

Healthy Birth Practices

from Lamaze® International

#1: Let Labor Begin on Its Own

Debby Amis, RN, BSN, CD(DONA), LCCE, FACCE

A pregnant woman in a Lamaze class tells her instructor and fellow classmates, “My doctor says my baby is pretty big. My neighbor had her labor induced because her baby was thought to be ‘too big.’ Do you think I should ask to be induced?”

In the United States and in many other countries, expectant women hear similar statements in childbirth education classes. Induction of labor—starting labor artificially—is one of the most controversial issues in maternity care today. In many hospitals, labor is induced only for medical reasons, and care providers follow strict guidelines. Yet, in other hospitals, women have elective inductions—those done for convenience rather than for medical reasons. Many women are confused about when induction is truly necessary. Are there problems with induction? What are the benefits of letting labor begin on its own? When does it make sense to induce, and when is it better to wait? What is safest for you and your baby?

As you read the following, it is important to remember that Lamaze can help you work effectively with your care provider so, together, you can make decisions that you feel good about and that can help ensure a safe, healthy, and satisfying childbearing experience.

Nature’s Plan for Birth

Although birth can seem overwhelming, Lamaze's natural approach takes the mystery out of the process. Your body is perfectly designed to birth your baby. During the last weeks of pregnancy, your body and your baby prepare for birth. For a first-time mother, the baby often “drops down” into the pelvis in the weeks before birth. The cervix tilts forward and gradually begins to soften. Over a period lasting from a few days to a few weeks, you may (or may not) feel irregular contractions that help your cervix gradually thin and, perhaps, even dilate a few centimeters.

During the last part of your pregnancy, your baby’s lungs mature, and he puts on a protective layer of fat, taking on the characteristic chubbiness of a newborn. Critical brain development continues through 41 weeks of gestation. Scientists estimate that there is a five-fold increase in the volume of white matter in the fetal brain from 35 to 41 weeks gestation. Researchers are still investigating how the brain continues to grow after the baby is born, compared to how the brain grows when the baby is still inside his mother (Kinney, 2006).



When the baby's organs are fully mature and he is ready for life outside his mother's uterus, scientists believe the baby's body releases a tiny amount of a substance that signals the mother's hormones to begin labor (Condon, Pancharatnam, Faust, & Mendelson, 2004). The surge of maternal hormones that accompanies full-term gestation and spontaneous vaginal birth appears to help the baby prepare for the transition from life inside the womb to outside and, especially, for breathing with his lungs for the first time (Jain & Eaton, 2006). Even if you know ahead of time that your baby needs to be delivered by cesarean surgery, the best way to tell that your baby is healthy enough to be born is to let labor begin on its own.

Medical Reasons for Induction

There are good medical reasons for inducing labor. Labor may be induced if it is more risky for your baby to remain inside your body than to be born. According to the American College of Obstetricians and Gynecologists (ACOG, 2005), labor may be induced if any one of the following occurs:

- your water has broken and labor has not begun.
- your pregnancy is postterm (more than 42 weeks).
- you have high blood pressure caused by your pregnancy.
- you have health problems, such as diabetes, that could affect your baby.
- you have an infection in the uterus.
- your baby is growing too slowly.

It is important to know that "postterm" means you are 2 weeks past your due date. The ACOG and international obstetric associations define a normal pregnancy as lasting from 38 to 42 weeks. If you go past your due date, there is some controversy about whether it is safer for your baby to be born at 41 completed weeks of gestation or 42 completed weeks. Nevertheless, in a recent medical survey, researchers concluded that there is no significant difference in perinatal mortality (the number of babies who die) between induction of labor at 41 weeks and expectant management (allowing the pregnancy to continue) (Wennerholm, Hagberg, Brorsson, & Bergh, 2009).

The expert physicians who write the leading obstetric textbook, *Williams Obstetrics* (Cunningham et al., 2005), have also come to this conclusion. They have

a policy of closely following women whose pregnancies have reached 41 weeks. But they do not induce labor until the pregnancy reaches 42 completed weeks, unless there is another medical reason for induction. They say that inducing at 41 (rather than 42) weeks would mean that about 500,000 more women each year would use interventions that have not been conclusively proved necessary or harmless (Cunningham et al., 2005).

It is also important to know that suspecting a large or very large baby is not a medical reason for induction. Studies have shown that inducing labor for macrosomia (large baby) almost doubles the risk of having cesarean surgery without improving the outcome for the baby (Horrigan, 2001; Leaphart, Meyer, & Capeless, 1997; Sadeh-Mestechkin et al., 2008; Sanchez-Ramos, Bernstein, & Kaunitz, 2002). Furthermore, it is very difficult to know how big your baby is until he is born. Ultrasound is not good at predicting macrosomic (very large) babies. According to ACOG (2009), an ultrasound estimate of the baby's weight is imprecise, with a variability of 16% to 20%.

Induction for Convenience

Induction is sometimes considered convenient for the people involved. Hospitals can staff extra nurses during shifts when inductions are scheduled, physicians can schedule births for the days and hours that are the most convenient for them, and expectant parents can make work and family arrangements according to the scheduled date of induction.

However, elective induction is not convenient when routine delays at the hospital postpone the starting time of the induction. It is not convenient when an induction does not work and the pregnant woman is sent home to try another day. And it certainly is not convenient when induction leads to a cesarean surgery. After a cesarean surgery, a new mother has to recover from major abdominal surgery and is at increased risk for complications such as infection and blood clots (Liu et al, 2007; Villar et al., 2007). Compared to vaginal birth, a baby born by cesarean surgery is at higher risk for breathing problems (Hansen, Wisborg, Uldbjerq, & Henriksen, 2008) and possible admission to the neonatal intensive care unit (NICU) (Villar et al., 2007). Separation of mother and baby can negatively affect breastfeeding and maternal-infant bonding. Before deciding to induce labor for nonmedical reasons, consider the risks of induction for both you and your baby.

How Labor Is Induced

Most often, labor is induced in the hospital setting by giving the mother artificial oxytocin (Pitocin) through an intravenous line (IV). In 2007, the Institute of Safe Medication Practices added IV oxytocin to the list of “high-alert” medications. “High-alert” medications have an increased risk of causing significant harm to the patient when they are used in error. If you need Pitocin for medical reasons during your labor, both you and your baby will require additional monitoring throughout labor and birth. Sometimes, medicines called “ripening agents” are used before the induction to soften the cervix and prepare it for labor. Pitocin and medications called “synthetic prostaglandin E2 preparations” used as ripening agents have been tested and approved by the U.S. Food and Drug Administration (FDA).

Occasionally, a drug called “misoprostol” (Cytotec) is used to induce labor. This drug has been approved by the FDA to treat stomach ulcers, but it has not been approved to induce labor. The FDA (2005) warns that when medical providers use misoprostol to induce labor, there can be rare but serious side effects, including a torn uterus. A tear in the uterus may result in severe bleeding and, consequently, removing the uterus (hysterectomy), or it may cause the death of the mother or baby. The side effects of misoprostol are more likely in women who have had previous uterine surgery, a previous cesarean surgery, or numerous previous births (FDA, 2005).

What Research Tells Us

Growing evidence indicates that induction of labor is not risk-free. In 2007, Goer, Leslie, and Romano reviewed the entire body of literature on the risks of induction in healthy women with normal pregnancies. They found that when labor was induced, the following were more likely to occur:

- vacuum or forceps-assisted vaginal birth;
- cesarean surgery;
- problems during labor, such as fever, changes in fetal heart rate, and shoulder dystocia (baby’s shoulder gets “caught” in the birth canal);
- the laboring woman’s use of an epidural or other drugs for pain relief;
- low birth weight;
- admission to the NICU;
- jaundice (yellow skin caused by the breaking down of red blood cells) that requires treatment for the newborn; and
- increased length of hospital stay for the mother and/or the baby.

Prematurity

One of the reasons that babies born after elective induction can have poor outcomes—such as low birth weight, breathing problems, and jaundice—is that some babies are accidentally induced before they reach full term (at least 37 completed weeks). This is because due dates are not exact. Engle (2006) found that prenatal methods for estimating gestational age have a margin of error of plus or minus 2 weeks. According to ACOG (2004), an ultrasound used to determine due dates during the first 20 weeks of pregnancy is accurate only within 7 days. Ultrasounds done from 20 to 30 weeks are only accurate within 14 days, and ultrasounds done in the last 10 weeks of pregnancy are only accurate within 21 days (ACOG, 2004). If there is a 2-week error in calculating a due date, a woman induced at 38 weeks might be only 36 weeks pregnant.

Babies born at only 34 through 36 completed weeks of pregnancy are considered late-preterm babies. In a study that examined birth and infant death records in the United States from 1995 to 2002, researchers concluded that late-preterm babies are nearly three times more likely to die in their first year of life than full-term infants (Tomashek, Shapiro-Mendoza, Davidoff, & Petrini, 2007). In this study, the causes of death included birth defects, sudden infant death syndrome (also known as “SIDS”), accidents, diseases of the circulatory system, lack of oxygen in the womb, and lack of oxygen during the birth. Researchers examining the brain development of late-preterm babies found that these babies are three times as likely to be diagnosed with cerebral palsy as babies born full-term (Petrini et al., 2009). Other studies found that late-preterm infants born at 35 to 36 weeks gestation have an increased risk for complications such as breathing problems, jaundice, feeding difficulties, and problems maintaining their temperature (Shapiro-Mendoza et al., 2008; Wang, Dorer, Fleming, & Catlin, 2004). In an editorial published in *The Journal of Pediatrics*, Dr. Michael S. Kramer (2009) stated that advances in neonatal care “may have led many obstetricians and neonatologists to consider late preterm births to be risk-free” (p. 159). Dr. Kramer also stated, “We need to pose the question of whether more frequent induction might be doing more harm than good” (p. 160).

The March of Dimes (2006) launched a campaign to enhance public awareness of the increased risks for babies born between 34 and 36 weeks gestation.

Through its Pregnancy & Newborn Health Education Center, the organization encourages pregnant women not to ask for or agree to labor induction unless there are medical reasons to induce labor (March of Dimes, 2008a, 2008b, 2008c). Together with the Johnson & Johnson Pediatric Institute and the Kentucky Department for Public Health, the March of Dimes also developed a Web site, *Healthy Babies Are Worth the Wait* (www.prematurityprevention.org). The Web site has easy-to-read handouts on the problems of late-preterm birth and of labor induction and preterm birth (Healthy Babies Are Worth the Wait, 2008a, 2008b).

Complications and Cesarean Surgeries

Studies consistently show that inducing labor almost doubles a woman's chance of having cesarean surgery (Glantz, 2005; Goer et al., 2007). Also, in hospitals where many women are induced, a low-risk woman having her first baby is more likely to end up giving birth by cesarean surgery (Main et al., 2006). The risk is not decreased by using cervical ripening agents. In fact, when medicines are used to ripen the cervix before administering Pitocin, the risk of cesarean surgery is even higher (Ben-Haroush et al., 2004; Hoffman, 2003; Vahratian, Zhang, Troendle, Sciscione, & Hoffman, 2005; Vrouenraets et al., 2005). Additionally, the risk of a rare but life-threatening complication called "amniotic-fluid embolism" is twice as high in women whose labor is induced (Kramer, Rouleau, Baskett, & Joseph, 2006).

Other Considerations

Increased Need for More Interventions

In addition to an increased risk for mild prematurity and cesarean surgery, induced labor often creates the need for more medical interventions. In most cases, if you are induced, you will need an IV and continuous electronic fetal heart rate monitoring. In many settings, you must stay in bed or very close to the bed. As a result, you may be unable to walk freely or change positions in response to your labor contractions, possibly slowing the progress of your labor. You may be unable to take advantage of a soothing tub bath or a warm shower to ease the pain of your labor contractions. Artificially induced contractions often peak sooner and remain intense longer than natural contractions, increasing your need for pain medications. Labor induction leads to a cascade of interventions, which often result in cesarean surgery.

Psychological Disadvantage

Induced labor, especially when it is not medically necessary, can send a powerful message that your body is not working correctly—that you need help to begin your labor. Letting labor begin on its own may increase your confidence in your ability to give birth and to take care of your baby after he arrives.

Recommendations from Lamaze International

Lamaze International recommends that you neither choose induction nor agree to be induced unless there is a true medical reason. A "large" or even "very large" baby is not a medical reason for induction. Letting your body go into labor on its own almost always is the best way for you to know that your baby is healthy enough to be born. Spontaneous labor also increases the likelihood that you can experience the other healthy birth practices identified by Lamaze International that lead to a safe and healthy birth—especially freedom of movement and no routine interventions.

Experiencing natural contractions produced by your own body's oxytocin increases your freedom to respond to your contractions by moving around, changing positions, and trying the tub or shower. Interfering with or replacing the natural hormones that orchestrate labor, birth, breastfeeding, and maternal attachment may have consequences that we do not yet understand. Avoiding unnecessary medical intervention decreases the possibility of complications for both you and your baby and increases the likelihood that you will have a safe and healthy birth and positive, lifelong memories of your birth experience.

To learn more about safe, healthy birth, read *The Official Lamaze Guide: Giving Birth with Confidence* (Lothian & DeVries, 2005), visit the Lamaze Web site (www.lamaze.org), and sign up to receive the *Lamaze...Building Confidence Week by Week* e-mails.

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References

- American College of Obstetricians and Gynecologists [ACOG]. (2004). ACOG Practice Bulletin No. 55: Management of postterm pregnancy. *Obstetrics and Gynecology*, 104(3), 639–646.
- American College of Obstetricians and Gynecologists [ACOG]. (2009). ACOG Practice Bulletin No. 101: Ultrasonography in pregnancy. *Obstetrics and Gynecology*, 113(2, Part 1), 451–461.
- Ben-Haroush, A., Yogev, Y., Bar, J., Glickman, H., Kaplan, B., & Hod, M. (2004). Indicated labor induction with vaginal prostaglandin E2 increases the risk of cesarean section even in multiparous women with no previous cesarean section. *Journal of Perinatal Medicine*, 32(1), 31–36.
- Condon, J. C., Pancharatnam, J., Faust, J. M., & Mendelson, C. R. (2004). Surfactant protein secreted by the maturing mouse fetal lung acts as a hormone that signals the initiation of parturition. *Proceedings of the National Academy of Sciences of the United States of America*, 101(14), 4978–4983.
- Cunningham, F. G., Leveno, K. J., Bloom, S. L., Hauth, J. C., Gilstrap, L. C., & Wenstrom, K. D. (2005). *Williams obstetrics* (22nd ed.). New York: McGraw-Hill.
- Engle, W. A. (2006). A recommendation for the definition of “late-preterm” (near-term) and the birth weight-gestational age classification system. *Seminars in Perinatology*, 30(1), 2–7.
- Glantz, J. C. (2005). Elective induction vs. spontaneous labor associations and outcomes. *The Journal of Reproductive Medicine*, 50(4), 235–240.
- Goer, H., Leslie, M. S., & Romano, A. (2007). The Coalition for Improving Maternity Services: Evidence basis for the ten steps of mother-friendly care. Step 6: Does not routinely employ practices, procedures unsupported by scientific evidence. *The Journal of Perinatal Education*, 16(Suppl. 1), 32S–64S.
- Hansen, A. K., Wisborg, K., Uldbjerg, N., & Henriksen, T. B. (2008). Risk of respiratory morbidity in term infants delivered by elective caesarean section: Cohort study. *BMJ*, 336(7635), 1–7.
- Hoffman, M. K. (2003, April 29). *Abstract 7S: Preinduction cervical ripening significantly increases risk of cesarean*. Abstract presented at the 51st annual clinical meeting of the American College of Obstetricians and Gynecologists, New Orleans, LA. Also, reviewed April 30, 2003, in *Medscape Medical News*, retrieved January 31, 2009, from www.medscape.com/viewarticle/453298_print
- Horrigan, T. J. (2001). Physicians who induce for fetal macrosomia do not reduce cesarean delivery rates. *Journal of Perinatology*, 21(2), 93–96.
- Institute for Safe Medication Practices [ISMP]. (2007). *ISMP's list of high-alert medications*. Retrieved January 31, 2009, from www.ismp.org/Newsletters/acutecare/articles/20070809.pdf
- Jain, L., & Eaton, D. C. (2006). Physiology of fetal lung fluid clearance and the effect of labor. *Seminars in Perinatology*, 30(1), 34–43.
- Kinney, H. C. (2006). The near-term (late-preterm) human brain and risk for periventricular leukomalacia: A review. *Seminars in Perinatology*, 30(2), 81–88.
- Kramer, M. S. (2009). Late preterm birth: Appreciable risk, rising incidence [Editorial]. *The Journal of Pediatrics*, 154(2), 159–160.
- Kramer, M. S., Rouleau, J., Baskett, T. F., & Joseph, K. S. (2006). Amniotic-fluid embolism and medical induction of labor: A retrospective, population-based cohort study. *The Lancet*, 368(9545), 1444–1448.
- Leaphart, W. L., Meyer, M. C., & Capeless, E. L. (1997). Labor induction with a prenatal diagnosis of fetal macrosomia. *The Journal of Maternal-Fetal Medicine*, 6(2), 99–102.
- Liu, S., Liston, R. M., Joseph, K. S., Heaman, M., Sauve, R., & Kramer, M. S. (2007). Maternal mortality and severe morbidity associated with low-risk planned cesarean delivery versus planned vaginal delivery at term. *CMAJ: Canadian Medical Association Journal*, 176(4), 455–460.
- Main, E. K., Moore, D., Farrell, B., Schimmel, L. D., Altman, R. J., Abrahams, C., et al. (2006). Is there a useful cesarean birth measure? Assessment of the nulliparous term singleton vertex cesarean birth rate as a tool for obstetric quality improvement. *American Journal of Obstetrics and Gynecology*, 194(6), 1644–1651; discussion 1651–1652.
- March of Dimes. (2006). *Late preterm birth: Every week matters. Medical perspectives on prematurity*. Retrieved January 31, 2009, from www.marchofdimes.com/files/MP_Late_Preterm_Birth-Every_Week_Matters_3-24-06.pdf
- Petrini, J. R., Dias, T., McCormick, M. C., Massolo, M. L., Green, N. S., & Escobar, G. J. (2009). Increased risk of adverse neurological development for late preterm infants. *The Journal of Pediatrics*, 154(2), 169–176.

- Sadeh-Mestechkin, D., Walfisch, A., Shachar, R., Shoham-Vardi, I., Vardi, H., & Hallak, M. (2008). Suspected macrosomia? Better not tell. *Archives of Gynecology and Obstetrics*, 278(3), 225–230.
- Sanchez-Ramos, L., Bernstein, S., & Kaunitz, A. M. (2002). Expectant management versus labor induction for suspected fetal macrosomia: A systematic review. *Obstetrics and Gynecology*, 100(5), 997–1002.
- Shapiro-Mendoza, C. K., Tomashek, K. M., Kotelchuck, M., Barfield, W., Nannini, A., Weiss, J., et al. (2008). Effect of late-preterm birth and maternal medical conditions on newborn morbidity risk. *Pediatrics*, 121(2), e223–e232.
- Tomashek, K. M., Shapiro-Mendoza, C. K., Davidoff, M. J., & Petrini, J. R. (2007). Differences in mortality between late-preterm and term singleton infants in the United States, 1995–2002. *The Journal of Pediatrics*, 151(5), 450–456.
- U.S. Food and Drug Administration [FDA]. (2005). *Misoprostol (marketed as Cytotec) information*. Retrieved January 31, 2009, from www.fda.gov/Cder/drug/infopage/misoprostol/default.htm
- Vahratian, A., Zhang, J., Troendle, J. F., Sciscione, A. C., & Hoffman, M. K. (2005). Labor progression and risk of cesarean delivery in electively induced nulliparas. *Obstetrics and Gynecology*, 105(4), 698–704.
- Villar, J., Carroli, G., Zavaleta, N., Donner, A., Wojdyla, D., & Faundes, A., et al., (2007). Maternal and neonatal individual risks and benefits associated with caesarean delivery: Multicentre prospective study. *BMJ*, 335(7628), 1–11.
- Vrouenraets, F. P., Roumen, F. J., Dehing, C. J., van den Akker, E. S., Aarts, M. J., & Scheve, E. J. (2005). Bishop score and risk of cesarean delivery after induction of labor in nulliparous women. *Obstetrics and Gynecology*, 105(4), 690–697.
- Wang, M. L., Dorer, D. J., Fleming, M. P., & Catlin, E. A. (2004). Clinical outcomes of near-term infants. *Pediatrics*, 114(2), 372–376.
- Wennerholm, U-B., Hagberg, H., Brorsson, B., & Bergh, C. (2009). Induction of labor versus expectant management for post-date pregnancy: Is there sufficient evidence for a change in clinical practice? *Acta Obstetrica et Gynecologica Scandinavica*, 88(1), 6–17.
- Helpful Resources Especially for Pregnant Women**
- American College of Obstetricians and Gynecologists [ACOG]. (2005). *Your pregnancy and birth* (4th ed.). Washington, DC: Author.
- American College of Obstetricians and Gynecologists [ACOG]. (2006). *What to expect after your due date*. Retrieved January 31, 2009, from www.acog.org/publications/patient_education/bp069.cfm?printerFriendly=yes
- American College of Obstetricians and Gynecologists [ACOG]. (2009). *Labor induction*. Retrieved May 11, 2009, from www.acog.org/publications/patient_education/bp154.cfm
- Healthy Babies Are Worth the Wait. (2008a). *Handout #4: The problem with late preterm birth*. Retrieved January 31, 2009, from www.prematurityprevention.org/download/Problem.pdf
- Healthy Babies Are Worth the Wait. (2008b). *Handout #7: Labor induction and preterm birth*. Retrieved January 31, 2009, from www.prematurityprevention.org/download/Labor_Induction.pdf
- March of Dimes, Pregnancy & Newborn Health Education Center. (2008a). *Inducing labor*. Retrieved January 31, 2009, from www.marchofdimes.com/pnhec/240_20202.asp
- March of Dimes, Pregnancy & Newborn Health Education Center. (2008b). *Induction by request*. Retrieved January 31, 2009, from www.marchofdimes.com/pnhec/240_20203.asp
- March of Dimes, Pregnancy & Newborn Health Education Center. (2008c). *Labor & delivery: Why the last weeks of pregnancy count*. Retrieved January 31, 2009, from www.marchofdimes.com/pnhec/240_48590.asp

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