
Profiling Hospitals on Bariatric Surgery Quality: Which Outcomes Are Most Reliable?



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- BACKGROUND:** Under the Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program, hospitals will receive risk-adjusted outcomes feedback for peer comparisons and benchmarking. It remains uncertain whether bariatric outcomes have adequate reliability to identify outlying performance, especially for hospitals with low caseloads that will be included in the program. We explored the ability of risk-adjusted outcomes to identify outlying hospital performance with bariatric surgery for a range of hospital caseloads.
- STUDY DESIGN:** We used the 2010 State Inpatient Databases for 12 states (N = 31,240 patients) to assess different outcomes (eg, complications, reoperation, and mortality) after bariatric stapling procedures. We first quantified outcomes reliability on a 0 (no reliability) to 1 (perfect reliability) scale. We then assessed whether risk- and reliability-adjusted outcomes could identify outlying performance among hospitals with different annual caseloads.
- RESULTS:** Overall and serious complications had the highest overall reliability, but this was heavily dependent on caseload. For example, among hospitals with the lowest caseloads (mean 56 cases/year), reliability for overall complications was 0.49 and 6.0% of hospitals had outlying performance. For hospitals with the highest caseloads (mean 298 cases/year), reliability for overall complications was 0.79 and 30.3% of hospitals had outlying performance. Reoperation had adequate reliability for hospitals with caseloads higher than 120 cases/year. Mortality had unacceptably low reliability regardless of hospital caseloads.
- CONCLUSIONS:** Overall complications and serious complications have adequate reliability for distinguishing outlying performance with bariatric surgery, even for hospitals with low annual caseloads. Rare outcomes, such as reoperations, have inadequate reliability to inform peer-based comparisons for hospitals with low annual caseloads, and mortality has unacceptably low reliability for bariatric performance profiling. (J Am Coll Surg 2014;219:725–734. © 2014 by the American College of Surgeons)
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Bariatric surgery is one of the most common gastrointestinal operations performed in the United States.^{1,2} With growing national emphasis on surgical quality

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improvement, the American Society of Metabolic and Bariatric Surgery and American College of Surgeons partnered to create the Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program (MBSAQIP) in 2012.³ Participating centers will be expected to monitor their outcomes to evaluate internal opportunities for improvement and to compare their risk-adjusted outcomes with other centers.⁴ It will be important for both targeted quality improvement and stakeholder buy-in to use reliable risk-adjusted outcomes metrics for accurate benchmarking and peer comparisons in the quality-improvement program. However, bariatric outcomes might not have sufficient reliability to differentiate hospital performance and promote quality-improvement efforts. Due to low event rates and small caseloads, many surgical outcomes cannot reliably differentiate hospital performance for a variety of procedures.⁵⁻⁷

Given national trends toward improved safety in bariatric surgery, the ability for bariatric outcomes in particular to identify outlying hospital performance is unclear.⁸⁻¹¹ Outlier detection is an important criterion of outcomes usefulness in quality-improvement platforms because information from centers with statistically better performance (low outliers) can be used to develop best practices, and centers with statistically worse performance (high outliers) can be used to identify quality-improvement targets (Fig. 1). The MBSAQIP will include hospitals with caseloads ranging from very small (>50 annual stapling cases) to very large.⁴ Among hospitals with small caseloads, many outcomes might prove to be unreliable indicators of outlier performance status. It is, therefore, of paramount importance to identify reliable outcomes to guide quality-improvement efforts.

In this study, we explored the ability of 4 commonly reported risk-adjusted outcomes to identify outlier performance for bariatric surgery. We assessed outcomes reliability at different levels of hospital caseloads, and then assessed the ability of risk- and reliability-adjusted outcomes to identify outlying hospital performance at different caseloads and reporting thresholds.

METHODS

Data source and study population

We assessed the 2009–2010 State Inpatient Databases for 12 states (Arizona, California, Florida, Iowa, Massachusetts, Maryland, North Carolina, Nebraska, New

Jersey, New York, Washington, and Wisconsin), which contain all inpatient discharges from short-term, nonfederal, acute care, general, and specialty hospitals in participating states.¹² Data include patient demographics and primary insurer information, as well as diagnoses and procedures identified by ICD-9-CM codes. For the current study, we identified patients undergoing laparoscopic or open bariatric surgical procedures using a previously validated coding algorithm.⁸ In brief, we identified patients with an ICD-9-CM procedure code corresponding to bariatric surgery, a primary or secondary diagnosis code indicating morbid obesity, and a diagnosis-related group code for weight-loss surgery. We excluded patients undergoing laparoscopic adjustable gastric banding procedures, patients younger than 18 years of age, and emergent procedures. In addition, we excluded patients who underwent surgery in hospitals that submitted <50 stapling procedures in 2009. This would allow our cohort to simulate hospitals with “Comprehensive Center” accreditation and avoid examining hospitals that might achieve other levels of accreditation under the new standards.⁴

Outcomes

Our main outcomes variables were overall complications, serious complications, reoperation for any reason, and inpatient mortality. We identified complications and reoperations most applicable to bariatric surgery from secondary ICD-9-CM diagnosis and procedure codes.¹³

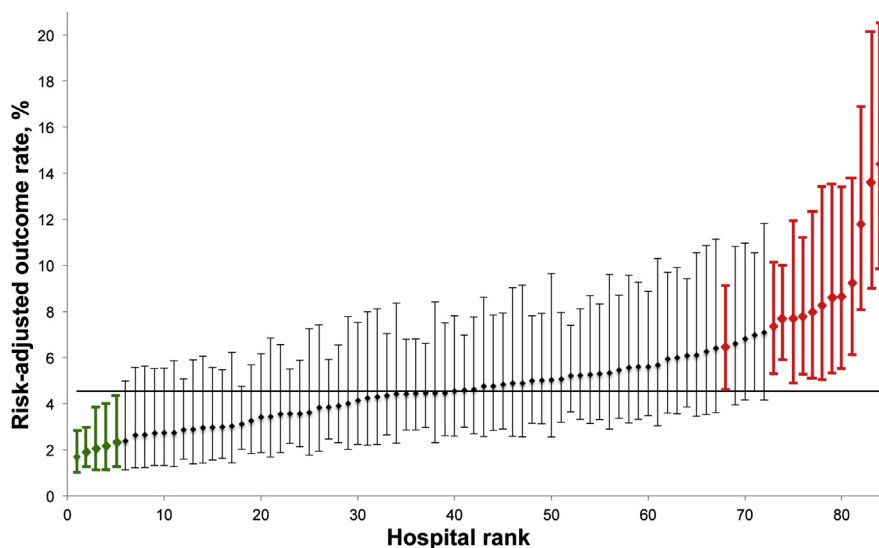


Figure 1. Example performance report (any complication, hospitals with at least 125 cases/year, laparoscopic gastric bypass procedures). Diamonds: hospital risk-adjusted outcomes rates with 95% CIs. Green: low outliers, have 95% CIs less than the average outcomes rate. Red: high outliers, have 95% CIs greater than the average outcomes rate. Solid horizontal line, overall mean outcomes rate.

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