Building a Culture of Safety in Ophthalmology

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Patient safety focused on a reduction in both procedural and diagnostic error is the number one concern of the United States healthcare system in the 21st century. The American Board of Ophthalmology has a longstanding interest in patient safety, and in 2015, teamed with the American Academy of Ophthalmology to convene all ophthalmology subspecialties and other prominent national organizations to address patient safety in ophthalmology. This article reviews the topic and highlights concerns for ophthalmologists. *Ophthalmology 2016;123:S40-S45 © 2016 by the American Academy of Ophthalmology.*

Patient Safety: The Larger View

"First do no harm" is an ethic in medicine as old as the profession itself. The Hippocratic oath, written between the 5th and 3rd centuries BCE, admonishes its adherents to ensure that their patients "suffer no hurt or damage."[1] Although the concern for the patient's welfare can be traced to the Code of Hammurabi, systematic efforts to improve patient safety have their roots in the work of Florence Nightingale in the 1850s and 1860s and Ernest Codman in the early 20th century, with his end result idea.[2]

More recently, the Anesthesia Patient Safety Foundation, established in 1984, was the first specialty organization to include the phrase "patient safety" in its title.[3] A decade later, Lucian Leape called the profession to action with his sentinel article, "Error in Medicine," asserting that "180 000 people die each year partly as a result of iatrogenic injury, the equivalent of three jumbo-jet crashes every 2 days."[4] Leape went on to detail the limits of human cognition and promoted systems that accommodate those limits, writing: "All humans err frequently. Systems that rely on error-free performance are doomed to fail."

The tipping point occurred in 1999, with the release of the Institute of Medicine's report *To Err is Human*, which estimated that as many as 100 000 deaths potentially occurred each year in hospitals because of medical error.[5] Hayward and Hofer[6] found that up to 23% of patient deaths were preventable with optimal care.

In response, there has been a tremendous focus on patient safety and building health care delivery systems that make errors less likely to occur.[7] Medicine has looked to aviation, occupational safety, and nuclear power facilities for approaches to safe care delivery. There has been a paradigm shift in health care from personal responsibility to teamwork and shared responsibility, from individual care preferences to standardized systematic care processes, from culpability and punitive responses to open reporting and a "just culture," and from the idea that people fail to the approach that systems fail and that they can be successfully (re)engineered. The synergy between occupational safety and patient safety in hospitals, in particular, has been noteworthy because those 2 areas have a long history of common goals and cooperation. At the same time, patient safety and risk management are segregated because of their fundamentally conflicting approaches. As will be discussed later, patient safety requires full disclosure to harmed individuals, with apologies when appropriate.

Encouraging progress has been made in the areas of reporting and improvement projects. For example, the Agency for Health Care Research and Quality's 2015 report *Saving Lives and Saving Money* documented a 17% decline between 2010 and 2014 in a broad range of hospital-acquired conditions. Patients experienced approximately 2.1 million fewer hospital-acquired conditions during this interval, resulting in approximately 87 000 fewer deaths and almost $20 billion in health care savings.[8] The goals of patient safety expanded to include diagnostic error with the publication in 2015 of the National Academy of Medicine's report *Improving Diagnosis in Healthcare*, with diagnostic error defined as "the failure to (a) establish an accurate and timely explanation of the patient's health problem(s) or (b) communicate that explanation to the patient."[9] The report emphasized the importance of this type of error by estimating that "most people will experience at least one diagnostic error in their lifetime, sometimes with devastating consequences." According to Singh and Graber, however, successful tactics to remedy this problem "might prove difficult to implement."[10]

Improving patient safety is a noble endeavor in keeping with the ancient mandates of the profession of medicine. The imperative of developing a culture of safety in ophthalmology is the focus of this article.

Patient Safety: Focus on Ophthalmology

A culture of safety in ophthalmology aims to minimize medical error and harm to our patients while providing care of

the highest quality, promotes safety in our workplaces and homes, and ensures the safety of the eye care team. Although ophthalmic care is delivered primarily in ambulatory settings, our specialty is not immune to safety issues that affect other areas of medicine. "Wrong surgery," and in particular wrong intraocular lens insertion, is arguably the most visible patient safety issue in ophthalmology. These mishaps are preventable and their persistence has gained the attention of state and federal entities. Related in part to the high volume of cataract surgery, ophthalmology was among the specialties with the greatest number of incidents in both the 2009 and 2011 Veterans Health Administration reports on incorrect surgical procedures.[11,12] Several states have released safety advisories on cataract surgery in recent years.[13−15] Wrong surgery is not isolated to cataract extraction, however. One-third of pediatric ophthalmologists report being involved in a wrong patient, wrong eye, or wrong procedure incident during their careers.[16] Ophthalmic patients can be exposed to other procedure-related injuries, such as toxic anterior segment syndrome, endophthalmitis resulting from contaminated compounded drugs, or thermal injury resulting from electrosurgical units or an operating room fire.[17] In a report of corneal burns during phacoemulsification, the cause typically was related to operator error or inadequate training, and not equipment failure.[18]

Communication errors are a frequent cause of patient safety mishaps. These include failure to triage or manage emergency calls, inadequate coverage or hand-off of unstable patients, and failure to review test results. In one report of medications used at ambulatory surgery centers, ophthalmic drugs most commonly were involved in medication errors.[19] Outpatient prescription mistakes are not uncommon.[20] Undetected drug side effects, such as corticosteroid-induced glaucoma or hyperglycemia, are serious safety issues. Incorrect perioperative management of anticoagulants can lead to life-threatening events.

The appropriate use of antibiotics minimizes the emergence of resistant bacteria and the risk of potentially life-threatening infections, such as with *Clostridium difficile*. Strict adherence to hand-washing protocols and equipment cleansing are essential. The Ophthalmic Mutual Insurance Company (OMIC) is particularly concerned about patient falls in practitioners' offices; these are often related to transferring from chairs and, in 10% of events, contribute to the patient's death.[21]

As noted previously, diagnostic error may be both our most important and most challenging safety issue. Throughout all of medicine, wrong diagnosis, delayed diagnosis, and failure to communicate diagnostic results lead to patient harm and are the most frequent cause and greatest cost of malpractice claims.

A culture of safety includes protecting the ophthalmic team. Sharps injuries occur both in our offices and operating rooms and often go unreported.[22,23] The nature of our work puts ophthalmologists at particular risk for neck and back injuries.[24]

The Importance of Culture

Culture is the context in which care is delivered. The culture of an organization is defined by the behaviors practiced by its members and the systems developed and resourced to support those desired behaviors. Culture-defining behaviors cannot be practiced unless identified, and cannot be sustained unless the systems of that culture make it feasible to make those defined behaviors the norm.

A culture of safety has defined elements that decrease the rates of error and patient harm within work teams[25]: acknowledgment of the high-risk nature of the team's activities and a commitment to consistently safe operations; an environment that is blame-free, in which team members are encouraged to report errors or near misses without fear of punishment; support of collaboration across ranks and disciplines to seek solutions to patient safety issues; and commitment of resources to address safety concerns.

Respectful behaviors among and between the members of the team is a critical requirement of safety. Without this element, it may be impossible to create and sustain a culture of safety,[26] and lack of respect may underlie other conditions detrimental to patient care, such as staff burnout.[27]

Tools exist to assess and improve safety culture and build stronger teams. The Patient Safety Culture Surveys[28] from the Agency for Healthcare Research and Quality are well-recognized instruments that can assess organizational safety culture and identify areas of deficiency to be addressed as well as strengths to be leveraged to improve safety, often quickly.

"Just Culture" is a framework of organizational practices that can be learned and used to provide a blame-free culture that removes punishment from errors that are the result of the system of care rather than individual malfeasance, sets criteria for distinguishing among types of error, and can codify organizational responses to types of error. Tool kits and education are available to assist with implementation of these practices within organizations.[29]

In organizations with a mature culture of safety, the sources of errors with potential to cause patient harm, once identified, are met with changes to the design of care. Useful tools to accomplish this redesign include failure modes effect analysis and root cause analysis. These exercises identify underlying causes for errors, which are usually multiple, and suggest care design changes to prevent future errors. A weakness in root cause analysis has been lack of follow-up and inadequate implementation of the suggested changes. The National Patient Safety Foundation has recently introduced root cause analysis and action, or RCA2, to amend the process and ensure that design changes are implemented and sustained.[30]

Attributes of a Safe Practice

The establishment and sustenance of a safety culture within an organization are associated with significant institutional performance improvement, not only in reductions in sentinel adverse events and near misses, but also in enhanced financial results, operational efficiency, and patient outcomes.[31−33]

The value of a safety culture to overall operations should not be surprising. Effective teamwork requires mutual