Surgical quality improvement driven by data surveillance, standardized processes and systems

April 30 2021

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Evidence from the medical literature that contributes to adopting a new practice into clinical care is integral for surgical quality improvement.

Part II of a comprehensive review of five key principles of the American College of Surgeons (ACS) Quality Verification Program demonstrates the role of data surveillance and standardized processes and systems to identify problems and improve the quality and safety of surgical patient care. The peer-reviewed article is published on the Journal of the *American College of Surgeons* (JACS) website in advance of print.

"Data is critical to quality improvement because it's impossible to know your problems without objective measures of what they may be. However, the existence of data alone is not enough to further quality improvement. That's where processes come into play; processes of focused review help to find problems and provide appropriate avenues to address them," said Chelsea Fischer, MD, MS, ACS Clinical Scholar in Residence and co-first-author of the literature review.

"Systems, in turn, are needed to accompany data review in order to make it useful to clinicians and anyone involved in surgical quality improvement. A system may be a process of how often data is reviewed—and in what format—along with the outputs of that review, meaning who looks at it and how it's dealt with," she explained.

The ACS Quality Verification Program helps surgeons and hospitals identify the resources needed for robust surgical quality improvement. The program is based on a set of principles or standards at the foundation of surgical quality. These principles were gleaned from the knowledge and experience of surgical experts as well as the ACS experience with 3,000 hospitals that participate in ACS Quality Programs. The principles were published in the *Optimal Resources for Surgical Quality and Safety*, also known as the "ACS Red Book."

The basis of the Quality Verification Program rests on 12 standards: leadership commitment and engagement, surgical quality officer, surgical quality and safety committee, safety culture, data collection and

surveillance, continuous quality improvement using data, case review, surgeon review, surgical credentialing and privileging, standardized and team-based processes of care, disease-based management, and compliance with regulatory performance metrics.

"The Red Book, which serves as the framework for the ACS Quality Verification Program, provides a detailed overview of the essential elements that any hospital or surgical practice should have in place to deliver safe, reliable, quality care. Through its 12 standards, it provides the resources and support that surgeons and their institutions need as they traverse the road to surgical quality improvement," said article coauthor, David B. Hoyt, MD, FACS, ACS Executive Director.

This new literature review in *JACS* is the second of three investigations to examine the evidence that supports these standards. The study group gathered and analyzed evidence associated with five principles that address processes for identification and resolution of quality improvement issues: case review, peer review, credentialing and privileging, data for surveillance, and continuous quality improvement using data.

"This article furthers our understanding of the evidence that forms the foundation for the ACS Quality Verification Program. Using 12 standards, the program can be implemented by any hospital regardless of location or size. Real and demonstrable achievements have been demonstrated by participating hospitals including increasing value and reliability and improving the resource and infrastructure that leads to even better care and results for their surgical patients. Interestingly, benefits have been appreciated by the operating surgeons, the surgical team members, and surgeon and hospital leadership," said article coauthor, Clifford Y. Ko, MD, MSHS, FACS, FASCRS, Director of the ACS Division of Research and Optimal Patient Care.

For this analysis, the U.S. National Library of Medicine's Medline database was searched for articles published between its inception in 1964 and January 2019. Articles evaluated the relationship between one of the Red Book principles and patient or organizational quality outcomes. Two reviewers synthesized and summarized information in a hierarchical fashion from these studies.

After identifying 9,098 studies involving the five principles, a total of 184 were selected for systematic review for this portion of the research. Several primary studies also were included for assessment. The authors primarily looked at observational, retrospective studies; not all were directly related to surgery, some came from other procedural specialties. A summary of the evidence follows.

Case review: A review of individual surgeon cases

Evidence from these investigations showed that outcomes can be improved through the implementation of case reviews in two areas: quantitative outcomes and in identifying systems issues for quality improvement. Authors note that "characteristics of effective [case] review include standardized data-driven case identification, multidisciplinary input, and follow-up status of issues."

A total of 79 unique studies were included in this review; 14 included a prospective analysis from one single institution, 12 were retrospective single-institution studies, and one was a mixed-methods analysis.

Peer review: A review of surgeon and performance

The evidence reviewed supports peer review as a means to improve patient outcomes and contribute to quality improvement projects. Potential challenges identified included process variability, reviewer agreement of performance, and a long implementation time for the

process. Authors note that, "Despite challenges, a well-implemented program is found to be useful by providers."

Ten studies were reviewed for this category encompassing a collective of 24 studies. All looked at peer review from a quality improvement perspective.

Credentialing and privileging: The process of ensuring proper credentialing, privileging, and onboarding

The evidence supports standardized credential and privileging processes for surgeons to potentially improve patient outcomes, but the authors note that "current processes have considerable variation and opportunities for improvement."

This analysis included 73 articles: a collective of 70 unique studies, two multi-institutional surveys, a single-institution retrospective review, and one multi-institutional retrospective review.

Data for surveillance and quality improvement: Effective use of data to surveil for potential quality and safety issues

In all articles analyzed, the evidence supports the use of registries to identify clinical problems. Furthermore, one-half of the articles supported using registries for implementation and surveillance of quality improvement initiatives.

This analysis used 20 articles: one systematic review, 10 multi-institutional retrospective reviews, four single-institutional retrospective

reviews, and four descriptive case studies.

Continuous quality improvement using data: Driving continuous quality improvement

The authors also focused on three of the data surveillance studies (*noted above*) to look at how surveillance contributes to continuous quality improvement over time, which they write "can be just as important to quality and safety as the initial identification of problems." Registries were cited as the tool of implementation for this practice when used to provide a clinical practice audit paired with feedback to clinicians.

In terms of the role of administrative claims data, the authors noted that "combining administrative claims data with prospectively collected clinical data through EHR linkages can allow providers real-time data for continuous monitoring of quality issues." However, while data is an important tool, they note that it's "likely insufficient" by itself, and "development of quality improvement initiatives is essential to drive patient care improvement."

"While there's some face validity to these quality improvement concepts, our analysis of the medical literature does supply the evidence supporting the framework for these concepts as well. This is particularly true around the standards of data and use of data. We found robust literature supporting these data concepts for the program standards, and certainly evidence in the areas of case review, peer review, and credentialing and privileging too," Dr. Fischer concluded.

More information: Chelsea P. Fischer et al, Evidence Review for the American College of Surgeons Quality Verification Part II: Processes

for Reliable Quality Improvement, *Journal of the American College of Surgeons* (2021). [DOI: 10.1016/j.jamcollsurg.2021.03.028](https://doi.org/10.1016/j.jamcollsurg.2021.03.028)

Provided by American College of Surgeons