



**HOSPITAL QUALITY: INGREDIENTS FOR SUCCESS—
A CASE STUDY OF
JEFFERSON REGIONAL MEDICAL CENTER**

Jack A. Meyer, Sharon Silow-Carroll, Todd Kutyla,
Larry S. Stepnick, and Lise S. Rybowski

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ABSTRACT: As part of their study on quality improvement initiatives in U.S. hospitals, the Economic and Social Research Institute and The Severyn Group conducted in-depth site visits at four top-performing hospitals from around the country to identify the factors that drive and challenge these institutions in their realization of quality goals. Jefferson Regional Medical Center, located near downtown Pittsburgh, was one of the hospitals selected for the study. The researchers find that Jefferson's experience demonstrates that neither leading-edge technology nor external pressures are prerequisites for quality or quality improvement initiatives. Rather, quality at Jefferson is driven by strong leadership and a well-entrenched culture that emphasizes quality, along with productive cross-disciplinary relationships and a flexible, decentralized approach to problem-solving. The institution also employs nuts-and-bolts tools, including performance monitoring systems, permanent and ad hoc committee structures, and an aggressive case management program.

[Click here](#) to see the overview report.

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ABOUT THE ECONOMIC AND SOCIAL RESEARCH INSTITUTE

The Economic and Social Research Institute (ESRI) is a nonprofit, nonpartisan organization that conducts research and policy analysis in health care and in the reform of social services. ESRI specializes in studies aimed at improving the way health care services are organized and delivered, making quality health care accessible and affordable, and enhancing the effectiveness of social programs. For more information, see <http://www.esresearch.org>.

About the Authors

Jack A. Meyer, Ph.D., is the founder and president of ESRI. Dr. Meyer has conducted policy analysis and directed research on health care access issues for several major foundations as well as federal and state government. Many of these projects have highlighted new strategies for building quality measurements and improvement into health care purchasing. Dr. Meyer has also directed studies on overcoming barriers to health care access and innovative designs for extending health insurance coverage to the uninsured. He is the author of numerous books, monographs, and articles on topics including health care, welfare reform, and policies to reduce poverty.

Sharon Silow-Carroll, M.B.A., M.S.W., is senior vice president at ESRI. Ms. Silow-Carroll's areas of expertise include health care reform strategies and meeting the needs of vulnerable populations. Her recent projects include: analyzing the factors behind successful state coverage expansions and the obstacles hindering such efforts; reviewing state

approaches to improving quality within Medicaid; and reviewing community-based health coverage and oral health programs. She is the author of numerous reports and articles analyzing public and private sector initiatives aimed at enhancing access, containing costs, and improving quality of health care.

Todd Kutyla, M.L.A., is a research associate at ESRI, where he works on health care cost and quality issues. He has conducted extensive research on the cost-effectiveness of medical innovation, helped develop and administer surveys aimed at determining attitudes toward health reform proposals, and worked on several projects that assess the effectiveness of programs that provide coverage to underserved populations. Prior to working at ESRI, Mr. Kutyla managed several projects focusing on quality of medical care at Harvard Medical School's Department of Health Care Policy.

ABOUT THE SEVERYN GROUP

The Severyn Group, Inc., specializes in conducting qualitative and quantitative research, and writing and producing publications on a wide range of health care management issues. In addition to printed materials, The Severyn Group has created Web site content and electronic presentations for training and education purposes. Severyn's clients include a broad spectrum of organizations that represent virtually all aspects of health care, including financing, management, delivery, and performance measurement.

About the Authors

Larry S. Stepnick, M.B.A., is vice president of The Severyn Group, Inc. He specializes in researching and writing about best practices in the financing and delivery of health care, including such topics as health care reform, quality improvement, physician-hospital relations, hospital governance, and managed care. Prior to co-founding Severyn, Mr. Stepnick served as a senior vice president and director of The Advisory Board Company in Washington, D.C. Mr. Stepnick received his M.B.A. from The Wharton School of the University of Pennsylvania, where he graduated with honors.

Lise S. Rybowski, M.B.A., is president of The Severyn Group, Inc. She specializes in researching and writing about best practices, including such topics as quality measurement and reporting, employer and public purchasing, business coalitions, and the privacy and confidentiality of health care data. Prior to starting The Severyn Group, Inc., in 1994, Ms. Rybowski was a consultant with The Advisory Board Company in Washington, D.C. Ms. Rybowski received her M.B.A. from Columbia University.

HOSPITAL QUALITY: INGREDIENTS FOR SUCCESS— A CASE STUDY OF JEFFERSON REGIONAL MEDICAL CENTER

SUMMARY

High quality at Jefferson Regional Medical Center appears to be the result of a variety of institutional factors that collectively have created an internal environment constantly focused on delivering excellent medical care. It is largely not, however, the result of a push from external stakeholders, including employers, health plans, and regulators. Rather, because of strong leadership and a well-entrenched culture that emphasizes quality, along with productive cross-disciplinary relationships and a flexible, decentralized approach to problem-solving, Jefferson has created the type of learning environment that produces good outcomes and continuous improvement. This success has been facilitated by a set of nuts-and-bolts tools that leads to quality care on a daily basis. Key factors responsible for the creation of a learning environment within Jefferson include the following:

- A rich history and culture that supports quality.
- Leadership at all levels committed to quality, as evidenced by a consistent willingness to commit resources and absorb financial losses, if necessary, to ensure that quality is not compromised.
- Mutual respect and strong relations across disciplines, including between the administration and clinical care staff (both doctors and nurses) and between physicians and non-physician care staff.
- A highly skilled nursing and medical staff.
- Local (i.e., clinical department or unit-based) ownership and accountability for quality and quality improvement (QI).

With this learning environment in place, Jefferson has invested in a variety of nuts-and-bolts factors that keep quality at the forefront on a daily basis. Sophisticated information technology (IT), however, is not one of these tools, as IT has not played an important role in Jefferson's historical success. It is, however, a central component of future plans. Rather, this daily attention to quality and QI are the result of the following:

- Selected performance monitoring and reporting.
- A broad set of existing structures to identify and address quality and service issues, along with the ability to create ad hoc structures to tackle specific problems identified through data analysis.

- Aggressive case managers who ensure that patients receive appropriate and timely care and services, leading to the earliest possible rehabilitation and discharge.

Key challenges faced by Jefferson relate primarily to getting physicians to accept IT and standardized medicine (e.g., use of protocols). The hospital has achieved its strong performance without having made much progress to date in addressing these challenges.

Lessons learned from the Jefferson case study include the following:

- Leading-edge IT is not necessarily a prerequisite to quality nor is strong external pressure for quality or QI.
- There is no substitute for creating the type of organization where talented individuals want to work and for instilling a culture that values mutual respect and peer-type relations between administrators and clinicians and between physicians and non-physician caregivers.
- Physicians and other caregivers can and should be liberated to take local ownership and accountability for QI.
- An aggressive case management program can play a critical role in facilitating a team-based approach that gets patients appropriate care in a timely manner.

BACKGROUND

Jefferson Regional Medical Center is a 380-bed hospital located roughly 20 miles south of downtown Pittsburgh, Pennsylvania. The hospital is a part of a health system that also goes by the same name. This system, formerly known as the South Hills Health System, was formed when two hospitals, St. Joseph's Hospital and Dispensary and Homestead Hospital, merged in 1973. At this time, the organization consisted of two hospitals, each with its own emergency department (ED), a long-term care facility, and the largest hospital-based home health operation in the country.

In 1977, a new 391-bed hospital was built, the current Jefferson Regional Medical Center. The St. Joseph's Hospital was sold to an outside interest, while Homestead Hospital continued to operate. In 2000, the Homestead facility was closed, and the home health agency became part of a joint venture with the University of Pittsburgh Medical Center.

The hospital is located in a competitive metropolitan area with 15 hospitals, several of which are located within a 20- to 30-minute drive of Jefferson. The hospital also faces

competition from a physician-owned surgery center located roughly 10 miles away. The hospital took a 15 percent stake in this surgery center as a demonstration of support to the physicians who started it, many of whom were members of Jefferson's medical staff.

Jefferson ranked number two among nearly 2,700 hospitals in an analysis of quality and efficiency by CareScience, Inc. The CareScience database covers 18 states that report data for all payers and contains close to 20 million inpatient records from 1999. A minimum threshold of 100 beds was used to form the sample. For each hospital, quality scores are calculated by ICD9-code (56 disease categories are used) and incorporate risk-adjusted adverse outcomes rates for mortality, morbidity, and complications. Length of stay (LOS) is used as a proxy for cost or efficiency; hospitals are presumed to spend more on patients who stay longer. While there are some clear limitations to using this variable, the strength is that LOS is recorded very accurately for each patient. Hospitals that score in the top two quintiles on both cost and quality are considered to have achieved "Select Practice" within that specific disease category. Jefferson Hospital attained 34 Select Practice designations—the maximum number of designations attained by any hospital in the sample.¹

KEY FACTORS DRIVING HIGH QUALITY AT JEFFERSON

High-quality care at Jefferson appears to be the result of a variety of institutional factors that collectively have created an internal environment that is constantly focused on delivering top-notch medical care. It is largely not, however, the result of a push from external stakeholders, including employers, health plans, and regulators. Rather, because of strong leadership and a well-entrenched culture that emphasizes quality, along with productive cross-disciplinary relationships and a flexible, decentralized approach to problem-solving, Jefferson has created the type of learning environment that produces good outcomes and continuous improvement.

What follows is a description of the key factors that have and have not played a role in allowing Jefferson to reach this point. It is broken into three parts. The first part is a brief review of the modest push for quality coming from outside Jefferson, including the payer and health plan community. The next two sections review the internal forces driving quality at Jefferson. The first reviews contextual factors that serve to create the type of environment in which quality and QI can flourish and the second reviews specific tools and programs that lead to a focus on quality and QI on a daily basis.

External Environment Only a Modest Impetus for Quality

The external environment, particularly the payer and business community, has been only a modest impetus for quality and QI at Jefferson, with the Pittsburgh Regional Health Initiative (PRHI) being a catalyst for activities in a few important clinical areas (e.g., cardiac surgery, nosocomial infections).

PRHI Facilitating Improvement in a Few Clinical Areas

The PRHI began in 1998, thanks in large part to the efforts of ex-Alcoa CEO and former Treasury Secretary Paul O'Neill, who also pioneered safety efforts at Alcoa. PRHI is a regional coalition of major employers and providers and is supported by the insurance community. It is seeking to drive quality within a handful of discrete areas where data suggest there is significant opportunity for improvement. These areas include nosocomial infections and medication errors, with the stated goal of complete elimination of such problems, and five clinical services including cardiac surgery, obstetrics care for mother and baby, care for depression, diabetes care, and orthopedic services.

At present, 40 hospitals (representing more than 90 percent of all hospitals in a five-county area around Pittsburgh) are working with PRHI in various capacities. To date, PRHI has been successful in encouraging these hospitals to establish QI programs in many of the targeted areas. Statistically significant improvements in outcomes have yet to be documented, although pilot projects in a few local hospitals have documented improvements. PRHI is currently trying to put additional pressure on hospitals to demonstrate improvement.

PRHI is clearly having an impact on selected QI efforts within Jefferson and that impact is growing over time. Jefferson actively participates in PRHI workgroups on nosocomial infections and medication errors. PRHI staff is working with process improvement and QI personnel at Jefferson in the area of medication administration. As a part of this effort, PRHI provided, free of charge, an industrial systems engineer who evaluated the handling of medications from the time of the physician's order until administration of the drug. This engineer helped to reduce the number of times the medication was handled during this process; approximately four out of 11 handlings were eliminated. The net result has been fewer opportunities for medication errors and faster administration of drugs. PRHI was also instrumental in convincing Jefferson that it needed a system to catch potential medication errors. As a result, the hospital's clinical and administrative leadership decided to purchase and implement a bar-coding system (described in more detail later in this report).

In addition, after an initial confrontation with PRHI about Jefferson's cardiac surgery program, Jefferson now actively participates in PRHI's efforts to improve cardiac surgery outcomes. The initial controversy arose when PRHI suggested that Jefferson should not open a new cardiac surgery program because it was unlikely to achieve good outcomes at low volumes. Jefferson convinced PRHI that because it had recruited top-notch, experienced surgeons, the hospital could run a high-quality, small program. Ultimately PRHI backed down and today, PRHI and Jefferson enjoy a positive working relationship in cardiac surgery. PRHI's cardiac registry program, in particular, has been valuable to Jefferson. Modeled on a program pioneered by the Northern New England Cardiovascular Network, the registry focuses on key outcomes in cardiac surgery. These outcomes include mortality rates, readmission rates, and specific types of complications, along with process-of-care elements that are thought to be related to outcomes. The New England network has seen significant reductions in death rates and in variability of outcomes across network hospitals. PRHI is trying to instill this same type of approach in the Pittsburgh area. The key elements are to put in place a system that makes sure patients get the care they are supposed to get and to identify and address any problems quickly.

Finally, PRHI seems to be having an impact on Jefferson's CEO, most notably in influencing the way he thinks about developing a systems approach to QI. PRHI, and in particular Mr. O'Neill, has challenged Jefferson's CEO and other Pittsburgh area hospital leaders to think boldly about how their organizations can improve safety by orders of magnitude and not incrementally, as has been the traditional hospital approach. This philosophy helped make Alcoa one of the safest manufacturing companies in the world. Jefferson's CEO has taken this message to heart and he is working to install systems that can result in exponential improvement.

Local Medicare QIO Influencing Specific Projects

Pennsylvania's Medicare quality improvement organization (QIO) has influenced some of the specific QI projects that Jefferson pursues. For example, the QIO identified patients with community-acquired pneumonia and/or congestive heart failure (CHF) as potentially being of concern, as evidence suggested these patients may not be receiving appropriate care (e.g., pneumococcal immunizations for the high-risk elderly, education and beta-blockers for patients with CHF). As a result, Jefferson conducted some baseline measurements of how the hospital was treating this subset of patients and discovered ample room for improvement. As a result of this analysis, several distinct changes were made, including educating case management and nursing unit staff to focus on ensuring delivery of appropriate care and placing brightly colored reminder sheets on patients' charts.

These changes netted modest improvement, but not enough to satisfy Jefferson's clinical leadership. At this point, Jefferson decided to work more closely with the local QIO, developing letters, written on the QIO's letterhead, to be placed on patients' chart that stated that Medicare would review patients' care and could deny reimbursement if care was not deemed to be appropriate. Further improvement occurred as a result of these actions. Unfortunately, once these point-of-care reminders were stopped, performance went back to baseline levels.

Few External Incentives for Quality, Although Some May Be on the Way

Few, if any, payers within the Pittsburgh area have demonstrated a willingness to explicitly reward hospitals for good quality or QI. The corporations in PRHI are reluctant to be seen as limiting employee or consumer choice in any meaningful way. While a few have threatened to move volume based on outcomes, these threats have never been carried out, partly because health care providers have been effective in "beating them back." Most corporations are reluctant to threaten to do something that they are actually unwilling to do. For instance, Highmark Blue Cross Blue Shield, by far the region's largest payer, has historically not offered higher payments in return for quality. The company limited its activities to data collection and performance feedback to hospitals in certain priority areas, such as c-section rates, follow-up after hospitalization for mental illness, and appropriate care for patients with CHF (e.g., appropriate use of beta-blockers, ACE inhibitors, and flu shots). While these efforts have met with some success, Highmark has developed plans to reward select hospitals more explicitly for QI. In its next round of negotiations with these hospitals, Highmark plans to include up to a 3 percent bonus for participating in QI activities and for achieving improvements in mutually agreed upon clinical areas (e.g., patient safety). The plan calls for the payout to be based on the hospital's degree of success. Some bonus funds will be paid for participating in certain activities (e.g., a cardiac registry), with additional payments for achieving agreed upon process- or outcome-oriented measures of quality.

At the time of the ESRI site visit, Jefferson's contract was not yet up for renewal, so discussions between Highmark's and Jefferson's representatives about this type of pay-for-performance system had not yet taken place. Jefferson's representatives indicated they had no knowledge of Highmark's intentions nor had they heard of other hospitals in the area being offered opportunities to participate.

Internal Factors That Create an Environment That Supports Quality

A variety of internal factors have combined to create an in-hospital environment that leads to quality care on a daily basis and to effective QI processes.

A Rich History and Culture That Supports Quality

From the beginning, Jefferson has been a small hospital with administrative and clinical leaders who did not have grandiose ideas about the hospital becoming a major academic medical center. Rather, these leaders knew that the hospital's niche should be to focus on taking care of patients and serving the community in the best way possible. The hospital's first leadership team (consisting of administrative and clinical leaders from the two merged hospitals) helped to establish this ambition for the institution and it has not deviated from it since then, even as the leading academic medical center in the community has made explicit overtures regarding its desire to merge with Jefferson. The hospital's early leaders, including representatives of the business community, adopted a continuous QI philosophy that emphasized the need to focus on providing compassionate care to the patients and the community across a wide range of medical disciplines. The hospital's mission statement reflects this focus, emphasizing that the hospital exists to provide "the highest practical level of quality, comprehensive, compassionate, and cost-effective health and health-related services attainable to meet demonstrated and appropriate health and social needs of the communities it serves."

Leadership at All Levels Committed to Quality

The administrative and clinical leaders of Jefferson demonstrate a strong commitment to high-quality care. Beginning with the first leadership team in the early 1970s and continuing until today, the administrative leadership at Jefferson has made it clear to the entire organization that quality is essential. Beyond the organization's mission statement and core values, both of which stress the importance of quality, Jefferson's leaders demonstrate their commitment in concrete ways.

Preserving nurse staffing, even at the expense of revenues. The hospital has established a standard for nursing hours per patient day that it strives to maintain, even if that means temporarily closing down nursing units to new patients, thus negatively affecting hospital revenues. Enforcing this standard serves a dual purpose. First, it ensures that patients receive adequate attention from nurses. Studies have shown that nursing hours per patient day are correlated with strong outcomes. Second, it leads to a better, more productive nursing staff, both because the standard helps reduce the likelihood that nurses will be overworked and burnt out and because it sends a strong signal of the value that the hospital places on its nurses.

Preserving patient care staff, even during layoffs. After decades of financial stability, Jefferson began running operating deficits and experiencing negative cash flow a few years ago. The system's leadership brought in The Hunter Group to help address the situation.

Using Hunter Group guidelines on staffing, the system began a series of cost-cutting measures that netted \$7.5 million in savings on a \$130 million expense base. Yet very few of these cuts resulted in a decline in the amount of patient care staff available to serve patients. Cuts were concentrated in administrative areas; any cost-cutting in patient care services was mainly the result of changes (e.g., reductions in use of agency nurses) that had minimal impact on staff hours among those delivering patient care.

Absorbing “denied” days when necessary. Jefferson maintains an aggressive case management program that seeks to discharge patients as soon as clinically appropriate and to challenge payer “denials” of days that Jefferson’s staff believe to be clinically necessary. However, Jefferson’s administrative and clinical leadership—from the chief financial officer to the nurse case manager team leaders—is willing to absorb the costs of denied days in situations where it disagrees with a payer decision to deny a day. In short, no patient will be discharged until the physicians and other patient care staff believe that discharge is appropriate, regardless of whether the payer will provide additional reimbursement.

Leading by example. The administrative leaders at Jefferson make it clear they are part of the team. Every month, all members of the executive team make rounds throughout the hospital, talking with staff and patients about their experiences and needs. In addition, the CEO periodically works as an aide in various clinical areas such as the ED, operating room, and inpatient nursing units. These types of actions provide strong signals to both staff members and patients about the leadership’s commitment to and accountability for quality.

Lighting a fire for quick action. When necessary, Jefferson’s leaders make it clear that certain quality problems simply will not be tolerated. For example, after several instances when Jefferson’s ED was on divert status due to a lack of inpatient beds, the CEO declared that such diversions would no longer be accepted because of the quality implications for the community and the loss of revenue opportunities for the hospital. Given this charge, staff members came up with the idea of developing an admission holding area unit that specializes in caring for short-stay patients who either are waiting for an inpatient bed or who need only minor treatment before being discharged. The 16-bed unit treats an average 12 patients per day and has helped the hospital avoid divert status.

Picking a handful of high-priority areas. Jefferson’s CEO periodically picks certain aspects of quality to emphasize. His current emphasis, adopted at the urging of the Board chair, is to move the hospital beyond its historic focus on clinical outcomes by also emphasizing improvements in customer service for inpatients and emergency room

patients. Key areas of emphasis include the patient's perception of interactions with physicians and nurses (e.g., responsiveness, courtesy, respect), the cleanliness of hospital facilities (e.g., beds), the quality of the food, and other service-related issues. As a part of this effort, each member of the management team, which includes administrative and clinical leaders, has adopted a nursing unit and spends two hours per month observing how patients are treated on the units. Each month a steering committee meets to review current levels of customer service (tracked through Press-Ganey scores), to discuss observations from their time on the units and to identify and develop plans for implementing strategies for further improvement.

It is not just the administrative leaders who are committed to quality at Jefferson. The clinical leadership of the organization is also strongly committed to quality. Many members of the medical staff have worked in the hospital and lived in the surrounding community for years. There is a strong sense among physicians that Jefferson is their hospital and not just a place to work. Medical staff leaders at Jefferson often serve in leadership positions for many years. It is not uncommon for physicians to progress through the leadership ranks. For example, the chairman of the peer review committee is always selected very carefully, as this committee is central to ensuring that the physicians who come to Jefferson are top-notch and that members of the medical staff consistently practice high-quality medicine. The current chair is a past president of the medical staff who has been at the hospital for 15 years. The vice president of medical affairs has been on the medical staff for the past 25 years and held a variety of medical staff leadership positions during this period. Most physicians in leadership positions at Jefferson have served without additional compensation, as Jefferson only recently began paying modest stipends for these roles.

Finally, the Board of Directors also plays a critical role in promoting quality throughout Jefferson. The Board has always made quality the number-one priority for the institution and the Board's actions demonstrate that this commitment represents more than just words. For example, the Board has set a financial goal that the hospital need only break even on its operations, rather than insisting on a certain level of operating profit. Shrewd investment strategies—also led by the Board—have allowed Jefferson to build a healthy balance sheet. In recent years Jefferson has struggled to meet this breakeven target, but this low profit threshold has meant that the hospital has historically had ample cash flow to invest in QI. In many cases, the Board has been a driving force in pushing these investments. In the mid-1970s, the Board insisted that the current facility be built with all private rooms, which was very rare at the time. The Board also pushed for an even richer clinical environment for the facility than the medical staff requested, with larger rooms and

better infection control systems. More recently, the Board authorized the hospital to significantly increase the size of the nursing staff; over an 18-month period, the number of full-time nurses jumped from 395 to 515. In short, the Board has made it very clear that the quality of patient care should never be sacrificed for financial reasons.

The Board also plays an active role in monitoring and addressing quality issues on an ongoing basis. The Board's Joint Conference Committee (which includes Board members, medical staff leaders, and administrative leaders) and the Board itself pay very much attention to data on clinical quality and service performance. Each member receives a quarterly report (the Joint Conference Committee members receive a more detailed version than does the full Board) that tracks a variety of dashboard indicators that measure this performance. The Board carefully scrutinizes these data each quarter, often asking for more detailed information in particular areas of interest or concern. At each monthly Board meeting, moreover, the chair of the Joint Conference Committee selects one particular area of quality to be discussed by the entire Board.

Mutual Respect and Strong Relations Across Disciplines

One of the most important quality-enhancing characteristics of Jefferson is the presence of mutual respect, and good working relationships, between administrators and clinicians (nurses and physicians) and between physicians and non-physician clinicians (including nurses and case managers). These good relations have served as an important foundation for the creation of other critical components of quality, including Jefferson's team-based approach to care and its decentralized approach to QI, which emphasizes local autonomy and accountability. The impact of these good relations on quality is hard to underestimate. Virtually everyone within the organization—be they an administrator, nurse, case manager, or physician—feels liberated to raise issues related to quality, to discuss them freely, and to work across disciplines to address problems in a cooperative rather than punitive fashion.

The hospital's leadership has extreme confidence in the medical staff, nursing staff, and administration, and more importantly, in their ability to work together to deliver high-quality, cost-effective care. This confidence is illustrated in the Board's consistent desire to remain an independent, standalone hospital, despite the many mergers occurring throughout the nation and the Pittsburgh metropolitan area. Jefferson has been approached on a number of occasions about the possibility of merging with a larger hospital in the area. At times, these conversations have become threatening. Yet the hospital's Board maintains its confidence in the organization's ability to counter any threats. In March 2001, the Board voted unanimously that the hospital should remain

independent, a position backed strongly by the administrative and clinical leadership at Jefferson.

Administration-medical staff relations. The roots of strong relations between the administration and the medical staff go back to the original leaders of the organization. The system developed its mission statement and core values under these original leaders, Sister M. Crescentia, CSJ, and George Yeckel, both of whom believed strongly in the importance of a good relationship between hospital administration and medical staff. The mission statement and values explicitly commit the hospital to giving physicians clinical autonomy and a role in decision making:

“Jefferson Regional Medical Center believes in treating individual physicians with respect and affording them a congenial environment in which to practice. Physicians shall have reasonable accommodation and minimum organizational barriers and restraints in the practice of medicine. Physicians shall have the appropriate opportunity to participate in decision making.”

As with its commitment to quality, the administration’s pledge to physicians is not just talk. Physicians who practice at Jefferson face little outside interference from administration when it comes to clinical care. Since the organization’s founding, clinical departments have been set up to be governed in a decentralized fashion by the medical staff itself. Medical staff directors run the departments, while organized medical staff committees work with individual physicians on issues related to quality and utilization. For example, neurologists were closely involved in setting up Jefferson’s stroke program and they maintain autonomy in running it today. The program has been named among the top 100 in the country by Solucient. Physicians are given opportunities to have input into major decisions. For example, physicians were a vital part of the search committees that found the last two CEOs. In fact, no major decision is made at Jefferson without consulting the medical staff.

“When physicians run a department, they are more effective. They essentially become owners of it.”

—Jefferson hospital administrator

As testimony to the strength of physician-hospital relations, Jefferson only recently decided to hire a vice president for medical affairs to act as a liaison between the administration and the medical staff. The medical staff was initially leery about the idea of someone taking on this liaison role and accepted it only after carefully scrutinizing and clarifying the job description. In keeping with the tradition of hiring proven physician

leaders, the hospital's first vice president for medical affairs is a general surgeon who has been with Jefferson for 25 years and has served in a variety of medical staff leadership positions.

Jefferson's respect for its physicians provides several benefits regarding quality of care. First, the hospital can recruit and retain physicians who are attracted to the notion that they can practice without much interference from administration. Two renowned cardiac surgery groups recently came to Jefferson to start an open heart surgery program, in part because of the ability to "run their own show." Second, physicians take the issue of quality very seriously and therefore accept ownership and accountability for the quality of care provided within their departments. Third, as discussed later, physicians who are treated respectfully by the administration are much more likely to extend that same level of respect to those they work with every day—nurses, case managers, and other patient care staff.

Physician-nurse relations. Physicians exhibit tremendous levels of respect for nurses, case managers, and other patient care staff. These strong relations have a positive impact on quality, as it liberates nurses to be full-fledged members of the patient care team, actively working with case managers and social workers to ensure that the patients receive the right treatments and services in a timely manner, and to identify and address potential problems (e.g., medication errors, unexpected complications) in a proactive manner. The roots of the strong physician-nurse relationships are found in the medical staff leadership, who emphasize the importance of treating non-physician patient care staff with respect and who look for physicians who exhibit this type of respect in recruitment efforts. As noted, physicians' respect for nurses is also a natural outgrowth of the good relations between physicians and the administration.

The administration supports strong physician-nurse relations in other ways as well, in part by making a "positive, professional and safe work environment" an explicit part of the organization's core values, by setting up a physician-nursing liaison team that meets regularly to openly discuss any issues between nurses and physicians, and by making it clear to the medical staff leadership that any physicians who fail to treat nurses or other staff appropriately will be dealt with accordingly (e.g., one physician was asked to leave the medical staff because he continually treated nurses disrespectfully). The physician-nurse liaison team has been particularly effective in making nurses feel they have mutually respectful, peer-type relationships with physicians, as this forum provides opportunities to speak openly and honestly about issues without fear of retribution. Over the last several years, the nursing staff has reached the point where it is confident in raising legitimate

issues about inappropriate behavior by physicians. The staff feels the issues will be dealt with quickly and appropriately and no longer feels the need to receive reports about how specific situations were handled, as it trusts the administration and medical staff leadership to do the right thing.

A Commitment to Workers

The core values of Jefferson include the following: “Jefferson Regional Medical Center believes in fostering a positive, professional and safe work environment for employees in which their involvement, creativity, and productivity are encouraged, recognized, valued, and rewarded. They shall be accorded support to achieve the maximum of their potential and shall be treated with a sense of compassion and fairness and receive due consideration for performance, loyalty, and seniority.”

Excellent Physicians and Patient Care Staff

Jefferson has established itself as an attractive place to work for both physicians and non-physician patient care staff (e.g., nurses, case managers). As a result, the hospital has been successful in attracting physicians, nurses, and other caregivers who are committed to quality and to working together as a team.

Attracting physicians. Jefferson is home to high-quality physicians for a variety of reasons. First and foremost, Jefferson is selective in who it allows to practice at the facility. While the hospital has an open medical staff, the medical staff credentialing committee is careful to screen all applicants to verify their qualifications and commitment to quality. Approximately 10 percent of applicants who apply for privileges are denied, even though many candidates appear qualified on paper. The committee’s thoroughness, driven by the desire to allow only high-quality physicians to practice at the hospital, weeds out many doctors. According to Jefferson’s CEO (who has had experience in many institutions during his career), very few other hospitals would have denied privileges to these applicants.

Jefferson’s selectivity has not damaged its attractiveness to physicians as a place to work and may even have enhanced it. Physicians want to work at Jefferson for many reasons. Jefferson has a reputation for supporting its physicians while simultaneously allowing them to work without too much interference. Every physician at Jefferson enjoys the support of an assigned case manager. Physicians also receive help from dedicated staff who facilitate interactions with third-party payers, including taking on the often time-consuming tasks of securing authorizations, appealing denials, and ensuring appropriate documentation and coding. As noted elsewhere in this report, physicians are involved in every major decision at Jefferson, including actively participating in the search to identify

and the decision to hire the last two CEOs. Physicians now comprise 20 percent of the Board; physician representation on the Board was recently increased as a signal to the medical staff of its importance.

Because of this support, Jefferson has been very successful in recruiting and retaining physicians. Many physicians reside and work in the local community (58 percent have their offices within the hospital's primary market) and most have worked at the hospital for years. Interviews with these physicians make it clear that they do not look at Jefferson merely as a place to work, but consider themselves part of the organization, even though they are not employees. As a result, these physicians take ownership of, and accountability for, quality of care and the efficient utilization of resources.

As a testimony to Jefferson's appeal, Jefferson recently recruited two highly respected cardiac surgery groups from other hospitals in the area to practice at the hospital's new open heart surgery program, which commenced operation in March 2002. The physicians in one of these groups have opted to become employees of the hospital, at a compensation package that was 20 percent less than they would have made at a local academic medical center. While these surgeons were clearly attracted to Jefferson for a variety of reasons, one factor was that they would have opportunities to be the lead physicians in the new program, as opposed to being number three or number four at other hospitals in the area. Thanks to these successful recruiting efforts, physicians in Jefferson's open-heart program performed 407 surgeries in the program's first year (double what was expected) and will likely perform 500 in the second year. The hospital performed over 1,800 cardiac catheterizations in the first year, roughly 50 percent more than was expected. Nearly one in five (18%) cardiac surgery patients come from outside the hospital's normal catchment area, despite strong competition from several other Pittsburgh hospitals. Jefferson's cardiac surgeons are actively working to improve the program's already-strong cardiac outcomes by participating in a cardiac registry program spearheaded by PRHI.

Attracting nurses. Despite the nursing shortage, Jefferson is not struggling to fill its nursing positions. The hospital consistently meets its targets for nursing hours per patient day. Thanks in part to a good reputation that continues to improve, the hospital has been able to attract an adequate number of qualified nurses. As noted previously, the hospital successfully recruited 120 full-time equivalent nurses over a recent 18-month period in a tight labor market.

The key to the hospital's high-quality nursing staff is not primarily its ability to attract new nurses, but rather to keep its presently-employed nurses. The hospital enjoys a very low turnover rate. As of October 2003, Jefferson's year-to-date vacancy rate was roughly 6 percent, and the average turnover rate was 1.9 percent. By comparison, the Voluntary Hospitals of America in 2002 reported an average vacancy rate of 9.2 percent and an average turnover rate of 2.6 percent for its East coast members.² Good nurses come to and stay at Jefferson for many of the same reasons that physicians want to practice there. Like the medical staff, nurses and other Jefferson employees often live in the local community and think of the hospital as being their own. This feeling of ownership is no accident, as the administration has made a strong commitment to support nurses in their efforts to provide high-quality care. The CEO is described by the head of nursing as being very supportive of nurses. Testimony to this commitment can be seen in the aforementioned hospital policies of not allowing any nursing unit to fall below a certain standard with respect to nurse-to-patient staffing ratios and in making cuts to direct patient care staffing largely off limits during the hospital's recent cost-cutting campaign. In fact, patient care staff members who were interviewed during the site visit did not even mention the recent \$10 million cost-cutting campaign as being an issue of concern (only the CFO made reference to the cuts), in large part because they were shielded from them. Patient-to-nurse ratios at Jefferson are reported (anecdotally by new recruits) to be lower at Jefferson than at other hospitals, with Jefferson nurses required to take care of fewer patients than nurses at other hospitals. Jefferson maintains a ratio of one nurse to five patients on its medical and surgical units.

Nurses at Jefferson enjoy the respect and admiration of both physicians and administration and are full-fledged members of the patient care team, offering their advice and voicing their concerns without fear of retribution. It is interesting to note that Jefferson's compensation package for nurses is competitive but not out of the ordinary, as the hospital targets the 70th percentile when setting salary and benefits. In some cases, nurses who left Jefferson to work at other hospitals offering higher salaries have returned after being disappointed in the working conditions and the role of nurses at these other institutions.

"The floor nurses and case managers run the place. We have good people on the front lines doing what they are supposed to do. That's the key to our success in offering high-quality care."

*—Jefferson's Chief
Operating Officer*

In an effort to attract nursing students, Jefferson offers a six-week mentoring program where student nurses can work side by side with floor nurses. Jefferson pays students who go through the program \$4,000 toward tuition in exchange for a two-year

commitment to the hospital. Jefferson also covers the cost for nurses to become certified in particular specialties (e.g., one-half of the nursing staff on the oncology unit has been certified in oncology). Jefferson also covers the cost of critical care classes for nurses. In theory, nurses who fail the course would be obligated to pay the money back to the hospital, but as of yet, none have failed.

Local Ownership and Accountability for Quality and QI

The aforementioned drivers of quality at Jefferson—a quality-oriented culture, leadership commitment, and strong interdisciplinary relationships—collectively serve to create an environment that is conducive to the most important element driving quality at Jefferson. This element is ownership and accountability by physician and non-physician leaders of virtually every department and unit for the quality of patient care and of improvement processes within their departments. In short, each unit and department pays constant and serious attention to quality, especially to identifying and addressing quality problems in a proactive fashion. The clinical leadership within individual departments also takes responsibility for addressing potential quality or utilization problems with individual physicians who may have practice patterns that are out of line with the norm or established best practices.

In addition, individual nursing units are liberated and expected to identify and address unit-specific problems. As a result, the staff mix on some units will vary from that of other units. For example, the orthopedics unit substitutes two nurses' aides for one licensed practitioner nurse because the extra staff is needed to help meet patients' physical rehabilitation needs.

The orthopedic department also demonstrates local accountability for QI. In that department, a group of aggressive surgeons is constantly striving to improve its performance, partly out of a desire to market good outcomes to consumers and payers. These surgeons compared internal data to benchmarks from around the country and found that Jefferson's relatively low LOS could be dropped further. As a result, these surgeons are working to identify strategies for accelerating recovery (e.g., early ambulation). The theory is that earlier recovery and discharge will lead to better quality outcomes (e.g., improved short- and long-term functional status and a reduced risk of hospital-acquired infections or complications) and more cost-effective care.

But the nursing department displays perhaps the best example of the seriousness with which individual departments take the issue of quality. Jefferson uses a relatively small number of agency nurses to fill in when needed. But if the agency staff nurses do not fit

the culture, or do not meet expectations with respect to competency, then the nursing staff is empowered to send these nurses home.

Nuts-and-Bolts Factors That Create a Daily Focus on Quality and Improvement

The factors that drive quality on a daily basis at Jefferson include: a constant measuring, monitoring, and reporting of performance on key indicators; a set of institutional and ad hoc structures designed to address identified quality problems; and a group of case managers who aggressively work in teams of nurses and physicians to ensure that patients receive the right care in a timely manner.

Selected Performance Monitoring and Reporting Versus Benchmarks

The backbone of Jefferson's efforts to maintain and improve its quality is the constant monitoring of selected indicators, combined with selective use of performance reports. These efforts began at the organization's founding in the early 1970s, when Jefferson's first manager of medical staff services began to get physicians involved in QI activities and created a sense of partnership between the administration and the medical staff on quality issues.

In recent years, monitoring and performance reporting systems have been ramped up considerably. Today, the Performance Improvement (PI) office, which consists of 4.6 full-time equivalent staff members dedicated to QI, leads the effort. Initially charged with responsibility for peer review and case review activities, the PI office has become the backbone of QI at Jefferson, providing medical staff and other clinical and non-clinical leaders with the data needed to identify and address problem areas. To ensure that performance goals are set at levels that raise the bar, Jefferson makes use of as much benchmarking data as possible, using information from national organizations (such as the Premier alliance), PRHI, and the state government, which puts out detailed public reports on hospital quality every year. One of Jefferson's single biggest investments in QI is participation in a Web-based clinical benchmarking system that provides detailed, comparative data on clinical outcomes and resource utilization within specific diagnosis and case types. Jefferson routinely uses this database when evaluating performance across the institution and within specific departments and units.

Like many other departments, the PI office has not adopted a rigorous model for QI, but rather tailors its approaches to particular situations. The overall goal is to create a learning organization that constantly evaluates and seeks to improve outcomes. The head of the department adopts an approach to QI that maintains that everything is a work in progress and tries to develop similar thinking in others throughout the organization. PI

office staff are highly involved and visible throughout the organization and staff members play active roles in facilitating the use of information to drive change and QI activities. At present, Jefferson is trying to incorporate more evidence-based best practices into its improvement efforts. For example, medical evidence from the literature is being used in individual case/peer review and to develop standard physician order sets to guide care in targeted patient groups.

Jefferson's performance-monitoring and reporting system includes a "balanced scorecard" report that is given to the Board and to all medical and administrative staff leaders on a quarterly basis. This report includes the following information:

- LOS, benchmarked versus peer institutions
- Volume
- Percent of surgical cases
- Medicare case mix index
- Average patient severity and median age versus regional benchmarks—consistently showing that Jefferson serves an older, sicker patient population than do other hospitals in the region
- Overall mortality rates versus benchmarks
- Infection rates versus national and regional benchmarks, including ventilator-associated pneumonia in ICU patients, surgical site infections, urinary tract infections, and bloodstream infections
- Unplanned returns to the operating room
- Inpatient satisfaction compared to a national peer group
- Fall rates compared to a national benchmark
- Injury rates from falls, both overall and severe injury rates
- Medication errors and adverse drug events compared to expected ranges found in the literature
- Utilization of restraints
- Nursing hours compared to occupancy rates—nursing hours are also tracked in separate reports on a per-unit basis, with correlations made to unit-specific LOS and patient satisfaction rates

- ED volumes
- ED waiting times
- Percent of ED cases resulting in admission
- Percent of ED cases arriving by ambulance
- Patient satisfaction in the ED
- Time from ED admission to disposition, either inpatient admission or discharge from ED
- Waiting times in the ED
- Observation case volumes
- Observation conversion rate, to admissions
- Short-stay volumes
- Outpatient satisfaction rates
- Patient satisfaction with ambulatory surgery

Along with this overall quarterly report, the PI office generates department-specific trend reports on a monthly basis, based on data submitted by the departments for peer review. These trend reports include blinded, physician-specific data that is reviewed by the department chiefs, who also serve on the peer review committee (PRC). These chiefs can request further information, including unblinded data, from the PI office if they detect particular areas of concern. Department-specific reports are generated for each of the major departments within Jefferson, including ED, surgery, medicine, anesthesiology, mental health, radiology, pathology, open heart surgery/cardiovascular unit, and the cardiac catheterization laboratory. For example, the monthly trend report on the open heart surgery/cardiovascular unit includes information on the following measures:

- Mortality within the same admission
- Cardiac arrest
- Unplanned returns to the operating room
- Re-exploration in the cardiovascular unit
- Mediastinal drainage of greater than 1,500 cubic centimeters on the day of operation

- Intra- or post-operative myocardial infarction
- Neurological complications
- Infections (deep wound, superficial, or blood stream)
- Mechanical ventilation more than 24 hours after surgery
- Reintubation
- Transfer back to the intensive care unit
- Readmission within 30 days of discharge
- ED visits within 30 days of discharge

A good example of the value of Jefferson's performance monitoring can be seen with colonoscopy patients. A peer-reviewed case raised questions about the wisdom of using a particular drug for conscious sedation for patients undergoing certain procedures. The PI office conducted a retrospective chart review and discovered a strong correlation between the use of certain drugs and negative clinical outcomes, including longer recovery times and higher complication rates. The PI office shared these data with the physicians, who quickly switched to other drugs that did not cause negative consequences.

Existing and Ad Hoc Structures with Little or No Bureaucracy

Jefferson uses a very practical approach to QI, setting up a variety of existing formal and informal structures when prudent and creating new, ad hoc structures in situations where existing mechanisms are not adequate.

Many of the formal structures for QI reside within the medical staff's hierarchy and committee structure. Each clinical department has a medical director who acts as a champion for quality. Working with the PI office, these medical directors evaluate performance reports to identify potential problem areas, such as systems problems that are impeding quality or individual physicians whose practice patterns and quality levels fall out of line with the norm. Individual clinical departments also use other tools to standardize care around best practices. Several departments, for example, have formed physician- or nurse-led committees who meet regularly to develop, review, and update protocols for care. For example, a group of orthopedic surgeons developed a set of protocols in the mid-1990s to guide post-surgical care. Groups are currently working to establish protocols in the intensive care, psychology, and oncology units.

Peer review committee. The PRC is an important tool for promoting quality. Chaired by a past president of the medical staff who has worked at Jefferson for 15 years, the PRC consists of representatives of every major clinical department in the hospital, the president and vice president of the medical staff, and administrative leaders. The committee tackles a variety of existing and potential quality problems, including sentinel events and questionable clinical practices. The committee receives referrals from throughout the hospital, including referrals from nurses who feel they have witnessed quality problems. As is the culture throughout Jefferson, the PRC epitomizes improvement rather than punishment. The PRC is serious about the need to address quality problems, with committee leaders refusing to tolerate any attempts to stonewall improvement. Examples of PRC initiatives to improve quality include the following:

- A retrospective review of a surgeon’s cases documented a set of issues related to his practice. The surgeon was put on 100 percent concurrent case review (i.e., a more senior surgeon observed every case), as the PRC leaders felt that this young physician needed to improve his overall technique. The surgeon has since improved his performance.
- A review of performance data identified a surgeon who had an unusually high number of patients return to the operating room. Further analysis suggested that the surgeon was operating too quickly. The PRC instructed the department chief to share evidence with the surgeon to support slowing down. The surgeon amended his technique and has had no further problems.

“Quality problems just don’t get to us (the administration). We have a culture and the systems in place to allow doctors to deal with doctors on quality issues.”

—Jefferson hospital administrator

Clinical Resource Management Committee. Another formal structure to drive QI is the clinical resource management committee (CRMC). This multidisciplinary group operates under the auspices of the organized medical staff and consists of nurses, physicians, case managers, administrators (including representatives of the finance department), and PI office staff. It meets regularly to address specific problem areas that have been identified. For example, the PI office identified a set of patients—seniors with pneumonia—who could benefit from earlier commencing of intravenous antibiotics, an earlier switch from intravenous to oral antibiotics, and more consistent administration of the pneumococcal vaccination. The CRMC worked to develop a set of standardized standing orders for these patients. The orders were reviewed by a medical staff committee and quickly approved by the organized medical staff in general. Pharmacists now review all patients on

IV antibiotics, providing physicians with information in the medical record on when and how to switch to oral antibiotics, including information on IV to oral drug equivalencies.

Another example comes from the ED, where too many patients were on observation status. It was not clear if these met the Medicare requirements for admission, which include criteria related both to severity of illness and intensity of services. Medicare provides no reimbursement for patients on observation status. After evaluating data, the CRMC discovered that many of these patients were ill enough to warrant admission, but medical treatment was not being authorized quickly. As a result, these patients did not meet the criteria for admission based on intensity of service. The CRMC tackled this issue by assigning case managers to conduct intake on all ED patients. The intake process helps to determine quickly if patients meet the criteria for admission and to get needed treatment authorized more quickly. The CRMC also set up a similar process for direct admissions from physician offices by establishing a separate intake office for these admissions. Case management staff in this office works with physicians to ensure that patients meet the criteria for admission. The office also secures authorization from insurance companies for all non-Medicare patients, thus relieving physician office staff of this responsibility.

Physicians have been very receptive to these programs, which have reduced the number of patients on observation status and helped to dramatically increase the number of direct admissions, from 20 to 200 per month. Three factors account for these changes. First, patients who previously would have been discharged from the ED, in spite of the fact that they needed inpatient care, are now being admitted to the hospital and are receiving needed care on a more timely basis. Second, some physicians who previously sent patients to the ED for observation now understand better the criteria for admission and thus directly admit patients who meet the criteria. Finally, some physicians have increased admissions to Jefferson because they enjoy the fact that Jefferson's intake office has relieved them of the burden of securing authorization from insurance companies.

Care Delivery Partnership Management Program and President's Council. The Care Delivery Partnership Management Program and the President's Council are explicitly designed to address issues that can be resolved relatively quickly. These often are problems that involve only the nursing staff. The Care Delivery Partnership Management Program is made up of more than 20 staff nurses from every unit, co-chaired by the vice president for patient care services and the vice president for ambulatory and ancillary services, meets for two hours on a monthly basis to discuss issues of concern, including quality of care and other processes. Individual nurses can approach committee representatives about issues that

need to be discussed at the meeting. Those that can be handled within the nursing department are dealt with appropriately. Issues that require approval from senior management (e.g., policy changes, requests requiring significant capital outlays) are taken to the President's Council, a group of 10 executives who meet on a weekly basis. Council members hear the merits of the request and typically give their decisions quickly, thus liberating the nursing department to move ahead. Examples of quality issues that were resolved quickly through this process include the following:

- Adding identification pins to help patients quickly identify hospital staff. Patient satisfaction improved following implementation of this policy.
- Formally giving staff the autonomy to send agency nurses home if the staff nurses feel that the agency nurses are not performing up to standard.
- Identifying and resolving equipment needs in a timely manner.

This mechanism, which allows nurses to raise issues and concerns with their managers or directors and to have these concerns receive rapid consideration, has resulted in more open communication among the nursing staff. Before the program existed, many nurses considered it futile to raise concerns about quality and felt that nothing would ever come of their efforts. Now the nursing staff is comfortable and willing to bring issues to the Care Delivery Partnership Management program. Approximately 85 percent of the issues raised in the monthly meeting are addressed with some type of follow-through, thus giving the program credibility with nurses, who clearly feel more empowered to proactively address quality and process issues.

Ad hoc committees to evaluate discrete problems. Jefferson periodically pulls together ad hoc committees to address specific quality-related problems that are not addressed easily by existing committees. These ad hoc groups form, address a problem, and then disband. The groups typically consist of all the relevant individuals necessary to deal with the specific problem being investigated. For example, analysis recently revealed an uptick in LOS, with no single, obvious reason for the increase. Jefferson's leadership believe that both efficiency and quality are sacrificed when patients stay in the hospital too long, so it pulled together an ad hoc committee consisting of case managers, social workers, and relevant administrative and physician leaders to address the problem. In addition, the PI office supported the effort with detailed data analysis that analyzed LOS by physician and medical category. One week after the problem was identified, the team went off site and spent 10 hours analyzing the data, brainstorming potential causes of the problem,

narrowing the brainstormed list to a handful of the most important problems, and developing strategies for addressing these problems.

Aggressive, Team-Based Care Led by Case Management Team

Physicians, nurses, and the case management team (case managers and social workers) work together in caring for patients, with the case management team playing an aggressive role in ensuring that patients receive appropriate care in a timely manner.

Jefferson has made a substantial investment in the case management team. For inpatient care, Jefferson employs 10.5 full-time equivalent case managers and team leaders and eight full-time equivalent social workers. The previously-described intake function includes 10 full-time equivalent staff members who work in the ED and in a separate office, handling direct admissions from physicians. All case managers and team leaders are registered nurses.

A Dual Role for the Case Management Team

Jefferson can afford to invest in case management partly because case managers and social workers not only work as advocates for quality patient care, they also help to generate additional revenues for the hospital in three distinct ways. First, the program is attractive to physicians and helps recruit new physicians. Second, nurse case managers and social workers work closely with payers to ensure that denial rates are low and that coding is done properly to ensure appropriate reimbursement from third-party payers. Finally, case managers and social workers work to ensure that uninsured patients who are eligible for Medicaid or other government-sponsored programs are enrolled in them.

Promoting physician and nurse acceptance of case management. One of the keys to an effective case management program is to make sure that physicians and other caregivers (e.g., nurses, social workers) accept the case manager's role in coordinating and facilitating the provision of appropriate services. To facilitate physician acceptance, case managers are assigned to work with the patients of one physician or a group of physicians, meaning that each physician has an assigned case manager who works with his or her patients. (This approach is a recent development that was not in place at the time that the data for this study were collected.) Physician-based case management evolved after earlier experiments with disease- and unit-based case management. This earlier model was looked upon somewhat unfavorably by physicians, since it entailed working with multiple case managers, who may have been caring for only one or a few of a doctor's patients. Physicians have readily accepted the new model. Some physicians have even cited the case management program as a "drawing card" for coming to work at Jefferson, noting that other hospitals do not provide the same level of support to their doctors. Physicians like the case managers and social workers, not only because they provide assistance in making

sure patients get the care they need, but also because they run interference with insurance companies to obtain authorization for payment and prevent denials of payment.

To facilitate other caregivers' acceptance of the case management program, the hospital sponsors team-building training programs designed to facilitate cross-discipline interaction by overcoming territorial barriers.

Promoting quality through inpatient case management. While managing utilization and maximizing reimbursement are part of the case management department's purpose, the primary objective is to improve quality of care for patients. To that end, every inpatient admitted to the hospital is assigned a case management team, with each patient assessed to determine the intensity of his or her needs. How closely a case manager or social worker follows a given patient will be determined by these needs. For straightforward cases, the case management team will do little more than a quick daily progress check, reserving more time and effort for patients who have more serious clinical and social needs. Case managers and social workers play a variety of roles for these complex patients. Stated simply, they try to understand the patients' needs and make sure they are being met. From a practical perspective, this means working with the doctor, nurses, and ancillary departments to make sure that appropriate treatments and services are provided (and test results received) in a timely manner. It also means working with the patient and family members to understand the patient's physical and mental functionality and support structure to determine appropriate post-discharge needs, and working with physicians, social workers, and others to ensure that planning for discharge begins early in the process (i.e., on the day of admission rather than right before discharge). Patient and family education is a key part of ensuring that patients are emotionally ready for discharge when their clinical conditions suggest they are physically ready. The case management team pays special attention to patients who have been in the hospital for 13 days or longer. They meet on a daily basis with unit-based nurses to review these high-cost, complex cases to determine if there is anything that can be done to facilitate recovery.

ED case management. As noted previously, case managers are also assigned to the ED at Jefferson. The ED case management program functions similarly to the inpatient program. The nurses work with the physicians to evaluate patients soon after they arrive to determine if they need to be admitted to the hospital. Those who need inpatient care are quickly admitted. For those who do not need inpatient care, case managers quickly begin discharge planning from the ED that is designed to get patients the appropriate level of care. As discussed previously, this intake function came into being after a data review showed that too many patients were hospitalized for observation, including many patients

who had been instructed during physician office visits to go to the ED. Analysis showed that, in many cases, patients in observation status had a severity of illness that met acute inpatient criteria. However, these patients did not meet the intensity of service requirement criteria, due to delays in initiating all aspects of treatment. In other cases, patients' needs could have potentially been met in other care settings. The data also suggested that some physicians stood out as being especially prone to sending patients for observation. The ED case managers worked with hospital administration to present this data to the physicians, who in most cases were receptive to the message and began changing their habits. The ED case managers also work with physicians to obtain orders and initiate treatment immediately in cases where the patient's severity of illness meets accepted criteria for inpatient acute care. In cases where the severity of the patient condition does not warrant acute hospitalization, case managers collaborate with the physician to arrange for appropriate alternative care settings. Prior to implementation of this function, roughly 20 percent of the total volume of hospitalized patients consisted of individuals on observation status. Since focusing on this area, this figure has been cut by one-half.

“We will never compromise the outcome of a patient. We’ll take a denied (unreimbursed) day rather than send a patient home before he or she is ready.”

—Nurse case management team leader at Jefferson

Information Technology a Key Component of Future QI

Jefferson has achieved its level of excellence without significant investments in IT. In fact, information flow at Jefferson has historically been low-tech. For example:

- Physician orders are still written by hand and these orders were, until recently, hand-delivered to a pharmacist. The pharmacist then enters the orders into a computer system, which checks for drug-drug interactions and allergies, and fills the order. Medicines are delivered by hand to the units on a regular schedule. To help reduce delays in medication administration, the hospital recently introduced two, low-tech improvements to this process—faxing drug orders to the pharmacy and placing a sign on each unit that can be turned to indicate that medications have been delivered.
- Bed capacity is managed through daily meetings in which department nurses or supervisors discuss bed needs and possible openings for the day. During ESRI's site visit, a flyer was posted in the medical staff lounge urging physicians to discharge their eligible patients early in the day to alleviate a severe bed shortage.

- Case managers place sticky notes on the patient's paper medical record to remind physicians to consider certain things, such as switching patients from IV to oral antibiotics or discharging a patient who is ready to leave the hospital.

Going forward, the hospital is clearly looking to IT and other technologies as tools to manage quality. For example, Jefferson is currently trying to find a suitable software program to help in managing hospital beds. A similar type of system is now used to manage ED capacity, but it is not applicable to hospital beds. The hospital also plans to invest in new patient monitors that will help to reduce the number of patient transfers that occur within the typical hospitalization. Some patients currently occupy three or four different beds during their inpatient stay; the goal with the new monitors is to reduce this figure to no more than two beds.

In a more important move, in March 2003, the hospital switched from its old McKesson-HBOC information system to a new system from Siemens that should eventually provide better and faster information flow across departments. As a Windows-based system, the new IT infrastructure will allow data to flow everywhere simultaneously. In addition, information will be better integrated than in the past, as clinicians and other users will be able to bring up information from across departments at the same time. The system also has a number of real-time decision support tools. For example, it can incorporate rules engines that allow for real-time drug alerts or access to evidence-based protocols. But since the Siemens system went live in March 2003, it had yet to pay many real dividends at the time of the ESRI site visit. The head of the IT department anticipates that it will take one or two years before Jefferson realizes the full benefits of the system as currently configured, with many of the functions turned off, and even longer to benefit from the full range of decision-support functions and other functions embedded in the system.

Along with switching to a new IT system, Jefferson became one of the first hospitals in the region to implement bar-coding for medication administration. Using codes that have been placed on selected drugs by the manufacturers (approximately 40 percent to 45 percent of drugs used in the hospital) and on patient identification tags and staff badges, this system verifies that patient care staff is giving the right drug to the right patient in the right dosage at the right time. The system began paying dividends immediately, alerting caregivers to potential errors in the administration of medications. It is important to note that the bar-coding system will not check to see if the drug was ordered correctly in the first place (e.g., drug and dosage consistent with the patient's clinical condition or indications) or whether the drug could cause an adverse reaction due

to allergies or drug–drug interactions. These functions are currently available in a limited capacity when the pharmacist enters the physician’s handwritten orders into the new Siemens system. In another testament to Jefferson’s commitment to quality, the CFO indicated that the hospital did not evaluate the potential return on investment from the new bar-coding system. Instead, the hospital chose to implement it based entirely on its potential to improve quality.

Key Challenges in Achieving Quality

Jefferson has faced, and continues to face, several challenges in its efforts to deliver high-quality care and to continually improve that quality over time. Much of the challenge lies in convincing physicians to change their ways.

“If my parents come to Jefferson, I want them to have all the potential checks against medication errors. It [putting in the bar-coding system] is a matter of quality, not ROI.”

*—CFO of Jefferson
Regional Medical Center*

Getting Physicians and Nurses to Use IT

As noted previously, many physicians and nurses have been at Jefferson for a long time, well before the computer revolution in this country. As a result, most physicians and at least some of the older nurses remain reluctant to use IT as they go about their daily business. Physician orders, including drug orders, are still written by hand, as are patient chart notations.

This bias against computers has created challenges for Jefferson in the past, and promises to create even bigger ones going forward. For example, Jefferson’s leadership briefly considered the possibility of investing in computerized physician order entry (CPOE) after the Institute of Medicine’s report on medical errors and The Leapfrog Group’s promotion of this technology. But physicians’ resistance quickly quelled any thoughts of investing in CPOE. This reluctance to use technology means that Jefferson must rely on other, low-technology systems to promote quality, such as pharmacists entering handwritten orders into a separate system that screens for potential quality problems (e.g., adverse reactions, drug–drug interactions). As noted previously, this arrangement is hardly fool-proof, as it still allows for the possibility of transcription errors, a major cause of medication errors around the nation.

Going forward, Jefferson will face a challenge in getting physicians and nurses to use the new system, which if utilized to its full extent, could provide a wide range of patient safety and decision-support tools to promote quality. The hospital’s newly hired chief information officer anticipates a long (at least two-year) period in which caregivers will slowly begin to understand the benefits of the new system. In the interim, he actually

expects productivity to suffer for at least three months and perhaps as long as nine months, after which time caregivers will slowly begin to understand how the new system works and to appreciate its benefits. Within 18 to 24 months, he expects the system to finally come together and begin producing quality- and efficiency-enhancing benefits.

Getting Physicians to Accept Standardized Medicine

Physicians at Jefferson are also somewhat resistant to clinical paths and standardized protocols, particularly those developed by external organizations. The hospital attempted to put a set of externally-developed clinical pathways in place in the mid- to late-1990s with very little success, as the pathways simply “sat on the shelves.” More recently, efforts to increase and sustain appropriate use of flu shots, beta-blockers, and patient education with CHF patients have run into difficulty, largely because so many different physicians and other caregivers are involved in the care of these patients. Similar difficulties have surfaced during attempts to develop pathways or protocols to guide the care of patients in other specialties, including psychiatry and oncology, where multiple caregivers tend to be involved and care tends to be less amenable to standardization.

To get around this issue, Jefferson has adopted two distinct philosophies. The first is to let the physicians take the lead in developing any initiatives designed to standardize care for patients. The second is to move away from the notion of developing a critical path to cover all aspects of care for a given type of patient and to focus instead on a discrete set of issues that really matter, such as switching patients from intravenous to oral antibiotics as early as possible and administering beta-blockers and ACE inhibitors in a timely fashion to cardiac patients who meet the appropriate clinical criteria. Another example comes from the orthopedics department, which several years ago developed its own set of approximately eight protocols to guide the care of surgical patients. Jefferson is also trying to develop standardized tools to promote delivery of discrete services. For example, a standard discharge teaching sheet is being considered to guide the education of CHF patients.

CONCLUSION AND LESSONS LEARNED

High quality at Jefferson Regional Medical Center appears to be the result of a variety of institutional factors that collectively have created an internal environment constantly focused on delivering top-notch medical care. It is not the result of a strong push from external stakeholders (including employers, health plans, and regulators) or of heavy investments in IT and other types of quality-enhancing technologies. Rather, because of strong leadership and a well-entrenched culture that emphasizes quality, along with productive cross-disciplinary relationships and a flexible, decentralized approach to

problem-solving, Jefferson has created the type of learning environment that produces good outcomes and continuous improvement. High levels of quality and effective QI processes have also been facilitated by a set of nuts-and-bolts tools, including selected performance monitoring systems, permanent and ad hoc committee structures, and an aggressive case management program.

The Jefferson case study highlights the following lessons learned with respect to what drives quality and effective QI within a hospital.

- Leading-edge IT is not necessarily a prerequisite to top-notch quality, nor are strong external pressures for quality or QI. The lack of a strong IT system may create the need for other, more labor-intensive (and thus inherently less efficient) processes to ensure quality, such as having pharmacists enter handwritten orders into a drug-alert system.
- There is no substitute for creating the type of organization where talented individuals want to work and for creating a culture that values mutual respect and peer-type relations between administrators and clinicians and between physicians and non-physician caregivers.
- With a talented staff and good relations in place, physicians and other caregivers can and should be liberated to take local ownership and accountability for QI. Performance measurement and feedback is critical in allowing staff members to do their jobs, as is having permanent structures and the flexibility to create ad hoc structures for addressing quality issues.
- Aggressive case managers play a critical role in facilitating a team-based approach that gets patients appropriate care in a timely manner.

NOTES

¹ See the [overview report](#) for more detailed explanation of selection methodology.

² *VHA East Coast Vacancy and Turnover Report*, October 2001 to September 2002.

RELATED PUBLICATIONS

In the list below, items that begin with a publication number can be found on The Commonwealth Fund's website at www.cmwf.org. Other items are available from the authors and/or publishers.

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#767 *Exploring the Business Case for Improving the Quality of Health Care for Children* (July/August 2004). Charles Homer et al. *Health Affairs*, vol. 23, no. 4. *In the Literature* summary forthcoming; full article available at <http://content.healthaffairs.org/cgi/content/full/23/4/159>.

#768 *Overcoming Barriers to Adopting and Implementing Computerized Physician Order Entry Systems in U.S. Hospitals* (July/August 2004). Eric G. Poon, David Blumenthal, Tonushree Jaggi, Melissa M. Honour, David W. Bates and Rainu Kaushal. *Health Affairs*, vol. 23, no. 4. *In the Literature* summary forthcoming; full article available at <http://content.healthaffairs.org/cgi/content/full/23/4/184>.

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#686 *Obtaining Greater Value from Health Care: The Roles of the U.S. Government* (November/December 2003). Stephen C. Schoenbaum, Anne-Marie J. Audet, and Karen Davis. *Health Affairs*, vol. 22, no. 6. In the Literature summary available at http://www.cmwf.org/programs/quality/schoenbaum_greatervalue_itl_686.asp; full article available at <http://www.healthaffairs.org/CMWF/Schoenbaum.pdf>.

#636 *Value-Based Purchasing: A Review of the Literature* (May 2003). Vittorio Maio, Neil I. Goldfarb, Chureen Carter, and David B. Nash. From their review of the literature, the authors conclude that value-based purchasing will only be effective when financial incentives are realigned with the goals of high-quality care and performance measures address purchasers' particular concerns.

#635 *How Does Quality Enter into Health Insurance Purchasing Decisions?* (May 2003). Neil I. Goldfarb, Vittorio Maio, Chureen Carter, Laura Pizzi, and David B. Nash. According to the authors, public and private purchasers may be able to hold physicians and insurers accountable for the quality and safety of the health care they provide. Yet, there is little evidence that current value-based purchasing activities—collecting information on the quality of care or selective contracting with high-quality providers—are having an impact.

#614 *The Business Case for Tobacco Cessation Programs: A Case Study of Group Health Cooperative in Seattle* (April 2003). Artemis March, The Quantum Lens. This case study looks at the business case for a smoking cessation program that was implemented through the Group Health Cooperative (GHC), a health system and health plan based in Seattle.

#613 *The Business Case for Pharmaceutical Management: A Case Study of Henry Ford Health System* (April 2003). Helen Smits, Barbara Zarowitz, Vinod K. Sahney, and Lucy Savitz. This case study explores the business case for two innovations in pharmacy management at the Henry Ford Health System, based in Detroit, Michigan. In an attempt to shorten hospitalization for deep vein thrombosis, Henry Ford experimented with the use of an expensive new drug, low molecular weight heparin. The study also examines a lipid clinic that was created at Henry Ford to maximize the benefit of powerful new cholesterol-lowering drugs.

#612 *The Business Case for a Corporate Wellness Program: A Case Study of General Motors and the United Auto Workers Union* (April 2003). Elizabeth A. McGlynn, Timothy McDonald, Laura Champagne, Bruce Bradley, and Wesley Walker. In 1996, General Motors and the United Auto Workers Union launched a comprehensive preventive health program for employees, LifeSteps, which involves education, health appraisals, counseling, and other interventions. This case study looks at the business case for this type of corporate wellness program.

#611 *The Business Case for Drop-In Group Medical Appointments: A Case Study Luther Midelfort Mayo System* (April 2003). Jon B. Christianson and Louise H. Warrick, Institute for Healthcare Improvement. Drop-in Group Medical Appointments (DIGMAs) are visits with a physician that take place in a supportive group setting, and that can increase access to physicians, improve patient satisfaction, and increase physician productivity. This case study examines the business case for DIGMAs as they were implemented in the Luther Midelfort Mayo System, based in Eau Claire, Wisconsin.

#610 *The Business Case for Diabetes Disease Management at Two Managed Care Organizations: A Case Study of HealthPartners and Independent Health Association* (April 2003). Nancy Dean Beaulieu, David M. Cutler, Katherine E. Ho, Dennis Horrigan, and George Isham. This case study looks at the business case for a diabetes disease management program at HealthPartners, an HMO in Minneapolis, Minnesota, and Independent Health Association, an HMO in Buffalo, New York.

Both disease management programs emphasize patient and physician education, adherence to clinical guidelines, and nurse case management.

#609 *The Business Case for Clinical Pathways and Outcomes Management: A Case Study of Children's Hospital and Health Center of San Diego* (April 2003). Artemis March, The Quantum Lens. This case study describes the implementation of an outcomes center and data-based decision-making at Children's Hospital and Health Center of San Diego during the mid-1990s. It examines the business case for the core initiative: the development of a computerized physician order entry system.

The Business Case for Quality: Case Studies and An Analysis (March/April 2003). Sheila Leatherman, Donald Berwick, Debra Iles, Lawrence S. Lewin, Frank Davidoff, Thomas Nolan, and Maureen Bisognano. *Health Affairs*, vol. 22, no. 2. Available online at <http://content.healthaffairs.org/cgi/reprint/22/2/17.pdf>.

#606 *Health Plan Quality Data: The Importance of Public Reporting* (January 2003). Joseph W. Thompson, Sathiska D. Pinidiya, Kevin W. Ryan, Elizabeth D. McKinley, Shannon Alston, James E. Bost, Jessica Briefer French, and Pippa Simpson. *American Journal of Preventive Medicine*, vol. 24, no. 1 (*In the Literature* summary). The authors present evidence that health plan performance is highly associated with whether a plan publicly releases its performance information. The finding makes a compelling argument for the support of policies that mandate reporting of quality-of-care measures.

#578 *Exploring Consumer Perspectives on Good Physician Care: A Summary of Focus Group Results* (January 2003). Donna Pillittere, Mary Beth Bigley, Judith Hibbard, and Greg Pawlson. Part of a multifaceted Commonwealth Fund-supported study, "Developing Patient-Centered Measures of Physician Quality," the authors report that consumers can understand and will value information about effectiveness and patient safety (as well as patient-centeredness) if they are presented with information in a consumer-friendly framework.

#563 *Escape Fire: Lessons for the Future of Health Care* (November 2002). Donald M. Berwick. In this monograph, Dr. Berwick outlines the problems with the health care system—medical errors, confusing and inconsistent information, and a lack of personal attention and continuity in care—and then sketches an ambitious program for reform.

#534 *Room for Improvement: Patients Report on the Quality of Their Health Care* (April 2002). Karen Davis, Stephen C. Schoenbaum, Karen Scott Collins, Katie Tenney, Dora L. Hughes, and Anne-Marie J. Audet. Based on the Commonwealth Fund 2001 Health Care Quality Survey, this report finds that many Americans fail to get preventive health services at recommended intervals or receive substandard care for chronic conditions, which can translate into needless suffering, reduced quality of life, and higher long-term health care costs.