By Barry P. Chaiken, MD, FHIMSS

Failure Is Not an Option

Healthcare could learn much from Gene Kranz. A recipient of the Presidential Medal of Freedom along with other mission scientists and crew, Kranz led his Tiger Team of experts at NASA in its successful effort to bring three astronauts on a perilous 500,000 mile journey around the moon and back home to Earth. Apollo XIII, launched in April 1970 to be America's third manned moon landing, suffered a catastrophic explosion of its service module on the way to moon, leaving the command module without adequate power to run the spacecraft's instruments or life support. Kranz's lead White team, aided by three other teams of experts, inventoried the available resources and improvised all along the way to bring the three astronauts, James A. Lovell, Ken Mattingly, and Fred W. Haise, back safely. Although inaccurately attributed to Kranz, "Failure is not an option" is now associated with the unwavering commitment by the teams of scientists to find a solution to a seemingly unsolvable problem.

This past December marked the 11th anniversary of the release of the landmark Institute of Medicine study, *To Err Is Human*, which attributed upwards of 100,000 deaths and more than 1 million injuries to medical errors caused by systematic failures of our healthcare delivery system. In response to the 1999 report, accreditation bodies, payors, providers, hospitals, and government agencies launched numerous efforts to reduce the number of medical errors, and in turn the morbidity, mortality, and wasted resourses associated with them. Interventions included implementation of electronic medical record systems with computerized physician order entry, deployment of ePrescribing modules, development of evidence-based care treatment guidelines, and use of checklists and CRM (Crew Resource Management) techniques in surgical suites.

Medical Error Rates Unchanged

Despite this great effort and investment, failure sadly remains a common occurrence in our healthcare system. According to a November 2010 article in *The New England Journal of Medicine,* medical errors continue to be a dangerous, common occurrence, appearing just as frequently today as they did more than a decade ago (Landrigan et al., 2010).

As for interventions to reduce the number of medical errors, less than 2% of hospitals have implemented a comprehensive system of electronic medical records as defined by the Stage 7 criteria from HIMSS Analytics (i.e., complete EMR; continuity of care document [CCD] transactions to share data; data warehousing; data continuity with ED, ambulatory, outpatient [2011]). In addition, less than 8% of hospitals have adopted closed loop medication administration systems to systematically eliminate medication errors.

Landrigan et al. offered cautious advice to their readers:

> …achieving transformational improvements in the safety of health care will require further study of which patient-safety efforts are truly effective across settings and a refocusing of resources, regulation, and improvement initiatives to successfully implement proven interventions.

Enter Meaningful Use

Although the incentives provided by the federal government through the Meaningful Use initiative foster the utilization of health information technology to improve quality and reduce errors, the use of health information technology alone will not reduce medical errors.

The meaningful use criteria evolved to encourage utilization of health information technology in a beneficial way, but it remains unclear what the true impact of the initiative will be on safety and costs. At this juncture, it is reasonable to assume those results will be mixed.

Applying broad, generic approaches to disparate and unique organizations can only deliver a broad range of results. Some organizations that blindly follow the meaningful use criteria will achieve significant benefits while others only modest ones. Only those organizations that utilize the meaningful use criteria as a guide, while creating their own unique roadmap for their use of health information technology, will achieve significant and long lasting improvements in patient safety and a reduction in medical errors.

Identify Well-Defined Goals

First steps begin with identifying well-defined goals and objectives (e.g., elimination of IV medication dose errors in the pediatric intensive care unit). Achieving these outcomes requires the use of proven, documented workflows built from effective processes, some of which employ health information technology tools. In addition, these tools collect data useful in monitoring the effectiveness of the workflow and identifying possible improvements to enhance results.

Effective use of information technology to reduce medical errors requires identifying the cause of the medical errors and the clinical transformation—the change in how we clinically do something—that

reduces the probability of the error occurring. Transformative solutions that reduce reliance on perfectly executed human actions while shifting that burden to tireless health information technology are much more likely to consistently reduce errors than those that fail to leverage such technology.

Facilitate Technology Use

Successful workflows that incorporate information technology to reduce medical errors also leverage technologies that encourage the frequent, consistent, and efficient use of the effective workflow. These technologies include those that make access to health information technology tools easy and efficient such as biometric user authentication, single sign-on, and roaming virtual desktops.

Such technologies bring the capabilities of health information technology to the clinician and increase the probability that information technology and overall proven workflow will be utilized in the care of patients. This in turn ensures the improved outcomes—reduction in medical errors—designed into the clinical workflow.

Only through intelligent, purposeful implementation of healthcare information technology will we be able to reduce medical errors. Using healthcare information technology in a shotgun mode fails to guarantee any level of success. And failure is not an option. PSQH

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References

Crew resource management. (2010, October 17). In *Wikipedia, The Free Encyclopedia*. Retrieved 20:11, January 5, 2011, from http://en.wikipedia.org/w/index.php?title=Crew_resource_management&oldid=391310541

HIMSS Analytics. (2011). *EMR adoption model℠*. Available at http://www.himssanalytics.org/stagesGraph.asp

Gene Kranz. (2011, January 1). In *Wikipedia, The Free Encyclopedia*. Retrieved 20:09, January 5, 2011, from http://en.wikipedia.org/w/index.php?title=Gene_Kranz&oldid=405306186http://en.wikipedia.org/wiki/Apollo_13

Landrigan, C. P., Parry G. J., Bones, C. B., Hackbarth, A. D., Goldmann, D. A., & Sharek, P. J. (2010, November 25). Temporal trends in rates of patient harm resulting from medical care. *New England Journal of Medicine, 363,* 2124-2134.