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EDITORIAL

Improving the quality of surgical care: The American College of Surgeons National Surgical Quality Improvement Program



Mejorar la calidad de la atención quirúrgica: Programa Nacional de Mejora de la Calidad Quirúrgica del Colegio Americano de Cirujanos

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Surgical quality and patient safety came to the forefront of the American healthcare system in the early 1980s. At that time, the quality of surgical care within the United States Veterans Affairs (VA) hospital system came under scrutiny. Anecdotal evidence seemed to indicate that the operative mortality within the VA system was higher than the national average, and subsequent legislation mandated that VA hospitals compare risk-adjusted surgical outcomes to the national average.

This mandate occurred at a time when quality data and risk-adjustment were not routinely or rigorously collected in the United States, and kick started a decades-long focus on surgical quality. The VA system led the charge in studying surgical quality, beginning with the National VA Surgical Risk Study (NVSRS) in 1991 and subsequently with the VA National Surgical Quality Improvement Program (VA NSQIP) throughout the 1990s.¹ In 1999, three non-federal hospi-

tals joined the VA NSQIP program, providing evidence that rigorous data collection and risk-adjustment methods might have broader applicability in surgical quality research.

Based on these early pilots, the American College of Surgeons (ACS) conducted the Patient Safety in Surgery Study, which successfully demonstrated that VA NSQIP methodology could identify process shortcomings in the private sector, reducing morbidity and mortality.² With these results, ACS NSQIP was created in 2004 and began enrolling new private sector hospitals. Programmatic growth over the intervening 13 years has been substantial, from 143 hospitals in 2008 to more than 800 adult and pediatric centers in 2017. The database includes more than 5.5 million cases to date, with approximately 990,000 new cases added in 2016.

The administrative and logistic support required to participate in ACS NSQIP are commensurate with a highly accurate and consistent clinical data registry. Each participating hospital is required to have at least two dedicated staff members: a Surgeon Champion and a Surgical Clinical Reviewer (SCR). The Surgeon Champion is a surgeon at the hospital who works to raise awareness about the

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importance of data collection and analysis, answer clinical questions, reviews results with fellow surgeons and hospital administrators, and supports quality improvement efforts. The SCR collects all clinical data variables through meticulous chart review for major and minor procedures, both in the inpatient and outpatient setting. The data collected and fed back include preoperative risk factors, intraoperative variables, compliance rates for clinical protocols, and 30-day postoperative morbidity and mortality outcomes. The SCR also helps to coordinate hospital quality improvement programs.

Rewards for participation primarily come in the form of detailed data reports that are actionable at the hospital level. Twice a year, a Semiannual Report (SAR) is generated along with individual site summaries. These data allow administrators and surgical service staff to compare their risk-adjusted surgical outcomes to other participating sites. Using hierarchical modeling, risk-adjusted 30-day morbidity and mortality outcomes are reported as odds ratios, allowing for comparison between the specific site and the "average" ACS NSQIP hospital.³ To further facilitate interpretation, hospitals that perform significantly above expectations for a given parameter are noted to be "exemplary," while those that are significantly below the national benchmark may be marked as "needs improvement."

It is the dissemination of this hospital-level data that is the primary impetus for improvement in the quality of surgical care. The NSQIP database may be used as an implementation aid and a quality improvement tool, but in its most fundamental form NSQIP is simply an accurate way to identify risk-adjusted strengths and weaknesses and act accordingly. Data are incorporated at multiple levels, from individual surgical departments to large regional hospital collaboratives.⁴ Improvement has been demonstrated in many domains, including pneumonia, venous thromboembolism (VTE) prophylaxis, and surgical site infection (SSI).⁵ Programs focusing on surgical quality improvement using ACS NSQIP data have also been shown to be cost-effective, as reduction in postoperative complication rates often more than compensates for the initial cost of the quality improvement program.⁶ Beyond providing the raw data required for these impressive quality improvement projects, the data from ACS NSQIP are also used for the ACS Surgical Risk Calculator. This calculator functions as a decision-support tool, helping clinicians and patients to make decisions based on patient-specific preoperative risk factors.⁷

These local and regional quality improvement programs have had significant cumulative effects at the national level. Evaluation of the ACS NSQIP participating hospitals from 2005 to 2007 demonstrated that 82% had reductions in risk-adjusted complication rates and 66% had significant reductions in surgical mortality.⁸ While hospitals that were worse performing at the outset of the study showed the most dramatic improvement, well-performing hospitals also improved over the course of the study period. These findings were corroborated when the study population was expanded through the year 2013, further demonstrating reductions in surgical site infections, morbidity, and mortality.⁹ These improvements were found to be even more dramatic in hospitals with longer-term participation in ACS NSQIP.

It is important to note that participation in ACS NSQIP does not guarantee hospital quality improvement. There are notable limitations of the ACS NSQIP database. While NSQIP provides hospital level risk-adjusted data, all quality improvement that has arisen from NSQIP are a direct result of local action in response to the NSQIP data being fed back. Without local action on the NSQIP data, improved patient care does not occur.

In conclusion, the ACS NSQIP is the culmination of a decades-long exploration in quality measurement in the United States. The program has expanded internationally, and there are currently 12 countries outside of the United States participating. Meticulous data abstraction and risk-adjustment can be an effective tool for evaluating hospital quality and patient safety, and reporting these data leads to life saving and cost effective clinical quality improvement programs. The subsequent improvements are significant, sustainable, and have positively impacted hundreds of thousands of patients since the program's inception.

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