

## Where should I have my baby?

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Every woman wants to deliver her baby in the best possible environment. A brief look on Google demonstrates that opinions on “the best place to have a baby” vary widely. Although there are no clear answers to this question, it is clear that this topic is of critical interest to pregnant women.

Kyser et al<sup>1</sup> in the current issue, using administrative data from 11 states, wrote a provocative article demonstrating that low delivery volume hospitals and high delivery volume hospitals have worse maternal outcomes than hospitals with more moderate delivery volumes. Other areas of medicine, such as surgery, previously have shown a relationship between volumes and outcomes.<sup>2,3</sup> What makes their study particularly strong is that they adjusted for inherent patient risk factors in several ways, thus minimizing the chance that the results were due to patient level differences and not hospital quality.

The use of administrative data for risk-adjustment is not ideal because administrative data lack important clinical detail. However, administrative data can be useful because they are uniform and encompass all hospitals. The study of Kyser et al<sup>1</sup> highlights the importance of having a complete data infrastructure and standardized maternity outcome quality measures. When the data and the quality markers can be agreed on, the ability to demonstrate variation becomes possible.

The Kyser results are strongest for low-volume hospitals having poorer outcomes.<sup>1</sup> However, the study included hospitals with no obstetrics unit that may occasionally perform an emergency delivery in the lowest volume decile. Although it would not be surprising if maternity outcomes in nonobstetric hospitals were worse, hospitals in the second lowest volume deciles also have poorer outcomes. These most likely are hospitals with obstetric units. Thus, the hospitals in the second decile of low volumes strengthen the conclusions and the need for further investigation into the relationship between volume and outcomes.

There are many differences between hospitals with high- and low-delivery volumes; teaching status, level of care, and rural

and urban status may all vary. The key insight we lack is the functional processes within high- and low-volume hospitals that account for the differences in outcomes. If there are mutable practices that we can find to explain the differences such as staffing patterns, practice protocols, blood bank size, or pharmacy routines, we can try to make these processes uniform across hospitals to try to improve care. The role that individual provider volume plays on outcomes should also be explored because provider volume significantly affects outcomes in other areas of surgery.<sup>4</sup> The study by Kyser et al<sup>1</sup> addresses overall hospital delivery volume only. Future research should seek to address all of these questions.

Documenting variation and understanding causes of the variation are the first steps in quality improvement. In the 1980s, when differences in outcomes between cardiac surgeons were first published, several hospitals were embarrassed by their results. What happened after that has been documented in an article by Chassin et al.<sup>4</sup> The risk-adjusted mortality rate from coronary artery bypass graft (CABG) dropped 41% in New York. There were several reasons for this change. Some low-volume surgeons stopped practicing. Other hospitals examined care processes at the hospitals with good CABG outcomes and tried to emulate those practices. The importance of stabilizing patients before surgery became evident in these reviews, and mortality rates dropped as a result of the adoption of processes to better stabilize patients before CABG.

Quality improvement in obstetrics has occurred when data on nonmedically indicated scheduled deliveries at <39 weeks' gestation were revealed confidentially to hospitals within the Ohio Quality Improvement Collaborative.<sup>5</sup> Once hospitals understood how their own rates compared with other hospitals, they were able to compare best practices, and the rates of nonmedically indicated deliveries dropped by >60% in 1 year. The experience in both CABG mortality rates and nonmedically indicated scheduled deliveries at <39 weeks' gestation suggests that the use of data on variation to motivate comparisons of best practices can be a strong influence on quality improvement. Lower and higher volume hospitals may want to visit more moderately sized hospitals to better understand their clinical processes and discover what processes can be exported to improve care in their own hospital.

Alternatively, the care processes that account for the differences in low- and high-volume hospital outcomes may not be mutable. If this is the case, the maternity health care system in the United States may require more drastic changes to improve outcomes. This underscores the importance of understanding the causes of variation in obstetric outcomes. Research into causes of outcome variation need not necessarily be done by academics or be grant funded. In the CABG example, individual hospitals took it upon themselves to look at neighboring hospitals with better outcomes and to glean insight into differ-

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ences in care processes and to publish their results for the benefit of others. The key is systematically and uniformly sharing the findings of best practices.

Although the processes of care that account for differences in maternal outcomes by hospital delivery volume are not currently known, the data on outcome variation by hospital volume are still immediately helpful. The article by Kyser et al<sup>1</sup> points out that many low-volume hospitals are within 25 miles of a higher volume hospital. For women who have a choice between reasonably located hospitals, the delivery volume may be a piece of information that they add into their delivery location decision calculus. Additionally, to the extent that doctors choose the hospitals in which they perform deliveries or insurance companies choose hospitals for their customers, this information may be helpful to them as well.

We may never have consensus on the best place to deliver a baby, and no single study will ever settle the debate. However, the study by Kyser et al<sup>1</sup> adds an important element to the

societal deliberations. This study can and should serve as an impetus for the development of a complete national data infrastructure and standardized maternity outcome quality measures. These data will help our understanding of the causes of variation and will motivate quality improvement. ■

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