Developing the American College of Surgeons Quality Improvement Framework to Evaluate Local Surgical Improvement Efforts

The American College of Surgeons (ACS) Quality Programs collect more than 3500 improvement efforts annually. These efforts are usually local (ie, occurring within a hospital) or small scale (ie, low resourced, low funded, or unfunded) and routinely conducted by frontline clinicians and clinical teams. We tried to identify an appropriate and adequate framework to evaluate these improvement efforts; however, no single framework for small-scale, clinician-led improvement efforts exists. Current available frameworks focus on investigative or research-based efforts, efforts led by improvement specialists, or large-scale (ie, resourced, funded) improvements. Herein we describe the development of the ACS Quality Improvement Framework, whose function is to evaluate small-scale surgical improvement efforts.

Methods | In this quality improvement study, framework development was conducted by the 12-member ACS Quality Programs Advisory Improvement Committee, which consists of surgeon or ACS staff representatives from 7 ACS Quality Accreditation Programs (focusing on trauma, cancer, breast disease, rectal cancer, children’s surgery, bariatric surgery, and geriatric surgery). Each committee member has extensive experience in leading and supporting surgical improvement efforts. A review of published frameworks in 3 areas (improvement science, program evaluation, and implementation science) was initially conducted to identify framework components and associated criteria thought to be applicable to small-scale surgical improvement efforts. With identified framework components, a nominal group technique was conducted with 3 rounds of iterative prototype development and pilot testing on a sample of improvement efforts. Each round prioritized development on 3 constructs: content validity, face validity, and feasibility. Prototype frameworks for each round were evaluated for feasibility using a split sample of ACS Quality Program improvement efforts. The final framework also underwent pilot testing for reliability by individual committee member evaluation.

Results | The literature review identified 88 published frameworks and 51 components. The number of components was reduced to 25 based on content and face validity for small-scale settings. The first 2 rounds of nominal group evaluations identified 12 and 10 components, respectively, and were each informed by pilot testing of 15 different randomly selected improvement projects. Pilot tests assessed validity and feasibility for component (and criteria) selection; the final framework consisted of 8 components with 39 criteria in total (Table, Box). The final framework test for reliability resulted in 80% agreement between raters (Cohen κ, 0.60), signifying moderate agreement.

Discussion | We developed a quality improvement framework to evaluate surgical improvement efforts reported to the ACS. It was specifically developed for and tested on small-scale surgical improvement efforts collected by sites participating in ACS Quality Programs. The planned function for the framework is to evaluate improvement efforts submitted to the ACS—with 2 goals: (1) ascertain how well the efforts were conducted; and (2) identify gaps in execution, aiming to advance improvement efforts.

The framework is unique for 2 reasons. First, to our knowledge, it is the first that specifically focuses on small-scale efforts—meaning it purposely addresses the type of improvement efforts largely seen in surgery in which local efforts that

| Table. Components for Prototype Frameworks 1 and 2 and Final Framework |
| Component | Prototype 1 | Prototype 2 | Final framework |
| Problem detailing | X | X | X |
| Goal specification | X | X | X |
| Strategic planning | X | X | X |
| Evaluation | | | |
| Process | X | X | X |
| Outcome | X | X | X |
| Cost | X | X | X |
| Knowledge acquisition | X | X | X |
| End-of-project decision-making | X | X | X |
| Data factors | X | X | |
| Stakeholder involvement | X | X | |
| Improvement team factors | X | | |
| Contextual factors | X | | |

X indicates the components included in each prototype.
are clinically important are also often low resourced, unfunded, occurring in single settings like a ward or unit, and conducted by busy frontline surgeons. Second, this framework eliminates issues more relevant to large-scale or investigative research efforts yet maintains core items, such as problem identification, identifying project aims, and use of data—all important to frontline efforts.
The framework also can be used to pragmatically guide conduct of a small-scale improvement effort—the planning, conducting, middle- and end-of-project evaluation, and reporting. Efforts are in progress to incorporate this framework into ACS Quality Programs to help frontline clinicians better execute improvement efforts, and we believe this framework will support these efforts.

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