First, Do No Harm: How Routine Interventions, Common Restrictions, and the Organization of Our Health-Care System Affect the Health of Mothers and Newborns

Amy M. Romano, MSN, CNM

ABSTRACT

In this column, the author reprises recent selections from the Lamaze International research blog, *Science & Sensibility*. Each selection discusses a new study that demonstrates the “First, do no harm” principle in a different way. New research on the potentially harmful effects of intravenous lines demonstrates that refraining from routine interventions in labor protects the safety of women and babies. A new systematic review of movement and position changes in labor shows that eliminating unfounded restrictions also protects maternal and infant health and well-being. Finally, a study of patterns of use of neonatal intensive care units reveals how the organization of the maternity care system itself can affect the health outcomes of its beneficiaries.

The Journal of Perinatal Education, 18(3), 58–62, doi: 10.1624/105812409X461243

Keywords: natural birth, childbirth education, intravenous lines, labor progress, labor pain, ambulation in labor, neonatal intensive care units

“First, do no harm” is a core precept of health care and is invoked to remind those who organize and deliver health care that sometimes doing nothing is better than doing something that could result in harm without counterbalancing benefits. “Doing nothing” in maternity care can in fact be good medicine. When the normal processes of pregnancy, labor, and birth proceed

without disruption, optimal health outcomes of the mother and baby are likely. Medical and surgical management are best reserved for the cases when watchful waiting and supportive care are not sufficient to safely achieve healthy outcomes. According to a recent Milbank Memorial Fund Report, the standard package of maternity care in the United States is characterized by overuse of ineffective and risky procedures, while many practices that are proven effective and safe remain underutilized (Sakala & Corry, 2008). Childbirth educators and other birth professionals can help women achieve safe and healthy birth outcomes by being aware of the existing medical literature, and the Milbank Report is an excellent

“First, do no harm” is a core precept of health care and is invoked to remind those who organize and deliver health care that sometimes doing nothing is better than doing something that could result in harm without counterbalancing benefits.

resource. When research is scarce, flawed, or absent, remembering the principle of “First, do no harm” can guide practice. If there is no evidence to support an intervention or restriction, then allowing the normal processes of labor and birth to proceed unhindered will almost always offer an appropriate default “treatment.”

In this article, I present three recent selections from *Science & Sensibility: A Research Blog About Healthy Pregnancy, Birth & Beyond*. Each demonstrates the “First, do no harm” principle in a different way. First, we see how the routine use of an *intervention*—intravenous lines in labor—may pose a risk to exposed women and their infants. Next, we see how a routine *restriction*—confining a laboring woman to bed—negatively affects clinical and psychosocial outcomes. Finally, we see how *the organization of the maternity care system itself*—with economic incentives to proliferate neonatal intensive care units—can expose the system’s supposed beneficiaries to harm without counterbalancing benefit.

FIRST, DO NO HARM: ANOTHER REASON TO DITCH ROUTINE IVS IN LABOR¹

In the latest Listening to Mothers survey, 83% of women reported having intravenous (IV) lines in labor or birth (Declercq, Sakala, Corry, & Applebaum, 2006). This number is probably not surprising to many of us—IVs are part of the routine package of care in most settings, even for low-risk women. Their ubiquitous place in modern obstetrics renders them practically invisible. And although the American Society of Anesthesiologists (2007) has revised its guidelines to encourage clear fluids in labor—which would presumably eliminate the need for IVs in most cases—the practice of routine IVs appears to be continuing unabated. Why? Because the medical model presumption is that it’s nice to have that IV access just in case an urgent complication is lurking around the corner. And besides, IVs are relatively harmless, right?

Wrong. In 2007, I was part of a team that conducted a systematic review of the research on IV fluids in labor (Goer, Leslie, & Romano, 2007). We found that IVs can cause anemia and that they reduce colloid osmotic pressure—which can lead to swelling in the tissues or lungs (pulmonary edema) of both the laboring woman and her infant. In addition, not all IV fluids are created equal: IV fluids with glucose in them were associated with low blood sugar in newborns, and salt-free fluids increased

the likelihood of potentially serious electrolyte imbalances. The body of research also confirmed common sense—that women find IVs uncomfortable and that IVs limit mobility. Finally, we failed to find a single study that supported the notion that IV access improves outcomes when urgent problems arise. Despite this nearly universal belief, no one has in fact studied the question.

This week, two different bits of news happened to blip onto my radar that raise other troubling concerns about the rampant use of IVs on maternity wards. Both pieces looked at possible harmful effects of the chemicals that may leach out of the plastic IV bags and tubing. A recent National Public Radio story (Hamilton, 2009) reported on an ongoing study looking at sexual maturity in teenagers who were exposed to high levels of phthalates as infants in neonatal intensive care units. The phthalates came from intravenous lines, including those used for extracorporeal membrane oxygenation (ECMO). *The Wall Street Journal* (Singer-Vine, 2009) posted a short blurb about an animal study showing that another chemical found in IV bags and tubing, cyclohexanone, can trigger health problems in the hearts and neurological systems of the rats that were exposed (Thompson-Torgerson, Champion, Santhanam, Harris, & Shoukas, 2009). We cannot—and should not—extrapolate the findings of these studies to possible effects on laboring women and their newborns. But they add new fuel to an already compelling case to do away with IVs whenever safely possible. With no evidence that their routine use is beneficial, a small but consistent body of evidence that they can cause harm, and important questions unanswered, a change in practice is long overdue.

For more information about potentially harmful chemicals used in health-care settings and ways to reduce the environmental impact of our health-care system, visit Health Care Without Harm (www.noharm.org/us). Along with other great resources, Health Care Without Harm published a booklet with the American College of Nurse-Midwives called *Green Birthdays* in 2001.

DO WE NEED A COCHRANE REVIEW TO TELL US THAT WOMEN SHOULD MOVE IN LABOR?²

This week, media outlets shared the news of a new Cochrane review that concludes upright positions

Visit the new Lamaze research blog, *Science & Sensibility* (www.scienceandsensibility.org), to stay up to date and comment on the latest evidence that supports natural, safe, and healthy birth practices.

Amy Romano, host of the *Science & Sensibility* research blog, invites readers to respond to her posts reprinted in this article. Log on to the URLs presented in the corresponding footnote for each section’s main heading.

¹ Posted May 21, 2009, at <http://www.scienceandsensibility.org/?p=178>

² Posted April 18, 2009, at <http://www.scienceandsensibility.org/?p=77>

A new Cochrane review concluded upright positions are beneficial because they shorten labor by about 1 hour.

are beneficial because they shorten labor by about 1 hour (Lawrence, Lewis, Hofmeyr, Dowswell, & Styles, 2009). The birth blogs have been buzzing about this, and the consensus is that we should feel delighted and vindicated to have the scientific evidence to support what women and midwives have always known.

Cochrane reviews synthesize all of the research on a particular topic, and because the reviewers bring together and analyze all of the data from many studies, the study population gets very large. Large populations yield greater statistical power and often (but not always) more reliable findings.

Prior to this Cochrane review, there was a large body of literature on movement in labor, including a good sized U.S. randomized controlled trial (Bloom et al., 1998). There was even another systematic review (Souza, Miquelutti, Cecatti, & Makuch, 2006). But this body of research never consistently supported the hypothesis that movement improved labor and birth outcomes. Now we have a Cochrane review, which is the gold standard for evidence-based practice. So we can put the evidence-based “stamp of approval” on freedom of movement.

But, were we any less justified in endorsing freedom of movement before the Cochrane review? Although studies have given us inconsistent results as to whether movement shortens labor or decreases the need for c-section, a few conclusions have been loud and clear from the literature since researchers began looking at maternal position and movement:

- Women prefer to move around, primarily because they experience less pain when they can move (Miquelutti, Cecatti, & Makuch, 2007; Simkin & Bolding, 2004).
- Women who stay in bed usually do so because they are connected to machines or IV lines, and/or because a health-care provider tells them to (Declercq, Sakala, Corry, Applebaum, & Risher, 2002).
- Movement and walking are not harmful to the woman or the baby (Miquelutti et al., 2007; Simkin & Bolding, 2004; Souza et al., 2006).

Freedom of movement is the thing that would happen if women did not have any interaction with a health-care system or provider in labor. In other words, it's the default state of affairs. Anything that we do in the name of “health care” to improve upon

this normal unfolding of things is referred to as an “intervention.” In scientific research, researchers compare a control group, which should represent the default/normal, with an experimental group, which represents the intervention. The burden of proof should be on the intervention.

Somehow, things have gotten turned around, and the normal condition is now the “experiment” and the intervention is the “control.” In addition to being irrational, this is a setup to perpetuate conventional obstetric care, which imposes unhealthy and unfounded restrictions on women in labor. This is because in “intervention versus control” research, you have to show that the intervention performs significantly better, otherwise the control condition remains standard practice. While many of us believe that encouraging a laboring woman to move when and how she wants to is healthier and safer than making her stay in bed, waiting for evidence that it produces better health outcomes is putting a burden of proof on normal birth that has never been applied to routine intervention. Besides, lack of evidence of harm, less pain, and maternal satisfaction are valid and important outcomes in and of themselves, and provide the justification we need to reject routine policies and practices that restrict maternal movement.

NICUS: IF WE BUILD IT, THEY WILL COME?³

A doula friend of mine was telling me recently about the seemingly arbitrary variation she sees across the different hospitals where she attends births. “In one hospital, they always turn the epidural off when the woman is ready to push, and in another hospital just a few miles away, we had to fight to get a client’s epidural turned off while she pushed.” In both cases, the woman was given only one choice, and that choice was dictated by whatever the standard practice was, regardless of the evidence, her particular circumstances, or her preferences. “Women assume that things are the same no matter where they give birth,” the doula told me. “They can’t make informed choices if they don’t know this stuff.” (This is why this doula and I are working together to promote *The Birth Survey* in our state.)

In research and policy-making, these differences are called “practice variation,” and in obstetrics there is plenty of it. Some variation in practice across settings or providers makes sense—women or their babies may have different needs depending

³ Posted April 13, 2009, at <http://www.scienceandsensibility.org/?p=69>

on their health status, risk factors, or preferences. But what's troubling is that a lot of practice variation arises from factors that have nothing to do with women or their babies, and everything to do with the approach to care. Do women know that their risk of episiotomy may be as much as 7 times higher if they go to a private obstetrician's practice rather than a public clinic (Howden, Weber, & Meyn, 2004)? Do low-risk, first-time mothers know that the hospitals where women are most likely to be induced or admitted early in labor have c-section rates 3 times higher than other hospitals that restrict those practices (Main et al., 2006)? (And how do they know which hospitals those are, anyway?) Do women who have had a cesarean know which hospitals restrict or deny access to vaginal birth after cesarean (Dunsmoor-Su, Sammel, Stevens, Peipert, & Macones, 2003)?

A new study published in the current issue of *The European Journal of Obstetrics, Gynecology, and Reproductive Biology* illuminates another troubling consequence of practice variation (Le Ray, Zeitlin, Jarreau, Breart, & Goffinet, for the PREMODA study group, 2009). Researchers studied the outcomes of over 3,500 full-term babies born to low-risk, first-time mothers in 138 French maternity units. Thirty-four were "Level 1" units, where there are no special facilities for caring for sick neonates, and babies needing such care are transferred to other facilities. Sixty-six were "Level 2" units, where special care nurseries are available to care for some sick newborns as well as preterm babies born at or beyond 32 weeks. The remaining 38 units had intensive care units capable of caring for very sick and preterm babies, and had 24/7 availability of neonatologists. The researchers were careful to compare apples with apples. In addition to restricting their analysis to healthy mothers with full-term babies, they used statistical adjustments to control for other factors that could affect outcomes such as the mother's age, the mode of birth, and the baby's gestational age and birth weight.

The results they reported show that the level of hospital is itself a risk factor for a baby being admitted for special or intensive care. Babies born in the Level 1 hospitals were most likely to stay with their mothers after birth. Babies born in Level 2 hospitals were twice as likely to be admitted for special or intensive care, a difference that was statistically significant. Babies born in Level 3 hospitals were also more likely to be admitted to special or intensive care, but the difference was not statistically significant.

I am not aware of any U.S. studies looking at the association between the presence of a NICU and the likelihood that a full-term baby born to a healthy mother will be admitted there. However, in our market-based health-care system, NICUs are major moneymakers for hospitals. Admission to the NICU drives costs way up for consumers and payers, and is a dismal way for a baby to start life. We know that optimal maternal and newborn well-being occur when mothers and babies stay together in the hours and days after birth, so the goal of a functioning health-care system should be to keep as many babies with their mothers as possible, without compromising safety or well-being.

NICUs should be there for the babies who need them. Babies should not have to be there for the NICUs that need them.

REFERENCES

- American Society of Anesthesiologists Task Force on Obstetric Anesthesia. (2007). Practice guidelines for obstetric anesthesia: An updated report by the American Society of Anesthesiologists Task Force on Obstetric Anesthesia. *Anesthesiology*, 106(4), 843–863.
- Bloom, S. L., McIntire, D. D., Kelly, M. A., Beimer, H. L., Burpo, R. H., Garcia, M. A., et al. (1998). Lack of effect of walking on labor and delivery. *The New England Journal of Medicine*, 339(2), 76–79.
- Declercq, E. R., Sakala, C., Corry, M. P., & Applebaum, S. (2006). *Listening to mothers II: Report of the second national U.S. survey of women's childbearing experiences*. New York: Childbirth Connection.
- Declercq, E. R., Sakala, C., Corry, M. P., Applebaum, A., & Risher, P. (2002). *Listening to mothers: Report of the first national U.S. survey of women's childbearing experiences*. New York: Maternity Center Association.
- Dunsmoor-Su, R., Sammel, M., Stevens, E., Peipert, J. L., & Macones, G. (2003). Impact of sociodemographic and hospital factors on attempts at vaginal birth after cesarean delivery. *Obstetrics and Gynecology*, 102(6), 1358–1365.
- 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(Supp.1), 32S–64S.
- Hamilton, J. (2009, May 19). *Surrounded by plastic, NICU infants tested for risk* [Radio broadcast, "All Things Considered," National Public Radio]. Retrieved May 19, 2009, from <http://www.npr.org/templates/story/story.php?storyId=104191628>
- Howden, N. L., Weber, A. M., & Meyn, L. A. (2004). Episiotomy use among residents and faculty compared with private practitioners. *Obstetrics and Gynecology*, 103(1), 114–118.
- Lawrence, A., Lewis, L., Hofmeyr, G. J., Dowswell, T., & Styles, C. (2009). Maternal positions and mobility

The Birth Survey is structured around the Coalition for Improving Maternity Service's evidence-based 10 Steps to Mother-Friendly Care and other quality of care indicators. The purpose of The Birth Survey is to provide women with a venue to give feedback about their birth experiences with specific doctors, midwives, hospitals, and birth centers, and to make this feedback available on the survey's Web site as searchable reports. For more information about The Birth Survey, visit <http://www.thebirthsurvey.com>

- during first stage labour. *Cochrane Database of Systematic Reviews*, Issue 2, Art. No.: CD003934.
- Le Ray, C., Zeitlin, J., Jarreau, P. H., Breart, G., & Goffinet, F., for the PREMODA study group. (2009). The influence of level of care on admission to neonatal care for babies of low-risk nullipara. *European Journal of Obstetrics, Gynecology, and Reproductive Biology*, 144(1), 21–26. doi: 10.1016/j.ejogrb.2009.01.006
- 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.
- Miquelutti, M. A., Cecatti, J. G., & Makuch, M. Y. (2007). Upright position during the first stage of labor: A randomised controlled trial. *Acta Obstetrica et Gynecologica Scandinavica*, 86(5), 553–558.
- Sakala, C., & Corry, M. P. (2008). *Evidence-based maternity care: What it is and what it can achieve*. New York: Milbank Memorial Fund.
- Simkin, P., & Bolding, A. (2004). Update on nonpharmacologic approaches to relieve labor pain and prevent suffering. *Journal of Midwifery & Women's Health*, 49(6), 489–504.
- Singer-Vine, J. (2009, May 19). New study spurs concern about chemical in IV bags. *The Wall Street Journal*, p. D3. Retrieved May 19, 2009, from <http://online.wsj.com/article/SB124268109210431853.html>
- Souza, J. P., Miquelutti, M. A., Cecatti, J. G., & Makuch, M. Y. (2006). Maternal position during the first stage of labor: A systematic review. *Reproductive Health*, 3(10). doi: 10.1186/1742-4755-3-10
- Thompson-Torgerson, C. S., Champion, H. C., Santhanam, L., Harris, Z. L., & Shoukas, A. A. (2009). Cyclohexanone contamination from extracorporeal circuits impairs cardiovascular function. *American Journal of Physiology. Heart and Circulatory Physiology*, 296(6), H1926–H1932. doi: 10.1152/ajpheart.00184.2009

AMY M. ROMANO is a midwife, author, and advocate for mother-friendly maternity care. She has analyzed, summarized, and critiqued research for the Lamaze International community since 2004 and is currently co-authoring the second edition of *Obstetric Myths Versus Research Realities with Henci Goer*. Romano is also a practicing home- and hospital-based midwife in Connecticut.

DONA[®]
International

Doulas...
Caring and Sharing
at the Heart of Birth

***Birth and postpartum doula training,
certification and ongoing support
and education***

Membership Benefits

- Subscription to quarterly *International Doula* magazine
- Subscription to monthly *eDoula* newsletter
- Discount on annual conference
- On-line discussion board

DONA Boutique

- DONA logo items
- Birth & postpartum books & videos
- Doula specialty items
- Member discounts on select items
- All major credit cards accepted
- Secure on-line shopping; fast shipping

Annual Conference

- July 22-25, 2010, Albuquerque, NM

PO Box 626 • Jasper, IN 47547
www.DONA.org • info@DONA.org
 888-788-DONA (3662)