



Keeping the Commitment: A Progress Report on Four Early Leaders in Patient Safety Improvement

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ABSTRACT: Four case studies document the progress achieved in the past five years by health care organizations that were early leaders in patient safety improvement. Their experience reflects an expansion of interventions from individual hospital units to whole facilities and delivery systems, including new settings such as home health care. Approaches include developing practical methods for training, coaching, and motivating staff to engage in patient safety work; designing effective tools and systems to minimize error and maximize learning; and leading change by setting ambitious goals, measuring and holding units accountable for performance, and sharing stories to convey values. Results include advancements in safety practices, reductions in serious events of patient harm, improved organizational safety climate and morale, and declines in malpractice claims. Keeping the commitment to patient safety has required sustained focus on making safety a core organizational value, a willingness to innovate and adapt, and perseverance in pursuing goals.



INTRODUCTION

In the decade since the Institute of Medicine (IOM) issued its landmark 1999 report *To Err Is Human*, there have been a number of successful efforts to improve patient safety in the United States.¹ Notable among these are national, statewide, and professional campaigns to persuade hospitals to adopt practices that have been shown to reduce patient mortality by preventing health care–associated infections and complications of surgical care.² Nevertheless, the nation appears to be far from realizing the goal of eliminating unintentional harm to some patients resulting from health care. For example, a recent study found no significant change from 2002 to 2007 in the overall rate of patient harm or of preventable harm recorded in patient records drawn from a random sample of 10 hospitals in North Carolina.³

In his recent assessment of the nation’s progress in making health care safer, Robert M. Wachter, M.D.—an academic physician executive and recognized expert on patient safety—gave the United States an overall grade of B–, reflecting “modest improvement” during the years 2004 to 2009, compared with an earlier grade of C+ for the 1999–2004 period following the IOM report.⁴ He noted that “hard evidence of improved outcomes remains elusive because of our rudimentary measurement capacity in safety.” To help fill gaps in knowledge, case studies can provide useful insights into exemplary efforts and learning from

the field about what is working in particular contexts over a given period.

A series of Commonwealth Fund case studies conducted on the fifth anniversary of the IOM report identified several health care organizations that had taken promising steps toward realizing one of the IOM's key recommendations: creating an organizational culture of safety.^{5,6} This follow-up report summarizes longitudinal findings from site visits to four of those organizations in order to document their progress in patient safety during the past five years. These four sites were selected to represent how early leaders in patient safety—identified by experts and a review of the literature five years ago—have continued to build on their initial work so as to sustain or intensify its effectiveness and expand its application throughout the organization.⁷ Hence, the cases are meant to illustrate the kinds of improvements that can be achieved with sustained effort. Their findings may be of interest to policymakers and other hospitals and health systems that are seeking to enhance their efforts to improve patient safety.

The report is organized as follows: It begins by summarizing findings from the case studies, then presents the combined results from the study sites' self-assessment of their progress in improving patient safety, and finally discusses cross-site themes and insights.

OVERVIEW OF THE CASE STUDIES

The four case-study sites are all multicampus, integrated health care delivery systems: Johns Hopkins Medicine (Johns Hopkins) in Maryland; OSF HealthCare, operated by the Sisters of the Third Order of St. Francis, in Illinois and Michigan; Sentara Healthcare in Virginia and North Carolina; and the U.S. Department of Veterans Affairs (VA), which operates facilities nationwide. Exhibit 1 on pages 4 and 5 summarizes information from the four case studies including their organizational settings, the strategies and interventions they have undertaken, and selected results they have achieved.

Consistent with our previous report, the study sites' patient safety improvement strategies and interventions have three instrumental areas of focus:

1. **People:** developing practical methods for training, coaching, and motivating staff to engage in patient safety work, to practice teamwork and other safety-related behaviors, and to develop a mindfulness for recognizing safety threats and acting to mitigate them;
2. **Processes:** designing and deploying effective information systems, standardized clinical processes, analytic methods, and other tools (such as checklists) to facilitate clear communication, minimize opportunities for errors to occur, and learn from mistakes so that they will not recur; and
3. **Organization:** making safety a core value and priority, setting ambitious goals, measuring and giving feedback on performance, collecting and sharing success stories, and recognizing and holding units accountable for meeting targets.

Study sites have expanded their early efforts, from pilot programs in individual units or facilities to hospitalwide and systemwide initiatives. Sites such as the VA that had previously engaged in systemwide interventions to promote safety-event reporting and analysis, expanded the scope and rigor of the interventions to build more effective teamwork and communication skills, often starting with pilot programs to learn what works before implementing more expansive change. Sites that rely on community physicians to staff their hospitals have been reaching out to identify physician "champions" who can act as role models to mentor peers within their system. Leaders also found that safety principles could be adapted to new care settings, such as home health care services, and that tools could be used to facilitate patients' engagement in their care.

Results generally reflect this broadened and intensified scope of work. Whereas outcomes in the prior period could be described as promising, in the

past five years sites have achieved and sustained more impressive gains at the facility and/or system level, including:

- increased compliance with safety practices such as hand hygiene, timely and effective analyses of safety events, and use of standardized processes and checklists;
- substantial and sustained reductions in serious safety events such as patient falls, health care–associated infections, and hospital-acquired pressure ulcers;
- reductions in patient mortality associated with specific interventions, such as checklist-guided surgical briefings or evidence-based infection-prevention activities;
- improved staff perceptions of organizational or team-level safety climate and morale, which were associated with reduced nurse turnover in some units; and
- declines in malpractice suits and claims.

It should be noted that these sites were selected to illustrate how local delivery systems have been instrumental in organization-wide patient safety improvement over time. In some cases, results of their efforts have exceeded national improvement and achieved better-than-average performance on specific measures of patient safety for which comparative data are available, such as rates of health care–associated infections in intensive care units ([Appendix A](#)).⁸ The study sites also have improved critical safety practices

and outcomes (such as patient falls) that are not yet being systematically tracked at a national level.

During the past five years, other hospitals and health systems have adopted some of the strategies employed by the study sites to achieve high levels of performance in specific domains such as infection prevention. Johns Hopkins' Comprehensive Unit-Based Safety Program, for example, has been used as part of a collaborative improvement intervention to advance safety culture and reduce health care–associated infections in the intensive care units (ICUs) of hospitals in Michigan and several other states.⁹ (Similar kinds of targeted interventions are described in companion case-study reports published by the Commonwealth Fund.¹⁰) Findings from the four case studies also are generally consistent with other reports in the literature describing successful organization-wide initiatives to improve patient safety.¹¹

Identifying organizations that are leaders in reducing preventable harm to patients is a challenge, because the nation lacks an agreed-upon comprehensive measure of patient safety that could be used for benchmarking performance. The creation of such a measure may become feasible in the future once a critical mass of the nation's health care providers have adopted electronic health records (EHRs) that use standard definitions to report on the quality and safety of care. In the meantime, by leveraging their investment in information systems to track performance at the unit, department, and/or facility level, study sites have innovated in developing measures of patient harm and risk-adjusted outcomes that spur ongoing improvements in care.^{12,13}

Individual case studies described in this report are available for download from the Fund Web site at www.commonwealthfund.org.

Exhibit 1. Overview of Case Study Site Settings, Strategies, and Results

Setting	Strategies/Interventions	Selected Results
Johns Hopkins Medicine¹⁴ (Maryland)		
<p>Johns Hopkins Hospital, a 945-bed academic medical center, and the Johns Hopkins Home Care Group, which provides services to 10,000 patients statewide. Both are components of Johns Hopkins Health System, a five-hospital nonprofit integrated health care delivery system affiliated with the Johns Hopkins School of Medicine in Baltimore, Maryland.</p>	<ol style="list-style-type: none"> 1. Encouraging leadership to set goals and reinforce patient safety as an organizational priority. 2. Teaching the science of safety to enable staff to recognize and address threats to patient safety. 3. Linking patient safety efforts to the institution's core values of research and discovery. 4. Spreading the Comprehensive Unit-Based Safety Program to build capacity for improvement among frontline teams. 5. Enhancing transparency of safety performance measures. <p>Similar strategies were adapted for use in the Home Care Group.</p>	<ul style="list-style-type: none"> ● 75–100 percent reduction over nine years in rates of central line–associated bloodstream infections in surgical ICUs. ● Reduction of more than 20 percent over seven years in rates of patient falls and injuries from falls. ● 56 percent reduction over seven years in rate of at-risk patients with hospital-acquired pressure ulcers. ● Near doubling in observed rate of hand hygiene compliance by clinicians both before and after seeing a patient. ● Improved staff perceptions of safety climate and teamwork hospitalwide; lower nursing turnover in some units. ● Reduction in annual hospitalization rate among home care patients to below the national average (23% vs. 29%).
Sentara Healthcare¹⁵ (Virginia and North Carolina)		
<p>A nonprofit integrated health care delivery system that operates more than 100 sites of care in Virginia and North Carolina including eight hospitals, seven nursing homes, eight outpatient and diagnostic-imaging centers, a medical group with 120 physician offices, a home health care division, a health plan, a school of health professions, and a medical residency program.</p>	<ol style="list-style-type: none"> 1. Elevating patient safety to a core organizational value. 2. Encouraging employees to adopt safety habits for error prevention. 3. Simplifying work processes to prevent error. 4. Implementing rigorous root-cause and common-cause analysis methods to make systemic changes. 5. Spreading and sustaining change by: (a) helping staff develop mindfulness to recognize signals of inadequate care; (b) providing methods for leaders to reinforce safety habits; (c) engaging physicians in safety work; (d) instituting processes for learning from mistakes; and (e) setting high standards and rewarding their attainment. 	<ul style="list-style-type: none"> ● 80 percent reduction over seven years in the serious safety event rate across Sentara hospitals. ● 42 percent decline over six years in the rate of patient falls with injuries. ● Reductions over seven years of 93 percent in average rates of ventilator-associated pneumonia and of 89 percent in rates of central line–associated bloodstream infections in Sentara's ICUs. ● 23 percent decline over five years in risk-adjusted in-hospital mortality across seven Sentara hospitals, to a rate 50 percent better than expected. ● 40 percent increase over two years in reported knowledge and practice of safety habits by staff in Sentara hospitals. ● 43 percent decline over six years in the annual rolling-average number of malpractice suits and claims.

Setting	Strategies/Interventions	Selected Results
OSF HealthCare¹⁶ (Illinois and Michigan)		
<p>A nonprofit integrated health care delivery system with seven hospitals in Illinois and Michigan (ranging from a 25-bed critical-access hospital to a 616-bed teaching facility), a medical group, a long-term care facility, home care services, and two colleges of nursing. The network is owned and operated by the Sisters of the Third Order of Saint Francis, based in Peoria, Illinois.</p>	<ol style="list-style-type: none"> 1. Enhancing organizational learning, in part by encouraging staff to report safety risks to a systemwide database to trigger reviews of risks at other facilities. 2. Enabling accountability by educating board members about safety and quality improvement. 3. Engaging staff in internal competition to spur improvement. 4. Using simulation to define team roles around critical incidents. 5. Standardizing the medication administration process to help prevent adverse drug events. 6. Using bundles of evidence-based practices to reduce hospital-acquired infections. 	<p>Facility-level results include:</p> <ul style="list-style-type: none"> ● An 80 percent reduction over six years in the rate of pneumonia among intensive care patients on mechanical ventilation. ● Increased use of evidence-based surgical infection prevention treatment, by 9 percentage points over one year, raising performance of one hospital from the worst to the best in the system. ● An almost threefold increase in safety-event reporting through prompt investigation and action in response to calls to a patient safety hotline. ● Increased compliance with a standardized medication administration process, from 39 percent to 100 percent.
U.S. Department of Veterans Affairs¹⁷ (nationwide)		
<p>The nation's largest publicly funded integrated health care system, serving 5.8 million veterans in 1,400 care sites nationwide including 153 VA medical centers, 783 community-based outpatient clinics, 135 nursing homes, and numerous home-care programs. Facilities and services are organized into 21 regional networks.</p>	<ol style="list-style-type: none"> 1. Establishing the National Center for Patient Safety to develop training programs and tools that engage staff in systems learning (i.e., analyzing causes of errors and identifying effective means of preventing them). 2. Disseminating a medical team training program that institutes checklist-guided briefing and debriefing methods in operating rooms and ICUs. 3. Pilot-testing a nursing crew resource management training program to enhance communication and teamwork in general patient care units. 4. Developing a "Daily Plan" to educate hospital patients about their care plan in order to promote safe and patient-centered care. 5. Sponsoring the Inpatient Evaluation Center and the Surgical Quality Improvement Program to develop risk-adjusted facility-level measures of patient outcomes and resources for improvement. 	<ul style="list-style-type: none"> ● Following implementation of checklist-guided surgical briefings and debriefings: 50 percent greater reduction in surgical mortality at trained vs. untrained facilities, increased on-time surgery starts, and a 33 percent decline in nursing turnover. ● Errors averted on 21–35 percent of shifts during which patients on pilot units had been educated about their daily plan of care. ● 66 percent to 69 percent reduction over four years in average rates of device-associated bloodstream infections and pneumonia in ICUs; reductions of 76 percent and 28 percent over two years in average rates of antibiotic-resistant health care-associated infections in ICUs and in other acute-care units, respectively. ● Reductions of 20 percent in hospital mortality rates and 33 percent in 30-day mortality rates among ICU patients over eight years, and continued reduction in 30-day postoperative mortality and morbidity rates, which have declined 59 percent and 51 percent, respectively, over 18 years. ● A doubling over four years in root-cause analyses completed in a timely manner, and in analyses that identified effective actions for improvement.

SELF-ASSESSED PROGRESS IN PATIENT SAFETY

To summarize the progress they have made in pursuing patient safety over the past decade, the study sites were asked to employ a self-assessment instrument modeled on Wachter's patient safety report card (described earlier).¹⁸ Using this tool, the sites compared their experience in the early part of the last decade (2000–2004) with their more recent experience (2005–2010). The first period comprises the five years that followed the release of the IOM report, which were covered in the previous Commonwealth Fund report on these organizations and in Wachter's 2004 report card. The more recent period roughly corresponds with Wachter's assessment of progress between 2004 and 2009, for which he assigned grades to 10 patient-safety domains (Exhibit 2).

For each period, the study sites rated their progress in each of the 10 domains using a five-point scale. A rating of "1" was defined to mean minimal or no achievement in a specific kind of safety-related work, while a rating of "5" represented the attainment of an advanced level in that dimension. A few policy-oriented domains were translated into equivalent managerial concepts; for example, the nation's research capacity is equated with an organization's learning capacity, and national organizational interventions are equated with an organization's participation in collaborative improvement interventions. The reporting systems dimension was divided into two subdimensions for internal and external reporting. Results are shown in [Appendix B](#).

On average across all dimensions, the sites gave ratings of 3.05 to their earlier experience and 4.30 to their recent experience, suggesting substantial advancement in their patient safety efforts. The highest rating on average in the early period (3.50) was for collaborative improvement activities, and likely reflects the results of the sites' participation in the Institute for Healthcare Improvement's (IHI) 100,000 Lives campaign from December 2004 to June 2006.¹⁹ In the recent period, the highest ratings on average (4.75) were given in two domains: making effective use of

internal reporting systems to identify and act on safety threats,²⁰ and engaging leaders in patient safety as a core organizational value.

The lowest ratings on average in both periods were given to the workforce and training domain, underlining the opportunity for spreading practical and effective team training programs such as that developed by the VA. Other domains that received relatively lower ratings included external reporting, patient engagement, and payment incentives. Commitment to external reporting may require further proof that such effort is worthwhile for generating useful information for improvement. (A large organization like the VA may find that its internal safety event reporting is adequate for generating robust analysis of safety events.) Sites that were introducing initiatives to increase patient engagement in care appeared to be driven by the dual purpose of making care both safer and more patient-centered. Effective use of payment incentives may depend to some degree on the willingness of payers to engage with providers in designing effective programs.

Looking across time periods and domains, the greatest increase in average ratings (1.75 points) was for health information technology, reflecting more widespread deployment of EHRs and the enhancement of existing EHR systems at several sites. Advancement in organizational learning likely reflects the maturation of efforts to systematically analyze and apply learning from safety events and efforts to inculcate a safety "mind-set" within frontline teams, along with practical improvement skills. Ratings for participation in collaborative activities increased the least, on average. This finding may reflect higher baseline ratings on that dimension, as well as the natural life cycle of harvesting the learning from collaborations such as the IHI's Five Million Lives Campaign as they came to a close toward the end of the decade.

To enable comparison of study site ratings to Wachter's assessment, his grades were converted to a five-point scale (A=5 and F=1). In the early period, average study site ratings were higher than the corresponding national grades for two of five domains

Exhibit 2. Assessment of National Progress in 10 Key Patient-Safety Domains

Safety category	2004 Grade (1999–2004)	2009 Grade (2004–2009)
Regulation/accreditation	A–	B+
Reporting systems	C	B+
Health information technology	B–	C+
Malpractice system and accountability	D+	C+
Workforce and training issues	B	B–
Research	*	B–
Patient engagement and involvement	*	C+
Provider organization leadership engagement	*	B
National and international organizational interventions	*	A–
Payment system interventions	*	C+
Overall grade for progress in patient safety	C+	B–

*Domain not ranked in 2004.

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that Wachter assessed in 2004: making effective use of internal reporting systems and establishing a “just culture” of accountability.²¹ In the recent period, the study sites rated their progress on patient safety more highly, on average, than the national grade for eight of 10 dimensions assessed in 2009. (The sites’ lower rating of workforce/training issues may reflect higher expectations for achievement in this regard.) Overall, the higher ratings given to study sites suggest that they have made more rapid progress than the nation as a whole. It is likely that some of the strategies they employ are not yet widely or fully disseminated across most health care organizations.

While the small number of study sites limits the ability to generalize the findings, this review offers insight into how organizational leaders think about the relative strengths and weaknesses of their progress in safety improvement. Because the self-assessment instrument was used to facilitate the gathering of information during interviews and site visits, it was not blinded. Hence, ratings may be subject to social acceptability bias. However, the leaders’ appraisals generally seemed consistent with the learning they shared during interviews, including adjustments made after the discovery that some early approaches did not work as well as had been hoped. Although organizational leaders tend to rate safety culture more highly

than do frontline staff,²² survey results from two of the study sites indicate that their staff also perceive that the organizations have made some progress in developing a safety culture during the recent time period.

THEMES AND INSIGHTS

The experience of the four study sites provides valuable lessons in how to sustain, intensify, and expand patient safety improvement efforts within large and complex organizations. Their efforts reflect a common view of patient safety as a practical science or method that can be taught and practiced at multiple levels, from managers to frontline staff (Exhibit 3). Implementation has typically required a staged approach that is attentive to readiness for change within units and facilities, often by sequentially introducing elements of the safety program to build skills and receptivity to change over time. The study sites have achieved success by developing adaptable, principle-based change methods, for both frontline staff and managers, methods that can be disseminated across units, facilities, and functions (including post-acute care services) so that positive experiences create credibility and demand for uptake among peers.

Johns Hopkins’ Comprehensive Unit Based Safety Program uses an improvement skill-building approach that has been adapted to many different care

Exhibit 3. Principles of Safety at Johns Hopkins Medicine

Every system is perfectly designed to achieve the results it gets

To ensure safe design: standardize, create checklists, and learn when things go wrong

Recognize that safety principles apply to teamwork as well as to technical procedures

Teams make wise decisions when there is diverse and independent input

settings and associated with improved safety culture throughout the hospital.²³ The VA's medical team training program has shown that improving communication and teamwork among surgical staff can improve patient outcomes.²⁴ While these programs typically begin in high-risk areas such as operating rooms and ICUs, they are now being adapted and expanded to general acute-care floors and support units (where their effectiveness is still being proven). Sentara Healthcare has taken a more general approach to instilling safety habits in the everyday work of staff. Providing tools and resources, including protected time to engage in improvement activities and executive sponsorship of safety efforts, can be critical to uptake and success. Regardless of the particular approach taken, the quality of local unit and facility leadership ultimately will determine the success of these initiatives.

The sites also have learned that engaging physicians is critical to success. Sentara Healthcare initially focused its safety efforts on nursing staff, but found that physicians needed the same kind of training and reinforcement to ensure that they would all work toward a common goal. Likewise, the VA found that team training on nursing floors was facilitated by its prior implementation in surgical suites, which exposed physicians to common principles and provided impetus for collaboration. Both sites found that engaging physicians proves more successful when framed as a way for them to gain control over their working environment and time, e.g., by enabling on-time surgery starts and avoiding downtime caused by mistakes or

faulty equipment. OSF Healthcare found that providing immediate, meaningful feedback was effective in motivating clinicians and managers when it was supplemented by education on how to use data for improvement and reinforced by some type of team-based recognition of success.

Like frontline staff, leaders require both practical principles and corresponding tools to translate the aspiration to safety into meaningful actions that they can take every day to reinforce patient safety goals (Exhibit 4). These organizations emphasized the value of rigorous performance measurement whenever feasible, supplemented by opportunistic observation to assess the organization's current mind-set toward safety. They used a combination of both hard and soft communication techniques, including performance feedback and thoughtful use of queries and anecdotes, to convey the importance of safety to staff.

All of these sites were integrated delivery systems that may have greater resources to execute change than do many other health care organizations. The VA in particular emphasized that integrated delivery allows its managers to take a holistic and long-term view of performance and to realize the "business case" for safety, as savings accrue back to the organization to support improvements. This alignment of incentives may become more common as the nation moves toward a more rational payment system and the creation of accountable care organizations and similar care models that allow providers to share in the rewards of more efficient, higher-quality care. In the meantime, institutions may be able to reap the benefits

Exhibit 4. Sentara Leadership Method for Performance Excellence

1. Daily check-in/huddle: to share and maintain situational awareness
2. Safety rounds: to identify problems and reinforce safety as a priority
3. Action plans: to manage and ensure accountability for improvement work

of collective action through participation in learning collaboratives and virtual networks.²⁵

Leaders at these organizations have actively educated and/or engaged with members of their boards of trustees so that the board will understand safety principles and effectively hold the organization accountable by setting goals and monitoring results. Safety efforts have been driven in some cases by well-publicized safety lapses that acted as “moments of truth” to convince leaders that safety is critical to institutional reputation and success. Leaders appear to be driven by a keen sense of mission and commitment to patient welfare that is shared by their nonprofit boards (or, in the case of VA facilities, by regional and national leaders who exercise oversight as part of the agency’s accountability to the President and Congress).

IMPLICATIONS AND CONCLUSION

These case studies add to a growing body of literature describing how health care organizations undertake transformation initiatives in general and patient safety improvement in particular.²⁶ Evidence from this and other research suggests that improving safety culture may have collateral benefit in facilitating broader delivery system transformation goals, such as reducing hospital readmissions.²⁷ The experience of these organizational leaders illustrates that the patient safety journey is challenging but worthwhile, even in an imperfect external environment that does not fully support system transformation.

Keeping the commitment to patient safety has required a sustained focus on making safety a core organizational value, a willingness to innovate and to apply learning about what works, and, perhaps above all, perseverance in staying the course. Wider uptake of patient safety initiatives will require similar organizational commitment, driven by local institutional mission and governance and reinforced through board oversight and public accountability mechanisms. Policy actions to support patient safety improvement include the development of rigorous and comprehensive performance metrics and benchmarking data, refinement of supportive accreditation standards, research on effective improvement strategies, and payment system reforms that support providers in doing the right thing for patients.

NOTES

- ¹ L. T. Kohn, J. M. Corrigan, and M. S. Donaldson (eds.), *To Err Is Human: Building a Safer Health Care System* (Washington, D.C.: National Academies Press, Dec. 1999).
 - ² D. M. Berwick, D. R. Calkins, C. J. McCannon et al., “The 100,000 Lives Campaign: Setting a Goal and a Deadline for Improving Health Care Quality,” *Journal of the American Medical Association*, Jan. 18, 2006 295(3):324–27; B. L. Hall, B. H. Hamilton, K. Richards et al., “Does Surgical Quality Improve in the American College of Surgeons National Surgical Quality Improvement Program? An Evaluation of All Participating Hospitals,” *Annals of Surgery*, Sept. 2009 250(3):363–76; P. J. Pronovost, G. A. Goeschel, E. Colantuoni et al., “Sustaining Reductions in Catheter Related Bloodstream Infections in Michigan Intensive Care Units: Observational Study,” *BMJ*, Feb. 4, 2010 340:c309; and A. Lipitz-Snyderman, D. Steinwachs, D. M. Needham et al., “Impact of a Statewide Intensive Care Unit Quality Improvement Initiative on Hospital Mortality and Length of Stay: Retrospective Comparative Analysis,” *BMJ*, Jan. 28, 2011, 342:d219; .
 - ³ C. P. Landrigan, G. J. Parry, C. B. Bones et al., “Temporal Trends in Rates of Patient Harm Resulting from Medical Care,” *New England Journal of Medicine*, Nov. 25, 2010 363(22):2124–34.
 - ⁴ R. M. Wachter, “Patient Safety at Ten: Unmistakable Progress, Troubling Gaps,” *Health Affairs*, Jan. 2010 29(1):165–73; and R. M. Wachter, “The End of the Beginning: Patient Safety Five Years After *To Err Is Human*,” *Health Affairs* Web Exclusive, Nov. 30, 2004:w4-534–w4-545.
- Dr. Wachter, professor of medicine and chief of the Division of Hospital Medicine at the University of California, San Francisco, associate chairman of UCSF’s Department of Medicine, and chief of the medical service at UCSF Medical Center, is a national leader in the field of patient safety and is recognized as the father of the hospitalist movement. He serves as editor of the Agency for Healthcare Research and Quality’s *WebM&M*, a case-based patient safety journal, and the *AHRQ Patient Safety Network*, and was project director of *Making Healthcare Safer: A Critical Analysis of Patient Safety Practices*, published by AHRQ in 2001. His books include *Internal Bleeding: The Truth Behind America’s Terrifying Epidemic of Medical Mistakes* (written with Dr. Kaveh Shojania) and *Understanding Patient Safety*, a leading primer in the field. He received a John M. Eisenberg Award, the nation’s top honor for contributions to the field of patient safety, in 2004.
- ⁵ D. McCarthy and D. Blumenthal, *Committed to Safety: Ten Case Studies on Reducing Harm to Patients* (New York: The Commonwealth Fund, April 2006); D. McCarthy and D. Blumenthal, “Stories from the Sharp End: Case Studies in Safety Improvement,” *Milbank Quarterly*, March 2006 84(1):165–200.
 - ⁶ The IOM recommended that health care organizations “develop a culture of safety such that an organization’s design processes and workforce are focused on a clear goal—dramatic improvement in the reliability and safety of the care process” (IOM 1999). Safety culture has been defined as “the product of individual and group values, attitudes, competencies, and patterns of behavior that determine the commitment to, and the style and proficiency of, an organization’s health and safety programs” (Advisory Committee on the Safety of Nuclear Installations, 1993).
 - ⁷ The original 10 case study sites were selected in late 2004 by asking experts in patient safety to identify innovations that had made a difference in patient safety during the five years since the publication of the IOM report, and by noting examples of these innovations from the literature. For the update, we selected four of the original sites that appeared to have sustained and expanded their patient safety improvement efforts in diverse ways and settings since that time. We excluded sites if they had discontinued the original intervention, had reported that results were similar to the original findings, or had been the subject of another recent case study report. Information for the case studies was gathered from site visits conducted during spring 2010, supplemented by telephone interviews, e-mail correspondence, documents provided by the study sites, and publicly available information.

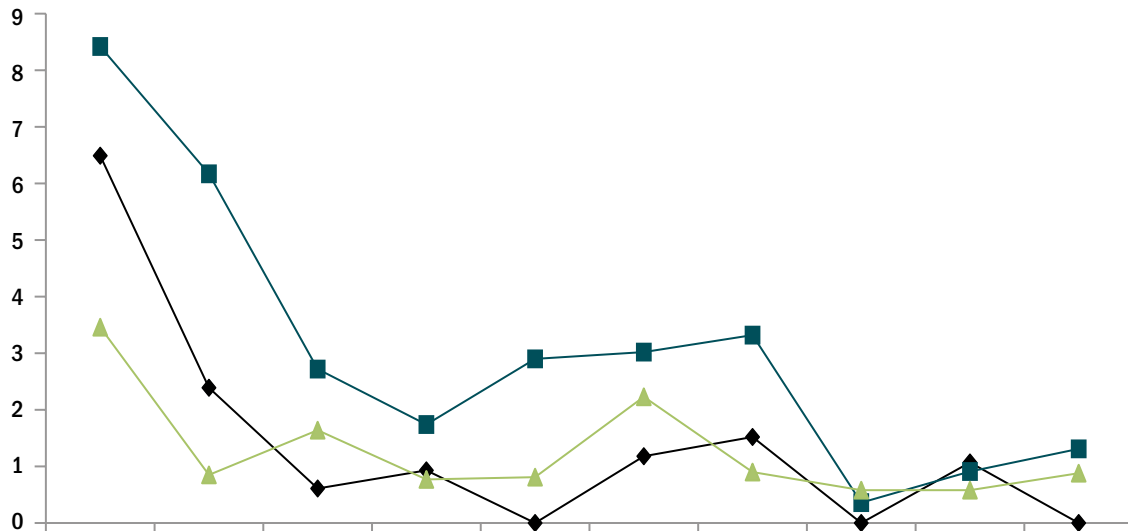
- ⁸ Among hospitals that voluntarily reported data to a national benchmarking database in 2001 (N=260) and 2009 (N=1,600), there was a 55 percent reduction in the pooled mean rate of central-line associated bloodstream infections in ICUs, from 3.64 to 1.65 per 1,000 central-line days. See: Centers for Disease Control and Prevention, “Vital Signs: Central Line–Associated Blood Stream Infections—United States, 2001, 2008, and 2009,” *MMWR Morbidity and Mortality Weekly Report*, Mar. 4, 2011 60(8):243–48.
- ⁹ P. Pronovost, D. Needham, S. Berenholtz et al., “An Intervention to Decrease Catheter-Related Bloodstream Infections in the ICU,” *New England Journal of Medicine*, Dec. 28, 2006 355(26):2725–32; and J. B. Sexton, S. M. Berenholtz, C. A. Goeschel et al., “Assessing and Improving Safety Climate in a Large Cohort of Intensive Care Units,” *Critical Care Medicine*, Feb. 3, 2011 [Epub ahead of print].
- ¹⁰ Additional case studies on patient safety–related topics are available or will be forthcoming on www.whynotthebest.org and www.commonwealthfund.org.
- ¹¹ D. B. Pryor, S. F. Tolchin, A. Hendrich et al., “The Clinical Transformation of Ascension Health: Eliminating All Preventable Injuries and Deaths,” *Joint Commission Journal on Quality and Patient Safety*, June 2006 32(6):299–308; and S. Hines, K. Luna, J. Lofthus et al., *Becoming a High Reliability Organization: Operational Advice for Hospital Leaders*, AHRQ Publication No. 08-0022 (Rockville, Md.: Agency for Healthcare Research and Quality, 2008).
- ¹² Sentara Healthcare measures rates of serious safety events, defined as a deviation from the expected performance or standard of care resulting in significant harm to the patient including death, permanent loss of function, or injury. Examples include misdiagnoses, medication errors, hospital-acquired infections, wrong-site surgery, and falls with serious injury. The measure, developed in cooperation with a consultant, is being used by approximately 100 hospitals. For methodology, see: C. Throop and C. Stockmeier, *SEC & SSER Patient Safety Measurement System for Healthcare*, HPI White Paper Series (Virginia Beach, Va.: Healthcare Performance Improvement, 2009), <http://www.hpireresults.com/resources.html>.
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- ¹⁵ D. McCarthy and S. Klein, *Sentara Healthcare: Making Patient Safety an Enduring Organizational Value* (New York: The Commonwealth Fund, March 2011).
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Appendix A. Select Study Site Results on Reducing Health Care–Associated Infections

Rates of Central Line–Associated Bloodstream Infections in Surgical Intensive Care Units at John Hopkins Hospital

Rate per 1,000 central line days

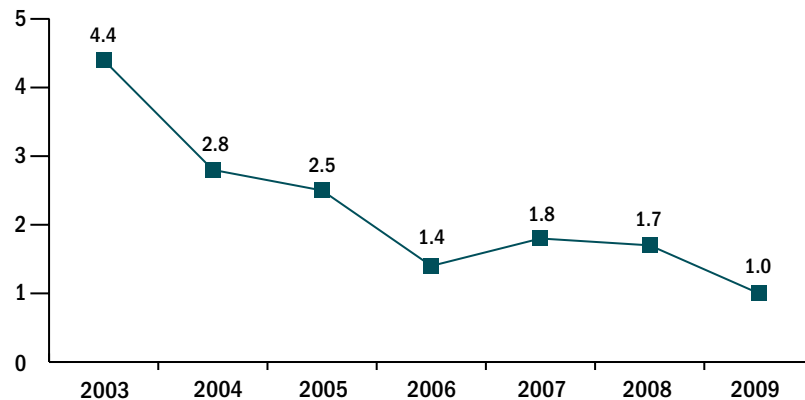


	2001	2002	2003	2004	2005	2006	2007	2008	2009	Q1-Q3 2010
◆ SICU	6.49	2.39	0.61	0.93	0	1.18	1.52	0	1.07	0
■ CSICU	8.42	6.17	2.72	1.74	2.9	3.02	3.32	0.36	0.91	1.31
▲ WICU	3.46	0.85	1.64	0.77	0.81	2.23	0.9	0.58	0.58	0.88

ICU = intensive care unit; SICU = surgical ICU, CSICU = coronary surgery ICU; WICU = Weinberg ICU.
Source: Johns Hopkins Hospital Epidemiology and Infection Control Department.

Rate of Ventilator Associated Pneumonia (VAP): OSF Saint Francis Medical Center (Peoria, Ill.)

Rate per 1,000 ventilator days

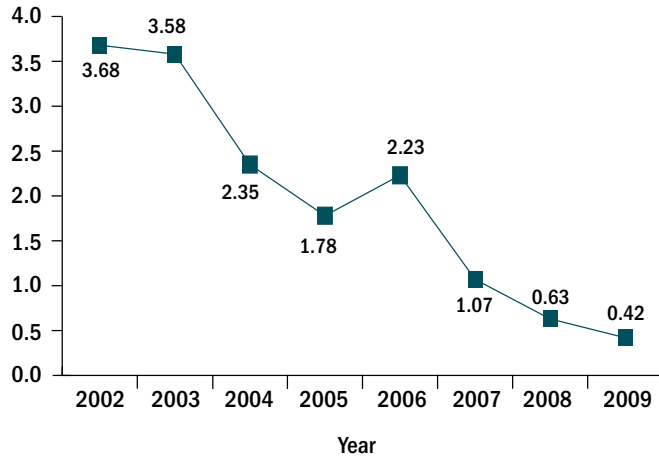


Source: OSF HealthCare.

Rate of Central Line-Associated Bloodstream Infections (CLABSI) Acquired by Patients in Sentara Intensive Care Units, 2002-2009

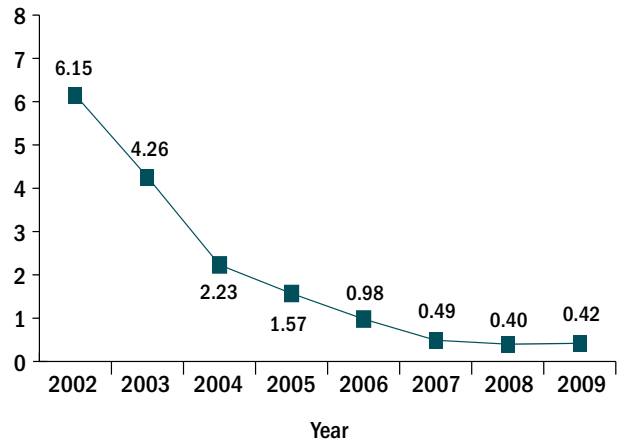
Central line-associated bloodstream infections

Rate per 1,000 line days



Ventilator-associated pneumonia

Rate per 1,000 ventilator days

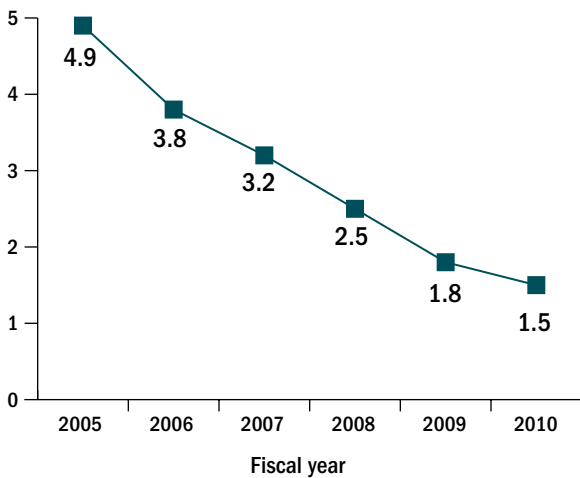


Source: Sentara Healthcare.

Rates of Health Care-Associated Infections in Veterans Affairs Intensive Care Units

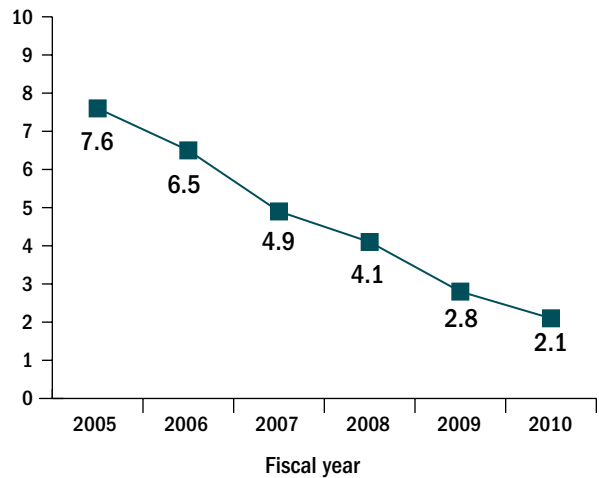
Central line-associated bloodstream infections

Rate per 1,000 line days



Ventilator-associated pneumonia

Rate per 1,000 ventilator days



Source: Department of Veteran Affairs, Inpatient Evaluation Center.

Appendix B. Summary of Patient Safety Self-Assessments by Case Study Sites (n=4)

Safety Category	Rating of Progress in Patient Safety (1–5)			Description and examples
	2000–2004	2005–2010*	Change	
Regulation & accreditation	3.25	4.50	1.25	5 = safety efforts meet relevant regulatory & accreditation requirements in a way that elevates the safety agenda (i.e., to “do the right thing”) 1 = safety efforts meet relevant regulatory & accreditation requirements but generally stop at satisfying “the letter of the law”
Reporting systems: Internal	3.25	4.75	1.50	5 = effective use of internal medical error and/or adverse event reporting or tracking system(s) to identify safety threats & actions to mitigate harm 1 = no internal reporting system, or lack of effective use
Reporting systems: External	2.75	4.00	1.25	5 = active participation in external medical error and/or adverse event reporting system(s) to enable benchmarking and improvement (e.g., CDC, Leapfrog, regional or consortium databases) 1 = no voluntary participation in external reporting systems
Health information technology	2.75	4.50	1.75	5 = systemwide implementation of interoperable EHR with advanced CPOE and clinical decision support capabilities 1 = no current implementation of EHR or CPOE
Accountability	3.25	4.25	1.00	5 = institutionalization of a “just culture” that strikes a balance between “no blame” for human error and accountability for “blameworthy” acts, with standards applied fairly to all staff (i.e., both doctors and nurses) 1 = no meaningful effort to instill a “just culture”
Workforce & training	2.50	3.75	1.25	5 = use of robust teamwork training, simulation, and other techniques to inculcate safety practices and behavior within the workforce 1 = none of the above
Organizational learning	3.00	4.50	1.50	5 = the organization learns from its errors and from others’ experiences and is able to disseminate lessons throughout the organization to mitigate risk and prevent harm 1 = little or no focus on systemic learning from errors
Patient engagement & involvement	3.00	4.00	1.00	5 = widespread adherence to policy for disclosure of medical errors to patients & families; robust programs to involve patients & families through education, advisory councils, feedback, etc. 1 = no meaningful patient engagement in safety
Organizational leadership engagement	3.25	4.75	1.50	5 = strong & consistent board & C-suite focus on patient safety as core organizational value (manifested in board oversight, use of executive walk-rounds, inclusion of safety in core performance metrics, etc.) 1 = patient safety not explicitly recognized or addressed as core value or tends to get pushed to the “back burner” by competing priorities
Collaborative improvement interventions	3.50	4.25	0.75	5 = active participation in collaborations or campaigns to improve patient safety, e.g., IHI campaigns, hospital associations, etc. 1 = no such participation
Payment system interventions	3.00	4.00	1.00	5 = payment reform or performance incentive programs are used as positive/productive levers/opportunities to improve patient safety 1 = such efforts/programs tend to focus on “teaching to the test”
AVERAGE	3.05	4.30	1.25	

*Most sites completed the self-assessment in the first half of 2010; one site did so in early 2011.

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This study was based on publicly available information and self-reported data provided by the case study institution(s). The Commonwealth Fund is not an accreditor of health care organizations or systems, and the inclusion of an institution in the Fund's case studies series is not an endorsement by the Fund for receipt of health care from the institution.

The aim of Commonwealth Fund–sponsored case studies of this type is to identify institutions that have achieved results indicating high performance in a particular area of interest, have undertaken innovations designed to reach higher performance, or exemplify attributes that can foster high performance. The studies are intended to enable other institutions to draw lessons from the studied institutions' experience that will be helpful in their own efforts to become high performers. It is important to note, however, that even the best-performing organizations may fall short in some areas; doing well in one dimension of quality does not necessarily mean that the same level of quality will be achieved in other dimensions. Similarly, performance may vary from one year to the next. Thus, it is critical to adopt systematic approaches for improving quality and preventing harm to patients and staff.

