HOSPITAL QUALITY IMPROVEMENT: STRATEGIES AND LESSONS FROM U.S. HOSPITALS

Sharon Silow-Carroll, Tanya Alteras, and Jack A. Meyer
Health Management Associates

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ABSTRACT: This report focuses on the dynamics of hospital performance: how hospitals achieve and sustain improvements over time. Case studies of four hospitals that made substantial improvements reveal a pattern: 1) a trigger such as a crisis or new leader serves as a "wake-up call" that prompts the hospital to make 2) organizational and structural changes such as multidisciplinary teams, quality-related committees, and technology investments, which facilitate 3) a systematic problem-identification and problem-solving process, resulting in 4) new treatment protocols and practices, which in turn result in 5) improved outcomes. Success strengthens commitment to quality improvement and turns this temporal pattern into an ongoing cycle. The entire process reflects the establishment, growth, and reinforcement of a culture of quality. A companion report, *Hospital Performance Improvement: Trends in Quality and Efficiency*, presents results of a quantitative examination of the degree to which hospitals are improving (or deteriorating) in quality and efficiency over time.

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ABOUT THE AUTHORS

Sharon Silow-Carroll, M.B.A., M.S.W., is a health policy analyst with nearly 20 years of experience in health care research. She has specialized in health system reforms at the local, state, and national levels; strategies by hospitals to improve quality and patient-centered care; public–private partnerships to improve the performance of the health care system; and efforts to meet the needs of underserved populations. Prior to joining Health Management Associates (HMA) as a principal, she was senior vice president at the Economic and Social Research Institute (ESRI), where she directed and conducted research studies and authored numerous reports and articles on a range of health care issues.

Tanya Alteras, M.P.P., is a senior consultant at HMA. Formerly a senior policy analyst at ESRI, she has over six years of experience examining issues related to health care financing, expanding coverage for uninsured populations, and developing cost-effective private–public coverage options. At ESRI, Ms. Alteras conducted research on a number of topics, including health coverage for adults without children, health coverage tax credits, oral health, and state- and community-based strategies for covering the uninsured, with a focus on strategies that involve leveraging scarce public resources with private sector funds.

Jack A. Meyer, Ph.D., is a health economist with more than 20 years of experience leading health care research and consulting projects. He has directed in-depth health research projects for numerous foundations and conducted policy analysis and strategic planning for government agencies and clients in the business community. Dr. Meyer specializes in developing and evaluating proposals to cover the uninsured at both the national and state levels. He has also focused on initiatives of both private employer groups and government to improve quality and patient safety. Prior to joining HMA, Dr. Meyer was the president of the Economic and Social Research Institute.

Health Management Associates (www.healthmanagement.com) is a national research and consulting firm specializing in complex health care program and policy issues. Founded in 1985, in Lansing, Michigan, Health Management Associates provides leadership, experience, and technical expertise to local, state, and federal governmental agencies, regional and national foundations, multi-state health system organizations and single-site health care providers, as well as employers and other purchasers in the public and private sectors.

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Mark Kestner, clinical vice president for quality
Lewis Low, medical director, inpatient medicine service
LuAnn Staul, director, critical care nurses and critical care system

Rankin Medical Center, Brandon, Miss.
Davis A. Richards III, chief executive officer
Margaret Stubblefield, director of quality/risk management
Rhonda Parker, performance improvement coordinator

St. Mary's Health Care System, Athens, Ga.
Brenda Dugger, senior vice president of patient care services
Jackie Ginter, director of quality and performance improvement
Jeff Frehse, director of risk management and compliance
Avery McLean, director of marketing

EXECUTIVE SUMMARY

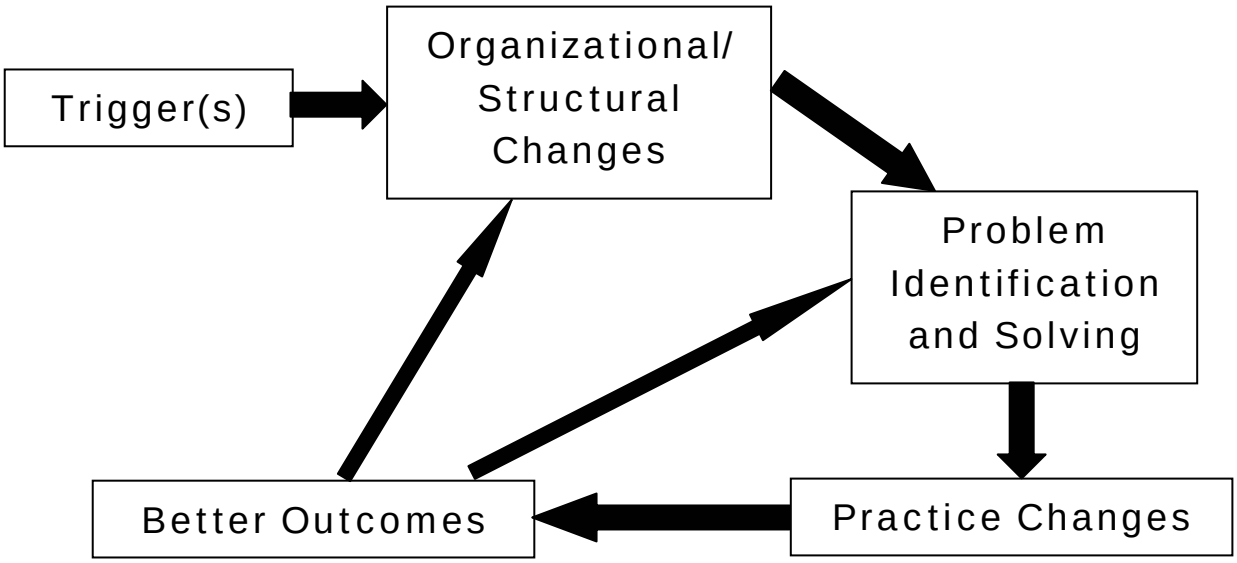
Since the Institute of Medicine's landmark reports, *To Err Is Human* (2000) and *Crossing the Quality Chasm* (2001), revealed widespread incidence of medical errors in U.S. hospitals, there has been a great deal of effort to measure and improve the quality of hospital care.[1] Much progress has been made in developing quality indicators and risk-adjustment mechanisms to compare quality across institutions, and in examining practices and cultures in high-performing hospitals. Little is known, however, about the dynamics of hospital performance: the degree to which hospitals are improving (or deteriorating) over time, and how they achieve and sustain that improvement. This study examines such trends and change strategies. It combines quantitative analysis of quality and efficiency trends, using three hospital databases, with case study analysis of four hospitals that experienced significant improvement in a composite quality indicator based on risk-adjusted mortality, complication, and morbidity rates.

The quantitative analysis, led by Eugene Kroch and Michael Duan of CareScience, Inc., and described in the companion report, *Hospital Performance Improvement: Trends in Quality and Efficiency,* found significant improvements in mortality rates, likely indicating that hospitals have been getting better at keeping people alive through error reduction, improved technologies, adherence to evidence-based protocols, and other strategies.[2] The improved mortality scores may also be attributed in part to more conscientious coding of comorbidities, and to discharging of sicker patients who may expire in home or hospice settings.

WHAT IT TAKES TO BE A "TOP IMPROVER" IN QUALITY: CASE STUDY ANALYSIS SUMMARY

Based on interviews with key informants at four hospitals that were among the top improvers (displaying significant, steady improvement in the composite quality measure from 2002–2004), we found a common temporal and ultimately cyclical sequence of factors resulting in change (Figure ES-1).[3]

Figure ES-1. Quality Improvement Sequence



1. A ***trigger*** serving as a "wake-up call" that prompts the hospital to begin or renew an emphasis on quality improvement, marking the beginning of cultural shift and leading to . . .

2. ***organizational and structural changes*** such as establishment of quality-related councils and committees, empowerment of nurses and other staff, and investments in new technology and infrastructure that facilitate . . .

3. ***a new problem-solving process,*** involving a standardized, systematic, multidisciplinary team approach to identify and study a problem area, conduct root cause analysis, develop action plans, and hold team leaders accountable, resulting in establishment of . . .

4. ***new protocols and practices,*** including evidence-based policies and procedures, clinical pathways and guidelines, error-reducing software, and patient flow management techniques, leading to . . .

5. ***improved outcomes*** in process and health-related measures (e.g., patient flow, errors, complications, mortality), satisfaction and work environment, and "bottom line" indicators such as reduced length of stay and increased market share. Experiencing such positive results then served as motivation to hospital staff to expand their efforts, thus turning the above sequence into a self-sustaining cycle. That is, the improved outcomes led to further impetus to change, accelerated change, and a spreading of the "change culture" to other parts of the institution. This entire sequence reflects the establishment, growth, and reinforcement of a culture of quality.

"Trigger" Situations or Events

All four hospitals cited negative or positive trigger events that motivated a new emphasis on quality, including:

- a series of medical errors with tragic results, which were reported in the media;
- arrival of a new CEO with a strong interest in patient service and quality;
- noticeable increases in length of stay and readmissions for certain conditions;
- significant loss in market share for certain services that led to dissatisfaction among staff and patients;
- new evidence and awareness of the potential for hospitalists and intensivists to promote multidisciplinary care, based on a growing body of literature indicating their ability to coordinate care, leading to improved outcomes;[4] and
- the Institute of Medicine report, *To Err Is Human,* that provided clear evidence of widespread medical errors in hospitals nationwide.

A few hospitals mentioned that changes to payment (e.g., pay-for-performance incentives, reimbursement adjustments) as well as assistance from quality improvement organizations (QIOs) served as incentives to improve quality in the period after the study (2002–2004). Such factors could potentially act as triggers for hospitals in the future.

Organizational and Structural Changes

After the trigger events, the hospitals made organizational changes that both reflected and nurtured a "culture of quality." They also created structures and processes to monitor performance, identify deficiencies, and devise, test, and implement solutions. The organizational changes included:

- creating or reenergizing councils, committees, or commissions responsible for monitoring and ensuring success of quality improvement efforts;
- elevating the role of the quality improvement and performance departments and providing them with sufficient resources (including increasing budgets for quality activities beyond one-time capital expenditures);
- instituting policies that encouraged staff to express concerns, identify deficiencies, and challenge the status quo such as nurse empowerment programs (along with granting nurses greater autonomy), anonymous reporting systems, CEO "open door" policies, and staff-wide open discussions on topics of concern;

- creating multidisciplinary teams to provide patient care and/or address deficiencies made up of staff who can best devise, test, and implement solutions and are held accountable for success;
- establishing or expanding hospitalist and intensivist programs to improve care coordination and access to physician services for inpatients;
- nurturing physician and nurse champions to take the lead in developing protocols to address deficiencies and to encourage and educate their peers on new practices and procedures;
- using public performance reports as opportunities to identify deficiencies and improve care, health outcomes, and patient satisfaction (the Joint Commission on Accreditation of Healthcare Organizations' Core Measures were uniformly deemed extremely valuable);
- reporting to Boards of Directors and parent health systems that closely monitor and set quality-related goals; and
- acquiring executives who communicate a culture of quality through personal example, supportive policies, and investment of resources (e.g., state-of-the-art diagnostic equipment, health information technology, and quality improvement staff).

Protocol and Practice Changes

As structural and organizational changes established standardized, systematic processes for problem-solving, hospitals were able to test and implement major practice changes. Examples include:

- clinical guidelines, protocols, or "care maps" for specific conditions or procedures;
- department-specific quality plans, with short- and long-term goals;
- improved educational and training materials for clinical staff on error reduction, hand-washing, and infection prevention;
- strategies for reducing need for patient restraints;
- educational materials for patients regarding fall prevention; and
- information technology that reduced medication errors and improved data collection.

Improved Outcomes

The practice changes appear to have resulted in improved outcomes for patients and the institutions themselves. In addition to major improvements in the combination quality

measure (based on mortality, morbidity, and complication rates), interviewees cited the following examples of improvements:

- process/operations: faster receipt of test results, faster patient flow, easier and more efficient data sharing and recording, fewer medication errors;
- health-related: reductions in mortality, blood infections, pneumonia, complications, readmissions, patient falls, and use of or need for restraints;
- work environment and reputation: increases in patient satisfaction and staff satisfaction/morale, improved status in community, greater ability to attract quality;
- staff and physicians; and
- bottom line: decreased costs per hospitalization and length of stay for certain conditions and increased admissions and/or market share.

These positive outcomes motivated staff and hospital leaders to strengthen their efforts and in this way reinforced the quality improvement process.

CHALLENGES AND LESSONS LEARNED

Change does not happen easily, as these hospitals learned. Further, the amount of time after changes were made before meaningful results were seen varied considerably within each of the hospitals, depending on the nature of the change and the rate of acceptance and adoption by staff. The hospitals studied struggled with:

- resistance to change in culture and specific protocols from physicians and nurses;
- limited resources available to make or maintain quality-related investments; and
- complacency with past improvements.

Lessons from the four hospitals' experiences that could assist other hospitals trying to establish a culture of quality include the following:

- set short-term, attainable goals and celebrate successes (and the individuals involved) in reaching them;
- keep the staff involved in problem identification and problem-solving, valuing everyone's experiences and encouraging as well expecting all to participate;
- nurture dedicated leaders and champions who encourage and "bring along" their peers;

- be patient but unrelenting, recognizing that change takes time and continuing to keep quality improvement "on the front burner"; and
- balance quality and financial goals, considering investments in quality improvement from a short- and long-term perspective.

HOW CAN PUBLIC POLICY HELP?

Representatives of the four hospitals suggested the following potential roles for public policy in facilitating quality improvement efforts:

- standardize reporting requirements;
- ensure accuracy and clarity of public reporting;
- educate consumers in interpreting information and using it appropriately;
- supporting pay-for-performance (P4P) programs that use "carrots" (rewards) rather than "sticks" (penalties);
- offer incentives such as tax credits to providers who participate in P4P programs; and
- continue to document and publicize quality issues.

Table ES- 1 summarizes this improvement process at the four case study hospitals.

Table ES-1. Summary of Case Study Sites and Their Improvement Processes

Organization/ Setting	Trigger	Organizational/Structural Changes	Examples of Practice Changes (processes, procedures)	Results (examples)
Beth Israel Medical Center, New York, N.Y. Very large, 1,080-bed teaching hospital in urban setting, part of a five-hospital not-for-profit system	▪ Series of publicized cases re: tragic medical errors and poor judgment	▪ Creation of board-level commission on quality ▪ Additional staff and responsibilities for Quality Improvement (QI) dept., VP position overseeing QI ▪ Replacement of two physician chairmen ▪ New division chief of quality position established in dept. of medicine; QI "champion" ▪ Critical Care Coordination Committee established ▪ Focus on new JCAHO Core Measures ▪ Patient care redesign; more training for aides ▪ Multidisciplinary leadership teams ▪ Best practices group established	▪ Clinical guidelines and "care maps" for heart failure, acute myocardial infarction (AMI), and pneumonia (JCAHO Core Measures), stroke protocols ▪ New policies re: bringing equipment into operating rooms ▪ New complaint system with anonymous hotline, zero tolerance for bad behavior ▪ Departmental quality plans with specific goals ▪ Sharing of best practices among health system hospitals ▪ Continuous Quality Improvement (CQI) training of staff	▪ Reduced deep vein thrombosis (blood clots) ▪ Reduced infections and complications ▪ Reduced patient mortality rates ▪ Improvement in JCAHO Core Measures ▪ Reduced readmissions, lengths of stay ▪ Healthy, robust Ob/Gyn program
Legacy Good Samaritan Hospital, Portland, Ore. Large 539-bed hospital in an urban setting, part of a six-hospital system	▪ Recognition of increases in lengths of stay and readmissions for some conditions ▪ New awareness of hospitalist model, multidisciplinary care strategies	▪ Establishment of hospitalist and intensivist services, multidisciplinary patient care ▪ Reinvention of Critical Care Committee to address development of new care protocols ▪ Using Good Samaritan as a testing site before implementing strategies across the Legacy Health System ▪ Standardized process for implementing new protocols: design, implement, evaluate, broad roll-out	▪ Preprinted orders for heart failure, AMI, and pneumonia ▪ Automated pharmacy orders ▪ Empowerment of bedside nurses ▪ New protocols for hypoglycemia, infection, etc. based on JCAHO Core Measures ▪ Implementation of new technologies for medication dispensing, paperless hospital	▪ Dramatic decrease in pneumonia and blood stream infections; subsequent cost savings ▪ Decreased lengths of stay and/or mortality for some populations ▪ Cost per hospitalization decreased under hospitalist service

Organization/ Setting	Trigger	Organizational/Structural Changes	Examples of Practice Changes (processes, procedures)	Results (examples)
Rankin Medical Center, Brandon, Miss. Small 90 (active acute care) bed community hospital serving rural and suburban counties, part of a 65-hospital for-profit system	▪ New CEO with strong commitment to QI ▪ Acquisition by for-profit health system ▪ IOM report on medical errors	▪ Additional staff for QI department, with expertise in evidence-based medicine ▪ Sharing of best practices with other hospitals in health system, and in region/state through state QIO ▪ Open door policy by CEO (facilitates activity of Quality Steering Council) ▪ Performance Improvement Teams ▪ Acquisition of new imaging and diagnostic equipment ▪ Physical plant improvements	▪ Development of clinical pathways ▪ Improved educational materials for patients ▪ Reader-friendly guide for reducing risk of falls ▪ Education to clinical staff on safety measures, error reduction, infection prevention ▪ Testing of alternatives to patient restraints ▪ Software for e-mail medication orders	▪ Reduction in medication errors re: transcription of orders ▪ Reduction in falls ▪ Reduction in use of patient restraints
St. Mary's Health Care System, Athens, Ga. Small 165-bed suburban hospital, part of 33-hospital Catholic Hospital system	▪ New CEO with strong commitment to QI and health information technology ▪ Loss of staff and market share due to outdated practices	▪ Establishment of Patient Safety Committee and Quality Council ▪ Empowerment of bedside nurses ▪ Expansion of hospitalist service	▪ Implementing new protocols based on JCAHO Core Measures ▪ "One call" program by nurses for doctors ▪ Creation of a JCAHO-certified stroke program and center, certified neurosurgery center, and new family care center ▪ DRG (diagnosis-related group) assurance program to improve coding ▪ Automated pharmacy dispensing	▪ 20% increase in admissions between 2004 and 2005 ▪ Significant increases in patient satisfaction ratings ▪ Scored 99.6% on Georgia Hospital Association quality and accountability index

HOSPITAL QUALITY IMPROVEMENT: STRATEGIES AND LESSONS FROM U.S. HOSPITALS

I. INTRODUCTION/BACKGROUND

STATEMENT OF PURPOSE

Despite much excellent research in recent years, there appears to be a gap in knowledge about widespread changes over time in performance at the hospital level. The objective of this study was to use a combination of quantitative and qualitative research to gain a better understanding of the dynamics of hospital performance. We sought to examine patterns of hospital quality and efficiency over time and identify approaches that have been successful in improving health outcomes. The goal was to produce information that could be used to improve hospital performance across the country.

In this qualitative phase of the study, we attempted to answer the following questions:

- Among the "top improvers" in quality, what forces or events motivated them to seriously address quality issues?
- What were the key strategies or ingredients in place that likely led to improvement on the quality indicators?
- What barriers did the hospitals face in implementing the strategies or achieving success? Did they overcome these obstacles, and, if so, how?
- What lessons can be learned from their experiences? What public policies or private practices can help other hospitals understand and replicate the successful strategies?

HYPOTHESES

Based on our own preliminary work and a review of the literature (summarized below), we hypothesized that some of the "ingredients" that we identified through our prior study on hospital quality improvement, *Hospital Quality: Ingredients for Success,* as key contributors toward high performance are also key contributors toward improvement over time. These might include: implementation of aggressive quality targets and the regular reporting of and accountability for performance indicators; tightening of recruitment and credentialing standards; enhanced respect for and role of nurses; enhancement of quality improvement processes that "drill down" to identify and rectify the root causes of problems in quality and efficiency; and new investments in quality-related information technology combined with staff/physician input and buy-in.[5]

Below we review some recent literature that has informed our work and shed light on this complex area.

REVIEW OF LITERATURE

Disparities in Hospital Performance

Evidence of poor and sub-par quality among hospitals has been well documented in recent years.[6] In response, the federal government, foundations, and the private sector have funded research to identify best clinical practices and develop strategies to reduce medical errors and improve health outcomes. A major element of this work has involved defining and measuring quality and developing indicators of performance to compare hospitals across the country.

Following the Institute of Medicine (IOM) reports, *To Err Is Human* and *Crossing the Quality Chasm,* several studies were conducted to ascertain how quality within the hospital setting could be appropriately measured.[7] Perhaps the most far-reaching of these studies was the "High Performers Special Study" (HPSS), supported by the Centers for Medicare and Medicaid Services (CMS).[8] The goal of the HPSS was to develop and implement a methodology for defining quality performance and identifying high-performing hospitals and the practices and characteristics that set them apart from other hospitals. Using quantitative performance data on acute myocardial infarction (AMI), congestive heart failure (CHF), and pneumonia, the researchers identified high-performing and non-high-performing hospitals throughout the nation. Based on in-depth interviews with 110 key informants at six matched pairs of high and non-high performers, four common quality improvement models of high-performing hospitals were differentiated according to various aspects of culture, technology, responsibilities, priorities, and targets. Within these four models, the researchers further identified specific basic and high-leverage "change ideas." In addition to developing methodologies for scoring hospitals on their performance and levels of leadership effort and commitment to quality improvement, the authors found that achieving high levels of quality in hospital performance requires an approach that actively creates links between the quality improvement dimensions of responsibility/involvement/reward; communications; quality management strategies; clinical management strategies; and monitoring.

In other important research, Ashish Jha and colleagues found major disparities in quality not only across regions and different types of hospitals, but also within hospitals across different conditions and disease states.[9] The research team looked at 10 measures that reflect quality of care for AMI, CHF, and pneumonia. The authors' finding regarding inconsistency of quality within the walls of an individual hospital raises a new set of

questions about how to accurately assess the overall quality of a hospital, and how best practices can be transferred from one department to another within an institution.

Factors Behind Disparities in Quality

Once major disparities in hospital quality were acknowledged, many researchers and clinicians have tried to understand why some institutions perform better than others. They have shed some light on the role played by a number of factors, or "ingredients." For example, in a prior study we conducted for The Commonwealth Fund, we found that top-performing hospitals are distinguished from others in the following ways:

- they develop the right culture for quality to flourish;
- they attract and retain the right people to promote quality;
- they devise and update the right in-house processes for quality improvement; and
- they give staff the right tools to do the job.[10]

A number of hospitals and health systems have put such practices in place, often supported by information technology to assist physicians and patients. Others have instituted an explicit quality-related mission and aggressive quality-related targets; emphasized selective hiring, credentialing, and re-credentialing; instituted an iterative process of discovery followed by corrective actions and accountability; and invested in tools to abstract medical records, analyze data, and facilitate the improvement process.

In 2005, a survey of hospital chief executive officers from more than 100 top national benchmark hospitals shed additional light on characteristics of high performance, particularly in the area of culture development and staff recruitment and retention. Findings included:

- CEOs of top national benchmark hospitals are more likely to be promoted from within and have more operational experience and reach higher levels of education than their counterparts at other hospitals. Additionally, they more often promote from within to form their senior leadership teams.
- High-performing hospitals have adopted strategies focused on nursing such as shared governance, pay for performance, and pursuit of "magnet" status.[11]

Implementing Quality Protocols

Looking beyond the necessary ingredients for overall quality transformations, several studies examined specific factors that helped or hindered the implementation of protocols designed

to improve quality of care for certain conditions. Elizabeth Bradley and colleagues found that organizational support for change was the most significant factor in successful implementation.[12] The researchers looked at rates of beta blocker prescriptions post-AMI and concluded that an institution's organizational environment—specifically administrative support or physician leadership for quality improvement—was as important a correlate with quality improvement as were post-AMI beta blocker prescription rates. The researchers also assert that quality improvement efforts are most successful when the administrative and clinical arms of the hospital have a shared goal of improving medical practice.

One of the tenets underlying implementation of quality improvement initiatives is the use of evidence-based practices. A study conducted by the Brain Trauma Foundation examined barriers to complying with evidence-based clinical guidelines for the management of severe traumatic brain injury (TBI) in hospital settings.[13] The author concluded that a "powerful set of forces for integration" must exist at an institution in order to counterbalance the fragmented nature of trauma care so that TBI guidelines can be successfully implemented. This underscores the findings noted above about the importance of organizational commitment and medical and administrative leadership. Specific ingredients that underlie TBI guideline implementation include an investment in training nurses and physicians in coordinated care and communication strategies; getting buy-in from administrative and high-level staff; and providing staff with hands-on change agents who can guide the process.

Creating Quality Improvement Incentives

Using financial incentives to promote quality processes is not a new concept, but it has recently gained momentum in the pay-for-performance (P4P) movement. A growing number of state employee health plans, Medicaid programs, private commercial health plans, and hospitals around the country have established P4P programs for their networks of physicians or health plans, typically based on the providers' achievement of pre-set outcome goals.[14] Meeting these goals is often rewarded by extra payments, generally equal to a small percentage of the provider's or health plan's regular payment.

With the passage of the Medicare Modernization Act of 2003 (MMA), movement toward establishing a national P4P program is evident. The MMA established a small financial incentive, 0.4 percent of payments, to motivate hospital reporting on 10 quality indicators for AMI, CHF, and pneumonia. These data are currently submitted by almost all acute care hospitals, creating an easy jumping off point for CMS to implement this strategy. The recently enacted Deficit Reduction Act increased the financial incentive to 2 percent and allows the Department of Health and Human Services to expand or replace

measures. Further, the Administration will soon require all health care providers who receive federal funds to adopt quality-measurement tools and uniform information technology standards. Since the MMA's passage, the federal government has also conducted P4P demonstration projects for hospitals and physician groups. Some observers predict that Congress will soon pass legislation phasing in P4P for CMS programs, which will affect physicians, hospitals, and health plans.

Hospital Quality over Time

Relatively little is known about the dynamics of hospital performance: the degree to which hospitals are improving over time, and how they achieve and sustain that improvement. A report by Douglas McCarthy and David Blumenthal examined 10 hospitals, all of which were motivated by the IOM report on medical errors, to see how they took action in five key areas: promoting a culture of safety, improving teamwork and communication, enhancing rapid response times, preventing infections related to intensive care units, and preventing adverse drug events throughout the hospital.[15] The case study sites all identified organizational culture change, or "the creation of a patient safety culture," to be the most critical element in improving patient safety and quality of care. Patient safety and quality improvement initiatives were also correlated with staff empowerment, which subsequently led to a reduction in staff turnover.

II. Case Study Analysis: What It Takes to Be a Top Improver in Quality

METHODOLOGY

The researchers relied on a number of criteria in selecting the four hospitals for case study. We used a list developed in our quantitative analysis (led by Eugene Kroch and Michael Duan of CareScience, Inc.) of the 100 top-improving hospitals in quality-related measures among the nearly 3,000 acute care hospitals in the database.[16] That is, these hospitals showed the biggest improvement compared to where they started. We further narrowed the potential pool by identifying those hospitals showing steady improvement over the three years (2002–2004), giving us greater confidence that the hospitals were experiencing a true improvement trend rather than a more haphazard "up–down" or "down–up" pattern. We also eliminated from our list those hospitals showing a decline in efficiency over the period.[17]

From the remaining pool, we identified a subset of institutions that would offer some diversity in institution size, geographic location, demographic served (urban, suburban, or rural), and teaching versus non-teaching status. We then contacted representatives at the hospitals (generally the director or vice president of quality management), described the study, and requested their participation. Each hospital that agreed to participate received a detailed interview guide, which was developed by the researchers based on findings from our previous work as well as current literature on hospital quality, performance improvement, patient safety, and error prevention (see Appendix).[18]

In the end, we recruited the following four hospitals to participate:

- Beth Israel Medical Center in New York City: very large, northeast, urban, teaching;
- Legacy Good Samaritan in Portland, Oregon: large, northwest, urban, non-teaching;
- Rankin Medical Center in Brandon, Mississippi: small, southern, rural/suburban, minor teaching; and
- St. Mary's Health Care System in Athens, Georgia: small to mid-size, southern, suburban, non-teaching.

The research team conducted interviews with multiple individuals who were working at the hospitals and involved in the clinical and quality processes that were developed and implemented during the 2002–2004 study period. These generally included the director and vice president of quality management, the CEO, the director of nursing and/or the

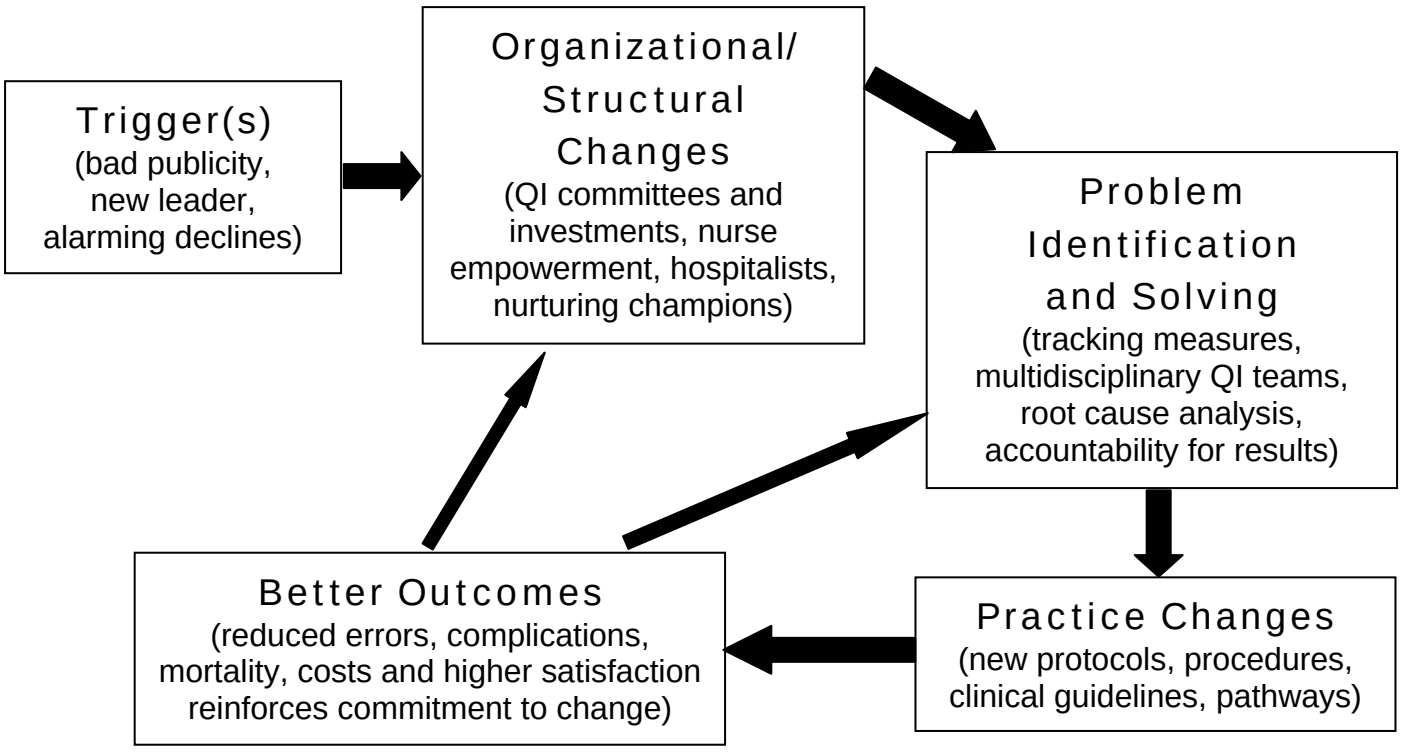
medical director or physician champion, and a director of marketing. A site visit was made to Beth Israel Medical Center, with interviews held with staff in person; telephone interviews were conducted with representatives at the other participating hospitals.

The four case studies included in this report are meant to provide examples of how certain hospitals addressed their concerns over quality of care and patient safety for their population. Clearly, the small sample is not meant to be generalizable to all hospitals. But by examining the cultural, organizational, and structural changes that took place and strategies that were implemented, the qualitative portion of this study seeks to draw connections between changes in processes and positive outcomes. It is also intended to provide examples of innovative ideas and lessons learned in the implementation process for other institutions. We caution against citing any one of these strategies as the single cause of higher quality or efficiency scores as reflected in these data. Rather, we hope to illustrate common themes across a varied set of hospitals and suggest a set of factors or ingredients that together contribute to improvements in quality over time.

KEY FINDINGS: THE IMPROVEMENT PROCESS

Despite the major differences among the four hospitals studied in terms of size, location, populations served, and teaching status, we found a strikingly similar process of change (Figure 1).

Figure 1. Quality Improvement Sequence



The change process begins with a trigger event that awakens the hospital to a new drive for quality. This impetus leads to organizational, cultural, and structural changes such as establishment of teams or committees that focus on issues related to quality improvement (QI), additional staff and responsibilities for the QI department, and/or new investments in health information technology. In addition, these changes help spread a culture of quality by equipping the institution to identify problems and develop solutions, often using a team approach to root cause analysis. The solutions found typically involve the development of evidence-based clinical guidelines, pathways, and protocols or new administrative and support service techniques. The overall result of these efforts is improved outcomes. These may be process outcomes such as reduced waiting time in emergency departments, improved reputation or financial performance, or final health outcomes such as reduced complications, morbidity, and mortality. Better outcomes lead back to a greater intensity of QI work by becoming in effect new "triggers." That is, success reinforces the logic and commitment to QI efforts.

IMPETUS FOR QUALITY FOCUS

In all of the hospitals studied, there was a seminal event or events, reprioritization, or trigger that prompted a major new emphasis on improving quality. The hospital representatives were not surprised when told that they showed major improvement during the 2002–2004 study period. They were able to immediately attribute or tie the improvement to a specific impetus for the change just prior to or during the first year of the study period. An underlying motivator in all cases was the IOM report, *To Err Is Human,* which provided clear evidence of widespread medical errors in hospitals nationwide. Other triggers included both "negative" and "positive" events:

- At Beth Israel, a set of medical errors with tragic results made national news, serving as a wake-up call and leading the hospital to take a close examination of and make major changes in its approach to quality control.
- At Rankin Medical Center, a new CEO with a vision centering on patient service and quality was hired during the first year of the study period, and very quickly transformed the culture to one of continuous quality improvement.
- At Legacy Good Samaritan, the hospital experienced an increase in both lengths of stay and readmissions to the hospital. At the same time, the clinical director for quality improvement became aware of the role that hospitalists and intensivists could play in promoting a multidisciplinary care environment.
- At St. Mary's Health Care System, a new CEO, coupled with a downward spiraling market share for heart surgery and obstetrics, motivated administrators

and clinical staff to implement evidence-based protocols and increase the use of available health information technology.

ORGANIZATIONAL AND STRUCTURAL CHANGES

All of the hospitals studied stressed the creation and nurturing of a "culture of quality" during the study period. When pressed to describe the actual activities and changes that nurtured and reflected that new culture, the following items emerged.

Creating Quality Councils, Committees, Commissions

The hospitals created or "reenergized" formal groups that were responsible for monitoring and ensuring success of QI efforts. Often, these groups would develop or oversee new methods for problem-solving and protocol development. For example:

- Beth Israel's health system formed the Committee on Quality Care just prior to the study period. This gave the board of the parent health system a forum for demanding from each member hospital certain performance-related data, with comparisons to their past performances, to each other, and to benchmarks. Beth Israel also created a Critical Care Coordination Committee to examine standards (e.g., Institute for Healthcare Improvement data) and develop new protocols in problem areas.
- Also just prior to the study period, and shortly after Legacy's intensivist and hospitalist services started, the hospital recommitted to strengthening the role of their Critical Care Committee, which took responsibility for identifying problem areas and creating subcommittees to address them.
- Rankin's Quality Steering Council is considered a driving force for QI. Composed of hospital leadership from the medical staff, administration, Advisory Board, and nursing staff, the Council determines whether a problem identified warrants further investigation and team problem-solving, then monitors status to ensure results.
- St. Mary's Quality Council meets monthly to examine data that are presented by all of its committees: AMI Core Measures, heart failure, stroke, pneumonia, patient safety, infection control, grievances and patient satisfaction, medical errors, and falls. It uses these data to identify problem areas and discuss new strategies for quality improvement as well as strategies for translating existing programs that are working for one condition or one hospital department across the institution.

Elevating the Role of and Resources for the QI Department

At Beth Israel, Rankin, and St. Mary's, the QI departments were expanded during the first year of the study period. All three received more resources to hire additional staff who, in turn, played a greater role in educational and problem-solving activities, including:

- tracking performance indicators;
- educating the staff about performance trends within the hospital, best practices from the outside, and effective methodologies for improving quality (one-on-one discussions and small group sessions, such as two-day, 24-person training in continuous quality improvement, were seen as very effective; emphasis on quality during new employee orientations was also considered important);
- educating patients about basic safety procedures (both in hospital and at home) and about what questions they should be asking their caregivers; and
- facilitating QI projects using problem-solving techniques (e.g., root cause analysis) and protocol development, focused on improving specific processes that had been deficient.

The QI departments were given new responsibilities, such as reporting adverse outcomes to the state. In one case, a new vice president position was established to oversee QI and related areas. These changes helped to raise the visibility and status of QI in the hospitals.

Establishing Policies that Encourage "Speaking Up"

- Beth Israel established new complaint procedures, including an anonymous reporting system that made both patients and staff feel more comfortable making complaints about clinicians when they saw problems.
- At Rankin, the CEO's "open door" policy—with his open office literally across the hall from the physician's lounge—encouraged the clinicians to voice their concerns. Importantly, the physicians began to feel more confident that sharing quality concerns with administration would be taken seriously and acted upon.
- At Legacy Good Samaritan, staff and administrators attended meetings following the testing of a new care protocol to air their concerns and grievances. Having an open forum in which all stakeholders could speak their minds decreased the incidence of miscommunication and allowed the hospital to implement improved systems.
- At St. Mary's, bedside nurses were empowered to coordinate care for patients, identify areas where quality standards could be improved, and facilitate improved diagnosis-related group (DRG) coding.

Creating Multidisciplinary Teams

Another common strategy that corresponded to the study period was the establishment of multidisciplinary teams. The team approach was adopted for patient care and to address specific quality problems. For example:

- At Legacy Good Samaritan, the creation of multidisciplinary teams formed the core of its quality improvement strategy. Led by hospitalists and intensivists, the teams focus on specific conditions such as stroke, heart attack, and pneumonia.
- At St. Mary's, multidisciplinary teams began operating in a number of areas, including neurosurgery, family care, and acute rehabilitation.
- Beth Israel implemented QI Committees (also called Leadership Teams), multidisciplinary groups that include clinical staff, support staff if appropriate, and a QI coordinator. These teams are created to address specific deficiencies, conduct root cause analysis, and test and implement new methods. They have greatly helped to involve everyone in QI.
- Interdisciplinary Performance Improvement Teams at Rankin are established when issues arise; they consist of the staff most involved in and affected by the particular problem.

It is important to note that these teams include individuals who are both knowledgeable about and involved in the issue so that they are able to understand the underlying causes of the problems and devise and test solutions. Also, interviewees at a few of the hospitals said that staff were much more likely to adhere to new procedures and processes if they:

1) were involved in developing the solution; and
2) had the opportunity to voice their concerns about the strategy after its implementation. At Legacy, all staff, both clinical and administrative, took part in roundtable discussions following the testing of a new protocol, and all grievances with that protocol were aired publicly to avoid miscommunications afterward.

It was also important that these teams were held accountable. If improvements were not seen, the team would be tasked to come up with another strategy until something worked.

One of the hospitals promoted a team mentality by training nurses' aides to take on greater patient care responsibilities and redefining the roles of housekeepers, transporters, and other staff to better support floor nurses.

Identifying and Nurturing Champions

All four hospitals reported that having leaders—whether they are nurses, doctors, or administrators—who champion a new strategy or protocol is critical to its success. The hospitals created environments where staff are encouraged and empowered to identify new problems and to take on this champion/leader role. For example, St. Mary's actually named a physician and nurse champion for each of its new programs, and hired clinical nursing directors to further nurture quality champions among the nursing staff. Beth Israel's Department of Medicine developed a new position: the division chief of quality. The physician selected for this position worked with other physicians and residents to develop protocols to address deficiencies in processes and outcomes. As the hospital's current CEO put it, "It helps to pay people to focus on quality."

Viewing Public Reporting Requirements as Opportunities

Each of the hospitals relied heavily on the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) Core Measures in constructing new protocols for heart failure, pneumonia, stroke, and other conditions. St. Mary's has already received certification from JCAHO for its stroke center, and has applied for certification for its heart failure program. All of the hospitals cited both the JCAHO and IOM measures as important route markers on their journeys to improving quality and patient safety.

Beyond national reporting requirements, Beth Israel and St. Mary's also participate in state-based data reporting. St. Mary's reports data to the Georgia Hospital Association and has participated in its quality and accountability rankings.

In terms of benchmarking their data, the participating hospitals used a variety of measures. St. Mary's uses the Maryland Hospital Association and Georgia Coverdale data, while Legacy Good Samaritan benchmarks against the CMS/Hospital Quality Alliance National Hospital Measures and Leapfrog data.

Reporting to Active Boards and Parent Health Systems

All of the hospitals studied had active Boards of Trustees that made real demands on their hospitals. Hospital leadership presented quality reports and updates on a regular basis. In addition, all of the hospitals are members of multi-hospital health systems, and this seemed to play a role in two ways. First, the hospitals were expected to meet quality (as well as financial) goals set and/or monitored by the parent company. Second, being part of a system allowed the hospitals to compare themselves with other hospitals in measures that are not necessarily available in publicly available data, and to share best practices and quality-related lessons with other hospitals in the system.

Commitment and Action from Top Leadership

Representatives of all of the hospitals stressed the importance of commitment to quality improvement—both in words and deed—from the top of the organization, particularly the CEOs. From emphasizing quality in opening remarks to new employees, to stopping in the hallway to pick up trash, the CEOs communicated a culture of quality to staff. Such behaviors must be accompanied by commitment of resources to quality, including investments in state-of-the-art diagnostic equipment and information technology, and to the QI process, in terms of adequate staffing for the QI department.

PROTOCOL AND PRACTICE CHANGES

The organizational and structural changes implemented by the hospitals included the establishment of systematic processes for identifying and solving problems. This process led to many changes in rules, procedures, clinical pathways and guidelines, and technological advances affecting specific departments and diagnoses as well as hospital-wide operations. Selected examples from the case studies include the following:

- creation of clinical guidelines, protocols, or "care maps" (often using JCAHO Core Measures) for heart failure, AMI, pneumonia, hypoglycemia, infection, and stroke;
- departmental quality plans and establishment of specific goals, for both the short and long term;
- improved educational and training materials for clinical staff on implementation of new protocols as well as on topics such as error reduction, hand washing, and infection prevention;
- strategies for reducing patient falls and need for patient restraints; and
- incorporation of health information technology to achieve a "paperless" institution, improve accuracy and efficiency of medication dispensing, and enable more efficient data collection.

See the case study reports in Section III for further examples.

BETTER OUTCOMES

The four institutions reported significant improvements in a variety of areas. They generally involved better processes and health outcomes as well as improved hospital reputation and staff morale, all of which, according to the interviewees, eventually led to an improved bottom line. Specific changes in outcomes are discussed in more detail in each of the case studies, but examples cited by interviewees include the following:

- process/operations: fewer delays in test results, faster patient flow, easier and more efficient data sharing and recording, fewer medication errors;
- health-related: reductions in mortality, blood infections, pneumonia, complications, readmissions, patient falls, and use of or need for patient restraints;
- work environment and reputation: increases in patient satisfaction and staff satisfaction/morale, improved status in community, greater ability to attract quality staff and physicians; and
- bottom line: decreased costs per hospitalization and length of stay for certain conditions; increased admissions and/or market share.

CHALLENGES

Though each of the four hospitals faced a few barriers specific to their situations (described in the case study reports), there were some major challenges faced by all of the hospitals, suggesting that these are "universal" issues that most hospitals will face during the change process. The ways the hospitals addressed these challenges should be instructional for other hospitals.

Resistance to Change from Physicians and Nurses

One of the biggest challenges faced by the four sites was resistance among physicians and nurses to the changes being implemented. At one institution, physicians referred to the new protocols as "cookbook" medicine, and argued that adhering too strictly to quality guidelines took away their ability to use their judgment and experience. Nurses at several sites complained about additional paperwork and bureaucracy related to new protocols. Hospitals addressed these concerns in several ways, including naming physician or nurse champions to "bring their colleagues along," holding open meetings for staff to express their displeasure, and creating new processes that could be seamlessly integrated into current work practices, rather than being add-ons.

Lack or Loss of Resources

Making structural and organizational changes required financial investments, such as hiring hospitalists and QI staff, and purchasing and supporting new technologies. These investments seemed reasonable during flush times, but were difficult to maintain when the economy or local health care market declined, and cutbacks were often necessary. Hospital representatives also fear that Medicare reimbursement rates may decline in coming years, thereby making further QI investments even more challenging.

Maintaining Higher Quality While Continuing to Make Improvements

Despite all of the hard work they are doing to improve quality and patient safety, there is no time for hospitals to "bask in their success or rest on their laurels," according to one interviewee. As soon as one protocol is tested and implemented, there are other conditions or issues to be tackled. At the same time, they must keep up with the evidence base for the conditions already addressed to ensure that they maintain high standards of care.

LESSONS

Among the lessons learned at each of the case study hospitals are the following:

- ***Set short-term attainable goals and celebrate successfully achieving them.*** That is, make it easy for clinical staff to see the immediate effects of their efforts in using new protocols or practices, and publicly acknowledge individuals who are achieving improvements. Use posters, newsletters, parties, prizes, or similar tactics to illustrate and reward progress on QI efforts. Physicians, typically described as competitive, are particularly motivated by comparisons with others. Clearly, accurate and ongoing measurement is critical for this to occur.
- ***Keep the staff involved in problem identification and problem-solving.*** Create a "safe" atmosphere for staff to identify problems and make complaints—they must know that their voices are being heard. Encourage buy-in by involving staff in finding, testing, and implementing solutions. This requires valuing everyone's experience, from the support staff to nurses to physicians to administrators.
- ***Nurture dedicated leaders and champions.*** Change requires leaders dedicated to QI, "not just managers who will do the minimum that the job requires," as one interviewee put it. In addition to acquiring senior staff (CEOs, medical directors, or nurse directors) who are quality champions, create a culture where anyone can become a QI leader, and all are encouraged to do so.
- ***Be patient but unrelenting.*** Once a commitment to QI is made, systems restructured, and resources invested, it still takes time to see results. It takes time to build a QI staff, get line staff on board and motivated, investigate weaknesses, develop action plans, and incorporate new procedures on a systematic basis before seeing changes in practices or health status. Thus, it is important to be patient but unrelenting, and gauge progress with process indicators as well as outcomes.
- ***Balance quality and financial goals.*** Improving quality often requires an increase in expenditures, and may or may not result in reduced costs over the short term. Rather than depending on a business case, hospital leaders need to balance QI and cost reduction, along with service goals, to drive improvements in all of these

areas. Over the long term, improved quality and services should enhance market share and result in growth and improved financial performance.

RECOMMENDATIONS FOR PUBLIC POLICY

Case study hospital representatives suggested that certain public policies could facilitate hospital QI efforts. In particular, state and federal policymakers and administrators might consider introducing legislative or regulatory changes, securing associated funds, and/or working with the private sector to implement or expand existing efforts in the following areas:

- ***Standardizing reporting requirements.*** Hospitals have many different options and requirements related to performance measurement from reputable sources (e.g., CMS, JCAHO, the Institute for Healthcare Improvement, the Leapfrog Group). Because the indicators are not uniform, measurement and reporting can be confusing and complicated for hospitals. Public policy could support testing and standardizing of performance measures, and limiting measures to those that have the greatest impact.
- ***Ensuring accuracy and clarity of public reporting, and educating consumers.*** Public policy can also play a role in monitoring public reporting to ensure that measures are accurate and presented in a clear way. Also, government could help educate consumers in interpreting the information and using it appropriately.
- ***Supporting "carrots" for P4P providers.*** Public policy could support development of pay-for-performance programs, preferably those that offer bonuses for reaching goals, rather than using a punitive "stick" approach. States could follow the lead of Pennsylvania and Arkansas, which have implemented P4P for inpatient care through their Medicaid programs.[19] Government could provide education and incentives such as tax credits for malpractice insurance premiums to providers who participate in such programs. That is, providers seem to want an incentive to participate in P4P programs, and then additional incentives for good performance.
- ***Documenting and publicizing quality issues.*** Public policies that are viewed as helpful to QI efforts include reports that document and publicize quality problems (e.g., IOM reports) and public reporting of quality data (e.g., new Medicare requirements) that will eventually help consumers make informed choices.
- ***Reviewing hospital regulatory requirements.*** Policymakers could review hospital regulatory language to identify where various requirements may be in opposition to each other, necessitating significant resources by the hospital to address and respond. These resources could be applied to other uses, including development of new QI programs.

III. Case Studies of Four Top Improvers

The following sections summarize what we have learned from interviews with representatives of four hospitals that displayed significant quality improvement over the 2002–2004 study period.

Beth Israel Medical Center, New York, New York

Legacy Good Samaritan Hospital, Portland, Oregon

Rankin Medical Center, Brandon, Mississippi

St. Mary's Health Care System, Athens, Georgia

CASE STUDY: BETH ISRAEL MEDICAL CENTER

SETTING

Beth Israel Medical Center is a very large, full-service tertiary teaching hospital located in New York City.[20] Its main division, the focus of this case study, was founded on Manhattan's Lower East Side in the late 1800s to serve vulnerable populations in the community. It now serves a wider patient population, and the main division has about 1,080 staffed beds. Beth Israel is part of the Continuum Health Partners system, a not-for-profit integrated health services network including five hospitals (seven hospital facilities) in the New York metropolitan area.

We selected Beth Israel Medical Center because our analysis of Medicare data over 2002–2004 (the "study period") identified it as among 100 hospitals showing greatest improvement in a quality index based on risk-adjusted mortality, morbidity, and complication rates. Though it began with a high ranking compared with other hospitals, it showed continued, steady improvement through the study period to reach a very high ranking compared with other hospitals in 2004. Also, the selection of Beth Israel provided diversity among our case study sites by including a very large, not-for-profit urban teaching hospital.

IMPETUS FOR QUALITY FOCUS

Reportable Events

In the years just preceding the study period, a few negative events including two that made national news dealt a severe blow to Beth Israel's reputation with the public and state authorities, as well as to staff morale.[21] The shock of these incidents and the negative publicity that ensued served as a wake-up call. They forced the hospital to take a close look at quality of care, and to make major changes in its medical leadership, priorities, policies, and procedures, described below. The changes instituted just prior to and during the 2002–2004 study period elevated the priority given to quality and quality improvement. The hospital established new committees with quality-related expectations and accountability, and this and other changes appear to have contributed to significant improvements in quality indicators.

ACTIONS TO IMPROVE QUALITY: ORGANIZATIONAL AND STRUCTURAL CHANGES

Creation of Board-Level Commission on Quality Care

While the Board of Trustees for Beth Israel had always been very active, its involvement in quality issues expanded and matured just prior to and during the study period. Through

the Committee on Quality Care, formed around 2001, the board of the Continuum system demanded from each member hospital certain performance-related data, with comparisons to their past performances, to each other, and to benchmarks. In monthly meetings, which included hospital leadership, the chairmen of clinical services from the hospitals presented to the trustees where their hospital stood on key measures, where it should be, and what it was doing to get there.

In addition, Beth Israel has its own hospital QI Committee, for which the CEO, chief medical officer, vice president for QI, director of QI, directors of support departments, key physicians, and two trustees meet each month to examine trends in quality measures and set priorities.

Elevated Role of QI Department

Just prior to the study period, the QI department underwent a major restructuring. It shifted from being what one employee called a "back room receiver of reports" to a proactive department that identified problem areas and facilitated, coordinated, and monitored quality improvement initiatives throughout the hospital. Responsibility for state reporting (described below) shifted from the Risk Management to the QI department, providing data and tools to help QI staff investigate and solve problems. "Risk management collected numbers; QI saw the data as opportunities," according to a QI employee. The QI department was given resources to increase its staff to include nine QI coordinators, each assigned to specific clinical departments to monitor performance and suggest and facilitate QI efforts.

Also, the hospital established a new vice president (VP) position to oversee the QI and related departments. This VP reports to the chief medical officer (CMO), and from the start has interacted with the CMO on quality issues nearly every day. According to the VP, "[The CMO] is intimately involved in QI projects and every root cause analysis performed."

Changes in Physician Leadership, New Chief of Quality Position, New Protocols

Acknowledging a need to practice differently, hospital leadership took action. Two physician chairmen were replaced, and a new complaint system was established. Experts were gathered to start working on clinical guidelines using evidence-based medicine.

At the beginning of the study period (2002), the Department of Medicine developed a new position: the division chief of quality. The physician selected for this position became a real champion for quality improvement, working with physician staff and residents and developing protocols to address deficiencies in processes and outcomes.

As the hospital's current CEO put it, "It helps to pay people to focus on quality." The following year, a Critical Care Coordination Committee was developed to examine standards (e.g., Institute for Healthcare Improvement data) and develop new protocols in problem areas.

Also around 2002, Beth Israel began to adopt the JCAHO Core Measures associated with heart failure, AMI (heart attacks), and pneumonia.[22] This both reflected and contributed to a culture shift, as data were fed back to the chief of quality, who then developed care maps and questioned physicians when some measures were not up to standards.

Multidisciplinary Leadership Teams and Quality Plans

Around 1999–2001, Beth Israel implemented a redesign of patient care. After examining the skill mix of staff, the administration enhanced training of nurses' aides and gave them more responsibility; they also redefined the roles of transporters and housekeepers so that these staff would better support the nurses. At the same time, the hospital implemented Leadership Teams, multidisciplinary groups that include clinical staff, support staff if appropriate, and a QI coordinator. These teams meet once per month to focus on improving patient care and have greatly helped to involve everyone in QI.

Further, at the beginning of each year, each hospital department develops a quality plan containing specific goals. The QI coordinator assigned to the department may suggest goals related to areas that the data indicate are in need of improvement. To address a specific problem, the department creates a QI committee (on the nursing units they are called leadership teams) composed of appropriate individuals who deal with the issue as well as the QI coordinator. Together, this group studies the problem, conducts root cause analysis (when necessary) to understand the basic factors behind the problem, examines potential solutions (often looking at best practices), recommends a course of action, and implements the new policy or procedure. The department chairman is responsible for achieving results.

Best Practices Group

The first year of the study period (2002), a Best Practices Group composed of CEOs, CMOs, vice presidents for quality, and QI directors of the four hospitals in the Continuum health system was established to facilitate the sharing of innovations and best practices. For example, one hospital discovered that the use of impregnated catheters could reduce infection; they then shared this information with the group and it was adopted by the sister hospitals. The group also sets the agenda for the monthly trustees' quality meeting.

Commitment from the Top

A strong sentiment among those trying to improve quality at Beth Israel Medical Center is that the most essential ingredient for success has been commitment and action from the top—the CEO, CMO, Board of Trustees, and the physician and nurse champions. Not only did the board and executive administrators establish new committees, positions, and procedures related to quality, but they illustrated their commitment by example on a daily basis, worked with clinical departments to effectively communicate what was expected of them, and provided resources to obtain tools and personnel needed to do the job right. Through these actions, hospital leadership established quality as an institutional priority.

Outside Requirements and Public Reporting

Hospitals in New York are heavily regulated in terms of quality control. The state's Department of Health requires hospitals to submit data on every adverse patient outcome through the New York Patient Occurrence Reporting and Tracking System (NYPORTS), and the individuals interviewed for this case study maintained that this helped rather than hindered their QI efforts. The negative events mentioned earlier, along with the shift in state reporting to the QI department, provided the impetus and means for Beth Israel to begin using NYPORTS as a tool to address problems.[23] Hospitals are able to query the database to compare their experience with reported events to the statewide, regional, or peer group experience. The state Department of Health was also helpful in setting up multi-hospital work groups through which hospitals could learn new strategies and share best practices.

As noted above, the JCAHO Core Measures introduced during the study period served as a key focus of QI efforts at Beth Israel. Other outside standards used at Beth Israel are those developed by professional organizations, and national or regional benchmarks. Consultants have been brought in as well, and have generally been taken seriously by hospital personnel.

Although not a factor during the 2002–2004 study period, hospital leaders mention that the current CMS pay-for-performance initiative (based on Core Measures) is now a strong impetus for improving performance. In general, the QI leaders believed that people pay attention to publicly reported information on hospital performance.

MONITORING RESULTS

Beth Israel measures its success in QI by tracking such data as mortality, Core Measures, patient satisfaction, and other information that may be specific to certain departments or conditions. With the help and coordination of QI personnel, all departments see data on

their own performance, along with comparisons with past data, sister hospitals (in the Continuum system), and regional or national benchmarks. Beth Israel's information technology was not very advanced during the study period. Yet, reporting of the Core Measures through a streamlined, Web-based system beginning around 2002 facilitated QI by providing more accurate, user-friendly data. The departments present the data across (to the departments) and up the hospital chain to the hospital leadership and the Board of Trustees.

CHALLENGES AND OBSTACLES

Need to Change Mind-Set, Incorporate QI into Daily Routine

One of the biggest challenges to establishing quality as a priority during and just prior to the study period was changing the mind-set of physicians, nurses, and other staff. While virtually all personnel agreed in theory on the need to reduce errors, there was nevertheless resistance to some of the actions associated with the new priority. New reporting requirements, for example, were viewed by many nurses as an additional burden, rather than an integral part of the daily routine. Physicians had to give up some autonomy and independence when asked to adopt best practices, and as their behaviors and practices were more closely scrutinized.

To address these challenges, the VP and director of QI engaged heavily in educating staff. The most effective educational strategy was through small groups. For example, "continuous quality improvement" (CQI) training involved 24 people at a time over two days. Also effective were one-on-one meetings with a nurse manager, in which participants explored how QI could be helpful to clinicians. The QI personnel stressed to the other staff the non-punitive nature of the new QI focus, such as the ability to report errors and problems anonymously on the QI hotline.

To help engage nurses specifically, the hospital created a forum for the nursing department to demonstrate ways in which nurses can affect quality of care. It was critical for nursing leadership to be engaged and supportive of the changes. Also, the QI director attended nurse manager staff meetings, using poster boards and other techniques to explain measures, data, and trends.

Most instrumental for getting the physicians on board was the involvement of the physician leadership. The chief medical officer and the division chief of quality were true champions of quality. They engaged the medical staff in the Core Measures, and drove efforts based on evidence-based medicine. Another effective strategy for getting physician buy-in was to allow physicians to choose their own indicators; this gave them more

control and ownership of the QI process. It was also noted that while a few "old world" physicians never quite embraced QI philosophy, a new generation of clinicians was generally more open to it.

The transfer of state reporting duties—along with a broader shift in emphasis from risk management to quality improvement described above—resulted in tension between these two departments initially. It took time, as well as handholding and an emphasis on inclusiveness in the QI process, to diminish the rift.

Difficult Financial Environment and Lack of Resources

After increasing the number of staff in the QI department in 2000–2001, a difficult financial environment forced cuts across the hospital in subsequent years. QI lost four full-time equivalent employees, and was forced to spread an increasing workload across fewer individuals. QI addressed this by looking to the clinical departments to step up their role in QI projects. This was often a struggle, since those departments experienced cutbacks as well, and the QI department continues to grapple with the problem. Financial constraints also limited the acquisition of new health information technology that could serve as helpful tools in quality improvement.

Lack of Strong Consequences

While quality has been increasingly monitored and egregious violations have resulted in dismissals, in general there has been a lack of serious consequences or financial incentives tied to quality improvement. QI leaders at Beth Israel are proud of what they have accomplished despite this lack of strong accountability. This is an area in which the current CEO is considering changes for the future.

FINANCIAL IMPLICATIONS

Beth Israel leadership stressed the importance of balancing financial and quality goals. Improving quality often requires an increase in expenditures, and may or may not result in reduced costs over the short term. Some interventions, such as reducing infection rates, do have near-immediate cost savings in terms of reduced resources expended and reduced length of stay. Other QI interventions do not have an immediate financial payoff. Rather than depending on a business case, therefore, hospital leaders need to balance QI and cost reduction, along with service goals, to drive improvements in all of these areas. Over the long term, improved quality and services should enhance market share and result in growth and improved financial performance.

LESSONS

It Takes Time

Once a commitment is made, systems are restructured, and resources are invested, it still takes time to see results. It takes time to build a QI staff, get line staff—including nurses, physicians, and other hospital personnel—on board and motivated, investigate weaknesses, develop action plans, and incorporate new procedures on a systematic basis before seeing changes in practices or health status. Thus, it is important to be patient but unrelenting, and gauge progress with process indicators as well as outcomes.

Standardization Is Needed

Currently, Beth Israel and other hospitals have many different options and requirements related to performance measurement from reputable sources such as CMS, JCAHO, the Institute for Healthcare Improvement, and the Leapfrog Group. Each of these sources has developed indicators, but they are not uniform, and this can be confusing and complicated for hospitals. Public policy could facilitate the QI process by helping to test and standardize performance measures, and to limit them to those that make the greatest impact.

QI leaders at Beth Israel suggest that public policy can also play a role in monitoring public reporting to ensure that measures are accurate and presented in a clear way. Government could educate consumers in interpreting the information and using it appropriately.

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CASE STUDY: LEGACY GOOD SAMARITAN HOSPITAL

SETTING

Legacy Good Samaritan (LGS) hospital is part of the Legacy Health System (LHS), which includes two tertiary hospitals, three community hospitals, the largest children's hospital in Oregon, as well as primary and specialty care clinics, hospice care, and a full-service research facility.[24]

We selected LGS because our analysis of Medicare data over 2002–2004 (the "study period") identified it as among 100 hospitals showing greatest improvement in a quality measure based on risk-adjusted mortality, morbidity, and complication rates. LGS displayed marked improvement during the study period in both quality and efficiency measures. Within Legacy Health System, LGS is considered the "testing ground." It is where many new protocols are implemented and evaluated before being rolled out across the system. The hospital's patient mix includes 42 percent privately insured patients, 46 percent Medicare, 8 percent Medicaid, and 4 percent uninsured.

IMPETUS FOR QUALITY FOCUS

Concerns over Fragmentation, LOS, Lack of Coordination

Concerns at LGS grew in the late 1990s over fragmentation of care in the intensive care unit (ICU), an increase in length of stay (LOS) for certain conditions, and course of care processes that made it difficult for nurses to coordinate care for their patients.

New Evidence and Awareness of Hospitalist Benefits

At around the same time, the system's senior management realized that creating a hospitalist service could set the stage for implementation of a more efficient care model, which would in turn lead to improved quality. The term "hospitalist" refers to hospital-based physicians who become the physician-of-record for inpatients and then return the patients to the care of their primary care providers when they are discharged.[25] Advantages include the ability to react quickly to changes in medical status and coordinate inpatient care "in real time throughout the day."[26]

It was becoming clear at that time that patients were receiving fragmented care due to the inability of the hospital staff to gather information from the admitting private practice physicians, who were often busy with their office patients. While residents traditionally filled that role, the state had recently passed legislation limiting the number of consecutive hours residents could work. Senior management began to consider developing an integrated delivery system in the Kaiser Permanente model, where all physicians are

hospital employees, in order to solve this efficiency problem and improve quality at the same time. Senior management came to view the hospitalist system as the "new age of care delivery," one that would offer benefits both in terms of quality of care and potential cost savings.[27] Bringing hospitalists and intensivists, or hospitalists who specialize in the care of critically ill patients, into the system led to a more multidisciplinary approach to care.

ACTIONS TO IMPROVE QUALITY: STRUCTURAL AND CULTURAL CHANGES

During the period of 2002–2004, quality improvement innovations that took hold at Legacy Good Samaritan were largely the function of a cultural shift, whereby the hospital went to significant lengths to develop a system based on multidisciplinary modalities of care for both acute and chronic conditions. Within the context of this cultural shift, LGS developed a stepwise methodology for developing, implementing, and testing new processes, policies, and treatment protocols before rolling them out across the health system.

Recruitment of Hospitalists

As noted above, LGS began to hire hospitalists and intensivists, which significantly changed patient care and coordination. As more of these providers were recruited, they drove a cultural shift in the institution that allowed for a more multidisciplinary approach to care.

Rejuvenation of the Critical Care Committee

In 2001, shortly after the intensivist and hospitalist services began, LGS recommitted to strengthening the role of their Critical Care Committee (CCC), which had in recent years ceased to be active. The reorganized CCC included 30 representatives from a number of system-wide departments, including nursing, pharmacy, physicians, administrative leadership, infection control, and respiratory therapy. While major decisions are made by the entire committee, subcommittees (focusing on hyperglycemia, respiratory care collaborative, critical care nursing, and other areas) form to address certain elements of care as they arise. This structure became the template for other system-wide committees, such as the medical interdisciplinary quality council and the women's collaborative care council, which formed to address other needs across the system.

The new CCC became a functional forum for the development and testing of policy and procedures in an efficient way. Today, the CCC and other committees and councils develop not only new policies and procedures, but also the processes for implementing and evaluating them. The rollout and implementation of these procedures is then done on a hospital-by-hospital basis.

Systematic Implementation of Best Practices

LGS developed a step-by-step process for putting new protocols that reflected best practices onto the hospital floor. The establishment of a protocol to lower the incidence of hyperglycemia illustrates the multilayered and thoughtful process that developed slightly prior to and during the study period. In 2001, the hospital's quality department became aware of the impact of good glucose levels on patient outcomes. It pulled together representatives from the intensivist service, quality improvement, nurses, endocrinology, and pharmacy to create a CCC subcommittee that could come up with new ideas for how to lower blood glucose levels in certain patients. The first step was to develop a protocol for managing hypoglycemia in the ICU. They got buy-in for the draft protocol design from the CCC and ICU, and developed training procedures for ICU doctors and nurses. When the protocol was rolled out at LGS's ICU, results were apparent immediately. Staff, however, were extremely dissatisfied with the protocol and were given a public forum in which to vent their feelings (discussed further below). The subcommittee brought the protocol back to the CCC, where it was completely reengineered to reflect staff concerns. Interviewees noted that in the process of modifying the protocol, additional research came out on the optimal blood glucose levels for improving patient outcomes, which allowed them to update the protocol according to the latest evidence.

Another example is the development of a best practice bundle (BPB) for critical care, which was tested in LGS's ICU. The BPB includes a checklist of best practices addressing respiratory care, ventilator-associated pneumonia, sepsis, deep vein thrombosis (DVT) prophylaxis, and peptic ulcer prophylaxis, which the multidisciplinary team is supposed to complete for each patient in the ICU. Team members are given a check sheet on which to mark whether the patient's bed was elevated, whether they took the DVT and peptic ulcer prophylaxis, and other steps. While originally recorded on paper, the system is now computerized, and managers can check compliance rates every day. Critical care BPB has decreased the rate of ventilator-associated pneumonia: before implementing the BPB, the LGS ICU experienced 11 patients that developed ventilator-associated pneumonia per 1,000 ventilator days; post-BPB, the rate dropped to two patients per 1,000 ventilator days. Because of the success of the critical care BPB, LHS is working on a surgical care best practice bundle to meet the goals of the Surgical Care Improvement Project (SCIP), a national collaborative to address surgical complications with the intent of decreasing those complications by 25 percent by 2010. There are also potential plans to develop a woman's best practice bundle focusing on perinatal care, based on recommendations from the Institute for Healthcare Improvement.

Prioritizing the Role of Bedside Nurses

Administrators realized in 2001 that the role of bedside nurses was critical to any quality improvement initiatives they would hope to implement. Thus, with every new protocol tested, they began with an education and training module for these nurses. A significant portion of the training focused on helping nurses understand the effect they can have on patients' health outcomes. The training also focused on empowering nurses to collaborate with and encourage doctors who were not following the new protocols. Establishing goals for nurses helped motivate them to "push" physicians who were still using the old methods. When those goals were reached (e.g., a significant reduction in pneumonia rates), it was widely noted throughout the hospital and the nurses were celebrated. Creating this nurse-centric culture has had a cyclic effect on the way quality improvements are handled, with nurses now being a major source of new strategies for improvement.

Using Technology to Improve Quality

Two of the most important structural changes cited by the LGS representatives were the implementation of preprinted orders for standardizing care processes for dealing with heart failure, myocardial infarction, and community-acquired pneumonia, as well as automating pharmacy orders to reduce medication errors. In addition, between 2002 and 2004, LGS conducted an inventory of its data and technology systems to better understand what resources it had and how best to use them. Based on that inventory, LGS decided to utilize the Sci-health data tracking software, which allows them to quickly collect, analyze, and evaluate data on a variety of quality measures (see "Monitoring Results," below).

Keeping Employees Happy, Making Sure All Voices Are Heard

The interviewees repeatedly cited the need for staff to buy in to new protocols in order for their implementation to be successful. To achieve that buy-in, the staff have to be able to voice their concerns during the rollout phase. Of course, care is also taken during the initial development stage to come up with tools that staff will easily be able to integrate into their practice. Members of the CCC have become well versed in what does not work when it comes to rolling out a new protocol: making it mandatory; rolling it out across the entire hospital untested; creating something that makes people's lives harder by requiring them to fill out additional paperwork; and not making achievements readily attainable. Interviewees noted that for each new protocol, the department in which it was being tested would come up with immediate measures that would allow the nurses and doctors to see within a day or two how their work was affecting patient care.

MONITORING RESULTS

National Measures and Collaborations

LGS and the entire Legacy Health System use a variety of measures to monitor quality improvement for various conditions. They collect data according to the 17 National Hospital Measures, which evaluate how well hospitals are providing recommended treatment for heart attacks, heart failure, and pneumonia.[28] Heart attack measures include such actions as providing aspirin and beta blocker at arrival and discharge, and offering smoking cessation advice and counseling. Pneumonia measures include timing of antibiotic dispensing, oxygen assessment, and pneumococcal screening and vaccination if necessary. In addition, LHS reports performance data in accordance with the Hospital Quality Alliance, the National Quality Forum, JCAHO, CMS, the Leapfrog Group, Patient Voice, and others that relate to specialty organizations.[29]

Since the 2002–2004 period, Legacy Health System has been participating in additional national quality and patient safety efforts, such as the Institute for Healthcare Improvement's (IHI) 100,000 Lives Campaign, which as of June 14, 2006, prevented 122,300 avoidable deaths and institutionalized new standards of care. LHS is implementing all six of the interventions recommended by IHI.[30] LHS is also continuously working to implement the annually updated JCAHO National Patient Safety Goals.[31]

Regional Efforts

Since 2005, LHS has participated in the Washington State Hospital Association Safe Table Learning Collaborative, which is a statewide patient safety program focused on improving rates of hand hygiene among health care workers by involving patients as partners in their own care and on implementing rapid response teams.[32] It has also been a member since 2005 of the Oregon Patient Safety Alliance, which aims to improve care through the use of evidence-based practices for AMI, CHF, pneumonia, and surgical care.

CHALLENGES AND OBSTACLES

Dissatisfaction with Initial Protocols

Despite all of the hard work behind developing what they thought would be well accepted protocols, CCC members found that putting what was on paper into practice generally led to negative feedback from nurses and doctors. They learned a valuable lesson in this process: the system will only be reformed if they take the time to "road test" a protocol, and are open to making sometimes dramatic changes in response to provider suggestions and input.

FINANCIAL IMPLICATIONS

Initial Financial Challenges

The hiring of hospitalists and intensivists was the engine that drove LGS's initial movement into quality improvement. Yet when this move was considered initially, there were significant financial barriers. These practitioners were expensive to employ, and it was approximately two years before their reimbursement levels matched what the health system spent on them. The benefit to the system, however, was considered worth more than the cost in that it enabled LHS to build a foundation of coordinated, multidisciplinary care. As senior management predicted, patients cared for by hospitalists have shorter lengths of stay and end up costing the hospital less—despite the fact that hospitalists tend to care for a sicker population than does the private practice community.

In terms of the overall financial picture, quality improvement does not have its own budget line item. QI initiatives are viewed as an aspect of coordinated care and, as such, funding for these initiatives is integrated into the hospital's operating budget.

Legacy Health System has a system-wide quality department that provides infrastructure support for the hospitals. This department is responsible for integrating quality into IT practices, pharmacy, and other areas so that the individual institutions do not have to support their own efforts. Implementation of specific initiatives, however, is hospital-specific, and each has to be supported by the individual hospital. Funding for that comes out of the operating budget for the department within the hospital in which the program is being tested.

LESSONS

Emphasize the Effectiveness of New Protocols and Celebrate Success

LHS made implementation of new protocols the central focus of its push to improve quality of care and patient safety, requiring staff to change already-established practices and protocols. The leadership recognized the importance of the human factor in making these new efforts successful, and for each new protocol, they designed ways of measuring immediate effectiveness. One example was taking daily counts of improved hypoglycemia levels, which made the staff (particularly the bedside nurses) feel that they were making a real and powerful difference in patients' lives. Nurses were (and continue to be) celebrated with parties and other morale-boosting events when they reached department goals.

Seeing Value in Everyone's Experiences

The improvements in quality and efficiency over time seen at Legacy Good Samaritan are indicative of the leadership's determination to bring all relevant voices and experiences to

the table in order to create a multidisciplinary care continuum. To do so, they committed to viewing all staff experiences as inherently valuable. This in turn led to buy-in from the staff, who felt their needs and voices were heard.

Public Policy Can Help

Interviewees at LGS suggested a number of ways in which public policy could contribute to the improvement of quality and patient safety in hospital settings. One way would be to establish tax credits for malpractice insurance for providers who participate in pay-for-performance programs and other quality improvement initiatives. They also suggested federal support for the development of P4P programs that provide bonuses for reaching goals, rather than holding back a portion of already-established payment rates. Finally they said physicians need a reason to get involved in quality improvement activities, and that the public policy realm could play a role in educating providers and helping them see how improving quality could affect their own practice favorably.

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CASE STUDY: RANKIN MEDICAL CENTER

SETTING

Rankin Medical Center (RMC) in Brandon, Mississippi, is a small community hospital with about 90 active acute care beds and serving five rural and suburban counties.[33] In 1997, RMC was converted from a county-owned facility to a member of a for-profit health system, Health Management Associates, Inc (HMA).[34] RMC is not officially a teaching hospital, but does have some residents in a few specialties. Its patient mix is 51 percent Medicare, 12 percent Medicaid, 26 percent commercial, and 9 percent self-pay.

We selected RMC because our analysis of Medicare data over 2002–2004 (the "study period") identified RMC as among 100 hospitals showing greatest improvement in a quality measure based on risk-adjusted mortality, morbidity, and complication rates. RMC displayed marked improvement on a steady basis over the study period, suggesting a true trend as opposed to a one-year aberration. Also, selection of RMC provided diversity among our case study sites by including a small, non-urban southern hospital that is a member of a large, for-profit health system.

IMPETUS FOR QUALITY FOCUS

Change in Leadership

The event that seemed to spark RMC's efforts in quality improvement was a change in executive leadership during the first year of the 2002–2004 study period. In 2002, RMC named a new CEO who had a strong commitment to quality improvement. He communicated to the staff a new vision in which customer service was the top priority, and he approved resources, programs, and activities (described below) that instilled a culture of customer service and quality.

Acquisition by For-Profit Health System

Preceding the new CEO, the 1997 purchase by a for-profit hospital chain (HMA) was the first turning point for RMC. The new ownership brought new resources and equipment to the hospital, and a process of sharing best practices with other member hospitals. HMA also selected RMC's new CEO, who had worked as COO at another HMA hospital and CEO for another for-profit health care organization.

National Awareness of Widespread Medical Errors

The Institute of Medicine's report, *To Err Is Human: Building a Safer Health System* (2000), prompted a national awareness of widespread medical errors in hospitals, and helped promote a greater consciousness of safety issues at RMC just prior to the study period.

ACTIONS TO IMPROVE QUALITY: ORGANIZATIONAL AND STRUCTURAL CHANGES

New QI Expertise and Expansion of Activities

Soon after the arrival of the new CEO, the administration and director of quality/risk management decided that the QI department needed more staff with a background in clinical pathways and evidence-based medicine. In 2002, RMC hired a performance improvement coordinator (PIC) who met this description.

The new PIC became very involved in patient and staff education. She helped develop clinical pathways and improve educational materials given to patients, using reputable outside sources recommended by CMS, the National Patient Safety Foundation, and JCAHO. Along with the hospital's Education Department, she coordinated education to clinical staff on best practices in safety measures such as how to reduce errors and prevent infections. The PIC also became involved in the state's quality improvement organization, working collaboratively and sharing best practices with other hospitals in the region and state.[35]

Reflecting the important role of quality at the institution, the director of quality/risk management (DQM) reports directly to the CEO. Since 2000, the DQM has been included in Administrative Council meetings along with the top leadership of the hospital, thus enhancing the stature and effectiveness of QI.

The Quality Steering Council and the QI Process

RMC's Quality Steering Council is considered a driving force for QI. It is composed of hospital leadership from the medical staff, administration (including the CEO, DQM, and others), Advisory Board, and nursing staff. When a problem is identified, either through a physician voicing a concern or the QI department identifying a deficiency based on hospital data, the Council uses a numeric ranking tool to decide how to handle the issue (Figure 2. Prioritization Grid). If the tool, which was adapted from industries outside of

Figure 2. Prioritization Grid

Impact Areas	Point Value	Improvement Opportunity	Improvement Opportunity	Improvement Opportunity	Improvement Opportunity
1. Life-Threatening	10				
2. Potential for Complications	8				
3. Safety	8				
4. Increased Cost	5				
5. Decreased Customer Satisfaction	5				
6. Potential Liability	5				
7. Impacts Regulatory Compliance	8				
8. Ethical Impact	2				
9. Public Relations	2				
Total Points					
Considerations of the Council:					
Can the organization support this team in the following areas:					
1. Do we have another team working on this issue?	Y N	Y N	Y N	Y N	Y N
2. Resources allocation (salary, supplies, staffing)?	Y N	Y N	Y N	Y N	Y N
3. Does this issue require a formalized team?	Y N	Y N	Y N	Y N	Y N
4. Does this support the mission and vision of our organization?	Y N	Y N	Y N	Y N	Y N

Guidelines

SCORE:
0–5 Trend Data
6–10 Refer to Department/Chairperson/Manager for Action
11–15 Refer to Key Management
16–25 Possible Performance Improvement Team
>25 Recommended Performance Improvement Team

Grid provided by the Rankin Medical Center.

health care, indicates that the problem warrants closer investigation, the Council engages in the FOCUS-PDCA Model, a nine-step process guide to quality improvement (also adapted from other industries):

- Find a process improvement opportunity;
- Organize a team who understands the process;
- Clarify the current knowledge of the process;
- Uncover the root cause of variation/poor outcome;
- Start the Plan-Do-Check-Act (PDCA) cycle:
  - Plan the process improvement;
  - Do the improvement, data collection, and analysis;
  - Check the results and lessons learned; and
  - Act by adopting, adjusting, or abandoning the change.

If warranted, an interdisciplinary performance improvement (PI) team is identified by the Council or one of eight medical staff committees to address the problem.[36] The PI team consists of individuals most involved in and affected by the particular problem. RMC has found that staff members buy into the process if they are represented in discussions, devise a solution together, and then implement and test their own recommendations. A team addressing medication errors, for example, includes a pharmacist, nurse managers, and line nursing staff. Also, the DQM or PIC participates in every PI team to help guide the process.

PI projects undertaken by the hospital have included the following:

- Zero Medication Error Program—commitment to reduce medication errors by 50 percent over five years;
- Fall Prevention Program—development of reader-friendly guide to patients for reducing risk of falling in the hospital and at home;
- Restraint Reduction—comparison and tracking the effects of alternatives to patient restraints, such as using "sitters" to watch at-risk patients, engaging patients in tasks and activities, and other strategies;
- Mystery Shopper Program—in addition to patient satisfaction surveys, some patients are selected at random at the beginning of their stay and asked to keep their eyes and ears open to whether staff were helpful to them and their families.

It is important to note that while this general QI process preceded the current CEO and the study period, it is viewed by many interviewees as having become much more effective after 2002. With the new CEO's quality-oriented vision and open door policy (described below), physicians and other staff began to feel more confident that sharing quality concerns with the administration would be taken seriously and acted upon. This appeared to make a major impact on the effectiveness of the process.

Resources and Health Information Technology

As noted above, RMC was able to obtain state-of-the-art imaging and diagnostic equipment after it was acquired by a for-profit health system a few years prior to the study period. Access to more resources and better tools, along with general support from the parent health system, are believed to have contributed to better patient care and safety. Indeed, RMC must report on and strive to meet quality and financial performance goals as a member of the health system. This requirement has contributed to the culture of quality.

With support from the health system, RMC made major improvements to the physical plant beginning in 2002. The new CEO believed that quality begins with a clean and physically appealing facility, which creates an expectation of quality throughout the organization. In 2003, RMC obtained new software that enabled medication orders to be sent to and received in the Pharmacy Department via e-mail. This led to a reduction in medical errors related to order transcription. Also, the hospital acquired imaging and lab programs that gave physicians access from their offices to a patient's lab and X-ray results as well as transcripts of reports from other physicians.

Open Door Policy, Keeping Employees Happy

As noted above, the commitment of the CEO who came in 2002 was instrumental in elevating performance improvement to a new level. The CEO immediately implemented an "open door policy," encouraging physicians to drop by to voice complaints or concerns, which are often brought to the Quality Steering Council. This policy greatly enhanced communication with physicians, leading the CEO to spend the majority of each day on quality issues.

The CEO maintains that achieving a warm and friendly atmosphere, the key to customer service, translates into higher quality and can be achieved only if employees are happy. He is dedicated to treating employees well, and listening to and addressing their concerns.

Keeping Performance on the Front Burner

Creating a culture of quality requires continuous reminders—through new employee orientation, ongoing staff education, a quality-focused newsletter, posting of outcomes,

quality improvement fairs, reports, and other means. As the DQM put it, "we need to keep quality on the front burner."

MONITORING RESULTS

A quality review nurse conducts concurrent chart reviews, examines "external" indicators such as Core Measures, and tracks a variety of "internal" measures related to PI team initiatives. RMC has tracked, for example, transport time for AMI patients, the number of emergency department patients who return with the same symptoms, and the time for getting an EKG for patients with chest pain. During the study period, the hospital noted improvement in many areas, including a reduction in patient falls and infection rates, decrease of door-to-drug time for antibiotic administration, and increase in pneumonia vaccination for eligible patients. In 2004, the last year of the study period, RMC received a State Quality Award from Mississippi's QIO.

Follow-up and monitoring of PI team initiatives are the responsibility of the team members assigned to a project, with results sent to the Quality Steering Council, Medical Executive Committee, and the Advisory Board. New solutions and procedures that are proved successful are communicated up to executive committees and down to staff through managers. Because RMC is a small hospital, changes in one department are quickly adopted by others. If improvements are not seen, the team revises its action plan and goes back to work until the problem is fixed. Some teams stay together for a short period, while others, such as those addressing patient falls and medication errors, are maintained over the long run.

In addition to PI team initiatives, each department sets annual quality-related goals. If a goal is not met, efforts to meet it continue for the following year and are reported to the Quality Steering Council. Performance in reaching goals is part of annual evaluation and compensation review for employees.

CHALLENGES AND OBSTACLES

Physician and Nurse Resistance

When new QI strategies were introduced at the start of the study period, many physicians, including medical staff leaders, resisted the recommended medical pathways as "cookbook medicine." RMC addressed this problem largely through peer-to-peer education. Physician champions of QI were identified and recruited to talk with their peers and persuade them that evidence-based medicine does improve results.

There also was some resistance by nurses who had "no time" for additional quality-related activities. In response, RMC got the nurses involved in the QI process and problem-solving, and showed them that such changes could actually make a difference in patient safety. It was also important not to burden the nurses with paperwork. Over time, these efforts resulted in most nurses and physicians viewing performance improvement as part of their daily routine.

During the study period, RMC began to prepare for new accreditation reporting requirements on Core Measures to JCAHO.[37] This process inspired both nurses and physicians, who took pride in their work and wanted the hospital to compare favorably to others.

FINANCIAL IMPLICATIONS

According to hospital representatives, improvements in quality have resulted in successful physician recruitment and the addition of new services. The hospital's image has steadily improved in the community it serves. This in turn has attracted patients who in the past might have chosen other hospitals for their care.

LESSONS

Emphasize Transparency and Celebrate Success

Interviewees deemed it important to recognize and remind personnel that the hospital is not perfect, and that there continues to be areas in need of improvement. Keeping the staff involved in decision-making and aware of progress contributed to better results.

Indeed, QI leaders at RMC emphasize the importance of celebrating successes. Showing staff where they had been on particular measures and how far they've come—through reports, posters, and QI fairs with games, food, and prizes—has effectively nurtured a culture of quality. Physicians, who are typically described as competitive, are particularly motivated by comparisons with others.

Public Policy Can Help

Public policies viewed as helpful to QI efforts include reports that document and publicize quality problems (e.g., IOM reports) and public reporting of quality data (e.g., new Medicare requirements) that will eventually help consumers make good choices.

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CASE STUDY: ST. MARY'S HEALTH CARE SYSTEM

SETTING

St. Mary's Health Care System recently celebrated its 100th year of service in Athens, Georgia. Located 70 miles from downtown Atlanta, it operates 165 beds (with a capacity of 195), and has about 10,000 inpatient admissions annually. It is a member hospital of Catholic Health East (CHE), which operates in 11 states from Maine to Florida. Their patient population is 41 percent managed care, 37 percent Medicare, 12 percent Medicaid, and 8 percent uninsured.

We selected St. Mary's because our analysis of Medicare data over 2002–2004 (the "study period") identified it as among 100 hospitals showing greatest improvement in a quality measure based on risk-adjusted mortality, morbidity, and complication rates. St. Mary's displayed marked improvement during the study period in terms of both quality and efficiency measures.

IMPETUS FOR QUALITY FOCUS

New Chief Executive Officer

A new CEO arrived at St. Mary's in 2000. Prior to his arrival, the hospital was losing market share, staff turnover was high, and levels of employee, patient, and physician satisfaction were in need of improvement. According to interviewees, the arrival of the new CEO, Tom Fitz, brought a new determination and support for quality improvement (QI). In turn, the years 2002–2004 saw a significant increase in the implementation of new programs and initiatives (see "Actions to Improve Quality," below).

Losing Patients, Market Share, Staff

In 2002, St. Mary's continued to lose market share, particularly in obstetrics, which included gynecology, labor and delivery, and both newborn and intensive care nurseries. They experienced high staff turnover and physician dissatisfaction. A new nursing director was selected through an extensive process, which included input from both staff and physicians. She was able to turn the obstetrics unit around through increased education and by striving for excellence. A new Family Birth Center was built with 16 labor and delivery rooms, two cesarean section operating rooms, and 12 neonatal intensive care unit private rooms, with day-bed accommodations for parents. In addition, the hospital senior leadership, along with a strong director group, revised the unit's mission and values to be more focused on patient care, and developed a shared vision for the future of other areas at St. Mary's Health Care System.

ACTIONS TO IMPROVE QUALITY: STRUCTURAL AND CULTURAL CHANGES

Creation of Patient Safety Committee and Quality Council

Following the release of the IOM report, *To Err Is Human,* St. Mary's created a physician-led, multidisciplinary, Patient Safety Committee. Its mission was to bring the hospital's practices in line with the JCAHO Quality Measures National Patient Safety Goals and to address other issues related to patient safety in order to enhance the quality of care. While the committee does not necessarily oversee all QI efforts, its establishment elevated these issues and reflected their higher priority in the hospital's changing culture.

The Quality Council was reorganized in 2004. Chaired by the director of quality and performance improvement, the council includes senior leadership as well as department directors. It meets monthly to examine data presented by all of its committees: AMI Core Measures, heart failure, stroke, pneumonia, patient safety, infection control, patient grievances and satisfaction, medical errors, and falls. The council uses these data to identify problem areas and discuss new strategies for quality improvement as well as strategies for translating existing programs that are working for one condition or department across the institution. The actively involved Board of Directors receives a quarterly quality report providing a top-level overview with key metrics, which they call "the dashboard."

Implementation of Protocols Based on Core Measures

New protocol development at St. Mary's is not a centralized function of any one department, but rather a responsibility of several. Data drive the recognition of quality-of-care issues in need of quality improvement. For example, in response to a high risk of stroke in the region and a need for rapid response to achieve positive outcomes, St. Mary's developed a multidisciplinary approach to stroke care, which led to their recognition as the region's only JCAHO-certified stroke center.

Interviewees noted that St. Mary's is a community hospital and, as such, responds to situations raised by the community population it serves. Recently, Athens was listed in a national magazine as one of the top five places to retire; subsequently, hospital staff have begun to plan for the types of care and services required by the 55-and-over population. It is predicted that this population will grow by 42 percent in the county over the next few years.

Once an issue is identified, the hospital establishes a multidisciplinary team consisting of physicians, frontline staff, and administration. In many cases, the performance

improvement (PI) solution that is developed utilizes evidence-based medicine and research. For every new Core Measure or PI project tackled, St. Mary's administrators identify a frontline staff champion and a physician champion who will make it their job to see the program to completion, with support from members of the appropriate Patient Safety and/or Quality Council Committees. A clinical nurse specialist, for example, led the team responsible for developing and implementing the stroke project. The process for implementing the stroke protocol included developing staff education tools, offering "skills days,"[38] an e-mail newsletter, and "train-the-trainer" protocols.

Addition of New Services

As a result of the attention to patient safety, quality of care, and satisfaction, St. Mary's opened the only acute rehabilitation center in the region, with 20 beds. They also created a neuroscience unit, which recently earned the ranking of a Center of Excellence—"a specialty neuroscience hospital within a hospital"—by Neurosource.[39] In 2002, the Diagnosis Related Group (DRG) assurance program was implemented. Staff in the case management department review patient records and work with physicians to ensure that comorbidities and complications are documented and coded accurately. For example, if hypoglycemia is documented, the case manager would work with the doctor to improve documentation to reflect the complete disease care process. The hospital is also very proud of its "One Call" service, in which registered nurses facilitate patient admissions. The One Call nurses ensure that incoming patients are admitted with the appropriate status, placed in the unit best suited to care for their needs, and generally coordinate patient care from the time of admission. The program has led to great improvements in physician and patient satisfaction as well as operational efficiency and has empowered nurses within the institution.

Interviewees noted that perhaps the biggest change that took place during the study period was the growth of the hospitalist program, whereby a staff physician becomes the physician-of-record for a patient, rapidly coordinating their care and quickly reacting to changes in their medical status.[40] St. Mary's began their hospitalist program in 2002 and have since more than doubled the number of hospitalists (from three to seven)—greatly enhancing access to physicians and enabling 24-hour attention and clinical support. The interviewees believe that this expansion led to great improvements in quality of care. The hospitalists are active participants in quality initiatives and act as physician champions for quality and performance improvement teams.

In 2001, St. Mary's asked a dedicated neurologist and neurosurgeon to implement a stroke care protocol that reflected evidence-based medicine. As previously mentioned,

the institution was certified as a stroke center by JCAHO in 2004, and certification was granted again in August 2006.

Empowerment of Bedside Nurses

In 2002, hospital leadership began a Shared Governance program designed to empower bedside nurses, believing that they could lead the charge in coordinating care and creating an environment in which multidisciplinary care protocols would thrive. To help achieve this vision, the hospital hired "top-notch" directors of nursing to ensure the program would have administrative support and leadership to bring it to fruition. Shared Governance provides the bedside nurse with the tools and avenues to shape and influence the provision of quality patient care. For example, the Practice Council reviews, approves, and/or revises nursing policies and procedures. The Performance Improvement (PI)[41] Council looks collectively at unit-based performance improvement activities to see if there are hospital-wide trends or issues that need additional investigation. And through hospital-wide and unit-based Nursing Councils, nurses plan and shape policies and procedures as well as initiate and advocate performance improvement efforts. Via these programs, registered nurses work to improve patient care as well as improve their work lives and environment.

Recruitment of "Risk-Takers"

In early 2004, St. Mary's administration recognized the need to recruit and hire senior staff who were willing, and had the necessary experience, to take risks and come up with challenging and innovative programs. New staff positions were created, including vice president for managed care, director of quality and performance improvement, and director of case management. While these hires actually took place in 2005, after the study period, they stem directly from shifts in the culture and prioritization of quality and patient safety that took place between 2002 and 2004.

Incorporation of Technology

St. Mary's leadership learned the importance of investing in technology to increase the levels of quality care, patient safety, and patient, employee, and physician satisfaction. One of St. Mary's 2006 investments was a remote EKG system built into their ambulance fleet that can transmit information on a patient to the emergency department, and from there to a cardiologist. Interviewees noted that this system gives physicians access to EKG data before AMI patients even arrive at the hospital, making it more likely that they will receive appropriate care in the crucial first minutes. While this did not occur during the study period, it again grew out of the cultural shifts that took root between the years 2002 and 2004.

Another technology investment was the hospital's Pixis pharmaceutical dispensing system, implemented in 2003. This electronic dispensing apparatus tracks medications and has helped reduce the incidence of medication errors. Its implementation was accompanied by a more stringent review of medication error data by the pharmacy, patient safety committee, and department staff.

MONITORING RESULTS

National Measures and Collaboratives

As described above, the Quality Council regularly reviews a variety of indicators, identifies areas in need of improvement, develops QI strategies, and reports to the board. In addition, the hospital relies on patient outcomes and identified community needs to guide its work. Recently it applied to JCAHO to be certified as a heart failure center of excellence and to the Commission on Accreditation of Rehab Facilities for acute rehab certification. As part of Catholic Health East, St. Mary's also participates in the IHI 100,000 lives program and benefits through collaboration with other CHE hospitals.

Local and Regional Benchmarking

St. Mary's relies mainly on local and regional data for benchmark comparisons. It used the Maryland Hospital Association for mortality and outcome data comparisons. Coverdale and Get with the Guidelines data are used by the stroke committee to monitor the effectiveness of the stroke project. The hospital participates in the Georgia Hospital Association's Partnership for Health and Accountability, which utilizes best practice process implementation and has developed a statewide quality index to measure the progress of Georgia hospitals in relation to patient safety. For 2005, the latest index score, St. Mary's scored 100 percent, a demonstration of the commitment to patient care by the organization. St. Mary's also benchmarks Core Measure, patient satisfaction, financial, and many other indicators against the 33 other acute care hospitals in the Catholic Health East system.[42]

CHALLENGES AND OBSTACLES

Cultural Change Moves Slowly

In a relatively short period, St. Mary's implemented an array of programs and protocols that significantly raised its levels of quality and efficiency. Interviewees described how a number of physicians saw implementation of protocols based on the Core Measures as an imposition. They noted, however, that some physicians were "brought around" after becoming informed and involved in change initiatives. The hospital encourages physician input and provides support for physicians in learning how to integrate information technology in the delivery of care. In doing so, the administration tries to make implementation less onerous and more user-friendly.

FINANCIAL IMPLICATIONS

The investments made in quality improvement and patient safety have paid off for St. Mary's. Between 2004 and 2005 the hospital saw a 20 percent increase in admissions. That rate increased another 8 percent from 2005 to 2006. Improvements in services, such as a new neonatal intensive care unit that enables parents to spend the night with their infants, gave the hospital a 2 percent increase in market share for newborn specialty care.

Quality improvement and patient safety have been integrated into the fabric of St. Mary's, reflected in the fact that the chief financial officer is an ad hoc member of the Quality Council. There is a specific line item for quality improvement in the operating budget, and additional funds may be reallocated to that purpose when appropriate and available. At the same time, St. Mary's financial resources are always tight, and reimbursement rates for Medicaid and Medicare are potentially on the chopping block. The administration is concerned with how it will continue to implement potentially money-saving programs while at the same time fulfill its mission to take care of the poor and provide a consistent level of uncompensated care.

LESSONS

Leaders, Not Managers

One lesson the staff at St. Mary's has learned is that change requires dedicated leaders. As reflected by their use of nurse and physician champions, and the fact that all staff members are empowered to identify problems and issues, they are working to create a culture in which anyone can become a leader and all are encouraged to do so.

Celebrate Successes, but Don't Get Complacent

St. Mary's recognized that, without commitment from staff, quality improvement and patient safety efforts would not get very far. Celebrating achievements in successfully implementing new strategies was crucial to staff involvement. These celebrations took the form of dinners, parties, and gifts of Wal-Mart shopping cards. The administration also created a recognition program in which patients can give points to their caregivers. The points can then be redeemed by staff at the hospital cafeteria and gift shop. Recently, they developed five annual nursing clinical excellence awards. Nominees are submitted by the clinical nursing staff, and recipients' photographs are placed on the "Wall of Strength" in recognition of their achievements.

At the same time, interviewees warned that it is important not to celebrate to the point where you become complacent about your successes. They noted that, as soon as they implement a new Core Measure protocol, another condition needs attention. They

also noted that the evidence base is changing all the time, so even new Core Measure protocols can become outdated and require renewed attention and consideration. Thus, maintaining and building on achievements is an ongoing challenge.

Public Policy Can Help

Interviewees noted that one area in which public policy can help address the needs of hospitals seeking to improve quality and performance is regulation. They are concerned that the multitude of regulatory requirements—sometimes in opposition to each other—focuses organizational resources on federal and state regulatory compliance, thus reducing the resources available to provide safe and good-quality care to patients.

Anyone Can Initiate Quality Improvement

As described above, everyone at St. Mary's is empowered to identify quality issues and needs. As one interviewee noted, "quality flows up and down. It goes down from the board, and up from the clinicians." They advocate the development of an environment in which this type of discourse is welcomed and encouraged.

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APPENDIX. INTERVIEW GUIDE

As you know, we've selected your hospital to study based on quality data over the 2002–2004 period. So I'd like you to try to focus on changes and activities during that time. We'd like to learn ***why*** *your hospital began to focus on improving quality,* ***what*** *strategies were used,* ***how*** *they were implemented,* ***barriers*** *you faced, and* ***results*** *and* ***lessons*** *you've learned.*

Basic information: *First, I'd like some basic information about the hospital.*

Hospital name:
Location:
Size (# beds, discharges/year):
Urban/Suburban/Rural:
Teaching status:
Patient population (% minority, immigrants; commercial/Medicare/Medicaid/uninsured):
Interviewee name, title, department:

I. General Changes During 2002–2004 Period: *Thinking back to 2002, 2003, and 2004, were there any major events or changes at the hospital?*

II. Why Were QI Initiatives Developed? *Now, let's discuss what impetus, if any, prompted the hospital to explore quality improvement or make it a priority.*

- Were there any significant motivating factors prompting the development of quality improvement programs that led to the changes in performance over 2002–2004?
  - e.g., media reports, "reportable events" or penalties, research study release?
- Were there other factors, not directly related to quality improvement per se, that prompted an interest in examining quality issues, such as:
  - Notable changes in leadership and governance; e.g., a new CEO, significant change in board composition, merger with another hospital or acquisition by a new system?
  - Significant changes in administrative or clinical staff?
  - Any implementation of new data collection, IT systems, or accreditation procedures?
  - Significant changes in the hospital's fiscal situation?

III. What Initiatives Were Developed? *Describe the initiatives and programs that were pursued and may have led to the improvement in performance during 2002–2004.*

- Describe the most important, or effective initiative for improving quality/performance over 2002–2004. [then repeat questions for additional major QI initiatives] Probes: Was it department- or disease-specific? Was it system-based? Which clinical areas were focused on specifically? Were hospital-wide efforts begun in one department and then rolled-out across the institution? If so, how was this accomplished?
- Were concrete goals or benchmarks established? Did you use national/external standards/benchmarks, or internally developed standards based on the hospital's past performance or other considerations?
- To what extent was the hospital focused on transformational change that involved cultural and structural strategies, versus implementing mechanisms that addressed specific quality issues?
- What performance measures (e.g., mortality, cost-per-admission, length-of-stay, adverse drug events, rate of infection, etc.) and tools were decided upon for use in assessing improvements? How frequently, and to which department or administrator, were these measures collected and reported? Are these same measures used today, and collected at the same frequency?
- How did the following priorities—patient safety, complication reduction, and performance improvement—rank in the QI initiative development? How did this ranking inform the models/methods that were ultimately developed?
- What role, if any, was designated for families and patients to play in the QI "team"?
- Did your hospital participate in any external QI efforts, such as those developed by the Institute for Healthcare Improvement or other initiatives (such as the Saving Lives initiative)? Did you collaborate with other health care agencies or institutions? Participate in CMS public reporting? Receive performance-related awards? How did these efforts inform the development of internal initiatives?

IV. How Were QI Initiatives Developed and Implemented? *What operational, systematic, and cultural shifts had to take place for these initiatives to get off the ground in 2002–2004?*

Operations

- For each major quality initiative: What steps were involved in implementing the model/method, i.e., how did you translate goals into concrete actions? How were linkages between performance measures and daily operations established and administered? To what extent did the staff come to view QI as an appendage to the workload versus viewing it as integrated into the daily routine of the institution? How do staff view it today?

- Who and what department was responsible for oversight of this program? How did this relate to the QI department? How did clinical and administrative leaders interact with this person(s)?
- How were quality goals and strategies developed? Which QI strategies were deemed most effective?
- How were the initiatives communicated throughout the institution—e.g., how were administrative and clinical staff informed/educated about their roles in QI efforts? How were responsibilities for implementation and priority setting of QI strategies and programs delineated at the senior leadership level?
- How have you tracked changes in quality and/or efficiency over the course of these initiatives being in place? What are the consequences if quality goals are not met? Examples.

Systems Change

- What processes (e.g., data collection, internal and external reporting, incentive structures, electronic medical records, automated trigger and reminder systems, rapid response technologies, etc.) were established or reformed in order to implement QI strategies?
- During 2002–2004, how were health information technology (HIT) systems integrated into the QI efforts? To what extent were physicians engaged, trained, and involved in HIT development? To what extent did patient care and protocols become evidence-based and data driven?
- Did the quality efforts lead to Centers of Excellence, new clinical guidelines, other system-wide tools or infrastructure to promote quality/performance (e.g., training in transformational change models, flow management practices)?

Cultural Change: Administration

- From where did the quality "mission" originate—administration/CEO/board member, clinical leader, etc.? How did the hospital align the goals and visions of administrators and clinicians? What steps were taken in order to reach consensus? What did it take to develop a common vocabulary on the subject?
- During 2002–2004, approximately how much time per month did the CEO/board spend dealing with quality issues? Did board members receive formal quality measurement reports? Did CEOs? If so, how often? Was there any indication of the extent they read the reports? responded to the reports? To what

extent, and in what capacities, did they interact with medical staff on issues related to strategies for improving quality, and implementation of those strategies?

- In what ways, if any, was the CFO involved in quality improvement measures? Were QI strategies reflected in the annual budget, capital investment, and other systems? Did the CFO/administration view QI as adding operational costs, or as a way to reduce costs by improving efficiencies?
- Where did the QI department "rank" in the institution's hierarchy? To whom did the QI director report? Was there a QI department prior to this period? Was there direct access from the director to the CFO and/or CEO? What qualifications were required in the position (and what are the credentials of the current director of QI)? How did this department interact with medical staff and other administrative departments?
- How did your institution's administrative offices interact with government/regulatory agencies to satisfy accrediting requirements prior to the initiative(s)? How have these interactions changed? How do these interactions affect QI efforts?

Cultural Change: Clinicians

- During 2002–2004, how would you describe the level of physician resistance versus enthusiasm to QI efforts? What methods were used to get physician "buy-in" to QI initiatives? How were QI initiatives communicated to physicians, and which of these buy-in and communication strategies were most effective? Can you describe any examples where physicians "championed" new programs and guided them through the implementation process? Was performance improvement during 2002–2004 related to changes in physician leadership or staffing? Describe.
- During 2002–2004, how would you describe the level of nurse resistance versus enthusiasm to QI efforts? Were there any effective methods used to get nurse "buy-in" to QI initiatives? In what ways were nurses encouraged to champion new QI efforts?
- What are the "ideal" provider-(nurse, RN)-to-patient ratios for your institution, and what is this based on? What were they during the study period, and did they change? To what extent did this relate to changes in performance?
- What other staff—e.g., transporters, housekeeping, clerical—have played an important role in QI efforts? Probe (involvement, resistance, buy-in, etc.)
- What strategies/systems were used, if any, to hold staff *accountable* for their roles in making QI initiatives successful? To what extent, if any, did you incorporate

incentives, pay for performance, discretionary vs. mandatory pathways/clinical guidelines, linking credentialing process to physician's performance, patient feedback on clinical performance, etc. (get specifics)? What was the attitude of most staff to these incentives? Do you think these methods had a minor or major role in making QI successful?

V. Results, Challenges, and Opportunities: *How have these quality initiatives affected the hospital, and what were the challenges and opportunities involved in the process?*

- Have QI efforts or other initiatives we have discussed led to changes in your quality indicators? Describe.
- Have QI efforts led to improvements or declines in the financial health of the institution?
- Have QI initiatives affected the institution's competitiveness in the market? How?
- What were the major barriers faced in developing and implementing QI efforts? How were those barriers addressed?
- Overall, what do you think are the most important ingredients necessary for improving quality, and for establishing successful QI initiatives?
- What challenges do you foresee occurring in the future in the effort to continue to improve quality?
- What role can public policy play in helping your and other hospitals understand and replicate successful strategies? What role do you think the private sector can play? Were these elements of public policy or private sector resources available during 2002–2004?
- What would you say are the most important lessons for other hospitals regarding improving quality, or in terms of developing and successfully implementing QI initiatives?

NOTES

[1] Institute of Medicine, Committee on Quality of Health Care in America, *To Err Is Human: Building a Safer Health System* (Washington, D.C.: National Academies Press, 2000); and *Crossing the Quality Chasm: A New Health System for the 21st Century* (Washington, D.C.: National Academies Press, 2001).

[2] E. Kroch, M. Duan, S. Silow-Carroll, and J. Meyer, *Hospital Performance Improvement: Trends in Quality and Efficiency* (New York: The Commonwealth Fund, Apr. 2007); available at http://www.cmwf.org/publications/publications_show.htm?doc_id=471264.

[3] Unlike the companion report that focuses on both quality and efficiency trends, the case study hospitals featured in this report were selected based on improvement in quality measures, although we excluded hospitals that displayed declining efficiency over the period examined.

[4] The National Association of Inpatient Physicians defines hospitalists as "physicians whose primary professional focus is the general medical care of hospitalized patients." Their activities include patient care, teaching and research, and leadership related to hospital care. An intensivist is a hospitalist who specializes in the care of critically ill patients, usually in an intensive care unit.

[5] J. Meyer, S. Silow-Carroll, T. Kutyla et al., *Hospital Quality: Ingredients for Success* (New York: The Commonwealth Fund, July 2004); available at http://www.cmwf.org/Publications/Publications_show.htm?doc_id=233868.

[6] See, for example, IOM, *To Err Is Human,* 2000; D. McCarthy and D. Blumenthal, *Committed to Safety: Ten Case Studies on Reducing Harm to Patients* (New York: The Commonwealth Fund, Apr. 2006), available at http://www.cmwf.org/publications/publications_show.htm?doc_id=368995; IOM, *Preventing Medication Errors* (Part of the *Quality Chasm* series) (Washington, D.C.: National Academies Press, 2006); T. A. Brennan, L. L. Leape, N. M. Laird et al., "Incidence of Adverse Events and Negligence in Hospitalized Patients: Results of the Harvard Medical Practice Study I," *New England Journal of Medicine,* Feb. 7, 1991 324(6):370–77; L. L. Leape, T. A. Brennan, N. M. Laird et al., "The Nature of Adverse Events in Hospitalized Patients: Results of the Harvard Medical Practice Study II," *New England Journal of Medicine,* Feb. 7, 1991 324(6):377–84; D. W. Bates, D. J. Cullen, N. M. Laird et al., "Incidence of Adverse Drug Events and Potential Adverse Drug Events: Implications for Prevention. ADE Prevention Study Group," *Journal of the American Medical Association,* July 5, 1995 274(1):29–34.

[7] IOM, *To Err Is Human,* 2000; and IOM, *Crossing the Quality Chasm,* 2001.

[8] Health Services Advisory Group, Inc., Centers for Medicare and Medicaid Services Special Study, *Identification and Synthesis of Components Essential to Achieving 'High Performer' Status in Various Provider Types* (Washington, D.C.: CMS, Oct. 2005); available at http://www.hsag.com/projects/HSAG_HighPerf_FinalReport_Complete%20Report_woEmbargoedArticles.pdf.

[9] A. Jha, Z. Li, E. J. Orav et al., "Care in U.S. Hospitals—The Quality Alliance Program," *New England Journal of Medicine,* July 21, 2005 353(3):265–74; available at http://www.cmwf.org/publications/publications_show.htm?doc_id=285995.

[10] Meyer, Silow-Carroll, Kutyla et al., *Hospital Quality,* 2004.

[11] Magnet status is a designation awarded by the American Nurses' Credentialing Center, an affiliate of the American Nurses Association, to hospitals that meet criteria designed to measure the strength and quality of their nursing such as: excellent patient outcomes, high level of job satisfaction among nurses, low staff nurse turnover rate, and appropriate grievance resolution.

[12] E. H. Bradley, J. Herrin, J. A. Mattera et al., "Quality Improvement Efforts and Hospital Performance: Rates of Beta-Blocker Prescription After Acute Myocardial Infarction," *Medical Care,* Mar. 2005 43(3):282–92.

[13] A. March, *Facilitating Implementation of Evidence-Based Guidelines in Hospital Settings: Learning from Trauma Centers* (New York: The Commonwealth Fund, June 2006); available at http://www.cmwf.org/publications/publications_show.htm?doc_id=378879.

[14] About one-third of Medicaid programs (17 of 47) responding to a recent survey report that they collect hospital data related to clinical quality. Only two states, however (Arkansas and Pennsylvania), have launched a hospital pay-for-performance (P4P) program as of 2006, and one additional state (Massachusetts) recently developed initiatives to improve the quality of hospital inpatient care. Medicaid P4P is more common for outpatient care: 19 of 47 states responding had P4P initiatives in place or starting in 2006, and another 16 programs expect to implement P4P for outpatient care within two years. (L. Duchon and V. Smith, Health Management Associates, prepared for the National Association of Children's Hospitals, *Quality Performance Measurement in Medicaid and SCHIP: Results of a 2006 National Survey of State Officials,* Aug. 2006.)

[15] McCarthy and Blumenthal, *Committed to Safety,* 2006.

[16] We used the MedPAR database because it was the largest and most comprehensive of the three hospital databases that we analyzed. Acute care hospitals with fewer than 1,500 annual discharges were excluded from the analysis. See the companion report for quantitative methodology: E. Kroch, M. Duan, S. Silow-Carroll, and J. Meyer., *Hospital Performance Improvement: Trends in Quality and Efficiency* (New York: The Commonwealth Fund, Apr. 2007); available at http://www.cmwf.org/publications/publications_show.htm?doc_id=471264.

[17] Although our primary focus was on quality improvement, we did not want to include hospitals that may have improved in quality at the expense of efficiency (as measured by length of stay).

[18] Meyer, Silow-Carroll, Kutyla et al., *Hospital Quality,* 2004.

[19] Duchon and Smith, *Quality Performance Measurement,* 2006.

[20] In addition to its Manhattan division, which was the focus of this case study, Beth Israel has a 200-bed division in Brooklyn.

[21] In one case, a young patient undergoing routine procedure was given too much saline and died; it was reported that a medical equipment salesman was in the room operating a piece of new equipment (1997); in another, an obstetrician reportedly carved his initials into a woman after a cesarean section (2000).

[22] In 2002, the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) began requiring accredited hospitals to collect and submit performance data on three of the following measure sets: acute myocardial infarction (heart attack), heart failure, pregnancy and related conditions, and community acquired pneumonia. This Core Measure initiative enables JCAHO to review data trends and work with hospitals as they use the information to improve patient care. It was intended to improve the safety and quality of care and to support performance improvement.

[23] Most reported events are unintended adverse and undesirable developments in an individual patient's condition occurring in the hospital. More serious occurrences defined as patient deaths or impairments of bodily functions in circumstances other than those related to the natural course of illness, disease, or proper treatment in accordance with generally accepted medical standards require the hospital to conduct a root cause analysis and are investigated individually.

[24] These include seven pediatric clinics, seven primary care clinics, and a wide range of specialty care service clinics.

[25] The National Association of Inpatient Physicians defines hospitalists as "physicians whose primary professional focus is the general medical care of hospitalized patients." Their activities include patient care, teaching, research, and leadership related to hospital care. An intensivist is a hospitalist who specializes in the care of critically ill patients, usually in an intensive care unit.

[26] Hospitalist Web site, http://www.hospitalist.net/.

[27] According to the Hospitalist Web site, potential disadvantages include "patient dissatisfaction secondary to being 'assigned' a new physician during an acutely stressful time and potential lack of adequate communication between inpatient physicians and outpatient primary care providers both at the time of hospital admission and discharge."

[28] The National Hospital Measures were created by the Centers for Medicare and Medicaid Services and the Hospital Quality Alliance.

[29] These specialty organizations include the Society for Thoracic Surgeons, the American College of Cardiology-National Cardiovascular Data Registry, and the Vermont Oxford Network.

[30] The six interventions are deploying rapid response teams, delivering evidence-based care for heart attacks, preventing adverse drug events by implementing medication reconciliation, preventing central line infections by implementing a series of steps called the "Central Line Bundle," preventing surgical site infections, and preventing ventilator-associated pneumonia by implementing a series of steps called the "Ventilator Bundle."

[31] The 2006 JCAHO goals are to improve the accuracy of patient identification, improve communication between patient and caregivers, improve safety of using medications, reduce the risk of health care–associated infections, accurately reconcile medications across the continuum of care, and reduce the risk of patient harm resulting from falls.

[32] Legacy Health System operates one hospital in Vancouver, Wash., so the system tries to participate in initiatives in both Oregon and Washington.

[33] Rankin Medical Center is licensed for 134 beds; it currently uses 90 beds for acute care and 15 beds for gero-psychiatric care.

[34] HMA, Inc., operates about 65 hospitals in non-urban areas in 16 states.

[35] Information and Quality Healthcare is Mississippi's quality improvement organization.

[36] Committees include: Medicine, Surgery, Emergency Department, Intensive Care Unit, Pharmacy and Therapeutics, Infection Control, Medical Record Utilization Review, and Medical Executive committee.

[37] As noted above, in 2002, JCAHO began requiring accredited hospitals to collect and submit performance data on three of the following measure sets: acute myocardial infarction (heart attack), heart failure, pregnancy and related conditions, and community acquired pneumonia. This Core Measure initiative allows JCAHO to review data trends and work with hospitals as they use the information to improve patient care. It was intended to improve the safety and quality of care and to support performance improvement.

[38] Skills days are workshops where work stations are set up allowing staff to go from station to station to listen/learn/participate or demonstrate specific skills needed when caring for stroke patients. Examples of workstations include neurological assessment or care of a ventriculostomy.

[39] Neurosource is a company that provides development services and expertise to physicians and hospitals to improve access to neuromedical care. For more information, see http://www.neurosource.com.

[40] The National Association of Inpatient Physicians defines hospitalists as "physicians whose primary professional focus is the general medical care of hospitalized patients." Their activities include patient care, teaching, research, and leadership related to hospital care.

[41] Performance Improvement and Quality Improvement are synonymous at St. Mary's.

[42] Catholic Health East also oversees four long-term acute care hospitals, 41 freestanding and hospital-based long-term care facilities, 13 assisted living facilities, five continuing care retirement communities, eight behavioral health and rehabilitation facilities, 32 home health/hospice agencies, and numerous ambulatory and community-based health services.

RELATED PUBLICATIONS

Publications listed below can be found on The Commonwealth Fund's Web site at www.cmwf.org.

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Hospital Quality: Ingredients for Success—A Case Study of Jefferson Regional Medical Center (July 2004). Jack A. Meyer, Sharon Silow-Carroll, Todd Kutyla, et al.