

Hospital volume inconsistent predictor of quality care

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A new review finds hospital volume to be a useful, albeit imperfect, predictor of short term mortality. While studies, when combined, show a quantifiable and statistically significant inverse association between case volume and mortality, the review finds that individual studies often fail to show such an association, leading the authors to conclude volume is at best an imperfect proxy for healthcare quality.

For years, a large body of research has examined the relationship between surgical volume and outcome. After early studies found an inverse relation between surgical volume and mortality, healthcare decision-makers became interested in regionalization of surgical services, which many hoped could improve patient outcomes at a lower cost. To investigate the importance of provider case volume, researchers led by Russell Gruen, MBBS, Ph.D. at University of Melbourne and Royal Melbourne Hospital in Melbourne, Australia, systematically reviewed 101 studies on case volume and mortality. The review involved more than a million patients with esophageal, gastric, hepatic, pancreatic, colon, or rectal cancer.

The review found the majority of studies addressed the relation between hospital surgical case volume and short-term perioperative mortality. Few studies addressed surgeon case volume or evaluated long-term survival outcomes. Using statistical meta-analysis, a significant volume-associated effect on mortality was found for five of the six cancer types. Overall, each doubling of hospital case volume decreased the risk of perioperative death by more than 10 percent. The authors calculated that between 10 and 50 patients per year, depending on cancer type, needed to be moved from a "low-volume" hospital to a "high-volume" hospital to prevent one additional volume-associated perioperative death.

Despite that finding, approximately one-third of all analyses, including some large studies, failed to

find a significant volume effect on mortality. The authors say the lack of consistent results from individual studies calls into question the validity of case volume as a proxy for care quality, and leads the authors to conclude that more direct quality measures and the validity of their use to inform policy should also be explored. "On the basis of mortality outcomes alone, it appears prudent to support volume-based referral and high-volume centers," write the authors. But they point out outcomes may also depend on an individual surgeon's case volume.

A large center where many surgeons each do a low volume of procedures, for example, may have higher mortality rates than a small practice where a one or two surgeons limit their practice to a particular operation. They conclude: "[T]here are also clearly some low-volume providers who get good results, and therefore referral to relatively low-volume providers should be supported if good outcomes can be demonstrated by process measures or by risk-adjusted outcomes, especially if there are compelling personal or medical reasons for the patient to be treated close to home."

More information: "The Effect of Provider Case Volume on Cancer Mortality; Systematic Review and Meta-analysis," Russell L. Gruen, Veronica Pitt, Sally Green, Anne Parkhill, Donald Campbell, Damien Jolley, *CA Cancer J Clin* 2009;59:192-211 (doi:10.3322/caac.20018).

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