What are the risks of giving birth inside and outside a hospital setting?

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The out-of-hospital birth setting in Oregon was associated with a higher risk of perinatal death, while the in-hospital birth setting was associated with a higher risk for cesarean delivery and other obstetric interventions (e.g., induction or augmentation of labor), according a study published today in the *New England Journal of Medicine* by researchers at Oregon Health & Science University.

"This study continues the national dialogue about the care, setting and health care systems that can provide more women with a safe, healthy birth that meets their birthing preferences," said Jonathan M. Snowden, Ph.D., an epidemiologist and assistant professor in the Department of Obstetrics and Gynecology in the OHSU School of Medicine and lead author of the study. "Our findings show that Oregon women are very likely to have a safe delivery in any setting. While those who deliver at home or in birth centers are much more likely to have a normal, vaginal delivery, there is also a small but statistically significant increase in risk for adverse baby outcomes."

The study, which looked at outcomes for mothers and babies based on birth setting, was conducted using data collected from Oregon birth certificates in 2012 and 2013 on what a mother's intended birth setting was when she went into labor. The study compared two groups of 'low-risk' pregnancies, meaning the babies were head down, close to their due date, and not twins or triplets. One group was planning hospital birth, the other out-of-hospital birth.

"While the overall risk for perinatal death was low in all settings, the stakes can be high," said Aaron B. Caughey, M.D., Ph.D., professor and chair in the OHSU Department of Obstetrics and Gynecology, associate dean for Women's Health Research and Policy in the OHSU School of Medicine, and paper co-author. "As health care providers, we need to make sure women know what the trade-offs are so they can make an informed choice that reflects their birth preferences."

The key findings were:

- While rare in both groups (less than 0.5% in all settings), there was a statistically significant higher risk of perinatal death in planned out-of-hospital births compared to planned hospital births.

- Neonatal seizures were also rare in all settings (less than 0.5%), and were significantly higher in planned out-of-hospital births compared to planned hospital births.
- The cesarean section rate was significantly lower in planned out-of-hospital births compared to planned hospital birth (24.7% in the hospital, 5.3% out of hospital).
- Risk of C-section was 24.7%, making the absolute difference between birth settings large (a difference of 20%). However, risk of perinatal death was very low in all settings, so the absolute extra risk associated with planned out-of-hospital birth was also less than 0.5%.
- Mothers who planned out-of-hospital birth had a significantly increased risk for blood transfusion, likely related to postpartum hemorrhage.
- Planned out-of-hospital birth was associated with decreased use of obstetric interventions across the board (e.g., augmentation of labor, induction of labor or C-section).
- The group planning hospital birth had significantly more mothers with high blood pressure, diabetes or a prior C-section, and overall, they were a higher-risk group.

This is the first birth certificate data set in the country in which women were asked about intended place of birth, regardless of where they delivered. Because the authors knew which women planned a hospital or out-of-hospital birth, they were able then to properly categorize outcomes by the intended place of birth. In the past, a woman may have started labor at home and intended to deliver at home, and then needed to be transferred to the hospital due to complications and delivered in the hospital. If outcomes were not good, the outcome was categorized as a hospital outcome.

This paper also addresses the overuse of C-sections in U.S. hospitals, a topic on which Dr. Caughey and the research team are nationally known

experts.

"There is now consensus in the medical and midwifery communities that the U.S. C-section rate is too high, and the desire to avoid a C-section may shape women's choices when seeking out-of-hospital birth," said Ellen Tilden, Ph.D., C.N.M., assistant professor at OHSU School of Nursing and study co-author. "It's really important that we strive to make birth safer in any setting, both through decreasing fetal and neonatal morbidity and mortality out of the hospital but also through supporting safe vaginal birth in hospitals."

Out-of-hospital births in Oregon account for about 4% of total births (2.4% home birth, 1.6% birth center), the highest rate of any state, so about 95% of births take place in the hospital. About 57% of out-of-hospital births in Oregon are attended by licensed direct entry midwives, 20% by certified nurse-midwives, 13% by naturopathic doctors, and 7.7% by unlicensed midwives. These two charts show which providers perform births in which setting, and define the types of midwives and their trainings/certifications.

Nationally there has been a significant increase in the rate of home births. Between 2004 and 2008, the home birth rate increased by 20%, and by another 24% between 2008 and 2012, so about 1.4% of U.S. women had a home birth in 2012.

The authors agree that working to integrate the maternal health care system would be good first steps. Specifically, they recommend focusing on:

- Looking to countries with better integrated maternity care systems, like the Netherlands, where midwives are the lead care providers for healthy women
- Developing formal guidelines for which women are appropriate

candidates for out-of-hospital birth
- Improving communication and collaboration between in- and out-of-hospital providers
- Creating an agreed upon transfer system where patients can easily be transferred to a hospital when needed

"The history and political tenor of the debate between out-of-hospital and in-hospital birth in our state and nationally has polarized the issue at a time when we sorely need a productive exchange," says Snowden. "It is important to recognize that we all—families, birth attendants, and policymakers—share the common goal of helping birth occur with the best possible outcomes for all."

Provided by Oregon Health & Science University