Editor’s Perspective

Adverse Clinical Event Peer Review Must Evolve to Be Relevant to Quality Improvement

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Self-regulation is a defining hallmark and privilege of the medical profession. A fundamental component of self-regulation is peer review of adverse clinical events to support high-quality care. Peer review has been part of medical practice for centuries, with reports of its use in ancient Greece and 11th century Arabic medicine.1 In the United States, peer review initially occurred as morbidity and mortality conferences.2 By the mid-20th century, hospitals began forming peer review committees, not only for quality assurance but also to provide protection against malpractice litigation and to satisfy external regulation by licensure boards.3,4

Unfortunately, both the culture and process of contemporary peer review can undermine its effectiveness in improving quality of care. Contemporary peer review often focuses on individual blame, causing many clinicians to view peer review as a personal affront. This can inhibit frank and open discussions about the root causes underlying the adverse event and potential strategies for improvement. This inhibition, in turn, may lead to systematic under-reporting of events. It may also contribute to reviewer bias, with many reviewers assuming that the mere presence of a review indicates individual wrongdoing or culpability.5 This culture of individual blame is also at odds with the evidence that most adverse clinical events arise from system failures. The 1999 Institute of Medicine To Err is Human report emphasized that most adverse clinical events resulting in patient harm are not because of providers’ lack of competence, intentions, or hard work.6 Rather, the system of care delivery is generally the root cause of most adverse events.

The peer review process also has significant limitations that impede its ability to provide effective adjudication of events. Because most peer review is conducted at the local hospital level, it can be difficult to find reviewers with sufficient subject matter expertise and objectivity (ie, reviewers who do not work with the affected provider) to review cases. In addition, peer reviewers may lack sufficient training to review and identify the system deficiencies that often underlie complications.7 Finally, hospitals rarely share the lessons learned from peer review with unaffected providers or other hospitals, and infrequently conduct adverse event trend analysis to assess provider and site rates of adverse events over time. Taken together, it is not clear that the culture and process of contemporary peer review meaningfully supports quality of care, and in some cases may hinder it.

Fortunately, both the aviation and nuclear power generation—industries with similar complexities and safety consequences as medicine—can provide examples for improvement in peer review of adverse events. The aviation peer review program has contributed substantially to aviation safety, and its success has been attributed to 3 factors: reporting is safe (pilots are immune from disciplinary action if they report events promptly), simple (reports are 1 page in length), and worthwhile (experts analyze the confidential reports and disseminate recommendations to the pilot community and the Federal Aviation Administration).7 Similarly, the nuclear industry review process has also contributed substantially to industry safety.4 When a safety incident occurs, an independent expert team provides an onsite review anywhere in the world within 2 weeks. The team identifies root causes and latent environmental conditions that contributed to the incident. On review completion, results are shared in a nonpunitive fashion with nuclear operators worldwide to improve practices throughout the industry.4

Medical peer review should absorb these lessons from the aviation and nuclear power industries. It must create a nonpunitive culture of honest inquiry, provide timely review of all events by unbiased experts, disseminate findings to improve systems of care, and track events and outcomes longitudinally. Peer review that uses these elements will encourage clinicians to engage in the process as performance improvement champions and to enhance its role as an integral part of system quality improvement actively.

The Veterans Affairs (VA) healthcare system provides an example of a peer review program attempting to achieve these goals. In 2011, the VA implemented a national peer review program for its 79 cardiac catheterization laboratories to evaluate all major adverse events (MAEs)—defined as any death, stroke, or need for emergent coronary artery bypass graft surgery that occurs during a diagnostic angiogram or percutaneous coronary intervention. The program was specifically designed to incorporate the best practices for peer review identified above. Specifically, the process occurs in an environment protected from legal discovery for personnel employment or disciplinary actions, thus facilitating an open, nonpunitive culture. A national committee of interventional cardiologists reviews each event and specifically assesses for
systemic contributors to the event. Finally, lessons learned from peer review are shared with the broader cardiac catheterization laboratory community, and MAE rates are tracked and reported over time. Importantly, the use of health information technology is integral to every step of the process. Peer review is administered by the Clinical Assessment Reporting and Tracking (CART) program, a clinical quality program that uses specialized catheterization laboratory software embedded in the VA electronic health record to collect catheterization laboratory data, including adverse events. The CART program uses these data and health information technology tools to provide real-time adverse event notification, to facilitate the review by the expert committee, and to disseminate lessons learned from the reviews to the broader VA catheterization laboratory community.

The initial results of this peer review design are promising. Since the program inception in 2011, the CART MAE peer review program has reviewed the 110 (0.06%) adverse events that occurred among 178,326 diagnostic angiograms and percutaneous coronary interventions performed by the VA. Of these, 66 (60.0%) were deaths, 37 (33.6%) were strokes, and 7 (6.4%) were emergent coronary artery bypass grafts. For all events, <24 hours elapsed between event occurrence and notification of CART leadership and the national peer review committee. Ninety (81.8%) of the MAEs were designated level I, indicating that no apparent quality issues contributed to the event. Among the other 20 events, potential quality issues and corresponding solutions were identified. Examples of these included changes to STEMI protocols to improve door-to-balloon times, establishment of policies in using both mechanical left ventricular support and distal embolic protection devices in selected percutaneous coronary intervention procedures, review of catheter flushing and exchange techniques to minimize thrombus formation, and more effective use of heart teams to inform optimal revascularization approaches. Each of these lessons learned was systematically distributed to catheterization laboratory staff at all 79 VA catheterization laboratories so that the entire community could learn from the peer review insights. Finally, both monthly and annual MAE rates and outcomes were reported to catheterization laboratory directors, medical center leadership, the CART quality program, and the national VA cardiology leadership. As the program continues to develop, it will expand to detect and review additional types of MAEs (eg, vascular complications) among a broader range of catheterization laboratory procedures (eg, electrophysiology and peripheral vascular procedures).

Now it is an opportune time to align the peer review culture and process in US health care with the principles of effective quality improvement. The VA national catheterization laboratory peer review program provides an example of peer review based on a nonpunitive culture of inquiry, review processes based on best practices of root cause analysis and quality improvement, and effective use of electronic health records and health information technology. Basing peer review on these principles may better support quality improvement and potentially drive down the overall rate of adverse events in the US healthcare system. There is also a need for research to design and evaluate new approaches to peer review, measuring the effect of such approaches on patient outcomes. In this way, peer review can evolve from its current state and achieve its original, intended role of ensuring high-quality care.

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References
