Understanding Recent Home-Birth Research: An Interview With Drs. Melissa Cheyney and Jonathan Snowden

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ABSTRACT

In the past month, two new studies have been released—one in *The New England Journal of Medicine* (NEJM; Snowden et al., 2015) and the other in the *Canadian Medical Association Journal* (Hutton et al., 2015)—comparing out-of-hospital birth outcomes to hospital birth outcomes. These studies join a growing body of literature that consistently shows high rates of obstetric intervention in hospitals and also show low risk to neonates regardless of setting. However, the recent NEJM study found a small but statistically significant increase in risk for perinatal mortality for babies born out of hospital. Jeanette McCulloch of BirthSwell (<http://www.birthswell.com>) interviews Melissa Cheyney, PhD, CPM, LDM, medical anthropologist, chair of the Midwives Alliance Division of Research, and lead author on the largest study of outcomes for planned home births in the United States to date (Cheyney et al., 2014a), and Jonathan Snowden, PhD, epidemiologist and assistant professor in the Department of Obstetrics and Gynecology and School of Public Health at Oregon Health and Science University. Snowden is also the lead author of the recent NEJM study.

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Jeanette McCulloch (JMc): Henci Goer [2015] compared the results of several recent studies on the safety of out-of-hospital birth. As her post on *Science and Sensibility* [<http://www.scienceandsensibility.org/homebirth-safety/>] points out, we've seen conflicting research around out-of-hospital outcomes. Dr. Cheyney, wearing your hat as researcher and midwife, how do you recommend families use the results of the NEJM study to inform their place of birth selection?

Melissa Cheyney (MC): I have actually had dozens of calls from women considering home and birth center births over the last few weeks, giving me the opportunity to discuss this very question.

What I say first is that we need to look at what the authors themselves say about their findings. Snowden and colleagues summarize three key findings for us.

First, they conclude that rates of obstetrical intervention are high in U.S. hospitals. They found large,

absolute differences in the risks of interventions between planned out-of-hospital births and in-hospital births. This first finding has been affirmed across numerous other recent studies.

Secondly, they conclude that adverse fetal and neonatal outcomes are infrequent across all birth settings and that the absolute differences in risk observed between planned birth locations are also small. This is a very important point as it is easy to become excessively myopic, limiting our conversation to small differences in relative risk rather than talking about how very low the absolute risk for an adverse outcome for the baby may be in either setting.

As an anthropologist with projects in numerous countries, this study is an excellent reminder that it is a privilege—a “first world problem” as some of my study participants have referred to it—to be debating what to do about 1.2 versus 2.4/1,000 fetal death rate. The rate of fetal loss in Sierra Leone for pregnancies that make it to at least 7 months’ gestation is 8.4/1,000, and the perinatal mortality rate is 34/1,000!

While we want to do all we can to make sure as many babies as possible in the U.S. are born healthy and well to mothers who are healthy and well, it is also helpful sometimes to look up from a single statistic and contemplate some larger questions. How do we navigate the often-delicate balance between maternal and fetal harms and benefits in both current and future pregnancies? Can we continue to advocate hospital births for all when the U.S. is already spending nearly half of the world’s health-care dollars with much of that going toward covering maternity care costs?

Thirdly, the authors conclude that planned out-of-hospital births are associated with an excess of less than 1 fetal death per 1,000 deliveries. I am not sure how many readers really took this message away from the article as the popular media tended to stress a doubling of risk without qualification. I encourage clients to read this study along with the larger body of literature on home and birth center birth safety [see Goer, 2015, for a great starting place] because the authors of the NEJM piece are themselves careful to stress in their “Limitations” section that the sample size for OOH births was small in the Oregon study. In fact, the entire study is based on 10 deaths in the OOH sample.

When I look at the balance of evidence across the totality of published literature, what I see is no

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perfect option for birthing families in our country, and when no clear cut, risk-free option is available, we allow families to choose the option that fits best with their values, beliefs, and desires.

JMc: Dr. Snowden, following up on that, your research suggests a significantly lower risk of interventions for mothers who plan home and birth center births. What might hospital providers take away from this study that could help improve maternal outcomes?

Jonathan Snowden (JS): I agree, the finding of lower obstetric interventions in the out-of-hospital setting is an important one and highlights the need for reform in the U.S. maternity care system. While Oregon’s planned in-hospital cesarean rate of 25% is lower than the national average, it is still higher than the recommended levels [10%–15% based on the WHO recommendations from decades ago, and 19% according to a recent study in JAMA [Molina et al., 2015]]. Although c-sections can be a life-saving procedure, they are currently overused, and they carry short-term and long-term risks for mothers and babies. In particular, the health of a woman and her babies during her future pregnancies can be adversely affected by the first cesarean, so the risks of one cesarean delivery may not be fully realized until many years later.

We believe that a key message for in-hospital providers from our study is the importance of recognizing healthy low-risk pregnancy and labor as physiologic processes that will proceed to a healthy outcome in a majority of cases. Recognizing this, obstetric interventions can be reserved for when complications arise and they become necessary, or when they become judicious, from the perspective of the woman and her provider. Hospital providers may use this information as rationale to more deeply explore how to better support physiologic labor processes and also to better support clinician decision making, for example, factors that encourage adoption of more contemporary definitions of normal labor progress. We also believe that structural factors in the U.S. maternity care system, separate from the individual choices of mothers

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and providers, contribute to procedure overuse in U.S. hospitals. Further, given such a large difference in cesarean delivery in the two groups we studied, it suggests that there are opportunities to better study why such differences exist. If practices can be imported from the out-of-hospital setting to the in-hospital setting that will safely reduce cesarean births, that would be an impactful benefit of such research.

Because our findings identify different risks in both in- and out-of-hospital settings, we feel this is an opportunity for all maternity care providers to seek to learn from each other. As Dr. Cheyney mentioned, while the higher risk for perinatal death identified by our research tends to garner more media attention, our findings regarding differences in cesarean delivery propose that in-hospital providers and systems may benefit from emulating home and birth center approaches to care as we seek to meet the national goal of safe cesarean section reduction.

JMc: The degree to which out-of-hospital providers are integrated into the larger maternal health-care system varies from community to community. Dr. Snowden, you and your colleagues cited the lack of integration as potentially impacting outcomes in the U.S. What are some signs of safe coordination that families can look for—and policy makers can advocate for—in their own communities?

MC: This is a critical question I think. As I have discussed extensively elsewhere [Cheyney, Bovbjerg, & Burcher, 2015], we know from work coming out of Canada, the U.K., and the Netherlands that birth outside of the hospital can be as safe, and for some variables, safer than birth in the hospital.

Yet, in our country, in many communities, we do not have an integrated system of seamless collaboration and transfer across all birth settings. I agree that this explains part of what Snowden and colleagues are seeing in Oregon. As a practicing midwife in

Oregon for 15 years, I am personally grateful to enjoy a truly integrated system of medical backup in my own community where I transfer to and can consult freely with beloved midwife and physician colleagues. However, as an anthropologist, I have also recorded hundreds of stories of individual cases and entire communities where integration and collaboration does not occur. Instead, midwife–physician relationships are nonexistent, strained, or even openly hostile [Cheyney, Everson, & Burcher, 2014].

As Henci so clearly stated in her *Science and Sensibility* piece [Goer, 2015], midwives alone cannot be held responsible for creating an integrated system. A willingness to increase safety through meaningful collaboration must also come from the medical establishment. While some obstetricians may be able to envision a world without home or birth center midwives, midwives cannot provide safe and empowering care for women without access to medical backup and collaboration when needed.

I encourage families who are exploring their birthing options—or advocating for increased integration in their own communities—to ask area midwives and obstetricians about referral systems, transfer protocols, and relationships between transferring and receiving providers. *The Best Practice Guidelines: Transfer from Planned Home Birth to Hospital* [Home Birth Summit, 2014] are a model for facilitating safe and mutually respectful interprofessional communication. They provide a great foundation for increasing collaboration and smoothing transfers of care in every community.

JS: I echo Dr. Cheyney's points about the importance of open, mutually respectful communication between out-of-hospital and in-hospital obstetric providers to more fully integrate the U.S. maternity care system across birth settings and to improve birth outcomes for women and babies in all settings. Defining specifically what a more integrated maternity care system will look like is more challenging. The fragmentation in our health-care system is a more general issue in U.S. health care, not just in maternity care.

I recently participated in an online forum sponsored by NEJM with other maternity care experts in the U.S., Canada, the U.K., and the Netherlands, and researchers and policy makers shared approaches to integration of maternity care that have worked in those countries. Themes that emerged included open and respectful communication between out-of-hospital and in-hospital providers, collaborative

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and mutually agreed upon protocols for seamless transfer of care when complications arise, and risk-based guidelines for who is an optimal candidate for out-of-hospital birth [with the recognition that ultimately, a woman makes this choice]. The formal guidelines put forth in the U.K. [National Institute for Health and Care Excellence, 2014] provide an excellent example of out-of-hospital birth being integrated into the broader maternity care system there. Equally important as broad formal guidelines is the communication of options, benefits, and risks to women in clear and nonjudgmental language. For example, individual maternity care services and universities in the U.K. have created user-friendly leaflets and infographics [Birmingham Women's NHS Foundation Trust, 2015; National Health Service, 2014] to clearly explain birthplace options to women. We could better integrate U.S. maternity care across birth settings, and help women understand their options, by emulating these approaches in the U.S.

JMc: The NEJM article suggests that a midwife's credentials or training may play a role in outcomes. When a family is selecting a provider for out-of-hospital birth, they may be choosing between a certified nurse-midwife/certified midwife [CNM/CM] or certified professional midwife/licensed midwife [CPM/LM]. [Check out Midwives Alliance North America, n.d., for clarification of each of these credentials.] What does the existing literature tell us about how training or credentials affect infant and/or maternal outcomes?

MC: We do not yet have a published study comparing birth outcomes for women attended by the different types of midwives practicing in the United States. That is actually something that my colleague Marit Bovbjerg [<http://health.oregonstate.edu/people/bovbjerg-marit>] and I are currently working on. We need to merge two data sets so we can compare outcomes by place of birth [planned home vs. planned birth center] and by provider type [CNM/CM and CPM/LDM].

JMc: Dr. Snowden, in your piece, you and your coauthors suggest that people who select out-of-hospital birth may have different values and goals for birth. Opponents sometimes suggest that home and birth center families are choosing an experience over the well-being of their baby. In each of your experiences, what values do you think are influencing place of birth decision making?

MC: Honestly, it breaks my heart when I hear that. I had my baby at home, and I have attended hundreds of families at home and in birth centers. People who choose to birth outside of the hospital do not love their babies any less.

The headlines that focus solely on fetal risk may be a function of our fetal-centric viewpoint in the U.S. A slightly elevated risk of fetal death demonstrated in one state with 2 years worth of data on very rare events does not in any way tell any individual family what is best for them. As the NEJM study shows, parity, maternal comorbidities, and, very likely, access to an integrated system of medical backup all influence risk for each individual.

Families who opt for out-of-hospital settings are not being selfish when they consider the experience and well-being of the birthing parent. In my experience, they are looking at the larger picture of risks and benefits. Roome and colleagues [2016] have recently pointed out that advocates of OOH birth may be defining safety more broadly "than neonatal mortality, emphasizing the reduction of potentially harmful interventions and the emotional and psychological safety of the woman and her family."

The baby's well-being is ultimately dependent on the well-being of the birthing parent. They cannot be separated, and it is not fair to pit parents against their babies. As Dr. Snowden discussed, we need to remember that elevated cesarean rates are not good for mothers or for babies. ACOG's statement on reducing primary cesarean [Lothian, 2014] makes clear that the risks to the mother and to babies [both in the current and in future pregnancies] are high when cesarean rates are high. As so many of the obstetricians who commented on the Oregon study have pointed out, given the relative risks and benefits of hospital, home, and birth center, it is understandable that some families will weigh the risks and plan a home or birth center birth.

JS: That women who choose out-of-hospital birth have a different decision-making process on birth setting than women who choose hospital birth seems evident, and research has begun to explore exactly what these differences are. Some of the factors that have been documented, which we discussed in our paper, include a woman's control over her surroundings and preferences for a physiologic birth and avoidance of unnecessary interventions [in the case of out-of-hospital birth] and access to pain relief and emergency medical services in the case of hospital birth [Boucher, Bennett, McFarlin,

& Freeze, 2009; Declercq, Sakala, Corry, Applebaum, & Herrlich, 2013; Murray-Davis et al., 2012; Murray-Davis, McDonald, Rietsma, Coubrough, & Hutton, 2014]. That said, these average differences should not detract from the fact that there is great diversity in values, preferences, and decision making within women who choose any single-birth setting. This is at the heart of our research on this topic and discussion of this topic: The choice of birth setting and provider/care are deeply personal choices that are informed by subjective assessments of benefits, risks, and weighing the two. In my research on birth setting, I strive to provide valid estimates of specific, measurable outcomes [risks as well as healthy outcomes] to equip providers, policy makers, and, most importantly, women with the best available information to inform their choice.

I disagree with the notion that women and families who choose out-of-hospital birth settings are privileging an experience over the health of their baby. It's important to refrain from judging others' motivations in this very personal decision. We all share the goal of a healthy outcome for moms and babies, even when we weigh various factors differently in our individual definition of that outcome. And it's worth noting that U.S. health care is moving toward the principle of patient centeredness more broadly, incorporating individual patients' perspectives about what matters to them into designing health-care systems, evaluating treatment/care options, and research on outcomes. Maternity care must follow this broad trend as well—in fact, I believe that we are in a great position to lead the way. For this reason, we advocate for more fine-grained research on women's birthing experiences and preferences [including qualitative and social science research]. My colleague Ellen Tilden [<http://www.ohsu.edu/xd/education/schools/school-of-nursing/faculty-staff/tilden-ellen-faculty-pg.cfm>] and I are currently pursuing further research in this vein.

JMc: As researchers, you both advocate for comprehensive data collection with a goal of shining a light on best practices for improving infant and maternal well-being. Oregon has made specific changes with the goal of improving data collection. Would you

advocate for similar changes in every state? What are best practices for birth certificates?

JS: My coauthors and I would advocate for such changes in birth certificate data collection in every state. We appreciate the leadership shown by the Oregon Center for Health Statistics, researchers, advocates, and policy makers in our state, which made this change possible. First and foremost, we believe it is essential to understand the intended place of birth and the credential of the intended birth attendant [e.g., obstetrician, certified nurse-midwife, certified professional midwife, etc.] for women when they entered labor, not just in the setting where they eventually delivered. This matters because of the “intention-to-treat” principle in epidemiology, whereby we care about the planned exposure [e.g., treatment, birth setting, health-care decision] and not just what ended up occurring after the fact.

Furthermore, we recommend collecting data on birth setting in a fine-grained way that distinguishes between the hospital setting, the home setting, and freestanding birth centers. Although we collapsed birth centers and the home setting into one “out-of-hospital” category in some analyses in our study, we recognize that there are important differences between the two, so it's important to collect data on these settings separately. Although changing vital statistics collection protocols can add to regulatory burden, we believe that having the most detailed and accurate data possible empowers women and their providers to better understand their options in each birth setting and make informed choices about their birthing preferences. Finally, it must be noted again that while birth certificate data boast many strengths, the birth certificate is not designed for research. Other more fine-grained research data must be collected and analyzed to provide a more complete picture of the benefits and risks of birth in different settings.

In addition to the issues above, it would be wonderful if we invested broadly in a public health data system and analytic enterprise that would capture much greater detail on a wide range of health conditions—both pathological processes of disease and healthy, normal physiologic processes. In the setting of childbirth, this includes greater detail on labor processes, labor management, length of labor, and greater specificity in the experienced by mothers and babies, as well as healthy outcomes free from complications. Finally, efforts towards greater

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verification of data accuracy would greatly enhance our ability to answer clinical and population-level questions in order to improve health care, health outcomes, and population health.

MC: We are really in agreement here as well, and this is why we have invested so many resources into developing and assessing data accuracy in the MANA Stats data sets [Cheyney et al., 2014b]. The only thing I would add is that it is critical that we understand more precisely when fetal deaths are occurring in the U.S. A death that occurs unexpectedly in utero at 30 weeks is very different from a death that occurs during labor. The U.S. birth certificate does not currently allow us to adequately differentiate between antenatal and intrapartum demises. In addition, several variables on the birth certificate have very low sensitivity rates. For example, the neonatal seizure variable has been shown in two large studies to yield sensitivity rates of 0.226 and 0.182 [Piper et al., 1993; Reichman & Schwartz-Soicher, 2007]. This means that 80% of seizures recorded in the medical record are not reported on birth certificates. Oregon has made some critical improvements to the birth certificate, but there is still work to be done.

JMc: Once states have this sort of data collection in place, how can individual states use the data to ensure improvement across all settings?

JS: Accurate data collection, data monitoring, research, and collaborative quality improvement will be essential to improve maternal and infant outcomes across all U.S. birth settings. While honing data collection practices and research [as we have done in Oregon] are an important first step, it will be equally important for all of us—researchers, policy makers, in- and out-of-hospital obstetric providers, and the women we care for—to join in an open, constructive, and mutually respectful discussion about improving the care and outcomes for women and babies. A key implication of our study is that in the U.S., there's room to improve obstetric care in all birth settings and to improve the health-care system in which we provide that care. We recommend looking to Canada, the Netherlands, and the U.K. for examples of health-care systems that offer women care in multiple birth settings [including the home and hospital] and which have systems in place to offer seamless transfer of care between those settings. In particular, we advocate for adoption of risk-based protocols for which women are

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optimal candidates for out-of-hospital birth, collaborative agreements between in- and out-of-hospital providers for the transfer of care, and a greater role for midwives meeting ICM standards in caring for healthy childbearing women in the U.S. This collaborative, woman-centered system of obstetric care would help us all make progress toward our common goal of a safe birth for every woman and baby and a positive, respectful birthing experience.

JMc: Dr. Cheyney, do you have anything to add?

MC: I see the NEJM paper as yet another call for a more integrated maternity care system in the United States. It is time to find a way to bridge the home–hospital divide, for providers to learn from each other. We all have a shared responsibility for increasing access to safe and healthy physiologic birth. Out-of-hospital birth is not going to go away. Doesn't it make more sense to have it operate within a system of support and collaboration so that families and babies benefit?

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