensive care unit (Simkin, 2002; Benfield, 2001; Cluett, 2004, <i>BMJ</i>; Cluett, 2004, <i>Cochrane</i>). 	Quality: A Quantity: A Consistency: A

A = good, B = fair, C = weak, NA = not applicable, NEH = no evidence of harm

Quality = aggregate of quality ratings for individual studies

Quantity = magnitude of effect, numbers of studies, and sample size or power

Consistency = the extent to which similar findings are reported using similar and different study designs

*only one study

**one study in SR

^aThe benefits of continuous labor support from a trained or experienced woman can be found in Step 1 on p. 12S. The benefits of freedom of movement and nonsupine positioning for pushing and birth can be found in Step 4 on pp. 25S–27S. Nondrug methods such as acupuncture and intradermal water injections have not been included in this review because they are more invasive and require specialized skills. Birth in water, as opposed to hydrotherapy, is also not addressed because this is a clinical practice, not a pain-relief method.

INCLUDED STUDIES

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Cluett, E. R., Nikodem, V. C., McCandlish, R. E., & Burns, E. E. (2004). Immersion in water in pregnancy, labour and birth. *Cochrane Database of Systematic Reviews* (2), CD000111.

Cluett, E. R., Pickering, R. M., Getliffe, K., & St. George Saunders, N. J. (2004). Randomised controlled trial of labouring in water compared with standard of augmentation for management of dystocia in first stage of labour. *British Medical Journal*, 328(7435), 314.

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Huntley, A. L., Coon, J. T., & Ernst, E. (2004). Complementary and alternative medicine for labor pain: A systematic review. *American Journal of Obstetrics and Gynecology*, 191(1), 36–44.

Lowe, N. K. (2002). The nature of labor pain. *American Journal of Obstetrics and Gynecology*, 186(5 Suppl. Nature), S16–24.

Simkin, P. P., & O'Hara, M. (2002). Nonpharmacologic relief of pain during labor: Systematic reviews of five methods. *American Journal of Obstetrics and Gynecology*, 186(5 Suppl. Nature), S131–159.

Smith, C. A., Collins, C. T., Cyna, A. M., & Crowther, C. A. (2003). Complementary and alternative therapies for pain management in labour. *Cochrane Database of Systematic Reviews*, (2), CD003521.

EXCLUDED STUDIES

Andersen, B., Gyghagen, M., & Nielsen, T. (1996). Warm bath during labour. Effects on labour duration and

- maternal and fetal infectious morbidity. *Journal of Obstetrics and Gynaecology*, 16, 326–330. **Reason:** Data included in Simkin (2002).
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- Field, T., Hernandez-Reif, M., Taylor, S., Quintino, O., & Burman, I. (1997). Labor pain is reduced by massage therapy. *Journal of Psychosomatic Obstetrics and Gynaecology*, 18(4), 286–291. **Reason:** Data included in Simkin (2002).
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- Lenstrup, C., Schantz, A., Berget, A., Feder, E., Roseno, H., & Hertel, J. (1987). Warm tub bath during delivery. *Acta Obstetrica et Gynecologica Scandinavica*, 66(8), 709–712. **Reason:** Data included in Simkin (2002).
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- Ohlsson, G., Buchhave, P., Leandersson, U., Nordstrom, L., Rydhstrom, H., & Sjolín, I. (2001). Warm tub bathing during labor: Maternal and neonatal effects. *Acta Obstetrica et Gynecologica Scandinavica*, 80(4), 311–314. **Reason:** Data included in Simkin (2002); Cluett (2004), *BMJ*.
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Step 7: Does not promote the use of analgesic or anesthetic drugs not specifically required to correct a complication

Opioids

The opioids commonly used in labor are one of several synthetic derivatives of morphine or morphine itself injected either intramuscularly or intravenously. Derivatives include Demerol/Pethidine/meperidine; Stadol/butorphanol; Nubain/nalbuphine; and Dilaudid/hydromorphone.

Opioids

Rationale for Compliance	Evidence Grade
Opioids may cause unpleasant side effects such as drowsiness, nausea, and vomiting (Bricker, 2002; Tsui, 2004).	Quality: B Quantity: A Consistency: B
Newborns of women who use opioids during labor (Bricker, 2002):	
• can experience respiratory depression in the first hours following birth.	Quality: A Quantity: A Consistency: A (SR with multiple studies)
• can be less alert in the first hours following birth.	Quality: A Quantity: A Consistency: A (SR with multiple studies)

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Opioids

Rationale for Compliance	Evidence Grade
<ul style="list-style-type: none">can experience a delay in the onset of successful feeding.	Quality: A Quantity: A Consistency: A (SR with multiple studies)
<ul style="list-style-type: none">may be more likely to become addicted to opioids or amphetamines in later life.	Quality: B Quantity: C Consistency: A (SR with multiple studies)

A = good, B = fair, C = weak, SR = systematic review

Quality = aggregate of quality ratings for individual studies

Quantity = magnitude of effect, numbers of studies, and sample size or power

Consistency = the extent to which similar findings are reported using similar and different study designs

INCLUDED STUDIES

Bricker, L., & Lavender, T. (2002). Parenteral opioids for labor pain relief: A systematic review. *American Journal of Obstetrics and Gynecology*, 186(5 Suppl. Nature), S94–109.

Tsui, M. H. Y., Kee, W. D. N., Ng, F. F., & Lau, T. K. (2004). A double-blinded randomized placebo-controlled study

of intramuscular pethidine for pain relief in the first stage of labour. *BJOG*, 111, 648–655.

EXCLUDED STUDIES

None

Step 7: Does not promote the use of analgesic or anesthetic drugs not specifically required to correct a complication: Regional anesthesia/analgesia

Regional Anesthesia/Analgesia

Regional anesthesia/analgesia for labor includes the epidural and the combined spinal/epidural.

The research that examines regional anesthesia/analgesia for labor is confounded by the following factors:

- Few studies compare groups using various pain medications with groups that use none.
- Almost all women in published comparative studies have been exposed to drugs, procedures, and restrictions that could also adversely affect the mother, baby, or labor pattern.
- Large percentages of women in many of the randomized controlled trials who are assigned to the “no epidural” group ultimately have epidurals. This reduces the likelihood of detecting differences between groups.
- Background cesarean rates in several randomized controlled trials are much lower than found in reports of conventional obstetric management. This means that factors influencing outcomes, such as timing of epidural initiation and policies and philosophies regarding management of women with epidurals, are not taken into account. Consequently, trial results cannot be generalized to conventionally managed populations.
- Background cesarean rates may be so high that the use or nonuse of epidurals can have little influence.

Regional Anesthesia/Analgesia

Rationale for Compliance	Evidence Grade
Compared with epidural anesthesia <i>without</i> the addition of intrathecal opioids, babies in utero of women receiving a combined spinal/epidural (with intrathecal opioids) may be more likely to experience bradycardia (Lieberman, 2002; Mardirosoff, 2002).	Quality: B Quantity: A Consistency: B (Continued)

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Regional Anesthesia/Analgesia

Rationale for Compliance	Evidence Grade	
Compared with epidural anesthesia without the addition of opioids, women receiving a combined spinal/epidural (with opioids):		
• can experience severe itching (Mayberry, 2002).	Quality:	A
	Quantity:	A
	Consistency:	A
• may be more sedated (Mayberry, 2002).	Quality:	B
	Quantity:	B
	Consistency:	B
Compared with women randomly assigned to using no pain medication or exclusively opioid pain medication during labor, women randomly assigned to having epidurals:		
• may experience a longer first-stage labor (Alexander, 2002; Anim-Somuah, 2006; Lieberman, 2002; Sharma, 2004).	Quality:	B
	Quantity:	A
	Consistency:	B
• can experience a longer second-stage labor (Alexander, 2002; Anim-Somuah, 2006; Feinstein, 2002; Lieberman, 2002; Liu, 2004; Sharma, 2004).	Quality:	A
	Quantity:	A
	Consistency:	A
• have increased likelihood of malposition of the fetal head (Anim-Somuah, 2006; Lieberman, 2002).	Quality:	B
	Quantity:	B
	Consistency:	B
• have increased likelihood of oxytocin use (Alexander, 2002; Anim-Somuah, 2006; Liu, 2004; Sharma, 2004).	Quality:	B
	Quantity:	A
	Consistency:	A
• have increased likelihood of hypotension (Anim-Somuah, 2006).	Quality:	A
	Quantity:	A
	Consistency:	A
• have increased likelihood of instrumental vaginal delivery (Alexander, 2002; Anim-Somuah, 2006; Lieberman, 2002; Liu, 2004; Sharma, 2004).	Quality:	B
	Quantity:	A
	Consistency:	A
• have increased likelihood of third- and fourth-degree tears associated with the increased incidence of instrumental vaginal deliveries (Lieberman, 2002).	Quality:	B
	Quantity:	A
	Consistency:	A
• may have increased likelihood of cesarean section for fetal distress (Anim-Somuah, 2006; Liu, 2004).	Quality:	B
	Quantity:	A
	Consistency:	C
• may have increased likelihood of having a cesarean for dystocia (Anim-Somuah, 2006; Feinstein, 2002; Liu, 2004).	Quality:	B
	Quantity:	A
	Consistency:	C
• have increased likelihood of fever during labor (Anim-Somuah, 2006; Lieberman, 2002). ^a	Quality:	A
	Quantity:	A
	Consistency:	A
The newborns of women who had a fever in labor may be more likely to experience seizures in the neonatal period (Lieberman, 2002).	Quality:	A
	Quantity:	C
	Consistency:	A
Compared with babies in utero of women not using pain medication, the fetuses of women having epidurals may have increased incidence of transient heart-rate abnormalities (Lieberman, 2002).	Quality:	B
	Quantity:	B
	Consistency:	B

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Regional Anesthesia/Analgesia

Rationale for Compliance	Evidence Grade	
Compared with newborns of women who did not receive intrathecal narcotics, the newborns of women who did receive intrathecal narcotics may experience more difficulty breastfeeding during the first hours/days after birth, in direct proportion to the amount of intrathecal narcotic the mother received (Beilin, 2005; Jordan, 2005; Lieberman, 2002; Radzynski, 2003, 2005).	Quality:	B
	Quantity:	C
	Consistency:	B
Compared with the newborns of women not using pain medication, the newborns of women having epidurals have increased likelihood of jaundice (Lieberman, 2002).	Quality:	B
	Quantity:	B
	Consistency:	B
Epidural placement before 4 cm dilation may increase (Lieberman, 2002):		
• the likelihood of fetal malposition.	Quality:	B
	Quantity:	C
	Consistency:	C
• the likelihood of instrumental vaginal delivery.	Quality:	B
	Quantity:	B
	Consistency:	B
• the likelihood of cesarean section.	Quality:	B
	Quantity:	A
	Consistency:	C ^b
Women whose epidurals are discontinued late in labor (rather than after birth) do not demonstrate a decreased incidence of the adverse delivery outcomes associated with epidurals (Lieberman, 2002; Torvaldsen, 2004).	Quality:	B
	Quantity:	B
	Consistency:	NA*
Women having epidurals may be more likely to experience hemorrhage immediately after birth. (Lieberman, 2002).	Quality:	B
	Quantity:	B
	Consistency:	B
Women having epidurals may be more likely to experience difficulty urinating in the first few hours after birth (Anim-Somuah, 2006; Lieberman, 2002).	Quality:	B
	Quantity:	B
	Consistency:	B

A = good, B = fair, C = weak

Quality = aggregate of quality ratings for individual studies

Quantity = magnitude of effect, numbers of studies, and sample size or power

Consistency = the extent to which similar findings are reported using similar and different study designs

*only one study

^aBecause newborns are especially vulnerable to infection, babies born to mothers who run fevers in labor are likely to be separated from their mothers for observation in the nursery, undergo septic workups, and possibly have prophylactic IV antibiotic therapy until cultures rule out infection. This subjects the baby to painful, unpleasant procedures; interferes with bonding and establishing breastfeeding; and can greatly increase parental anxiety.

^bWong (2005), an excluded study, has been cited as evidence that early epidural placement, as compared with later placement, does not affect cesarean rates. It is not included as evidence for this rationale because this trial did not actually compare early to late epidurals. Women in the "early epidural" arm were given spinal/epidurals. Most did not receive the epidural component until 4 cm dilation or later, the same timing as the "late epidural" group. Spinal opioid, in contrast to epidural anesthetic, has not been shown to affect labor progress.

Klein (2006) observes that neither previous nor current Cochrane reviewers of epidural versus non-epidural analgesia evaluated the effect of late versus early epidural initiation. If they had, Klein notes they would have found that early epidural placement more than doubled the likelihood of cesarean delivery OR 2.59 (95% CI 1.29–5.23).

REFERENCE

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Anim-Somuah, M., Smyth, R., & Howell, C. (2006). Epidural versus non-epidural or no analgesia in labour. *Cochrane Database of Systematic Reviews* (1).

Beilin, Y., Bodian, C. A., Weiser, J., Hossain, S., Arnold, I., Feierman, D. E., et al. (2005). Effect of labor epidural analgesia with and without fentanyl on infant breastfeeding. *Anesthesiology*, 103(6), 1211–1217.

Feinstein, U., Sheiner, E., Levy, A., Hallak, M., & Mazor, M. (2002). Risk factors for arrest of descent during the

- second stage of labor. *International Journal of Gynaecology and Obstetrics*, 77(1), 7–14.
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- Lieberman, E., & O'Donoghue, C. (2002). Unintended effects of epidural analgesia during labor: A systematic review. *American Journal of Obstetrics and Gynecology*, 186(5), S31–S68.
- Liu, E., & Sia, A. (2004). Rates of caesarean section and instrumental vaginal delivery in nulliparous women after low concentration epidural infusions or opioid analgesia: Systematic review. *British Medical Journal*, 328, 1410–1416.
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- Sharma, S., McIntire, D., Wiley, J., & Leveno, K. (2004). Labor analgesia and cesarean delivery: An individual patient meta-analysis of nulliparous women. *Anesthesiology*, 100, 142–148.
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- Choi, P., Galinski, S., Takeuchi, L., Tamayo, C., & Jadad, A. (2003). PDPH is a common complication blockade in parturients: A meta-analysis of obstetrical studies. *Canadian Journal of Anaesthesia*, 50(5), 460–469. **Reason:** Planned meta-analysis, but studies extracted too heterogeneous, so limited analysis to narrative on onset and duration, with small meta-analysis of pooled data.
- Dickinson, J., Paech, M., McDonald, S., & Evans, S. (2002). The impact of intrapartum analgesia on labour and delivery outcomes in nulliparous women. *The Australian & New Zealand Journal of Obstetrics & Gynaecology*, 42(1), 65–72. **Reason:** Data included in most recent Cochrane systematic reviews.
- Eriksson, S., Olausson, P., & Olofsson, C. (2005). Use of epidural analgesia and its relation to caesarean and instrumental deliveries—A population-based study of 94,217 primiparae. *European Journal of Obstetrics, Gynecology, and Reproductive Biology*, 128, 1–6. **Reason:** Poorly designed. The study estimated the number of subjects who used epidurals and did not connect each subject with her own outcomes.
- Henderson, J., Dickinson, J., Evans, S., McDonald, S., & Paech, M. (2003). Impact of intrapartum epidural analgesia on breast-feeding duration. *The Australian & New Zealand Journal of Obstetrics & Gynaecology*, 43, 372–377. **Reason:** Intended to be a randomized controlled trial but was converted to observational study because of high crossover rate. Conclusions add nothing to the body of knowledge. This issue is addressed in Anim-Somuah (2006) *Cochrane* review.
- Howell, C. (1999). Epidural versus non-epidural analgesia for pain relief in labour. *The Cochrane Database of Systematic Reviews* (3). **Reason:** Study superseded by Anim-Somuah (2006).
- Howell, C., Dean, T., Lucking, L., Dziedzic, K., Jones, P., & Johanson, R. (2002). Randomised study of long-term outcome after labour epidural versus non-epidural analgesia during labour. *British Medical Journal*, 325, 357–365. **Reason:** Data included in Anim-Somuah (2006).
- Leighton, B. L., & Halpern, S. H. (2002). The effects of epidural analgesia on labor, maternal, and neonatal outcomes: A systematic review. *American Journal of Obstetrics and Gynecology*, 186 (5 Suppl. Nature), S69–77. **Reason:** Poorly designed. Data are contaminated by many variables. Lieberman & O'Donoghue (2002) provide a much more inclusive and reasoned review whose conclusions are much clearer and more likely to be valid.
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- Nystedt, A., Edvardsson, D., & Willman, A. (2004). Epidural analgesia for pain relief in labour and childbirth—A review with a systematic approach. *Journal of Clinical Nursing*, 13, 455–466. **Reason:** Poorly designed.

EXCLUDED STUDIES

- Baumgardner, D.J., Muehl, P., Fischer, J., & Pribbenow, B. (2003). Effect of labor epidural anesthesia on breast-feeding of healthy full-term newborns delivered vaginally. *The Journal of the American Board of Family Practice*, 16, 7–13. **Reason:** Poorly designed. Did not control for or describe medications used in the epidural. Study too small. Results not statistically significant after stratifying by parity, which is a significant confounder.
- Chang, Z. M., & Heaman, J. I. (2005). Epidural analgesia during labor and delivery: Effects on the initiation and continuation of effective breastfeeding. *Journal of Human Lactation*, 21(3), 305–314. **Reason:** Poorly designed. High potential for self-selection bias. Although there is a power calculation, authors admit it was not valid for the instruments they ultimately used. Study did not control for or describe type or dose of epidural infusions.

This “review” used articles relatively easy to find in Medline and CINAHL (but no other database), because the authors wanted to see what kind of data busy clinicians might be likely to encounter. There are better-quality data in Anim-Somuah (2006).

Reynolds, F., Sharma, S., & Seed, P. (2002). Analgesia in labour and fetal acid-base balance: a meta-analysis comparing epidural with systemic opioid analgesia. *BJOG*, 109, 344–353. **Reason:** Have better-quality, more recent research.

Volmanen, P., Valanne, J., & Alahuhta, S. (2004). Breast-feeding problems after epidural analgesia for labour: a retrospective cohort study of pain, obstetrical procedures and breast-feeding practices. *International Journal of Obstetric Anesthesia*, 13, 24–29. **Reason:** Not relevant. Old data with small response rate.

Wong, C. A., Scavone, B. M., Peaceman, A. M., McCarthy, R. J., Sullivan, J. T., Diaz, N. T., et al. (2005). The risk of

cesarean delivery with neuraxial analgesia given early versus late in labor. *New England Journal of Medicine*, 352(7), 655–665. **Reason:** Poorly designed. Randomization unsuccessful; two groups differed little in actual timing of epidural in labor.

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