

Quality, Patient Safety, and the Cardiac Surgical Team

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KEYWORDS

- Quality • Patient safety • Cardiac surgery • Continuous quality improvement
- Registries • System redesign • Collaboratives • Interventions

KEY POINTS

- The patient safety literature has evolved from a quality-assurance focus to quality improvement using multidisciplinary teams that review the continuum of care: structure, process, and outcomes.
- Recent publications regarding patient safety in cardiac surgery consider teamwork and collaboration to be integral to improving patient safety.
- Cardiac surgery has a rich history in patient safety, including the use of benchmarking, public reporting, collaboratives, and systems redesign.
- Effective interventions use tools to ensure collaboration, such as briefings, checklists, and handoff protocols.

BACKGROUND

The need for quality improvement (QI), coupled with increased safety and efficiency, continues to be at the forefront of health care discussions. To accomplish these goals, clinical leaders need to be proficient in the principles of QI, identification and mitigation of hazards, and redesign of care process. The practice of quality evaluation has evolved from primarily an external review of practice (such as accreditation, board certification, and licensing) to an internalized process of ensuring QI, and an increasing focus on outcomes. This evolution denotes the growing (and arguably obvious) recognition that quality cannot be improved by focusing on structure, process, or outcomes independently; rather, the entire continuum of care must be considered. Recent efforts to infuse industrial process innovations into health care, coupled with a national

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agenda to improve the quality of care and reduce costs, have solidified a commitment to continuous QI (CQI). The trend towards more intensive self-evaluation is supported by partnerships with physicians to conduct QI, which is now a required element by licensing and accreditation bodies.

Cardiac surgery remains an area of focus for quality and safety efforts, because of its prevalence, high cost, and high-risk nature. There is a long history of quality work in cardiac surgery, but there is residual room for improvement. Early research seemed to indicate that volume was inversely correlated with outcomes: surgeons and centers that performed more operations tended to have lower mortality. Volume was initially accepted as a surrogate for quality and was adopted as a quality measure by the Leapfrog group.¹ However, it has since been shown that volume, when appropriately risk adjusted, is not the most important driver, or even a proxy for, quality in cardiac surgery. Thus, although practice (high volume) is important, other factors are amenable to improvements that influence patient safety, such as better teamwork and collaboration combined with a systems approach to proactively identify hazards and near-misses to correct or mitigate them.

This review introduces the reader to the principles of research in QI and the science of safety, followed by a targeted review of several decades of discussion surrounding quality and safety issues in medicine, and then presents a focused review of efforts to improve quality and safety in cardiac surgery, specifically. The review concludes with recommendations for future research regarding effective interventions to improve quality and safety of cardiac surgery.

INTRODUCTION TO QUALITY AND SAFETY

Perceptions of Quality and Safety

Patients and clinicians tend to agree that patient safety and health care quality are not yet where they need to be. In 1999, the Institute of Medicine's (IOM's) report *To Err is Human*² reinvigorated the focus on the state of patient safety in US medicine. Although this oft-cited report got the nation's attention, the problem was not new. The practice of assessing quality began more than 4 decades ago with the publication in 1966 of Avedis Donabedian's³ article on the evaluation of quality in health care. One of the concepts introduced in this seminal work is the notion of assessing quality from 3 vantage points: (1) structure (staffing patterns, personnel training, organization, tools, and technology), (2) process (the degree to which care practices are evidence-based, timely, safe, and followed), and (3) outcomes (such as mortality, functional improvement, and patient satisfaction).⁴ Donabedian's framework reflects the interrelatedness of these concepts (**Fig. 1**). Furthermore, in 1991, Brennan and Leape⁵ noted that approximately 3% of hospitalized patients suffered a medical error, resulting in 44,000 to 98,000 deaths per year and billions in excess costs.

Several years later, a 1997 survey by the National Patient Safety Foundation found that 1 in 3 US adults have reported that they have been personally involved with a medical mistake with a permanent negative effect on health, and only half reported being very satisfied with their latest experience with a health care professional.^{6,7} In the intervening years, opinion has not improved measurably, even among clinicians. In a nationwide survey in 2001 of health professionals,⁸ 58% reported that health care in the United States was not very good, with as many as 95% of physicians reporting that they had witnessed a serious medical error. Four of 5 professionals stated that they believed that fundamental changes were needed in the American health care system. The problem continues to be grave. In a recent survey of 1034 Americans, 66% gave "the quality of health care in the country as a whole" a grade of C or lower.⁹

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