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Author response

We don't know exactly why people who had an inguinal hernia repair at the Shouldice Hospital had a much lower rate of surgery for recurrence than those who had hernias repaired elsewhere in Ontario. Ultimately, there are only 3 possible explanations: patient selection, surgical technique, or perioperative care. Most likely, it is some combination of these factors.

Dr. Vinden suggests that patient selection largely explains the difference, and he may be correct. However, for selection alone to account for the extraordinary difference in surgical recurrences we observed, the influence of selection must be enormous. Even assuming that 30% of all patients seen at the Shouldice Hospital are rejected for surgery and have their hernia repairs done elsewhere, the recurrence rate among those patients would have to be nearly 14% to mask a "true" risk of recurrence that is equivalent to the surgical recurrence risk in general hospitals.

It is true that randomized trials do not support the use of the Shouldice technique for inguinal hernia repair, especially when compared to modern, tension-free repairs. Like Dr. Vinden, we do not believe that general surgeons should stop performing their usual technique of hernia repair — with which they are most skilled and confident — in favour of a repair that is notoriously difficult to perform well in typical practice settings. We also agree that it is neither advisable nor feasible to regionalize a procedure as common as inguinal hernia repair to specialty hospitals.

On the other hand, it appears that much may be learned about inguinal hernia repair from large specialty hospitals — even if those lessons relate to issues such as how patient selection and preparation influence outcomes, and the value of focused expertise even in a relatively minor surgical procedure.

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Letter to the Editor

We are writing to respond to Drs. Vinden and Ott's commentary, "GPs with enhanced surgical skills: a questionable solution for remote services." We commend the authors for appealing to research data to inform the discussion of the need for a standardized curriculum by considering the efficacy of family physicians with enhanced surgical skills (FPESS) in meeting the health care needs of rural Canadians. However, we feel some of the data referenced has been misconstrued and would like to contribute to this discussion, focusing primarily on data regarding maternity services and operative delivery.

Regarding the volume-to-outcomes data cited,[1] the context of the data was analysis of outcomes from 3 major hospital systems in the United States who committed to a volume threshold for 10 high-complexity surgeries. The author explains why volume is traditionally used instead of outcomes in the evaluation of surgical competence (to account for the procedure selection bias of surgeons and ease of data access) but concludes that "the mechanism underlying volume–outcomes relationships remain unknown." Further, he argues that if the underlying mechanism is one of increased practice leading to better outcomes, support for best practice models and quality improvement — not volume thresholds — is the most appropriate response.[1] As the author notes,

> if, on the other hand, outcomes improve because hospitals and surgeons gain expertise with incremental experience through a "practice makes perfect" mechanism, then the focus should be on dissemination of best practices and quality improvement.[1]

Additionally — and more pertinent to the current discussion — an earlier study by Urbach and colleagues[2] comparing volume studies from Canada and the United States found:

> (…)that volume–outcome associations are much less common in Canada than in the United States, perhaps because different models of health care financing and delivery affect patterns of procedure volumes and volume–outcome associations. Market-based models promote competition between hospitals and providers, which may exacerbate existing variations in quality of care. The extent to which models of health care financing and organization cause variation in health outcomes across hospitals, and contribute to volume–outcome associations, has not been fully appreciated or examined.

Jurisdictions outside of the United States have witnessed their volume–outcomes associations disappear with improving prenatal screening, regionalization and formalized referral systems. No international data after 1996 outside the United States have shown a volume–outcome association in maternity care. The mid-1990s is recognized as a watershed date for advances in prenatal screening, influencing appropriate triage for those cases likely to require higher levels of care.[3] For example, Lasswell and colleagues[4] found an undisputed volume–outcome association for very low–birth weight and very premature infants (those who would be risked out for delivery at a hospital without a neonatal intensive care unit and attendant pediatric specialist). Heller and colleagues[5] in Germany showed no association between volume and outcomes after 1996. Two large studies in Norway showed a volume–outcome association in data up to 1995,[6,7] as did a study in Sweden with data to the same date.[8] In Australia, a study replicating the procedures of Moster and colleagues[6] but using Australian data from 1999–2001 found no volume association.[9]

Taken together, the weight of evidence for rural obstetrical care suggests that that distance to care has a greater clinical effect than does volume. Not taking into account reported psychosocial stress, sense of belonging and community, Aboriginal claim to birthing in their home territories and other qualitative evidence, BC and Canada-wide population data demonstrate that those women without local services have far worse outcomes that those with primary only (no surgical) services or those with FPESS-supported surgical services.[10,11] Further, a positive correlation between increasing adverse maternal–newborn outcomes and distance to services (1–4+ h) has been demonstrated.[11] In international data, a study from the Netherlands showed that each minute of travel time is associated with an increased risk of neonatal mortality (odds ratio 1.01).[12] In Australia, remoteness was found to be an independent factor in birth outcomes.[13] In France, greater distance was associated with worse outcomes.[14] In Wales, greater distance to hospital was associated with higher risk of neonatal mortality.[15]

Finally, the authors cite the Canadian Institute for Health Information report on "Hospital births in Canada: a focus on women living in rural and remote areas."[16] Although we applaud the spotlight on rural outcomes that this report brings, it must be noted that "rural" was defined as communities with a population of less than 10 000 not stratified by service delivery level. The influence of poor outcomes from communities with no access to services as noted above would be a primary determinant of the overall poor health outcomes of rural women. This, as much as anything, should be an indicator of the need for finding innovative and safe solutions to meet the perinatal — and other — surgical needs of rural residents. Although we agree with the authors that a plurality of solutions is needed in rural Canada, the available evidence would suggest that the solutions must involve the contribution of FPESS.

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