Safe and Healthy Birth: The Importance of Data

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ABSTRACT

In this column, the author reprises recent selections from the Lamaze International research blog, *Science & Sensibility*. Each selection discusses the mismatch between data commonly collected at the time of birth and the data needed to measure optimal care for physiologic birth. Selections include the importance of documenting duration of skin-to-skin contact after birth, the role of qualitative research in improving care in the second stage of labor, and pitfalls of meta-analyzing data on the safety of planned home birth.

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Keywords: childbirth, second-stage labor, postpartum hemorrhage, home birth, skin-to-skin contact, breastfeeding, childbirth education

Lamaze International's research blog, *Science & Sensibility*, is intended to help childbirth educators and other birth professionals gain the skills necessary to deconstruct the evidence related to current birth practices. Visit the Science & Sensibility Web site (www.scienceandsensibility.org) to stay up to date and comment on the latest evidence that supports natural, safe, and healthy birth practices.

In January 2010, a multistakeholder group of leaders from across the U.S. health-care system issued recommendations for transforming maternity care (Angood et al., 2010). Many of the recommendations called for improved processes for collecting, reporting, and leveraging maternity-care data.

Data—anything measured or observed and documented—can, at the individual level, help a woman and her care provider assess maternal and fetal well-being or the progress of labor. When collected from many labors and analyzed, data can be used to evaluate the benefits and harms of var-

ious care practices, help hospitals or care providers measure and improve performance and women's satisfaction with care, and assess population-level health characteristics. When publicly reported, data can help women make informed choices about where and with whom to access maternity-care services.

Unfortunately, many aspects of the current data environment complicate these efforts. The most commonly collected data during labor and birth—maternal vital signs; fetal heart tone characteristics; fetal position at birth; length of labor; time and mode of birth; Apgar scores; neonatal weight, length, and head circumference; and degree of perineal trauma and suturing—provide an incomplete picture of the process and outcomes of care. The emphasis on pharmacological or surgical interventions and short-term, physical outcomes limits the opportunities to use data to evaluate the availability

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or effectiveness of supportive, low-technology care practices or to drive improvements in other important outcomes such as long-term physical and emotional health, maternal-infant attachment, breastfeeding, family-centeredness, and women's satisfaction with care. In addition, data are coded to facilitate billing, and this process of converting clinical data into billing data produces data that are unreliable for performance measurement and improvement (Angood et al., 2010). The other major repository of maternity-care data, the birth certificate, collects only a small subset of clinically important data, and studies have found that these data are incomplete and unreliable for many of the variables reported (Diers, 2007). Finally, almost no maternity-care data are reported publicly, severely limiting consumers' ability to make informed choices about their care (McAllister, 2008).

Recently on Lamaze International's research blog *Science & Sensibility*, we have been exploring the strengths and limitations of different types of data, and the need to rethink how maternity-care data are collected and reported. Recent posts covering these issues address the need to document duration of skin-to-skin contact after birth as a means to improve exclusive breastfeeding rates for Joint Commission accreditation, the role of qualitative data in describing how women and providers experience maternity-care practices, and the limitations of combining data from many different contexts to glean information about the safety of planned home births.

A NEW VITAL SIGN FOR MATERNITY CARE: DURATION OF SKIN-TO-SKIN CONTACT AFTER BIRTH¹

If you haven't heard, the Joint Commission, the organization that accredits U.S. hospitals, has recently rolled out a bundle of perinatal quality measures (Advance for Nurses, 2009). These measures are designed for hospitals to track and improve their performance on indicators of perinatal quality, including the proportion of newborns discharged from the hospital having consumed only breastmilk during their hospital stay. The U.S. Breastfeeding Committee created a helpful document for hospitals, *Implementing the Joint Commission Perinatal Core Measure on Exclusive Breast Milk Feeding* (United States Breastfeeding Committee, 2010).

¹Posted April 26, 2010, at <http://www.scienceandsensibility.org/?p=1171>

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Right on the first page and repeated two more times, the committee makes this suggestion:

Compliance with the new core measure may require facilities to modify their paper charts and/or electronic medical records. Thus facilities may want to consider charting modifications that support breastfeeding (such as length of time of skin-to-skin contact, especially immediately following birth [emphasis added]). (p. 2)

I don't know how difficult it is to get hospitals to make changes to their documentation forms. I assume as more hospitals adopt electronic health records, the task is easier. However, even if changing the form is easy and inexpensive, staff will need to be briefed on the rationale for the change and trained to document the new data properly. This all adds to the complexity and cost of providing care, so it's easy to see how some hospitals would just stick with their old way of documenting.

But if hospitals are serious about improving their exclusive breastfeeding rates, they should get serious about measuring the duration of skin-to-skin care. A new study in the *Journal of Human Lactation* demonstrates a strong dose-response relationship between skin-to-skin care and exclusive breastfeeding at hospital discharge (Bramson et al., 2010). The data in fact come from a hospital quality improvement program carried out in 19 hospitals in California. The reason they were able to detect the dose-response relationship is that they were documenting the length of skin-to-skin contact as part of these quality improvement efforts. Using data from nearly 22,000 mothers and their healthy, full-term babies, the researchers found the dose-response relationship even after controlling for whether the woman intended to exclusively breastfeed, education, ethnicity, anesthesia, mode of birth, and other factors. One factor that was not reported and apparently not controlled for was history of prior birth and/or prior breastfeeding experience. This could be a significant confounder, but there is no reason to believe it would negate the strong and consistent findings—the dose-response pattern held up in multiple calculations applying various assumptions.

Amy Romano, host of the Science & Sensibility research blog, invites readers to respond to the posts reprinted in this article. Go to the URLs presented in the corresponding footnote for each section's main heading and post your response.

The quality improvement project that produced this study was supported by the Loma Linda University Perinatal Services Network, a network of hospitals working collaboratively to create policies and practices that keep moms and babies together after birth. You can learn more about the program and download flyers and handouts about early mother-infant attachment and breastfeeding at <http://lomalindahealth.org/medical-center/our-services/perinatal-services-network/for-health-professionals/about-us/media-guide.html>.

SIX REASONS I “HEART” QUALITATIVE RESEARCH²

First, a confession: I am no expert in qualitative research. I read a lot of it, and I understand the basic principles, but I’ve never taken a course to learn the specific methodologies. I know enough to know when I’m looking at good quality qualitative research, to have a few favorite qualitative studies, and to have some things about qualitative research that I just adore.

I know that sounds a little nerdy, but maybe I can make you learn to love qualitative research, too. Here are some things I love about qualitative research, with some examples from the literature on second-stage labor, second stage being the theme of this month’s blog carnival, not to mention a well-researched topic among qualitative researchers.

Qualitative Studies Demonstrate Undocumented Harms of Common Obstetric Practices

In a qualitative analysis of videotaped births, researchers documented the number of vaginal exams each woman had in second-stage labor, which ranged from 2 to 17 (Bergstrom, Roberts, Skillman, & Seidel, 1992). And although not a single study defines the circumstances, if any, under which second-stage vaginal exams are beneficial and indicated, this study suggests that they may be associated with harm—namely, severe, pathological pain.

The researchers reported that both the woman’s experience of pain during vaginal exams and the providers’ response were markedly different from pain experienced during contractions. During vaginal exams, participants displayed pain with “unusual behaviors such as screaming, pleading, cursing, crying, arching back, pulling the head back-

ward, and panting” (Bergstrom et al., 1992, pp. 15–16). Providers did not help women anticipate or cope with the pain associated with vaginal exams, and in fact did not even acknowledge it. In contrast, pain experienced during contractions was directly acknowledged and comfort measures or coping suggestions were offered immediately.

Qualitative Research Finds New Things to Study

In the same study documenting the practice of vaginal exams in second-stage labor, the researchers discovered that the “most common reason for performing the procedure, to help the woman push better, seems to be specific to the second stage of labor and is not described in the literature” (Bergstrom et al., 1992, p. 10). The logical next step would be to design a study to determine the safety and effectiveness of vaginal exams to elicit better pushing effort.

Qualitative Research Tells You the Words People Actually Say

As someone who cares for women in labor, I always love to know the words other midwives and doulas actually say. We all have our go-to phrases for women who need reassurance or help with coping. In a couple of the studies on coached versus spontaneous pushing, researchers looked at what care providers and support companions actually said to the laboring women, then categorized their words as supportive or directive. In a 2007 study in which the researchers watched the videotaped births of 10 women, we again see that qualitative research documents undiscovered phenomena (Roberts, González, & Sampselle, 2007). The researchers wrote:

A category of “supportive direction” (20%) was identified. This care strategy has not been previously reported. It combined direction with support in a way that was supportive rather than overriding the woman’s involuntary efforts. (p. 134)

The researchers provided examples from the qualitative data of these “supportive direction” phrases (p. 138):

- “You’re doing so good, just push that baby down when you’re ready.”
- “Take in another breath and get in another push, if you have it.”
- “That’s great, if you feel the urge again, then try it again.”
- “Try it like that and hold your legs.”

Read dozens of bloggers’ contributions to the Second-Stage Healthy Birth Blog Carnival at <http://www.scienceandsensibility.org/?p=1105>

²Posted on March 29, 2010, at <http://www.scienceandsensibility.org/?p=1058>

- “Don’t forget to breathe.”
- “Strong and steady.”
- “Let’s try this. . .,” or “Do you wanna try. . .?”
- “Keep it coming.”
- “Just relax in between.”
- “Concentrate on your breathing.”
- “That’s it, push when you feel the urge.”
- “Don’t push unless you feel a contraction, but go ahead if you feel it.”

Qualitative Studies Have Titles That Make You Feel Something

Consider, “You’ll Feel Me Touching You, Sweetie”: *Vaginal Examinations During the Second Stage of Labor*” (Bergstrom et al., 1992), and “I Gotta Push. Please Let Me Push!” *Social Interactions During the Change from First to Second Stage Labor* (Bergstrom, Seidel, Skillman-Hull, & Roberts, 1997).

Qualitative Research Exposes the Paternalism Inherent in Conventional Medical Model Obstetrics

“I Gotta Push. . .” was the first study (to my knowledge) to document the ubiquitous practice of a doctor performing a vaginal exam to “certify” full dilation (Bergstrom et al., 1997). The researchers analyzed videotapes of women giving birth, and they present three cases that illustrate this phenomenon. In the most egregious case, transcripts revealed two nurses and a medical student insisting that the woman not push until a physician could perform the certifying exam, scolding and stalling her for 28 minutes despite her begging to push with her irresistible urge. Although nurses, students, and even women themselves can perform vaginal exams in labor, the official certification came only when the doctor performed the vaginal exam (in fact repeating an exam that had been conducted by the medical student 6 minutes earlier). The researchers write:

Upon certification of full dilation and despite clear evidence that the woman felt a strong spontaneous pushing urge, the nurse immediately “stated the new rules for the remainder of second stage, ‘Push three times on your next contraction, okay?’” (p. 179)

No, not okay.

Qualitative Research Can Expose Trauma Narratives

According to a Listening to Mothers national survey of women who gave birth in U.S. hospitals in

2005, 9% screened as meeting all of the criteria for childbirth-related posttraumatic stress disorder (Declercq, Sakala, Corry, & Applebaum, 2008). But this condition—and the circumstances and environmental factors that contribute to it—scarcely exist in the quantitative literature. In the qualitative literature, however, such narratives are abundant. One woman participating in a sociological study of prenatal counseling and consent recalled this about her birth:

So here I’d been up all this time, in all this pain, and he takes the baby out and what does he tell me? He said, “Your vagina exploded.” What a thing to tell a woman. “Your vagina exploded.” What a thing to say! (Rosenthal, 2006, p. 382)

The study’s author goes on to tell the epilogue of her story (emphasis mine):

Without the benefit of examining Holly’s medical records, it seems as though she suffered extreme vaginal tearing, aggravated, or caused by, forceps, and went through vaginal repair surgery. As a result of this injury, Holly had difficulty post-partum: she suffered from depression, problems with breastfeeding because of her inability to sit and position herself properly, and difficulty with scarring and pain. She never had another child, and this experience left Holly with the sense that she could not risk childbirth again. Of note, the child was healthy, and this birth was considered a “good outcome” [quantitatively speaking]. (p. 382)

PLANNED HOME BIRTH AND NEONATAL DEATH: WHOM DO WE BELIEVE?³

The (in)famous Wax home birth meta-analysis hit the scene over a month ago (Wax et al., 2010). But the buzz doesn’t seem to be dying down. In the weeks since the original prepublication and press release, editors at *The Lancet* (The Lancet, 2010) and *BMJ* (Delamothe, 2010) have both weighed in, and there’s a steady stream of media attention. While all of the media have dutifully quoted midwives in leadership positions saying the meta-analysis is flawed (an assessment with which I agree), I still keep coming back to the question I asked in my

³Posted August 17, 2010, at <http://www.scienceandsensibility.org/?p=1422>

earlier post—did we need a meta-analysis to establish the neonatal outcomes of planned home birth? We had, after all, a very large, methodologically rigorous study on home birth safety involving over a half million women that was published less than 2 years ago (de Jonge et al., 2009). Won't that suffice?

I had a chance to interview two of the researchers who conducted that study when I was in Vancouver for the Normal Labor & Birth International Research Conference. Simone Buitendijk, MD, is Professor of Maternal and Child Health and Midwifery Studies at the Academic Medical Center of Amstcrsdam and heads up the Child Health Program at the Netherlands Organization for Applied Scientific Research. Ank de Jonge, the study's lead author, is a practicing midwife with a PhD in public health who works at the Midwifery Science section within the EMGO Institute for Health and Care Research at VU University Medical Center in Amsterdam. I gained some new insights from them about their research and the Wax meta-analysis. Based on those interviews, and despite having written about the meta-analysis twice already, I thought it was time to ask anew: Which is the "better" evidence for determining neonatal outcomes of planned home birth: the de Jonge cohort study or the Wax meta-analysis? Let's have a look at some objective criteria and see how each study measures up.

Study Size (Home Birth Group)

- Wax et al. (2010): 9,811
- de Jonge et al. (2009): 321,307

That's right, the Dutch neonatal mortality analysis is 33 times the size of the neonatal mortality meta-analysis. And believe it or not, this was brand-new news to me that I didn't realize until I spoke to de Jonge and Buitendijk. Although I had access to the full-text of the Wax meta-analysis and in fact looked critically at it (heck, I blogged about it!), I completely missed the fact that while the de Jonge study was "included" in the meta-analysis, it was excluded from the analysis of neonatal mortality, which was the major finding given so much attention by the media. On the one hand, I'm pretty embarrassed to have made such a major error. On the other hand, it just underscores how misleading it can be for professionals or lay people to read headlines about a meta-analysis of "hundreds of thousands" of births finding triple the neonatal death rate. Wax's neonatal death data don't come

from hundreds of thousands of births at all. Not by a long shot.

Mechanism to Ensure Data Were From Planned Home Births

In Wax et al.'s (2010) study, the mechanism to ensure data varies across the included studies. In a study by Pang, Heffelfinger, Huang, Benedetti, and Weiss (2002), which contributed 63% of the home birth data and accounted for 12 of the 18 neonatal deaths in normally formed newborns, researchers relied on birth certificate data that did not differentiate between planned and unplanned home births, and assumed that any birth certificate for a baby born at home at or beyond 34 weeks and signed by a midwife, nurse, or doctor was a planned home birth, a method that has not been scientifically validated and has been widely criticized. Unplanned home births are riskier than planned home births with qualified attendants (Declercq, Macdorman, Menacker, & Stotland, 2010).

In de Jonge et al.'s (2009) study, midwives routinely recorded the planned place of birth in a national perinatal database that covers 99% of births and is linked to another database of neonatal deaths by a validated method. Planned place of birth was unknown for 8.5% of the population, and the outcomes of this group were analyzed separately and reported.

Definition of Neonatal Death

- Wax et al. (2010): death of a live-born infant between 0 and 28 days
- de Jonge et al. (2009): death of a live-born infant between 0 and 7 days (the World Health Organization's definition of early neonatal death)

The appropriate definition of neonatal death has been a major bone of contention in the comments on this and other blogs that criticized the Wax meta-analysis. Both 0–28 days (neonatal death) and 0–7 days (early neonatal death) are accepted definitions. Proponents of using early neonatal death argue that it is more sensitive to events occurring around the time of birth, such as hypoxic injury resulting from inadequate fetal monitoring or a sudden emergency like a cord prolapse or placental abruption. Indeed, some of the late (8–28 days) neonatal deaths reported in Wax resulted from sudden infant death syndrome, a condition that has nothing to do with planned place of birth. On the other hand, proponents of using 0–28 day mortality point

out that some babies experiencing severe hypoxic injury in labor or birth may be kept alive for many days in a modern neonatal intensive care unit. Their deaths should be counted as birth-related even if they don't die as soon after birth.

Regardless of which is the more appropriate measure, I was shocked by something de Jonge and Buitendijk revealed in their interview. Wax never contacted them to ask for their 8–28 day mortality data. It is standard practice among researchers who conduct meta-analyses to contact the authors of the original papers to obtain unpublished data, clarify methodologies, or ask for data in a compatible format. One would think that if Wax was truly interested in whether planned home birth caused neonatal death up to 28 days, he would be very motivated to get his hands on the Dutch data set. And while de Jonge and Buitendijk told me that those data are not as complete as the early neonatal death data (because some pediatricians don't reliably enter their patients' data), they do in fact have the data up to 28 days and would have supplied it to Wax had he asked. Instead, they have done the analysis themselves and submitted it for peer review. (Therefore, we'll have to wait for the results.)

What Were the Characteristics of the Population?

In Wax et al.'s (2010) study, no requirements for home birth eligibility were defined for inclusion in the meta-analysis. Individual studies included in the meta-analysis varied in their mechanisms for determining eligibility. As noted above, the largest study that contributed the majority of neonatal deaths relied on birth certificates. Women with any of 18 medical conditions documented on the baby's birth certificate were excluded. Neither the study authors nor Wax and colleagues comment on whether this is a reliable method for defining "low-risk." (As someone who routinely completed birth certificates when I was practicing, my guess is that it isn't.)

In their study, de Jonge et al. (2009) used national guidelines ("Obstetric Indication List") to define who is eligible for primary midwifery care and home birth. These conservative guidelines ensure that the population of women having planned home births are healthy and at very low risk of complications.

The Dutch study has been criticized because it is, well, Dutch. Midwifery and home birth in the Netherlands are highly regulated and integrated into the system, and there are clear eligibility guidelines. The same isn't true of the United States, so we can't gen-

eralize the results here or elsewhere where home birth is marginalized (e.g., Australia). What the Dutch study gives us, though, is a clear model to emulate in order to make sure home birth is as safe as it can be: regulate midwifery, provide continuity of care for women who need to be referred, and make sure only low-risk women are having home births. Instead of acknowledging this and moving forward to optimize safety, Wax and colleagues (2010) chose to mash together data from five different countries and four different decades with no attention paid to which women were and were not eligible and spit out an authoritative answer to the question, "Is home birth safe?" "Is home birth safe?" is a bogus question to which there is no answer. Context, training, system integration, and perhaps above all else the characteristics of the population matter. Any study worth its salt will describe these factors in as robust detail as is feasible. Combining and meta-analyzing data from dissimilar contexts may make sense in other areas of health care, but when context is everything, what's there to gain?

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