

Broader definition of 'severe maternal morbidity' could identify women at risk for pregnancy complications earlier

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Severe Maternal Morbidity—generally referring to any condition or diagnosis that could indicate a potentially life-threatening maternal complication—has been on the rise, but a new study suggests that widespread adoption of an expanded definition of SMM could identify more at-risk patients, leading to improved care and lives saved. The study is one of two on the topic of SMM from researchers from the Perelman School of Medicine at University of Pennsylvania. The second study examined the relationship between SMM and maternal level-of-care designations (MLOCD) at hospitals and uncovered a need for better data. The studies are presented Monday, May 16, 2016 at the American College of Obstetrics & Gynecology's (ACOG) Annual Clinical and Scientific Meeting in Washington, DC (posters #9R and 9L, respectively).

Maternal morbidity refers to health problems arising from or advanced by pregnancy. "Severe" [maternal morbidity](#) encompasses serious bleeding, eclampsia convulsions, heart attacks, emergency hysterectomies and other potentially fatal crises in women around the time of delivery. There are about 50,000 cases of SMM every year in the United States, and the incidence is rising. Increasing ages for new mothers, increasing rates of obesity and diabetes, and increasing rates of Caesarean deliveries are likely factors driving that trend.

"The issues we're addressing in these studies are very important because

they have implications for the way that maternity care should be delivered in this country, in particular to reverse the rise in maternal morbidity," said Sindhu Srinivas, MD, MSCE, associate professor at the Perelman School of Medicine at the University of Pennsylvania, and director of Obstetrical Services at the Hospital of the University of Pennsylvania, who was a co-author on both studies.

In the first study, researchers looked at the rate and causes of SMM during a year of deliveries (July 2014—June 2015) at the Hospital of the University of Pennsylvania. The team defined SMM according to two alternative sets of criteria that have been proposed by obstetricians' associations. The first, a more "restricted" [definition](#), includes any condition resulting in admission to intensive care or the use of four or more units of packed red blood cells—given in cases of bleeding. The second, "expanded" definition, adds criteria including an estimated blood loss of two liters or more, unplanned hysterectomy, and re-admission to the hospital for specialty services in the first 30 days after delivery.

The team found that the rate of SMM in the 4,198 deliveries covered by the study was 0.9 percent (36 cases) using the restricted definition, and 1.2 percent (52 cases) according to the expanded definition. Postpartum readmission to hospital, and blood loss of two liters or more, accounted for most of the difference. The majority of the severe complications—under both SMM definitions—developed after childbirth and in association with Caesarean delivery.

"Our results suggest that the expanded definition of SMM provides a better measure, in particular because it covers a significant number of cases of severe blood loss and postpartum hospital readmission that aren't covered by the restricted definition," said lead author Adi Hirshberg, MD, a fellow in the department of Obstetrics & Gynecology and Penn Medicine. "By considering these variables when tracking and

evaluating SMM, we can better identify at-risk women and improve all aspects of postpartum care."

Care levels and outcomes

Using Maternal Level-of-Care Designations, as determined by ACOG and the Society of Maternal Fetal Medicine, the research team on the second study examined data from 90 birth hospitals within the United States to see whether higher designations are associated with fewer SMM events in high-risk pregnancies.

"Designations are determined based on expert consensus and opinion, and relate to the availability of certain medical services and staff expertise," said Srinivas. "The question we asked is: if we classify hospitals by those care levels, will we find that patients at hospitals with higher level designations have better outcomes?"

The researchers used telephone surveys to collect data from the hospitals, and assigned hospital care levels (1 to 4) based on the proposed criteria. For the more than 135,000 deliveries covered by the survey, they found that the frequency of SMM was 1.9 percent overall, but 8.5 percent for high-risk pregnancies.

As expected, the study found a greater number of high-risk pregnancies at Level 4-designated hospitals. Adjusting the data to account for differences in health status among patients at each hospital yielded no significant association between SMM rates and hospital care levels.

The authors suggest future research of care levels and SMM rates should be forward-looking studies in which hospitals are pre-designated with care levels, and participating doctors collect more detailed clinical data on patients.

"We really need a concerted, national effort to improve the way we collect this information so that we can better evaluate these issues and ultimately make a positive impact on maternal care and reduce maternal morbidity and mortality," Srinivas said.

Provided by University of Pennsylvania School of Medicine

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