

Hospital rankings for complications after spinal fusion are 'unreliable'

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Routinely collected data on patients undergoing spinal fusion surgery do not provide a valid basis for assessing and comparing hospital performance on patient safety outcomes, reports a study in *Spine*.

At a time when hospitals are increasingly subject to online rankings or "pay-for-performance" reimbursement programs, metrics based on hospital administrative data are "unreliable for profiling [hospital performance](#)," concludes the new research by Jacob K. Greenberg, MD, MSCI, of Washington University in St Louis and colleagues. They write, "These results provide important insights into the advisability of using administrative billing data to benchmark hospital quality in spine surgery."

Study finds unacceptably low hospital 'rankability' for spinal fusion

The researchers analyzed more than 367,000 [spinal fusion surgery](#) procedures performed in nine states between 2010 and 2017, drawn from nine state inpatient databases. Performed in patients with degenerative spine disease, spinal [fusion](#) is a common and costly inpatient surgical procedure. The study included data on approximately 154,000 procedures in the upper (cervical) spine and 213,000 in the lower (thoracic and lumbar) spine.

The analysis focused on serious complications such as return to the [operating room](#), myocardial infarction (heart attack), death, or prolonged [hospital stay](#). The study was designed to determine whether a metric based on publicly available information from state inpatient databases would be reliable for benchmarking and comparing performance between hospitals.

The researchers calculated a risk/reliability-adjusted [complication](#) rate to account for differences in the characteristics (case mix) of patients treated at each hospital. They then used a "rankability" measure to assess whether the metric could distinguish true differences in hospital performance from random fluctuations due to chance (signal-to-noise

ratio).

Overall, 4.4 percent of patients undergoing *cervical* spinal fusion had serious complications. For this group of patients, rankability was consistently low—indicating that "rank-based profiling efforts would lead to widely varying results over time," Dr. Greenberg and colleagues write.

For patients undergoing *thoracic and lumbar* spinal fusion, the serious [complication rate](#) was 7.7 percent. Rankability was higher than for cervical spinal fusion. However, the metric's ability to compare complication rates between hospitals was still just slight to moderate depending on the year, indicating most differences across hospitals were due to chance.

The authors noted that rankability increases with the volume of spinal fusion procedures performed. However, only about one-third of hospitals performed sufficient numbers of thoracic-lumbar fusions to produce reliable estimates. Less than five percent performed enough cervical fusions for reliable rankings.

Medicare, Medicaid, and private insurers increasingly use complication rates or other safety metrics to adjust payments to doctors and hospitals for various conditions and procedures. Complication rates are not yet used in national benchmarking for spine surgery, but are widely used for hip and knee replacement surgery. "While payers are increasingly focused on implementing pay-for-performance measures, quality metrics must reliably reflect true differences in performance among the hospitals profiled," according to the authors.

The new analysis—including hundreds of thousands of procedures performed at hospitals across the United States—suggests that state inpatient data on complications are inappropriate for use in ranking and

comparing [hospital](#) performance for spinal fusion procedures. Dr. Greenberg and colleagues conclude: "These results indicate that such metrics derived from administrative billing data should not be used in high-stakes applications, such as public reporting or pay-for-performance."

More information: Jacob K. Greenberg et al. Administrative Data are Unreliable for Ranking Hospital Performance Based on Serious Complications after Spine Fusion, *Spine* (2021). [DOI: 10.1097/BRS.0000000000004017](#)

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