Commentary: Does patient volume matter for low-risk deliveries?

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The authors posit that the most likely cause of the results is the response time to medical emergencies at the lower-volume hospitals. While I am not familiar with the organizational details of care in Hesse, since these facilities focus on the care given to low-risk cases, it is likely that they are not as prepared to respond to medical emergencies as the perinatal centres. Most will not have 24-hour dedicated obstetric anaesthesia coverage and may lack continuous obstetric coverage. Further, many of these units will not be continuously staffed with the skilled personnel necessary for optimal neonatal resuscitation. Thus, it will take longer to perform emergency c-sections and to resuscitate newborns in circumstances where a few minutes makes a big difference. Since the availability of these personnel is likely to be inversely related to delivery volume, this also provides a plausible explanation for the volume gradient.

While this study indicates that lives could be saved if all births were concentrated in high-volume tertiary centres, caution is needed before making such a radical change to the health care system. Geographical access to delivery services needs to be considered. In larger urban areas it is clearly possible to concentrate deliveries in a few large delivery services with minimal added travel for patients. But, in smaller urban, semi-rural, and rural areas this could cause considerable added travel to reach delivery hospitals, which could adversely affect outcomes. Low-volume delivery services would need to be retained in some areas to maintain reasonable geographical access. Additional research is needed to determine how to make the decisions about trading off added travel distance with high delivery service volume. We also need to determine how large delivery services should be, the 1500 deliveries per year cutoff that Heller et al. used is not that large a delivery service.

Even in urban areas, the change to concentrate deliveries at a limited number of hospitals would be a major change from the current delivery system. Before any such change could be recommended, this study will need to be replicated and additional research is needed to determine the cause of the mortality differences. It would be wise to explore if there are any actions that can be taken to reduce the mortality differences across settings. Given that much of the mortality difference is probably due to response times for the unexpected emergencies, are there any organizational changes that could improve response times in smaller delivery services?

Even if the Heller et al. results are replicated, policy makers would be well advised to move slowly; shifting as many deliveries as geographically possible to tertiary centres would represent a massive shift of patients. In many areas the existing tertiary centres may not have the physical capacity to accommodate all of the additional deliveries. We must also consider that while the relative risk of mortality is fairly large, the baseline risk in this population is very low, so the number of deliveries antenatally referred to a perinatal centre for a high-risk condition that was not a lethal congenital anomaly. The inclusion of time of day of delivery also probably contributes to an underestimate of the true effect of patient volume; some of the time of day effect is probably driven by the ability to respond to emergencies.

The ability to identify high-risk cases is not perfect and some complications occur too late in the delivery process to subsequently move the delivery to a high-risk facility. Thus, some high-risk births will always occur at low-risk delivery services.
potential lives saved is small. Any efforts to concentrate low-risk deliveries should first be tried in the most densely populated urban areas where it is most feasible. The effects should be studied to see if the actual gains match the expected gains, and to measure the costs or savings of such a policy.

References