Interpreting Home Birth Research:
Understanding Conflicting Evidence

Two conflicting bodies of research

As parents and policy makers review home birth research to make personal and policy-level decisions about place of birth, they are often confronted with two conflicting bodies of research. One finds that home birth is a safe option for low-risk women who choose a skilled care provider. Another finds increased risk. Why are there such differences, and how can we evaluate the research?

Two different kinds of data used to draw conclusions

Current home birth research draws on two different kinds of data: medical records or vital statistics data.

Medical records are considered to be the "gold standard" in this kind of research. Medical records are considered to be a reliable way to accurately capture the intended place of birth and the outcomes of the birth. The Midwives Alliance of North America dataset (MANA Stats) and the American Association of Birth Centers (AABC) Perinatal Data Registry (PDR) are both based on medical records with an almost perfect level of validity.

Vital statistics data uses birth and/or death certificates to ascertain place of birth and the outcome of the birth. Birth certificates are known to be unreliable for accurately capturing where a baby was intended to be born and have weaknesses for capturing rare outcomes.

Data from Voluntary Birth Registries like MANA Stats and the PDR:
What are the Limitations?

The primary limitation of the medical record-based data collected in MANA Stats and the PDR is that participation by midwives is voluntary. While it is reassuring that the findings of the latest study by Cheyney et al (2014) are similar to the last mandatory collection of home birth outcomes in the U.S. (Johnson & Daviss, 2005), a higher percentage of participation by midwives would give us a fuller picture of outcomes. Results may not be generalizable to all midwives doing births at home or in birth centers in the U.S. Findings really only to speak to the outcomes of those who participated in one of these data collection projects.

Vital Statistics Data (birth and/or death certificate):
Flawed For Understanding Home Birth

Limitations in capturing place of birth. Birth certificates capture where a baby was actually born, which may not necessarily have been where the family planned for their birth to take place. This means:

- Babies born at home by accident and without an attendant are captured as home births. Accidental and unattended births are much more likely to be an emergency and have been shown in research to have poorer outcomes (Declercq et al, 2010).
- According to the Cheyney et al (2014) article, eleven percent of women planning a home birth transferred to the hospital during labor. The MANA Stats data keeps the outcomes of these transports in the planned home birth group. However, birth certificate data will inaccurately attribute all of those births - both the overwhelming majority of transfers that are non-eventful, as well as the small number of mothers or babies with poor outcomes - to the hospital group. Since only about one percent of all births happen at home, this error is not likely to significantly impact the hospital outcomes. However, removing those eleven percent of the births from the home birth sample makes any analysis based on these numbers unreliable. Some have said that this would only make the home birth outcomes look worse if those poor outcomes were correctly attributed to the home birth group, but the overwhelming majority of transfers in labor result in excellent outcomes, which also belong to the planned home birth group.

Vital Statistics data flawed in general. Birth certificates in the hospital setting are often completed by people who were not in any way involved in the care of the patient. Errors in the data are introduced in this way. Birth certificates are often incomplete, contain false data, and/or are inaccurate when compared to medical records (Martin et al, 2013). Many national and professional organizations have projects underway to improve the quality of health data.

Limitations in capturing certain outcomes. Fortunately, fetal and newborn death is rare in any place of birth, at least in high resource countries like the United States. In research terms, this means it is a rare event. The rarer the outcome being studied, such as death or Apgar scores of zero, the more unreliable birth certificate data is for studying it (Dobie et al, 1998; DiGiuseppe et al, 2002; Roohan et al, 2003; Northam & Knapp, 2006; Bailit, 2010; Martin et al, 2013). This is why most well-designed research uses medical records rather than birth certificates for studying rare outcomes.

When absolute risks are low, relative risks are misleading. Vital Statistics data are often used to create relative risks (for example, "home birth is twice as dangerous as hospital birth"). We believe that the loss of any baby is a terrible tragedy. But when an event is so rare, the doubling (or tripling or more) of that risk still represents a very, very small number (absolute risk) and creates a misleading impression for consumers and policy makers.

When Evaluating Research, Ask Yourself:

Is this research or information published? Preliminary or unpublished data, findings, and back-of-the-envelope calculations on blog posts have not been subjected to the rigorous scrutiny that takes place when an article is peer-reviewed for publication.

Is the research peer-reviewed? Articles in peer-reviewed journals have been subjected to a high level of scrutiny by other researchers who are knowledgeable in the subject matter.

Does the research use medical records? Or does it use vital statistics data? Data based on medical records is the gold standard for this type of research. Vital statistics data is known to produce misleading results, especially for rare events.

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