Invited commentary: Is it a mistake to focus on errors?

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Since publication of the Institute of Medicine report To Err is Human,1 medical error has been a hot topic in medicine, and because a large proportion of errors occurs in the context of surgical care, it probably should be a hot topic for surgeons. The precise number of deaths attributable to medical errors is debated, but all agree that the issue is serious. Unfortunately, efforts to reduce the frequency of errors have been hindered by a lack of information about the epidemiology of surgical errors.

The study by Gawande et al in this issue of Surgery helps to fill this knowledge gap.2 The authors interviewed 45 randomly selected surgeons at three Massachusetts teaching hospitals. The surgeons were involved in the care of approximately 146 patients, each of whom was judged to have experienced an adverse event that resulted from a management error. Almost half these incidents resulted in death or disability. The large majority (77%) were related to operations and other invasive interventions, and most occurred in the operating room. Of a broad number of factors potentially related to these adverse events, the authors identified three variables as being particularly important: inexperience/lack of competence, communication breakdowns between personnel, and fatigue/excessive workload.

The retrospective nature of the study and the authors’ reliance on surgeon recall may have skewed their analysis toward certain types of adverse events. For example, surgeons are more likely to remember operative mishaps (cutting the ureter) than less dramatic but equally important mistakes (neglecting to put a patient on thromboembolism prophylaxis). Despite this limitation, however, the main findings have face validity—few would be surprised that most surgical mishaps are related to the procedure itself. And few would be surprised that inexperience, poor communication, and fatigue contribute to bad outcomes. In confirming the importance of these variables, the authors provide additional motivation for surgical leaders trying to improve the delivery of surgical care particularly in teaching hospitals.

But more broadly, will focusing on errors really improve the overall quality of surgical care? The effectiveness of this approach depends on two assumptions: (1) that we can reliably determine when bad outcomes are truly preventable, and (2) that current approaches to analyzing errors are effective in averting subsequent errors. Both of these assumptions are debatable.

It is often difficult to determine when errors are to blame for bad outcomes. Complications, such as bleeding, anastomotic leak, and death, occur at a predictable rate after surgery. Unfortunately, it is often difficult to judge which complications reflect true adverse events (injuries related to management), and which reflect the patient’s underlying disease or simple bad luck. Most complications likely reflect some combination of all three factors. Even when there is agreement that an adverse event has occurred, it is hard to know which can be considered errors and thus “preventable.” For example, in the Harvard Medical Practice Study,3 there was little agreement among reviewers on which adverse events were attributable to “negligence” (κ = 0.2). Of course, some adverse events are clearly errors. For example, the National Quality Forum identifies five “serious reportable events” for surgery: surgery on the wrong body part, surgery on the wrong patient, performance of the wrong procedure, retention of foreign object (eg, a sponge) in a patient after surgery, and death after surgery in an ASA class I patient.1 Unfortunately,
these events are so rare that eliminating them altogether would have only a negligible effect on the overall quality of surgical care.

Even if we could identify errors reliably, is analyzing them likely to be effective? One common approach is root cause analysis, in which a patient’s care is painstakingly dissected into its component parts, ultimately a very large number of interrelated processes and systems. Inferences are then made about the relative contribution of various processes to the patient’s adverse event, which are then changed (or “reengineered”). Unfortunately, there is little research to confirm that root cause analysis actually works, in healthcare or elsewhere. Because this type of analysis is often applied to relatively rare events, it is difficult to infer effectiveness simply because no further events occurred after changes were made. Root cause analysis assumes that clinicians can make reliable judgments about cause and effect in individual cases, in the absence of information from “controls” (similar patients not experiencing the adverse event). Such inferences run counter to the basic principles of clinical epidemiology.

These cautions are not intended to dismiss the importance of gaining a better understanding of surgical errors. The field needs more quantitative research as careful as the study by Gawande et al.\textsuperscript{2} At the same time, however, it is important that we don’t get so distracted focusing on relatively rare events that we overlook more mundane but more important opportunities for improvement. For every patient who has the wrong leg amputated, thousands experience pneumonias, pulmonary embolism, and myocardial infarctions after surgery. For this reason, our first priority should be identifying and implementing practices aimed at reducing the incidence of the most common causes of surgical morbidity and mortality, not stamping out errors.

REFERENCES