Research Summaries for Normal Birth

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ABSTRACT

In this column, the author summarizes research studies relevant to normal birth. The studies summarized include a large trial evaluating the effect of prior vaginal births after a cesarean on outcomes in subsequent births; a study linking umbilical cord blood pH with intellectual outcomes in childhood; and a prospective trial evaluating the effect of routine antenatal nonstress testing on maternal anxiety. The author also highlights four articles about normal birth in a recent nursing journal series dedicated to the topic.

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Keywords: normal birth, childbirth education, cesarean section, vaginal birth after cesarean (VBAC), uterine rupture, umbilical cord blood, neonatal academia, antepartum fetal surveillance

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JOGNN PUBLISHES CLINICAL ISSUES SERIES ON NORMAL BIRTH

- Stark, M. A. (Ed.). (2008) Clinical issues series: Preserving normal birth. *Journal of Obstetric, Gynecologic, and Neonatal Nursing*, 37(1), 85–122.

Summary

The January/February 2008 issue of the *Journal of Obstetric, Gynecologic, and Neonatal Nursing* features four articles on the theme of normal birth, including a continuing nursing education (CNE) module on the scientific evidence for Lamaze International's Six Care Practices That Support Normal Birth.

In "The Emergence of High-Tech Birthing," Zwelling (2008) examines the impact of sociocultural factors, consumer trends, the medical malpractice environment, the current nursing shortage, and changes in nursing education on the emergence of

technology-intensive birth. She presents eight specific ways nurses can promote normal birth and influence the care childbearing women receive. In the CNE article, "Promoting, Protecting, and Supporting Normal Birth: A Look at the Evidence," Romano and Lothian (2008) review the research evidence for each of the Six Care Practices That Support Normal Birth. They also describe the physiology of labor initiation and progress and of the postpartum and newborn transitions. Finally, they discuss ways to overcome ethical and logistical dilemmas in bringing nursing practice in line with the evidence. In "A Practical Approach to Labor Support," Adams and Bianchi (2008) describe approaches to supporting normal birth. They discuss physical approaches, such as providing comfort measures and promoting hydration and nourishment; emotional support techniques, such as using affirming words and establishing a trusting relationship; informational/instructional support techniques, such as encouraging physiologic "open-glottis" pushing and role

To view Lamaze International's Six Care Practices That Support Normal Birth and to read about the evidence that supports these practices, click on the Lamaze Institute for Normal Birth link at Lamaze's Web site (www.lamaze.org).

modeling supportive behaviors for other labor companions; and advocacy support techniques, including protecting the laboring woman's rights (e.g., informed refusal and informed consent), listening to and respecting her wishes, and intervening when the actions of others threaten the physical or emotional well-being of the woman or baby. Finally, in "Observing Position and Movements in Hydrotherapy: A Pilot Study," Stark, Rudell, and Haus (2008) evaluate the effect of hydrotherapy on women's use of movement in labor. The researchers observed women in labor and documented both the quantity and quality of movements in labor during hydrotherapy (123 15-minute observations) and "on land" (312 observations). While using hydrotherapy, women changed positions more frequently, used more pelvic and torso movements, and used more rhythmic movements than when they labored out of a tub. Women were observed having more frequent contractions in the tub than when they were observed in bed.

Significance for Normal Birth

Romano and Lothian (2008) note, "The heart of nursing is providing individualized care, promoting comfort, addressing emotional needs within a holistic health model, and teaching wellness and self care" (p. 101). However, in today's modern maternity care system, perinatal nurses too often find themselves caring for machines rather than women and infants. It is imperative that nurses gain the confidence and skills to effect change toward humanizing birth. This theme issue in a major nursing journal provides invaluable tools to help nurses promote, support, and protect normal birth. Understanding the evidence for each of the Six Care Practices That Support Normal Birth will arm nurses with the information they need to provide and advocate for safe and effective care (Romano & Lothian, 2008). Translating that evidence into practice will take confidence and practical support (Zwelling, 2008). Nurses must also reclaim and update their labor support skills to ensure that women receive excellent care without over-reliance on medical technology (Adams & Bianchi, 2008). Finally, ongoing nursing research can help determine elements within the birth setting, such as availability of hydrotherapy, that may promote normal physiologic birth (Stark et al., 2008).

Nurses play a unique and important role in determining the care practices laboring women experience. Unfortunately, nurses may be "structurally

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excluded from important sources of information exchange and from contributing to the plan of care" (Lyndon, 2008, p. 13). This may affect nurses' ability to effectively promote, support, and protect normal birth. Because medicalized birth poses a risk of iatrogenic harm to both mothers and babies, nurses have an ethical imperative to promote normal birth in order to optimize patient safety.

PRIOR VBAC INCREASES THE LIKELIHOOD OF VAGINAL BIRTH, DECREASES RISK OF POOR OUTCOMES IN SUBSEQUENT BIRTHS

- Mercer, B. M., Gilbert, S., Landon, M. B., Spong, C. Y., Leveno, K. J., Rouse, D. J., et al. (2008). Labor outcomes with increasing number of prior vaginal births after cesarean delivery. *Obstetrics and Gynecology*, 111(2), 285–291.

Summary

This large multicenter prospective study evaluated the impact of prior vaginal births after cesarean (VBACs) on uterine scar rupture and other outcomes in subsequent pregnancies. Researchers reviewed medical charts of 13,532 women planning VBACs in any of nine participating academic medical centers in the United States between 1999 and 2002. The study included only women who gave birth after 20 weeks to singleton infants and whose previous cesarean section(s) were by low-transverse uterine incision. Researchers compared obstetric, surgical, and infant outcomes for women with zero, one, two, three, or four or more prior VBACs.

The likelihood of giving birth vaginally increased with increasing numbers of prior VBACs from 63% in women without a previous VBAC to 88% in women with one prior VBAC. The vaginal birth rate plateaued around 91% in women with two, three, four, or more prior VBACs. The risk of uterine scar rupture in subsequent labors decreased significantly after the first VBAC. The risk was 87 scar ruptures per 1,000 births in the first VBAC, dropping to around 45 per 1,000 after one prior

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VBAC and occurring at similar rates thereafter. Women with one or more prior VBACs were also less likely to experience other poor outcomes, including infections, transfusion, or surgical complications. The authors attributed these differences to the lower likelihood of cesarean surgery in women with prior VBACs.

Significance for Normal Birth

This study provides the strongest evidence to date of a protective effect of prior VBACs on outcomes in subsequent births. Cesarean surgery increases the risks to both the mother and the baby in subsequent pregnancies, and a mounting body of evidence demonstrates that these risks become more likely and more severe with accumulating cesareans. In stark contrast, having a VBAC increases the likelihood of vaginal birth and decreases the risk of complications in later births.

Hospital “VBAC bans,” physician denial, and nonevidence-based labor management and restrictions on eligibility condemn women with prior cesarean surgery to undergo repeat surgery for subsequent children and subjects them to the well documented risks of accumulating uterine scars. Because women may have future pregnancies, planned or unplanned, all women who have not taken permanent contraception measures must be told the downstream effects of cesarean surgery and how the choice of mode of birth in the pregnancy following the cesarean modulates those risks for better or worse. Finally, in order to minimize risks in subsequent labors, the goal of care in VBAC labors should be to maximize the likelihood of a safe vaginal birth.

ACIDEMIA AT BIRTH MAY BE ASSOCIATED WITH ENHANCED INTELLIGENCE IN CHILDHOOD

- Svirko, E., Mellanby, J., & Impey, L. (2008). The association between cord pH at birth and intellectual function in childhood. *Early Human Development*, 84(1), 37–41.

Summary

In this retrospective cohort study, researchers evaluated the relationship between newborn acidemia (low cord blood pH) and intellectual achievement in early childhood. The investigators assessed the

birth records of children who were aged 6–8 years old and enrolled in primary schools in Oxford, England, to determine if cord blood pH value predicted scores on tests of nonverbal intelligence (data available for 116 children), grammar comprehension (113 children), and literacy (87 children). Children born preterm and those born by cesarean surgery before labor were excluded. Cord blood pH values were analyzed from a sample of umbilical cord blood obtained after immediate cord clamping.

After controlling for differences in socioeconomic status and obstetric variables, babies who were more acidemic (thought to be indicative of more fetal compromise) scored significantly better on literacy tests at age 6–8 years old, a counterintuitive result. The researchers did not find significant associations with the two other intelligence measures in their original analysis. However, after excluding babies with cord blood pH < 7.00 on the basis that this level represents severe acidemia and is known to be associated with hypoxic injury in newborns, the significant impact on literacy was even stronger and the association with nonverbal intelligence became significant. There was no significant association between grammar comprehension and cord blood pH.

Significance for Normal Birth

This study, though small, provides intriguing evidence that newborns are resilient and that acidemia at birth may, in fact, be part of an adaptive response to the so-called “stress of being born.” The authors propose that some degree of acidemia may protect brain tissue against the harmful effects of hypoxia (low oxygen). Other research also points to the likelihood that mild to moderate acidemia is physiologic, may be neuroprotective, and is rarely harmful.

The study also calls into question two common obstetric practices: fetal scalp pH sampling and immediate cord clamping to obtain cord blood for pH testing. Because continuous electronic fetal monitoring (EFM) does not provide reliable information about fetal well-being, some providers rely on intrapartum fetal scalp blood sampling to confirm fetal distress in the presence of nonreassuring EFM tracings. Adding fetal scalp blood sampling to continuous EFM does not improve outcomes compared with intermittent auscultation (Alfirevic, Devane, & Gyte, 2006), and the possibility that mild to moderate acidemia is physiologically adaptive could explain

why. Immediate cord clamping, required to obtain reliable pH results, deprives infants of up to 40% of their blood volume, increases the risk of infant anemia, and overrides the newborn's normal respiratory and cardiac transition (Hutton & Hassan, 2007; Mercer & Skovgaard, 2002). Given these adverse effects, the provider's wish to measure the infant's pH is not a sufficient rationale for immediate cord clamping.

ANTEPARTUM ELECTRONIC FETAL MONITORING INCREASES MATERNAL ANXIETY

- Mancuso, A., De Vivo, A., Fanara, G., Denaro, A., Lagana, D., & Accardo, F. M. (2008). Effects of antepartum electronic fetal monitoring on maternal emotional state. *Acta Obstetrica et Gynecologica Scandinavica*, 87(2), 184–189.

Summary

In this prospective study, researchers evaluated the effect of routine nonstress testing (antenatal EFM) on maternal anxiety. One hundred fifty-six low-risk women who received prenatal care from a university hospital maternity service in Italy in 2006 underwent routine computerized nonstress tests (NST) at 40 weeks of pregnancy. Investigators assessed each woman's baseline level of anxiety 2 days before the NST and again immediately after testing but before revealing her test results. The assessment differentiated "trait anxiety," an individual's proneness to anxiety, from "state anxiety," a transitory emotional state. The participants also answered survey questions about obstetric history, problems in the current pregnancy, substance use, the perceived quality of their relationship with their doctors, and their preferences for mode of birth.

The mean state anxiety score increased significantly from baseline after nonstress testing. Further statistical analysis revealed that women who had obstetric complications in the current pregnancy and those who reported feeling few fetal movements during the NST were particularly likely to experience elevated state anxiety after nonstress testing. No other obstetric or demographic factors affected anxiety significantly. There was no increase in trait anxiety scores before and after NST.

Significance for Normal Birth

Women who face the possibility of an induction of labor may be offered "expectant management" as

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an alternative. This period of watchful waiting typically involves tests of fetal well-being, including NSTs. Nonstress tests also are commonly used to assess the fetus when there is cause for concern, such as when the mother suffers abdominal trauma or reports decreased fetal movement. While NSTs are noninvasive and "normal" results are reassuring, any test or procedure may cause unintended side effects. These must be weighed against the potential benefits of the test, including its ability to detect or rule out pathology, the clinical usefulness of its findings, and the likelihood that the test will result in more testing or interventions. The use of NSTs is common, grounded in an assumption that they are benign and offer clinically useful information. However, the dearth of evidence of benefit and the high rate of false-positive results have led to the determination that NSTs and other forms of antenatal fetal surveillance are practices "likely to be ineffective or harmful" (Enkin et al., 2000, p. 500). This study shows for the first time that NSTs also appear to be a transient but significant increase in maternal anxiety. Because women who experience significant stress in pregnancy are more prone to poor perinatal outcomes, a goal of prenatal care should be to minimize and mitigate emotional anxiety. This study suggests that injudicious or routine use of nonstress testing is a potentially modifiable source of prenatal stress. Evidence for the test's clinical benefits in a given situation, if any, should be weighed against the documented risk of maternal anxiety.

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Welcome Song to a Newborn

What I know about birth:

It's a leap of faith.
it's the ultimate let-go—
or is that death?

You move through the narrow passageway.
Resistance creates tone.
Pressure defines your body:
squeeze – release
Breathing the waters that will become your
life-blood:
Squeeze – release.
Heartbeat ripples the liquid you float in
the liquid flowing through you
pulsing the rhythms of life on land.

Your mother's heartbeat
grounds you in this body.
Your mother's heartbeat tethers you to
the planet.
You will not float away.

At home you are born at home you are
conceived at home,
you are always at home.
And you are birthed human.
Not snake, rat, pelican or spider.

Your mother's heartbeat sings:
Welcome to this world
Welcome to your fantastic body
Welcome to fingers, tongue, eyes and nostrils
Ears, skin
Welcome to tears, laughter, anger, love
Every nuance of feeling you can explore, express.

Life beat, life breath, you can
return to center pulse
at any moment you
can return home.
You are home
You are the joy that lives in the nucleus
of each cell in your body

You are the joy that birthed this world.

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