Results | The age and sex distribution of the LAGB population analyzed is provided in the Figure. During the 3 years after LAGB, the rate of revisional surgery was 18.9 events per 100 patients, comprising 11.4 intra-abdominal and 7.5 subcutaneous surgical procedures. The majority of revisional procedures were repeated or revisional LAGB procedures (8.3 events per 100 patients) and repairs or revisions of the LAGB reservoir (7.5 events per 100 patients). Conversions to another bariatric procedure (1.3 events per 100 patients) and LAGB reversals (1.9 events per 100 patients) were uncommon (Table).

Discussion | The present study found that almost 1 in 5 patients undergoing LAGB require some revisional surgery within 3 years. These results from our national cohort study are similar, albeit slightly higher, than the results from previous single-center (15.3% of patients) and multicenter cohort studies (17.5% of patients).²

There are 2 key strengths of our study. First, the data analyzed are observed health care utilization data maintained by the Australian government; therefore, the level of reliability is high, and the data set is complete (no loss to follow-up). Second, the entire population of Australians who received Medicare-subsidized LAGB was analyzed, thus providing results reflective of LAGB as delivered in a “real-world” setting.

Bariatric surgery is associated with dramatic weight loss and improvements in many clinical end points.² The benefits of surgery must be compared with the risk of adverse events, the need for reoperations, and the associated costs for each patient.

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Avoiding Immortal Time Bias in the American College of Surgeons National Surgical Quality Improvement Program Readmission Measure

Readmission has become a key quality metric because it is a frequent and costly adverse event for patients.¹ Medicare penalizes hospitals if they have excess numbers of readmissions for certain diagnoses, including some within surgery. The American College of Surgeons National Surgical Quality Improvement Program (NSQIP) began tracking readmission rates in 2011.²

While conducting research on readmission after surgery, we noted a problem with the NSQIP’s definition of readmission.³ The NSQIP only counts readmissions during the 30 days following surgery, consistent with the interval they use for all postoperative outcomes. However, the standard period for readmission used by Medicare and others is 30 days after hospital discharge. This discrepancy creates an immortal time bias—patients cannot be readmitted before hospital discharge and are therefore “immortal” for this outcome until they leave the hospital.⁴ Including immortal time when calculat-
The National Surgical Quality Improvement Program (NSQIP) method (30-day postoperative readmission) undercounts true 30-day postdischarge readmission. This effect worsens with longer lengths of stay and is statistically significant at 25 days or longer \((P = .012\), determined by use of the Fisher exact test).

The NSQIP began reporting the day of readmission in 2012. This information can be used to overcome the immortal time bias. Truncating our data at 30 days after surgery as if it were from the NSQIP, we estimated the 30-day postdischarge readmission rate using Kaplan-Meier methods. This resulted in an estimated readmission rate of 17.2% (95% CI, 14.5%-20.3%), which included the true value of 18.9%.

**Conclusions** | The NSQIP systematically undercounts 30-day postdischarge readmissions, and this bias worsens with longer lengths of stay. The Medicare Hospital Readmissions Reduction Program enforces larger and more widespread financial penalties than any other quality measure of any type, and it is expanding into surgery. The NSQIP and other programs like it, which are designed to help hospitals improve quality, should “teach to the test” and adopt the 30-day postdischarge readmission definition. Until this occurs, research on readmission using NSQIP data should use Kaplan-Meier methods to avoid underestimating readmission rates.

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**Acquisition, analysis, or interpretation of data:** Lucas, Hechenbleikner, Wick, Pawlik.

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COMMENT & RESPONSE

Areas of Overlap

To the Editor We write to alert readers that there are areas of overlap between 2 articles that we published, one in the Archives of Surgery1 and the other in the Journal of Pediatric Surgery.2 Both of these studies used the US National Trauma Data Bank and similar methods of analysis. However, our study in the Archives of Surgery focused on adult patients, whereas our study in the Journal of Pediatric Surgery focused on pediatric patients, and therefore different nonoverlapping subsets of the data bank were used for each study. Given the different analyses and target audiences, we decided to submit them to separate journals. In our Archives of Surgery article,1 we should have included a reference to the previously published article in the Journal of Pediatric Surgery,2 which was accepted and published first. In addition, we should have recognized that the descriptions in the Results and Comment sections of both articles needed to be clearly nonduplicative. We apologize for these important errors.

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