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Improving Quality and Safety at an Academic Health Center

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Prescriptions for Excellence in
HEALTH CARE

Improving Quality and Safety at an Academic Health Center

By Evan M. Benjamin, MD, FACP

Health Center Profile

Baystate Health is a 3-hospital health system in Western Massachusetts. Its flagship hospital, Baystate Medical Center, is a 650-bed tertiary care referral center on the Western Campus of Tufts University School of Medicine. The medical center has a 1200-member medical staff with more than 250 full-time faculty physicians. In 2006, the medical center had more than 41,000 admissions and 27,000 surgeries.

Strategic Plan

Ten years ago, Baystate Health created a long-term strategic plan that has quality and patient safety at its core. The leadership recognized that providing the highest quality and safest care was the right thing to do – for our community *and* for ensuring growth of the institution.

The Board's priorities were to build a robust quality and patient safety improvement infrastructure (Figure 1) and to form a *Quality Committee*, comprising clinicians and quality improvement experts, to oversee performance improvement, health care quality, and patient safety activities. The
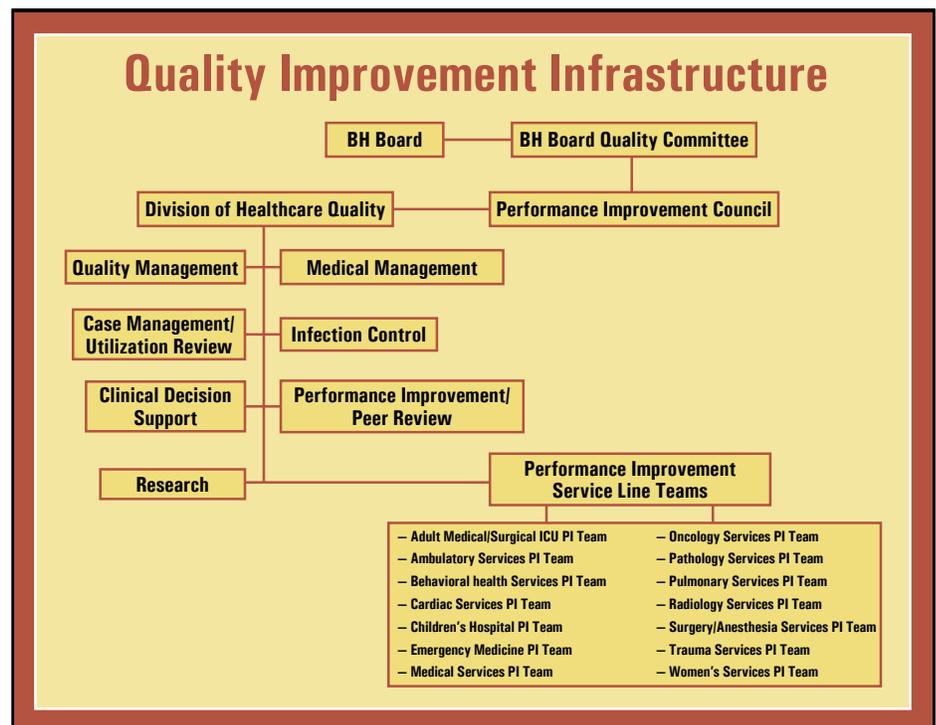
Figure 1. Quality Improvement Infrastructure

Performance Improvement Council is responsible for operational measurement and improvement of all service lines. Each service line, in turn, has a *Performance Improvement Team* that is co-chaired by an operational leader and a physician leader (usually the department chairman) and includes a performance improvement expert and a multidiscipline staff within that

service line. These Performance Improvement Teams have fixed agendas based on specific goals to improve effectiveness, patient safety, mortality rates, and patient satisfaction.

Led by a physician vice president with other medical staff functioning in full- and part-time

roles, the Division of Healthcare Quality (DHQ) helps to align all quality management, case management, infection control, performance improvement, and clinical decision support functions. When annual objectives are set for health care quality, the DHQ sets specific goals to drive change and improvement at the medical center.

Personnel at all levels – from full-time faculty and medical staff to senior leaders – must be engaged in advancing quality and patient safety. Senior leaders in particular must understand that the "business case for quality" focuses on the benefits of quality improvement (eg, good reputation, increased service volume), but also recognizes that poor quality is costly to the health system because it increases the likelihood of readmissions, complications, and untimely death, and is associated with longer lengths of stay and higher costs. Early on, Baystate's senior leadership supported the strategic plan by investing in new ways to reduce practice variation and improve quality and patient safety. That investment has resulted in improvement of the bottom line *and* the system's reputation. In addition to the quality and safety initiatives mentioned, the system has improved efficiency by lowering 1) inpatient and outpatient costs, 2) length of stay, and 3) inpatient and outpatient pharmacy costs through a reduction in practice variation.

Strategies for improvement

The 4 major improvement strategies that continue to guide Baystate's quest for performance excellence are 1) information technology, 2) measurement and reporting, 3) organizational change, and 4) process redesign and reliability.

1. *Information Technology (IT)*. The information infrastructure was improved to support an electronic medical record (EMR) and computerized physician order entry (CPOE) system. This robust information infrastructure has supported efforts to reduce medical errors and practice variation by allowing guidelines and order sets to be imbedded in the CPOE system, providing medical decision support in real time, prompting consistent choices in health care delivery, and enabling the longitudinal data collection necessary for understanding care outcomes. IT also supports a non-punitive safety culture via an online safety reporting system that allows staff to enter data on all errors and "near-misses" in the health system.

2. *Measurement and Reporting*. Process and outcomes measurement is essential for fostering open discussions about quality and patient safety. The performance improvement system uses data from all service lines to assess and improve care based on best practices and benchmarking. Updated reports on processes, mortality, and costs as compared to national benchmarks are used to drive Baystate's performance. One area of focus has been reducing hospital complications and hospital-acquired infections by targeting the prevention of surgical-site infections, ventilator-associated pneumonia, and bloodstream infections.

3. *Organizational change*. Physicians and clinicians work in teams that care for populations over time. We have begun to teach specific team skills that incorporate human factors principles and cultural change to improve quality and patient safety. The goal of teamwork training is to introduce tools and strategies to improve communication and teamwork, thereby reducing the chance of error and providing safer care. Another important organizational change concept is understanding safety as a system property. We have used the AHRQ Team STEPPS curriculum as a foundation for our teamwork training (http://www.usuhs.mil/cerps/TeamSTEPPS.html).

4. *Process Redesign using reliability principles*. Reliability can be defined as a failure-free operation over time. The Institute of Healthcare Improvement's innovation team has developed a failure rate vocabulary to describe processes in health care[1]; for instance,

- 10^{-1} reliability = approximately 1 defect per 10 process opportunities. It is generally associated with inconsistent processes that lack human factors principles in their design.
- 10^{-2} reliability = approximately 1 defect in 100 opportunities. This reliability designation indicates the use of human factors design principles.
- 10^{-3} or better performance indicates the use of human factors design principles with a specific framework to further mitigate failure.

To achieve truly reliable care of 10^{-2} reliability or better, our health care system must employ concepts of human factors design principles with a framework to mitigate failure.

Baystate's Quality Improvement Process

Areas of opportunity are detected through a measurement and benchmarking process. Quality action teams (formed by Performance Improvement [PI] Teams at the medical center) consisting of key physician champions review processes and work with performance improvement experts to help adapt and develop evidence-based clinical practice guidelines. The quality action teams attempt to redesign processes

Baystate Medical Center FY 2006-2008 Strategic Plan Metrics as of September 2006 YTD (Updated 1/8/2007)
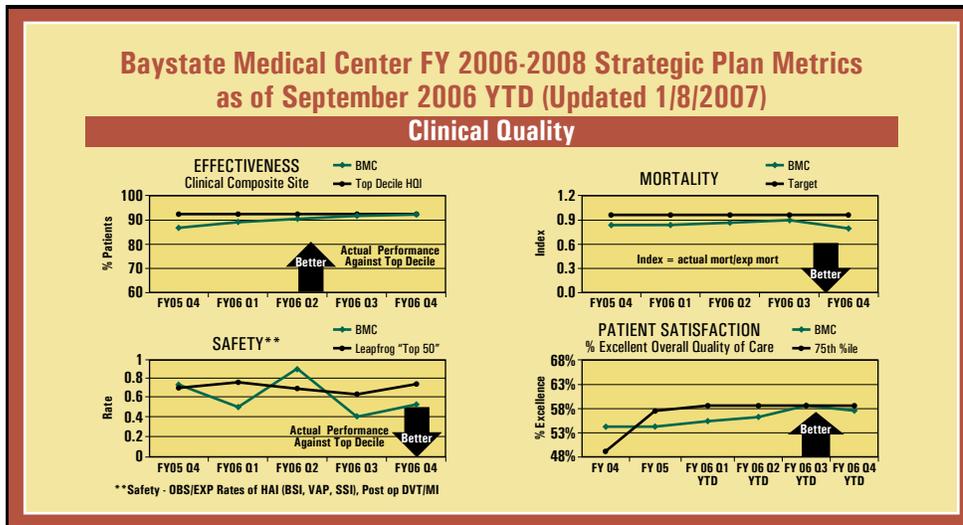
Clinical Quality

Figure 2. Quality Dashboard

(continued from page 2)

to achieve a 10^{-2} reliability rating. Using improvement tools, PI teams measure and track progress, accelerating improvement through cycles of the Plan-Do-Study-Act (PDSA) processes. Recommendations are disseminated through mailings, grand rounds, pocket cards, and handheld electronic devices (eg, PDAs), as well as in the EMR and IT infrastructure. The CPOE is used to communicate guidelines and order sets for standardizing care. Finally, Clinical Effectiveness Nurses and Hospital Case Managers form a "quality safety net," working with physicians to promote adherence to best practices guidelines.

Outcomes

Multiple processes were redesigned by adopting reliability principles. Standardization of care based on evidence has resulted in reduced practice variation, increased reliability of processes, and improved outcomes. A newly developed quality dashboard (Figure 2) is shared with the Board Quality Committee to aid in tracking our "big dots" of Effectiveness, Mortality, Safety, and Patient Satisfaction. The "effectiveness score" is a composite score of more than 60 process measures throughout the health system, including publicly-reported core measures and numerous processes in key clinical areas.

Aggressive benchmarks are used to assure performance in the top decile nationally.

Mortality is tracked by population, by service line, and overall. Risk-adjusted mortality rates have remained stable or declined in the health system over the past 10 years. "Patient safety score" (ie, a roll-up score of hospital-acquired infections and postoperative complications such as venous thromboembolism and myocardial infarction) are tracked against a national benchmark to gauge progress and performance compared to peers. Patient satisfaction is also tracked against a national benchmark and reported to senior leadership on the clinical quality dashboard.

Conclusions

- Improving quality and patient safety is the result of strategic planning with a specific vision and investment in infrastructure.

- The organization must understand the rationale for quality improvement *and* the business case for quality.

- An intentional strategy that helps to align numerous departments across the organization is necessary for success.

- It is important to have a quality improvement infrastructure that

combines expertise in improvement methods, knowledge of reliability science, and concepts of the system properties of patient safety.

- Physicians play a pivotal role as champions and leaders in improving health care quality.

- A culture of openness is vital to the success of an organization's quality and safety program.

- Forums to discuss quality of care and medical errors must exist in the organization.

- Specific strategies - including IT, a robust measurement system, openness to change, redesign based on human factors, and teamwork - are vital to success.

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1. Nolan T, et al. *Improving the Reliability of Health Care.* Cambridge, MA: Institute for Healthcare Improvement; 2004.