**Labor Pain**

**Best evidence:** When making important maternity decisions, women should have information from the best available research about the safety and effectiveness of different choices. In general, we can be most confident about results of systematic reviews that summarize randomized controlled trials (or RCTs, a type of study).

Unfortunately, for many decisions, we must rely on less definitive research; and many important questions â€” even in the case of widely used drugs, tests, and procedures â€” have hardly been studied at all. Although this situation is discouraging, an awareness of weak or missing evidence can help you make more informed choices about care.

To help women and their caregivers make decisions about labor pain relief that are informed by the best available research, Childbirth Connection has an ongoing [labor pain initiative](http://childbirthconnection.org/article.asp?ck=10130) and commissioned a set of reviews published in a special issue of *American Journal of Obstetrics and Gynecology* (2002). These include systematic reviews about the safety and effectiveness of various methods for labor pain relief and are the main source of information on this page. An [Executive Summary](http://childbirthconnection.org/pdf.asp?PDFDownload=laborpainexecsum) (click for PDF) describes the project and summarizes key findings (Nature and Management of Labor Pain Symposium Steering Committee 2002).

**Key messages**

Despite the challenges of conducting research on labor pain relief and limitations within the best available research, the following conclusions seem clear:

* A woman's labor pain relief options depend in large measure on where and with whom she chooses to give birth; women in other western industrial nations appear to have more options for labor pain relief than women in the U.S. (Marmor and Krol 2002).
* The factor that best predicts a woman's experience of labor pain is her level of confidence in her ability to cope with labor (Lowe 2002).
* Receiving continuous support during labor decreases the probability of using pain medication and increases the likelihood of satisfaction with the birth experience in North American settings (Simkin and O'Hara 2002, a systematic review) and more generally (Hodnett and colleagues 2004, a systematic review).
* Various non-drug techniques can offer pain relief and comfort in labor and have little or no probability of causing adverse effects. If a concern arises or a woman dislikes a technique, discontinuing it should reverse its effects (Simkin and O'Hara 2002, a systematic review).
* We lack good information to answer many questions about unwanted effects of pain medications on babies, mothers, and labor (Bricker and Lavender 2002 and Lieberman and O'Donoghue 2002 â€” systematic reviews, Caton and colleagues 2002).
* The epidural/spinal family has become the most common approach to labor pain relief in the U.S. It is the only pain relief method that can completely abolish pain, but it also has a high profile of adverse effects, both minor and major (Leighton and Halpern 2002, Lieberman and O'Donoghue 2002, and Mayberry and colleagues 2002 â€” systematic reviews).
* Although widely used in the U.S. and elsewhere, injected narcotics appear to have little effect on pain and considerable potential for adverse effects (Bricker and Lavender 2002, a systematic review).
* Nitrous oxide could be a useful method for coping with labor pain, but is rarely available in the U.S. (Rosen 2002, a systematic review).
* These four factors make the greatest contribution to women's satisfaction in childbirth:

	+ having good support from caregivers
	+ having a high-quality relationship with caregivers
	+ being involved in decision-making about care
	+ having better-than-expected experiences, or having high expectations.

Pain relief only becomes important for satisfaction in childbirth when expectations are not met (Hodnett 2002, a systematic review).

**Best evidence about effects of good labor support**

* **effectiveness:** receiving support from a labor companion decreases the probability of using pain medication and increases the likelihood of satisfaction with the birth experience
* **safety:** no safety issues (Hodnett and colleagues 2004 and Simkin, systematic reviews).

**Best evidence about effects of selected comfort measures**

**Activity and positioning:**

* **effectiveness:** studies suggest that women may experience less pain laboring and pushing in upright positions
* **safety:** no known adverse effects; women should be encouraged to seek comfort in being up and about and changing position as they please unless there are specific medical reasons why they should not (Simkin and O'Hara 2002, a systematic review).

**Touch:**

* **effectiveness:** studies suggest that soothing touch or massage, as desired, can help women cope with labor, reduce anxiety, ease pain, and increase comfort
* **safety:** no known adverse effects (Simkin and O'Hara 2002, a systematic review).

**Immersion in water:**

* **effectiveness:** studies of deep tub baths have found inconsistent effects on various indicators of pain; however, many women find deep tub baths soothing and relaxing
* **safety:** studies suggest that prolonged bathing in early labor can slow labor and that water temperatures higher than body temperature can cause maternal fever, at least while the woman remains in the tub; infection in mother or baby doesn't appear to be a problem even with ruptured membranes (Simkin and O'Hara 2002, a systematic review).

**Best evidence about effects of mental strategies**

* **effectiveness:** few of the mental strategies have been evaluated, but many women report finding them helpful
* **safety:** no known safety issues (Enkin and colleagues 2000).

**Best evidence about effects of sterile water injection**

* **effectiveness:** randomized controlled trials consistently find sterile water injections significantly relieve severe back pain compared with a placebo injection
* **safety:** the only drawback is stinging at the time of injection (Simkin and O'Hara 2002, a systematic review).

**Best evidence about effects of nitrous oxide**

* **effectiveness:** although the best available research is difficult to interpret, many women using nitrous oxide give high ratings for pain relief
* **safety:** the most serious known risk, loss of consciousness, can be minimized by avoiding high concentrations of nitrous oxide, limiting use with narcotics, and having women hold the mouthpiece or mask (when it falls away, consciousness rapidly returns) (Rosen 2002, a systematic review).

**Best evidence about effects of injected narcotics (opioids)**

* **effectiveness:** narcotics appear to have limited effect on labor pain; in some settings, a large proportion of women who use narcotics go on to have epidural analgesia
* **safety:** research into narcotic safety is inadequate, and what is known is of concern; most studies have evaluated Demerol (meperidine, also called pethidine), but the few studies of newer opioids do not show any improvement over Demerol; narcotics:
	+ can cause nausea and depress respiration in laboring women
	+ readily cross the placenta and can depress newborn breathing and affect behavior in a way that appears to interfere with parent-baby interaction and breastfeeding; a drug that reverses respiratory depression (Narcan or naloxone) also has drawbacks
	+ may be associated with addictive and self-destructive behaviors in the exposed child later in life (Bricker and Lavender 2000, a systematic review).

A nasal spray version of butorphanol (Stadol NS) is used in some U.S. maternity settings. The manufacturer's "label" for this migraine drug, which has been approved by the U.S. Food and Drug Administration, recommends that the drug not be used during labor as it has not been studied for this purpose.

**Best evidence about effects of epidural or combined spinal-epidural analgesia**

* **effectiveness:**epidural and spinal-epidural analgesia are generally highly effective at abolishing pain; women with epidurals are more satisfied with pain relief than women using narcotics by intravenous line or muscle injection; also, women whose epidurals do not include a narcotic component remain fully alert
* **safety:** the best available research finds that epidurals:
	+ increase the length of the pushing phase of labor
	+ increase the likelihood of birth with vacuum extraction or forceps
	+ reduce the likelihood of "spontaneous vaginal birth," that is, birth with neither vacuum extraction, nor forceps, nor cesarean section
	+ increase the likelihood of maternal fever, which in turn increases the chance that the baby will have blood drawn to check for infection and will be given antibiotics through an IV (intravenous) line as a precaution
	+ increase the likelihood of serious tearing of perineal tissue into or through the rectal sphincter â€” probably due to the increased use of vacuum extraction or forceps
	+ can adversely affect newborn behavior compared with unmedicated infants
	+ increase the likelihood of newborn jaundice (Leighton and Halpern 2002 and Lieberman and O'Donoghue 2002, systematic reviews).

Studies disagree or data are not adequate to definitively determine, but epidurals may:

* + increase the length of the cervical dilation phase (before pushing) of labor
	+ increase the likelihood of cesarean section
	+ increase the likelihood of postpartum hemorrhage and retained placenta
	+ adversely affect breastfeeding
	+ increase the likelihood of inability to urinate and stress incontinence (loss of urine with laughing, coughing, or sneezing) in the early days and weeks after birth
	+ in babies of mothers with fever, increase the likelihood of being born in poor condition and having seizures (Leighton and Halpern 2002 and Lieberman and O'Donoghue 2002, systematic reviews).

Potential side effects during labor include:

* + low blood pressure; this may pose a risk by decreasing blood flow to the baby.
	+ inability to move about, even with "walking" or "light" epidural; may be due to "motor block" of lower body, grogginess from narcotics, being attached to equipment, and/or unavailability of support from nursing staff
	+ inability to urinate
	+ life-threatening complications (severe low blood pressure, respiratory or cardiac arrest, convulsions, severe allergic reaction) (Mayberry and colleagues 2002, a systematic review).

During labor, the narcotic component in the narcotic epidural and the combined spinal-epidural can cause:

* + itching
	+ grogginess (Mayberry and colleagues 2002, a systematic review).

Various interventions are used to monitor, prevent, or treat side effects of epidurals, and labors with epidural analgesia are technology-intensive. The following are routinely used with epidural during labor:

* + electronic fetal monitoring (EFM)
	+ intravenous (IV) fluids
	+ frequent blood pressure monitoring (Mayberry and colleagues 2002, a systematic review).

The following interventions are more likely to be used during labor with epidural:

* + Pitocin ("pit"), a drug to intensify contractions
	+ drugs for low blood pressure
	+ bladder catheter (Leighton and Halpern 2002 and Mayberry and colleagues 2002, systematic reviews).

As these interventions may have their own side effects, the [cascade of intervention](http://childbirthconnection.org/article.asp?ck=10182) is a concern with this pain relief method.

In recent years, anesthesiologists have introduced various changes in technique to reduce side effects of epidurals. These include adjusting timing, using a "light" dose, and using combined spinal-epidural analgesia. While these alterations are widely believed to have resolved many problems, a systematic look at the studies reveals that either key changes have not had the desired effect or there is insufficient evidence to show that they have (Lieberman and O'Donogue 2002, a systematic review).

**References**

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

Caton D, Froelich MA, and Euliano TY. Anesthesia for childbirth: controversy and change.  *American Journal of Obstetrics and Gynecology* 186,5 (2002) S25-30.

Enkin M et al. *A Guide to Effective Care in Pregnancy and Childbirth*, 3rd ed. Oxford: Oxford University Press, 2000.

Hodnett ED. Pain and women's satisfaction with the experience of childbirth: a systematic review. *American Journal of Obstetrics and Gynecology* 186,5 (2002) S160-72.

Hodnett ED, Gates S, Hofmeyr G J, Sakala C. [Continuous support for women during childbirth](http://childbirthconnection.org/pdf.asp?PDFDownload=Continuous_Support) [PDF]. *The Cochrane Database of Systematic Reviews* 2003, Issue 3. Art. No.: CD003766. DOI: 10.1002/14651858.CD003766.

Leighton BL and Halpern SH. The effects of epidural analgesia on labor, maternal, and neonatal outcomes: a systematic review. *American Journal of Obstetrics and Gynecology* 186,5 (2002) S69-77.

Lieberman E and O'Donoghue C. Unintended effects of epidural analgesia during labor: a systematic review. *American Journal of Obstetrics and Gynecology* 186,5 (2002) S31-68.

Lowe NK. The nature of labor pain.  *American Journal of Obstetrics and Gynecology* 186,5 (2002) S16-24.

Marmor TR and Krol DM. Labor pain management in the United States: understanding patterns and the issue of choice. *American Journal of Obstetrics and Gynecology* 186,5 (2002) S173-80.

Mayberry LJ, Clemmens D, and De A. Epidural analgesia side effects, co-interventions, and care of women during childbirth: a systematic review.  *American Journal of Obstetrics and Gynecology* 186,5 (2002) S81-93.

*Nature and Management of Labor Pain* Symposium Steering Committee. The Nature and Management of Labor Pain: [executive summary](http://childbirthconnection.org/pdf.asp?PDFDownload=laborpainexecsum) [click for PDF]. *American Journal of Obstetrics and Gynecology* 186,5 (2002) S1-15.

Rosen MA. Nitrous oxide for relief of labor pain: a systematic review. *American Journal of Obstetrics and Gynecology* 186,5 (2002) S110-26.

Simkin PP and O'Hara MA. Nonpharmacologic relief of pain during labor: systematic reviews of five methods. *American Journal of Obstetrics and Gynecology* 186,5 (2002) S131-59.