THE MILBANK QUARTERLY
A MULTIDISCIPLINARY JOURNAL OF POPULATION HEALTH AND HEALTH POLICY

High-Reliability Health Care: Getting There from Here

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Context: Despite serious and widespread efforts to improve the quality of health care, many patients still suffer preventable harm every day. Hospitals find improvement difficult to sustain, and they suffer "project fatigue" because so many problems need attention. No hospitals or health systems have achieved consistent excellence throughout their institutions. High-reliability science is the study of organizations in industries like commercial aviation and nuclear power that operate under hazardous conditions while maintaining safety levels that are far better than those of health care. Adapting and applying the lessons of this science to health care offer the promise of enabling hospitals to reach levels of quality and safety that are comparable to those of the best high-reliability organizations.

Methods: We combined the Joint Commission's knowledge of health care organizations with knowledge from the published literature and from experts in high-reliability industries and leading safety scholars outside health care. We developed a conceptual and practical framework for assessing hospitals' readiness for and progress toward high reliability. By iterative testing with hospital leaders, we refined the framework and, for each of its fourteen components, defined stages of maturity through which we believe hospitals must pass to reach high reliability.

Findings: We discovered that the ways that high-reliability organizations generate and maintain high levels of safety cannot be directly applied to today's hospitals. We defined a series of incremental changes that hospitals should undertake to progress toward high reliability. These changes involve the leadership's commitment to achieving zero patient harm, a fully functional culture of

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The Milbank Quarterly, Vol. 91, No. 3, 2013 (pp. 459–490)

unsafely, a phenomenon that increases rather than decreases the risk of harm (Ash et al. 2007, 2009; Joint Commission 2008b; Koppel et al. 2005; Sparnon and Marella 2012). In addition, various types of health IT are often not coordinated, thereby increasing risk. For example, if programmable infusion devices are not supported by the same decision support rules that govern pharmacy systems and physician order entry systems, the resulting confusion can be life threatening for patients. A hospital approaching high reliability adopts health IT solutions in a coordinated and integrated manner following the principles of safe adoption (Joint Commission 2008b; Karsh 2004).

Safety Culture

Table 3 shows the five components of safety culture and their manifestations in each of the four stages of maturity toward high reliability. A culture of safety that fully supports high reliability has three central attributes: trust, report, and improve (Reason and Hobbs 2003). Workers exhibit enough trust in their peers and the organization's management that they routinely recognize and report errors and unsafe conditions. This trust is established when the organization eliminates intimidating behavior that suppresses reporting, acts in a timely way to fix the problems reported by workers, and communicates these improvements consistently to the individuals who reported the problems in the first place. That communication in turn strengthens the trust that led to the reports and fosters further identification and reporting of problems even further upstream from harm. When all three of these components of a safety culture (trust, report, and improve) are working well, they reinforce one another and produce a stable organizational culture that sustains high reliability.

Maintaining trust also requires the organization to hold employees accountable for adhering to safety protocols and procedures. HROs establish clear, equitable, and transparent processes for recognizing and separating the small, blameless errors that all people make every day from unsafe or reckless actions that are blameworthy. Understanding how and why blameless errors occur is part of the learning process that HROs employ to maintain their exemplary safety records. Recognizing and dealing appropriately with blameworthy acts is an equally important dimension of an HRO's safety culture because of its vital role in maintaining trust. Unfortunately, health care organizations too often punish staff for blameless acts while failing to implement equitable

TABLE 3
Safety Culture and High Reliability: Stages of Organizational Maturity

Safety Culture	Beginning	Developing	Advancing	Approaching
Trust	Trust or intimidating behavior is not assessed.	First codes of behavior are adopted in some clinical departments.	CEO and clinical leaders establish a trusting environment for all staff by modeling appropriate behaviors and championing efforts to eradicate intimidating behaviors.	High levels of (measured) trust exist in all clinical areas; self-policing of codes of behavior is in place.
Accountability	Emphasis is on blame; discipline is not applied equitably or with transparent standards; no process exists for distinguishing "blameless" from "blameworthy" acts.	The importance of equitable disciplinary procedures is recognized, and some clinical departments adopt these procedures.	Managers at all levels accord high priority to establishing all elements of safety culture; adoption of uniform equitable and transparent disciplinary procedures begins across the organization.	All staff recognize and act on their personal accountability for maintaining a culture of safety; equitable and transparent disciplinary procedures are fully adopted across the organization.
Identifying unsafe conditions	Root cause analysis is limited to adverse events; close calls ("early warnings") are not recognized or evaluated.	Pilot "close call" reporting programs begin in few areas; some examples of early intervention to prevent harm can be found.	Staff in many areas begin to recognize and report unsafe conditions and practices before they harm patients.	Close calls and unsafe conditions are routinely reported, leading to early problem resolution before patients are harmed; results are routinely communicated.

Continued

TABLE 3—*Continued*

Safety Culture	Beginning	Developing	Advancing	Approaching
Strengthening systems	Limited or no efforts exist to assess system defenses against quality failures and to remedy weaknesses.	RCAs begin to identify the same weaknesses in system defenses in many clinical areas, but systematic efforts to strengthen them are lacking.	System weaknesses are cataloged and prioritized for improvement.	System defenses are proactively assessed, and weaknesses are proactively repaired.
Assessment	No measures of safety culture exist.	Some measures of safety culture are undertaken but are not widespread; little if any attempt is made to strengthen safety culture.	Measures of safety culture are adopted and deployed across the organization; efforts to improve safety culture are beginning.	Safety culture measures are part of the strategic metrics reported to the board; systematic improvement initiatives are under way to achieve a fully functioning safety culture.

disciplinary procedures for those who commit blameworthy acts. Nor have hospital leaders succeeded in eradicating intimidating behaviors (Institute for Safe Medication Practices 2004). These failings explain the lack of trust among hospital staff noted earlier (Agency for Healthcare Research and Quality 2012). Hospitals that move toward high reliability establish codes of behavior that are modeled by leaders (including nurses and physicians) who champion efforts to eliminate intimidation and encourage and reward the reporting of blameless errors and unsafe conditions. Accountability for adhering to safe practices should be ingrained in all employees and is spurred by implementing standards for invoking disciplinary procedures that apply to all staff, regardless of seniority or professional credentials. For example, Maimonides Medical Center in New York City has established such a program in its Code of Mutual Respect, which commits all stakeholders (including physicians, nurses, staff, students, vendors, consultants, and volunteers) to "working harmoniously" together and to eliminate intimidating behaviors. The program includes progressive interventions, including disciplinary actions for individuals who repeatedly violate the code (Maimonides Medical Center 2009).

HROs also proactively assess the strength and resilience of their safety systems and the organizational defenses that prevent errors from propagating and leading to harm. Today's hospitals function in primarily a reactive mode, investigating incidents in which patients have already been harmed, conducting root cause analyses, and instituting corrective action plans to prevent future occurrences. Becoming much safer requires caregivers' willingness and ability to recognize and report close calls and unsafe conditions, combined with an organizational capacity to act effectively on those reports to eliminate the risks they embody. Furthermore, as opposed to today's norm of focusing on single events, hospitals should compile the results of their investigations across many harm events and close calls to identify which of their safety systems or defenses are most in need of improvement. These evaluations should lead to the development of proactive assessments of key safety systems (e.g., those that relate to medication administration and infection prevention and control) so that weaknesses can be identified and remedied before they pose any significant risk to patients.

Finally, progress toward establishing all these elements of a culture of safety should be measured. Today, many hospitals regularly use one of several available staff surveys to assess their safety culture. Few, however,

analyze the meaning of the survey data, evaluate where each area of the hospital is falling short, and undertake specific, focused interventions to remedy those shortcomings. As hospitals make more progress toward high reliability, they will include safety culture metrics as part of their strategic planning programs, set goals for improving on those metrics, and report on those metrics to their boards, just as they report on metrics related to financial performance or patient satisfaction.

Robust Process Improvement

Hospitals need new process improvement tools and methods to break out of their current state of low reliability. We have argued that robust process improvement (RPI)—a combination of lean, six sigma, and change management—is a much more potent set of tools than health care currently uses to address safety and quality problems. Briefly, and oversimplifying somewhat, *lean* is a set of tools and a philosophy of employee-empowered improvement that identifies and removes wasted effort from processes without compromising the quality of the outcome. *Six sigma* tools focus on improving the outcomes of a process by radically reducing the frequency with which defective products or outcomes occur. Lean and six sigma tools produce markedly improved processes. *Change management* is a systematic approach, used alongside lean and six sigma, that prepares an organization to accept, implement, and sustain the improved processes that result from the application of lean and six sigma tools. These three sets of tools are complementary, and together they provide the best available methods for hospitals to achieve major improvements in faulty processes.

Table 4 shows the three components of RPI and how each changes as a hospital comes closer to high reliability. Like GE, Best Buy, and other companies that have benefited from RPI, we believe that getting the most benefit from them requires that they be employed as a common language throughout the entire organization (Bartlett and Wozny 2005; Rao 2011). Nearly all employees should be trained at levels appropriate to each one's job. The tools should be used throughout the organization for all improvement work. Finally, proficiency in the use of RPI should be a part of every employee's performance appraisal and be required for career advancement within the organization. These elements provide vital support for spreading the use of these tools. For HROs, quality and