



Achieving Efficiency: Lessons from Four Top-Performing Hospitals

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SUMMARY

Despite widespread acknowledgment of waste and inefficiency in the U.S. health care system, there have not been dramatic breakthroughs that point the way to more cost-effective alternatives. The problems that contribute to high costs and mediocre quality are complex and intertwined with the organization and financing of health services. There are, however, changes under way within leading organizations that suggest significant improvements in quality and value can be achieved. In 2008, the Leapfrog Group's Hospital Recognition Program began identifying hospitals that have made "big leaps in health care safety, quality, and customer value."¹ Thirteen hospitals out of nearly 1,300 who voluntarily submitted data in 2008 achieved top scores in quality of care while keeping resource use low.

To learn what opportunities exist for all hospitals to achieve greater efficiency, we conducted case studies of four of the 13 Leapfrog Group-designated "Highest Value Hospitals." These included [Fairview Southdale Hospital](#) in Edina, Minn., [North Mississippi Medical Center](#) in Tupelo, Miss., [Park Nicollet Methodist Hospital](#) in St. Louis Park, Minn., and [Providence St. Vincent Medical Center](#) in Portland, Ore. This paper offers a synthesis of lessons from their experiences.

During site visits conducted in 2010, we asked hospital leaders and staff about the activities they credit with having contributed to high quality and low resource use, not just measures used in the Leapfrog recognition program. In each case, the hospital described myriad programs they had undertaken in the past few years that did not target efficiency but had indirectly contributed to it.

A number of commonalities emerged. All of the hospital leaders had set clear goals for their organizations and aligned daily practice with those objectives. They employed widely used quality improvement strategies such as monitoring and reporting quality indicators against benchmarks to motivate providers and focus improvement resources. Each hospital also used technology to test

improvement tools and provide staff with longitudinal patient information that they might use to monitor their progress.

All four of the hospitals had begun to shift a larger portion of patient care responsibility from community physicians toward a smaller team of hospitalists who are accessible full-time and can be more easily trained to adhere to best-practice guidelines. Each hospital had also recently reorganized at least a portion of its staffing assignments and roles to align provider skills and staffing levels more effectively with patient needs.

In addition, all four hospitals had worked on improving provider communication during handoffs between hospital departments and transitions between inpatient and outpatient care. While technology was a part of the revised processes, more complete communication, including frequent face-to-face contact, was also deemed integral to its success.

In both clinical and support services, staff of these institutions standardized and simplified processes to eliminate redundancy, slowdowns in patient flow, and errors. At least one of the hospitals went outside the health care sector for models of managing labor costs, standardizing and tracking supplies, and purchasing in bulk.

Though it was not a selection criterion for this study, each hospital was part of an integrated system with certain features that support efficiency, including access to patient information across settings and over time, economies of scale, opportunities to share best practices, and greater potential for aligning inpatient and outpatient goals. In integrated systems, reduced hospital admissions and readmissions do not hurt the bottom line to the extent they do in freestanding hospitals.

The environmental factors motivating the hospitals' efficiency efforts were not uniform. Some hospitals were in competitive marketplaces that pushed them to improve, but one was the dominant provider in half of its state. Cost pressures were observed everywhere. And while most of the improvements were undertaken in the middle part of this past decade,

the economic downturn since 2008 had increased the deliberateness with which each hospital was seeking to maximize value.

In sum, the experiences of the four case study hospitals offer the following lessons for hospitals seeking to increase efficiency:

- Pursue quality and access, and efficiency will improve. Case study hospitals reported that cost reduction was the consequence, not the primary goal, of their efforts.
- Reinforce goals by addressing organizational culture through communication, clinical leadership, alignment of purpose, and celebration of success.
- Implement quality improvement strategies such as close monitoring of performance indicators against benchmarks to motivate physicians and frontline staff and promote a culture of continuous quality improvement.
- Use technology including electronic medical records that are customized to the hospital's configuration and needs as tools to improve quality and efficiency.
- Manage staffing and adjust roles to reduce or improve handoffs and promote teamwork to meet patient needs, including reassessing traditional boundaries that contribute to faulty handoffs between personnel. Use full-time, on-site physicians such as hospitalists, as well as team leaders, to coordinate services and enhance continuity.
- Emphasize communication among providers and with families to clarify expectations and improve patient transitions throughout sites of care.
- Standardize processes and supplies to reduce the opportunity for errors and increase purchasing power.
- Integrate care, systems, and providers, either explicitly in an integrated health system or by adopting the characteristics of an integrated care system within a community (for instance, by sharing a common information system).

Federally supported health system reforms promote changes that are consistent with these leading hospitals' experience, including greater use of health information technology, care coordination, and payment reforms that incentivize inpatient and outpatient care coordination and promote quality. As a result of the health reform law, hospitals will have both greater responsibility and opportunity to implement these broad changes.

INTRODUCTION

Public and Purchaser Approaches to Enhancing Efficiency

Rising costs and evidence of waste have led purchasers including employers, consumers, and governmental agencies to demand that health plans and providers improve the value of health care. Exact estimates vary, but analysts point to inefficiencies in administration, operations, and clinical care totaling billions of dollars per year. Peter Orszag, former director of the Congressional Budget Office, stated in August 2008 that “a variety of credible evidence suggests that health care contains the largest inefficiencies in our economy. As much as \$700 billion a year in health care services are delivered in the United States that does not improve health outcomes.”²

Insurers, managed care organizations, and health plans are pressuring hospitals, physicians, and other care providers by reducing or constraining the growth in reimbursement rates, and threatening to not pay for care that is unsafe or unnecessary. In order to survive, these providers must find ways to improve efficiency by reducing their resource, administrative, and labor costs without sacrificing quality.

The Institute for Healthcare Improvement (IHI), a leader in quality improvement research and practice, incorporated the need to increase efficiency into one of its core teaching concepts—the Triple Aim. The Triple Aim calls for developing new designs and initiatives to: 1) improve the health of the population; 2) enhance the patient experience of care (including quality,

access, and reliability); and 3) reduce, or at least control, the per capita cost of care.

IHI has been working with hospitals and other organizations around the U.S. and the world to implement design changes to achieve the Triple Aim. Some of these efforts have been documented in case studies supported by The Commonwealth Fund.³ The themes of Triple Aim are also echoed in the goals and strategies of the hospitals described in this report and accompanying case studies.

The drive for greater value has also motivated public and private initiatives to increase the transparency of costs and quality. The Centers for Medicare and Medicaid Services (CMS), numerous state governments, hospital associations, consumer groups, and others are collecting and publicly reporting clinical quality indicators (e.g., process of care measures, mortality data, and readmission rates), fees, and resource use or costs. Most of these efforts to date focus on hospital care with some early attempts at measuring and reporting quality of ambulatory care.

Public policies are further reinforcing the drive for efficiency. The Patient Protection and Affordable Care Act, the national health reform bill signed into law in March 2010, has numerous provisions designed to promote value in health care. Among them:

- A value-based purchasing program that will provide incentives in the form of enhanced payments to hospitals that meet certain quality standards for Medicare discharges beginning in fiscal year 2013. The criteria for these payments will expand to include efficiency measures such as risk-adjusted Medicare spending per beneficiary, as early as fiscal year 2014.⁴
- In fiscal year 2013, Medicare payments to hospitals will be reduced if a hospital experiences “excess readmissions.”⁵

- Payment and delivery reform pilots will test strategies to enhance value, reduce unnecessary utilization and costs, and improve outcomes, including:
 - global capitation payments to large safety-net hospital systems, in five states from 2010 to 2012;
 - the Medicare Shared Savings Program, which will allow providers who are organized as accountable care organizations (ACOs) and meet quality thresholds to share in cost savings they achieve for Medicare, with demonstrations of five or six large ACOs beginning in 2012 or sooner;
 - ACOs for pediatric providers in Medicaid and the Children’s Health Insurance Program that allow providers to share in savings from 2012 to 2016;
 - bundled Medicaid payment demonstrations for episodes of care (i.e., longitudinal inpatient and outpatient care for a condition) that include hospitalizations, in eight states from 2012 to 2016; and
 - demonstrations of bundled Medicare payments beginning by 2013.

As these programs indicate, the payment incentives in the health care system that have historically encouraged inefficiency are changing. These new payment approaches are designed to break down the separation between inpatient and outpatient care to optimize outcomes and reduce costs. Hospitals need to be ready to change the way they organize and deliver care in order to survive and continue to serve their communities.

Defining and Measuring Efficiency

Despite consensus on the need to enhance efficiency and value in health care, there is no agreement among stakeholders on how to define or measure efficiency. A review of efficiency measurement by Elizabeth McGlynn, Ph.D., and colleagues notes that the measurement of health care efficiency has lagged behind the measurement of health care quality.⁶ Investigators found many definitions for efficiency, which are noted in Exhibit 1.

All of these definitions of hospital efficiency incorporated the relationship between costs and outcomes, but how these inputs and outputs were measured varied significantly. Inputs included physical inputs such as number of physicians, nurses and other personnel, and beds, while financial inputs included such things as costs of labor, supplies, and capital.

Exhibit 1. Definitions for Efficiency

Entity	Definition
Institute of Medicine (IOM), 2001	Avoiding waste, including waste of equipment, supplies, ideas, and energy.
Palmer & Torgerson, 1999	Health care resources are being used to get the best value for money.
Economic theory	Technical efficiency means that the same level of the output cannot be produced with fewer of the inputs.
Economic theory	Productive efficiency refers to the maximization of output for a given cost, or minimization of cost for a given output.
Economic theory	Social (or Pareto) efficiency exists when no one can be made better off without making someone else worse off.
AQA alliance	A measure of the relationship of the cost of care associated with a specific level of performance measured with respect to the other five IOM aims of quality.
U.S. Government Accountability Office	Providing and ordering a level of services that is sufficient to meet patients’ health care needs, but not excessive, given a patient’s health status.
Medicare Payment Advisory Commission	Using fewer inputs to get the same or better outcomes. Efficiency combines concepts of resource use and quality.

Outputs included the number of hospital discharges, health outcomes such as mortality rates or life expectancy, or other measures. Further complicating the issue, most studies of efficiency have focused on limited geographic regions, or are proprietary and unavailable to the public.

The Leapfrog Group’s “Highest Value Hospital” recognition appears to be the only data source that incorporates quality and costs and is available across a wide spectrum of hospitals, though not all hospitals, in the country. Lessons from leading hospitals that have achieved Leapfrog “Highest Value Hospital” recognition—indicating that they are perform exceptionally in a combination of clinical processes and outcomes, and resource use (relatively low length of stay, readmissions) in multiple disease areas—could help other hospitals improve efficiency and better address, or prepare for, systemwide changes.

To learn what these leading hospitals have done that contributes to their high rate of efficiency and to inspire improvement in other hospitals, The Commonwealth Fund supported the development of case studies of top performers. This report summarizes findings, best practices, and lessons learned from four U.S. hospitals that were among the 13 “Highest Value Hospitals” in 2008, as assessed by the Leapfrog Group.

The four hospitals are:

- *Fairview Southdale Hospital*—a 390-bed, private, nonprofit hospital in Edina, Minnesota, serving the southwest Minneapolis/St. Paul community. It is a member of Fairview Health Services, an integrated system with 10 hospitals and more than 40 clinics as well as urgent care facilities, pharmacies, home care services, hospice, rehabilitation services, laboratory facilities, and mental health facilities.
- *North Mississippi Medical Center*—a 650-bed, tertiary care facility in Tupelo, Mississippi, serving the northern half of Mississippi and a portion of northwestern Alabama. It is the flagship hospital of North Mississippi Health Services, an integrated system that also includes five smaller community hospitals, 34 primary and specialty care clinics,

seven home health agencies, and four nursing homes.

- *Park Nicollet Methodist Hospital*—a 426-bed private, nonprofit teaching hospital in St. Louis Park, Minnesota. It is the cornerstone of Park Nicollet Health Services, an integrated health care delivery system that also comprises 24 multispecialty clinics in the West Metro section of Minneapolis. The Park Nicollet Institute coordinates educational programs, classes, and conferences for patients and health care professionals, and participates in research studies.
- *Providence St. Vincent Medical Center*—a 523-bed, private, nonprofit teaching hospital in Portland, Oregon. St. Vincent Medical Center is a member of Providence Health and Services, a Catholic system with 27 hospitals in the Pacific Northwest, including seven hospitals in Oregon. The local Portland segment of the Providence system includes four hospitals, 30 clinics, and a health plan covering one million members (or one-quarter of all managed care enrollees in Oregon).

METHODOLOGY

In 2008, 1,282 hospitals submitted Leapfrog surveys either because they sought recognition for their achievements, or they did so at the request of large employers or business coalitions in their region who were seeking comparative data to use in their purchasing decisions. Thirteen hospitals were selected by the Leapfrog Group as “Highest Value Hospitals” that year. For this case study series, we chose the four that had the most areas of recognition.

Leapfrog’s “Highest Value Hospital” scoring methodology takes into consideration both resource use and quality of care for a subset of all hospital patients. A hospital whose relevant patients have higher quality of care, a shorter than expected length of stay, and are without a readmission within 14 days for any reason, are scored as fully meeting the Leapfrog efficiency standard. For a hospital to be deemed a “Highest Value Hospital” by the Leapfrog

Group, the hospital had to fully meet the efficiency standard for at least three of the four procedures and conditions: coronary artery bypass graft (CABG) or a percutaneous coronary intervention (PCI), or treatment for an acute myocardial infarction (AMI) or pneumonia. Designation as a “Highest Value Hospital” was the primary criterion for selection in this series.⁷

After selecting four hospitals to profile, we conducted site visits to each of the hospitals and interviewed leaders and managers in administration and clinical areas at the hospital and sometimes at system level, if they were available on site. During and after the site visits, we reviewed quality reports, trend data on the impact of quality improvement work, and supporting materials the sites provided to illustrate the programs they associated with high quality and low costs. Individual reports about the four hospitals are available at www.WhyNotTheBest.org.

The Leapfrog methodology has some limitations as a means of measuring efficiency in hospitals. It does not take into account the care provided to patients with other conditions, nor does it examine resource use other than length of stay. Further, participation is voluntary on the part of hospitals, and thus the survey includes only about one-fourth of U.S. hospitals. Therefore, we invited hospitals to discuss all contributors to efficiency, not just those represented by the Leapfrog methodology.

FINDINGS: THE DRIVERS OF EFFICIENCY

Case study hospitals had undertaken major initiatives to redesign work processes to improve quality and lower costs. The following strategies appear to be significant contributors to their success.

Deliberate Pursuit of Quality and Access

A defining feature of the four hospitals is a shared philosophy that quality and serving the community comes first. None of the hospitals set out to address efficiency as their primary goal, but rather focused on improving quality, access, and population health. It was through the pursuit of excellence in these other areas that they achieved greater efficiencies.

We don't have goals for efficiency. It's a byproduct of our success in focusing on what's right for the patient and excellence in quality of care.... [It is] a trailing indicator.

Dennis Noonan, former CFO,
Providence St. Vincent Medical Center

Each hospital described an ambitious set of quality improvement activities that were either recently completed or still under way. These activities ranged from improving patient flow in order to serve more patients in the community to establishing new services to help patients manage their disease and stay out of the hospital.

As an example, Park Nicollet is improving the patient experience by improving the continuity and coordination of the entire treatment episode (as opposed to the hospitalization) and is testing this new approach first with bariatric and pulmonary patients. Physician-led teams are developing and testing integrated care plans that will address the patients' entire scope of needs (both outpatient and inpatient) and improve postdischarge outcomes. The plans will address the types of patients for whom the care plan is relevant, the evidence-based practice, roles of primary and specialty services, and follow-up plans. Similarly, Fairview Southdale partnered with a local cardiology group to provide integrated, longitudinal chronic care management services for congestive heart failure (CHF) patients. The hospital funds a specialized, cardiac optimization clinic and a telemanagement program, both of which are improving care for CHF patients.

North Mississippi Medical Center (NMMC) undertook a major redesign of its emergency department after reaching out to the community and learning that there was significant dissatisfaction with the emergency department's unwelcoming atmosphere and delays. The hospital addressed these concerns by implementing a variety of measures to improve access and “put patients first.” These measures, which include a bedside triage and assessment process and computerized tracking system that shows patient flow and test

results, among other things, have helped the hospital improve efficiency by reducing the average patient time in the emergency department by two to three hours.

An initiative at St. Vincent aimed to eliminate backups in the emergency department that were causing the hospital to close its doors to new patients. Hospital administrators believed strongly that it was their obligation to guarantee access for the community's poor and sick, and it was this obligation that drove the hospital to redesign its emergency department registration, triage, patient transport, bed assignment, and discharge processes through a series of process improvement projects. These projects were collectively termed the SPACE (Safe Patient Access Capacity Enhancement) initiative—or “No Patient Turned Away.” As a result of the initiative, the hospital's time on ambulance diversion status was reduced from 116 hours per month to less than 20 hours per month. The projects also broke down interdepartmental silos by developing a shared responsibility for adhering to practice standards between inpatient units and the emergency department. Efficiency also was achieved through lower resource use, implementation of consistent protocols, daily huddles to improve communication, and better response time by service departments.

Culture of Excellence, Staff Involvement, and Rewarding Success

The pursuit of excellence is engrained in the culture of these highly efficient hospitals. All believe excellence is driven by motivated, engaged personnel, and each has implemented meaningful staff engagement activities that solicit input from frontline staff. All also described ways in which they recognized positive contributions made by staff.

NMMC's leadership, for example, describes itself as relentlessly consistent on priorities. Employees are asked to submit at least two improvement ideas each year. These ideas are sent directly to decision-makers who have authority to approve or deny the proposed idea. Last year 37 percent of all ideas submitted were approved for implementation. Employees that submit approved ideas receive “points” that can be redeemed for gifts as an incentive

Looking at hospital efficiency is potentially misleading. We need to look at efficiency of caring for a population.

David Abelson, M.D., CEO,
Park Nicollet Methodist Hospital

for participation. NMMC has won the prestigious Malcolm Baldrige National Quality Award, which includes staff empowerment as a measure of success.

Staff participation in improvement projects is the norm at Fairview Southdale as well. Every department director is required to develop and pursue at least two projects a year that improve quality and result in savings of at least \$60,000. Annual bonuses are distributed to directors who meet the quality and cost savings goals.

St. Vincent also has established a formal process for engaging staff. The self-governance model—known as their “one team, many hands” approach—provides a mechanism for staff to shape the hospital's decision-making process. Each staff member is represented on a clinical or operational council, and council meetings are used to identify issues and areas for improvement. Many solutions are council-driven, and the hospital's chief nursing officer oversees council meetings to make sure any problems identified receive appropriate follow-up. Recent council recommendations resulted in an investment of over \$1.5 million to reduce patient falls, including the purchase of new hospital beds and teal patient gowns. The unique color of the gowns helps all staff—janitors, physicians, and others—identify patients at a high risk of falling.

Though they used different methods, each of the case study hospitals made a point to recognize individual and team achievements. “WOW” awards at St. Vincent recognize staff who exceed expectations in their daily responsibilities; the award comes with a coupon for free coffee. Senior leaders at Park Nicollet review the hospital's progress toward a common set of goals, and the goals and performance results are posted on the hospital intranet to keep employees engaged. Financial incentives were available for certain specialties in some of the hospitals.

Our management has always sought ways of supporting staff. The philosophy behind shared governance is to let the brightest minds sit together, and get out of their way.

Martie Moore, R.N., B.S.N., M.A.O.M., C.P.H.Q.,
chief nursing officer, Providence St. Vincent Medical Center

Some of the hospitals acknowledged high staffing costs, or higher than average staff-to-patient ratios in particular areas, but hospital leaders believed the costs contributed to better patient outcomes. St. Vincent, for example, only hires nurses with at least a bachelor's degree. The hospital believes their extra years of training better prepare them to solve problems and think critically.

Changing Staff Relationships

The case study hospitals have experimented with new models for enhancing communication and organizing teams that promote shared responsibility for patients' outcomes and the hospital's success. For example, process improvement activities at Fairview Southdale are organized around a "triad structure" that includes a physician, administrator, and operations leader. All improvement projects must include goals for influencing 1) clinical quality; 2) operations and finances; and 3) patient satisfaction. This approach helps the hospital stay focused on all of its major goals.

Other hospitals have benefited from more fluid and less defined executive roles. Leaders at St. Vincent are constantly accepting new responsibilities suited to their experience and strengths. This provides an opportunity for the leaders to be more responsive to the hospital's shifting needs and priorities over time. Adjusting staff responsibilities and management structures, as well as the way information is shared throughout an organization, is consistent with improving efficiency.

Some case study hospitals have transitioned to a service line structure where physicians and staff from different units provide integrated care for patients with similar conditions. At Park Nicollet, the service lines are led by one clinical and one

administrative leader. This two-person team is tasked with identifying areas for improvement. Once identified, a designated five-person process improvement team is engaged to pursue the project.

All four case study hospitals have increased the role of hospitalists in caring for patients. They find these staff physicians improve patient care and efficiency because they are both accessible and a consistent source of care. Hospitalists are located on site and see patients throughout the day, which enables more timely discharges. It is also much easier to communicate and standardize protocols with a small group of hospitalists than with a large, diverse set of community physicians.

Altering the responsibilities of emergency department physicians can support faster care when time is of the essence and can improve patient flow. Fairview Southdale began empowering its emergency department physicians to alert the cardiac catheterization laboratory about new acute myocardial infarction cases directly, instead of waiting for a consultation from cardiology, which might delay the provision of necessary care. St. Vincent recently shifted some responsibility away from its hospitalists, who used to provide consultation for all emergency department patients, to improve patient flow and reduce waiting periods. Hospitalists now see only higher-acuity cases. Emergency department physicians can exclusively treat those patients most likely to be discharged in the same day—which trims emergency department treatment times without harming patient care. This change is one of a number of process improvements that have enhanced the hospital's emergency department patient flow. The department has seen 21 percent fewer patients leave the hospital in frustration—without receiving needed care—because of its increased efficiency.

Care teams are changing the way services are delivered at NMMC and Fairview Southdale. At NMMC, service delivery has transformed from a physician-centered process to one in which interdisciplinary care teams address problems and issues that may arise. Fairview Southdale has implemented a similar team structure in its primary care clinics. Every patient

Hospitalists are much more efficient and better for the patient than having four or five different physicians consulting with no one in charge.

Mark Williams, M.D., chief medical officer,
North Mississippi Health Services

is assigned to a “teamlet,” which comprises a scheduler, a nurse practitioner or physician, registered nurses, and a medical assistant or licensed practical nurse. A key component of the new team design is a shifting of certain responsibilities from physicians and midlevel practitioners to other staff. The shifting of responsibilities improves access to care because more patients can be seen. At the same time, the patient benefits because nurses and support staff provide additional services, including health coaching and chronic care management, that are otherwise too difficult to squeeze into a 10-minute physician office visit.

In some parts of the hospitals, improving communication among providers and other staff has been beneficial even without establishing a new team structure. Both Park Nicollet and St. Vincent have successfully used staff huddles to share critical patient information. Park Nicollet’s presurgery huddles are reducing operating room delays that often result from miscommunication or a failure to communicate. St. Vincent bed huddles occur twice a day and focus on discharge timing, potential bottlenecks, and issues that may impact the nurses’ ability to render good care.

Information Systems That Support Patient Care and Management Functions

Technology is being leveraged to provide higher quality and more efficient care. On the care side, these case study hospitals use it to retrieve patient information quickly and conveniently, access best practices at the patient’s bedside, promote patient–provider communication, and track patient flow. For example, St. Vincent and Fairview Southdale are part of systems with online patient portals that, among other things, allow patients to communicate with their doctor electronically, complete online visits for nonurgent health care needs, refill prescriptions, and schedule appointments.

Case study hospitals implemented or are in the process of implementing a common electronic health record (EHR) for both inpatient and outpatient services. Some of the EHRs, including NMMC’s, are developed internally based on extensive clinician input. NMMC was an early adopter of placing clinical staff on its information technology teams. The hospital found that involving clinicians in the system design promotes user satisfaction and avoids compatibility problems and expensive redesigns down the road. Other hospitals purchased and then customized EHRs to address their specific needs.

Park Nicollet integrated a sophisticated data collection and reporting tool when building its EHR. Aggregated data are available from its data warehouse for analysis and trending. For example, the hospital developed a powerful composite measure for monitoring indicators for caring for people with diabetes. The Commonwealth Fund studied this enhancement in an earlier report and concluded that while such measures could technically be collected without an EHR, it would have been impractical to do so.⁸

Making patient information available across sites of care promotes better handoffs between inpatient and outpatient providers, and can reduce unnecessary duplication of tests and services. EHRs are also well positioned to deploy evidence-based guidelines at the bedside. Fairview Southdale’s EHR is noted for bringing “the best evidence to the nurse’s fingertips.” By providing easy access to current clinical standards, the hospital’s EHR also has improved nurse–physician communication. The EHR alerts nurses to signs that the patient’s condition is deteriorating, which equips the nurses with the additional confidence and knowledge so they know when to notify physicians of changes in patient status.

Two of the hospitals described new technologies that are improving patient flow. Electronic bed boards/bed tracking systems help intake staff assign patients to units more quickly, with a better fit to the unit that has the services they need. The systems can be designed to anticipate a patient’s discharge date based on diagnosis and other characteristics, which helps care coordinators make sure patients remain on

track for discharge. The tools also help hospitals identify and plan for times when patient demand may exceed available resources. Strategies such as borrowing nurses from other units can be employed before turning patients away.

Electronic tracking systems and other technologies can be used in other processes as well. St. Vincent installed a patient transportation software program which allows nurses to make patient transport requests electronically. Before making the request, nurses can see how many requests are already in the system, and they may choose to discharge the patient themselves to avoid bottlenecks. NMMC implemented a supply management system that relies on robots to pull supplies from storage. This technology has increased the hospital's accuracy rate in providing clinicians with the right surgical supply trays. Technologies at NMMC also allow staff to add shifts from home when the hospital's needs change.

Wireless technology at Parkview Southdale has improved heart attack care by enabling ambulances to send electrocardiograms from the ambulance to the hospital, allowing the hospital to initiate care as soon as the patient arrives and reduce its average door-to-balloon time by 20 minutes.

Standardization and Simplification That Reduce Redundancy and Slowdowns

Standardizing and simplifying processes, as well as sharing resources, have improved patient flow at all four case study hospitals. St. Vincent and NMMC standardized surgical protocols and supplies, which reduced opportunities for errors and lowered costs. St. Vincent also standardized key processes and reduced complex steps in the emergency department to improve patient flow and help patients get into inpatient units more quickly. Defined protocols for assigning beds removed the subjectivity and opportunities for negotiation that were once commonplace in older processes and led to inefficiencies. Now bed assignment algorithms speed patients to the right place for the right level of care and expertise they need.

Fairview Southdale and NMMC rely on patient tracking devices to improve patient flow and plan for fluctuations in the number of patients. Fairview Southdale has established a process for alerting other departments when a unit is likely to reach capacity and need to borrow staff from other units to fill gaps. The process helps eliminate the closure of units and reduces unnecessary overtime and the expensive use of agency nurses.

Another change has been the staggering of staff or procedure start times. For example, patient transport staff at St. Vincent now start and take breaks at different times, which has helped avoid backups in certain parts of the day.

Quality Improvement Tools and Strategies

As is typical in U.S. hospitals, the case study hospitals have full-time, dedicated quality improvement departments that use a variety of tools to promote improvements and many have project managers available to support process improvement projects. What distinguished many of the hospitals, however, was the training of clinical and nonclinical staff outside the quality improvement department in process improvement methods. Staff are expected to solve quality-related problems as part of their job, and are given the tools to do so.

The collection and review of performance data featured prominently at these highly efficient hospitals. The hospitals benchmark performance against internal goals and external benchmarks, and use dashboards to report the data in a meaningful way. The dashboards typically incorporate both quality- and efficiency-related indicators, such as length of stay and resource allocation measures. Simple methods for highlighting the data have been implemented at Park Nicollet. Physicians whose care meets evidence-based standards and guidelines are highlighted in green, and those that fall outside the standards are highlighted in yellow or red depending on the intensity of variation. All of the hospitals indicate that peer benchmarking can be a powerful tool in altering physician behavior and improving performance. As Stephen Battista, M.D.,

The goal is to help “steer physicians toward efficiency by using surrogate measures, using their language and breaking it down into pieces they understand and can manage.”

Mark Williams, M.D., chief medical officer,
North Mississippi Health Services

chief of staff and quality improvement director of Fairview Southdale Hospital puts it: “If you keep looking at the data, and you have a competitive spirit, you keep getting better.”

- Data are not limited for use in motivating improvement in clinical outcomes. For example, Fairview Southdale pays close attention to the productivity measures it collects. If a department is not performing at at least 98 percent productivity for two pay periods, it must submit a report to a staffing and productivity committee and meet with the hospital CEO to explain the results. At NMMC, hospital leadership monitors length of stay and cost per diagnosis-related group at the individual physician level. Physicians who exhibit certain patterns are counseled one-on-one about drug utilization, procedure scheduling, treatment pathways or other choices that may be contributing to increased length of stay or higher costs. The hospital aims to “steer physicians toward efficiency by using surrogate measures, using their language, and breaking it down into pieces they understand and can manage.... If you don’t tell them why something costs more, they won’t know what to do,” said Mark Williams, M.D., chief medical officer of North Mississippi Health Services.

Business Tools for Cost Management

Some case study hospitals apply the goal of standardizing and streamlining their processes upstream to the way that they order supplies, stock and retrieve them, and assure the quality of each item. NMMC selects products it will stock through rigorous testing, then

purchases in bulk from the most cost-effective suppliers. NMMC also utilizes on-site equipment repair, barcode scanning for instrument tracking, robotics, and a state-of-the art assembly process for producing case carts (the set of equipment and disposable supplies needed for care of a particular type of patient.) Their redesigned warehouse was able to dispense greater number of supplies from 2007 to 2010, while reducing the number of mispicked items. While the dollar value of NMMC’s inventory on hand has gone up, the amount it spends on ordering supplies through distributors has declined, reducing NMMC costs by approximately \$3 million per year.

If you keep looking at the data, and you have a competitive spirit, you keep getting better.

Stephen Battista, M.D., chief of staff and quality improvement director, Fairview Southdale Hospital

Benefits of Health Systems

Each case study hospital is part of a health care system, which provides it certain resources and efficiencies that are not available to freestanding hospitals. System hospitals routinely benchmark their performance against other member hospitals and share best practices. Lagging performance by an individual hospital can be addressed and monitored at the system level. Administrative functions such as information systems, legal support, and quality and process improvement resources can be provided at the corporate level to avoid duplication and reduce costs. St. Vincent is part of a health care system that is currently engaged in standardizing care by creating a set of evidence-based order sets for its 27 member hospitals. The order sets are being developed on a regional basis and cover such things as discharge planning and treating sepsis. Other systems have standardized hospital formularies for their member hospitals, which saves staff time and resources. A unique research and education division at Park Nicollet Health Services coordinates education and research, including clinical

evaluations of new medicines and medical devices. The hospital believes this research may contribute to improved outcomes and increased value for payers.

Systems can also leverage their purchasing power to secure optimal rates for temporary labor, supplies, and equipment. For example, Fairview Southdale partnered with its sister hospitals to create joint contracting agreements to purchase the services of agency (temporary) nurses. Purchasing through these contracts helped the hospital reduce its agency staffing costs, and also formalized a protocol for sending the agency nurses to the hospital with the highest need. Previously system hospitals had been competing with each other for agency nurses.

Being part of a system facilitates less obvious but equally important opportunities to improve quality and efficiency. For example, St. Vincent noted the benefits of having their system health plan at the table when making budget decisions or vetting proposed initiatives. The unique health plan perspective helps focus resource allocation discussions on what will improve population health and the system's bottom line.

Environmental Influences

The environment or context in which a hospital works can contribute to the hospital's interest in and capacity for efficiency. Hospitals are influenced by the policy environment and local health care market dynamics, which many include pressure from purchasers to lower costs, rewards from payers for achieving high-quality results, and hospital collaborations for systemwide quality improvement. Leaders at the case study hospitals acknowledged a need for better-aligned incentives in the broader health care system to promote greater value and improved efficiency. Two in particular are pursuing purchasing arrangements that resemble the accountable care organization model in an effort to bring a better product to market.

Three of the hospitals are located in highly competitive markets where quality and efficiency are a focus of policymakers and payers. St. Vincent is in the Portland health care market where health care prices are lower than other parts of the country because

We work together, look for efficiencies, talk about the latest breakthroughs.

Stephen Battista, M.D., chief of staff,
referring to working in a large physician practice

private purchasers negotiate hospital contracts based on value. Similarly, in the Minneapolis/St. Paul area, where Parkview Southdale and Park Nicollet are located, payers publish data on prices, quality, and safety. In the Twin Cities, area providers also collaborate on clinical guidelines and there is a payer collaborative that focuses on improving diabetes care. Being located in areas like Portland and Minneapolis/St. Paul, where the market has higher expectations of quality and efficiency, can drive a hospital's efforts to shine not only in clinical outcomes, but also in value. However, as demonstrated by NMMC, even hospitals in markets with little competition are motivated to improve. Physicians and administrators in these markets must work hard to work out challenges and differences because there are fewer employment opportunities in the local health care community.

The environment can also shape the way care is delivered. Physicians in the Minneapolis/St. Paul area have gravitated toward large physician groups that support efficiency and seek to improve the patient experience. The groups are designed to facilitate improved coordination of care, and may also reduce overutilization of health care services. There is less financial motivation for physicians to order extra tests as doing so would dilute the physician's share of the profit in the practice.

IMPACT OF DRIVERS ON VALUE

The four case study hospitals had very high efficiency scores—in the top 1 percent of participating hospitals; however the inclusion criteria only looked at a subset of patients, as described above: those undergoing a coronary artery bypass graft (CABG) or a percutaneous coronary intervention (PCI), or those being treated for an acute myocardial infarction (AMI) or pneumonia.

As shown in Exhibit 2, other quality indicators are strong, but are not consistently among the best in the country. Scores on process of care measures for heart attack, heart failure, surgical care, and pneumonia are all better than the national average, but none is in the top 10 percent. On 30-day readmission rates for heart attack and heart failure, Park Nicollet and St. Vincent are in the top 10 percent of hospitals nationally, while Fairview Southdale and NMMC are performing on par with or worse than the national average in at least some of the conditions reported. (Scores worse than the national average are shown in red while scores within the top 10 percent of hospitals are bolded.) On patient experience, NMMC nearly reaches the top 10 percent. This variability between scores demonstrates the inconsistency in hospital performance that has been seen elsewhere. It also suggests the need for new measures that are relevant to all patients.

The hospitals' specific improvement projects have themselves demonstrated improved quality and

cost savings. St. Vincent's SPACE initiative reduced barriers to care, slashing the number of hours its emergency department spent on diversion status from 116 hours per month to less than 20 hours per month. St. Vincent has also seen a 21 percent drop in the number of patients that leave the emergency department without being seen.

Emergency department restructuring efforts at NMMC similarly increased patient flow and access to care. The average amount of time a patient spends in the emergency department has dropped from over 4.5 hours to 2.75 hours. A new protocol, which includes follow-up phone calls to heart failure patients after discharge, produced a decline in heart failure readmissions within 15 days from 17 percent to 12 percent.

When Park Nicollet redesigned its surgical process to include a staff "huddle" before surgery, overtime costs decreased by as much as \$30,000 to \$60,000 per month. Other changes in the surgical service line resulted in a 1.2 percent reduction in cost per case and a 3 percent increase in productivity.

Exhibit 2. Selected Quality and Efficiency Measures

	Overall heart attack care	Overall heart failure care	Overall pneumonia care	Overall surgical care	Patient would definitely recommend the hospital to family or friend	30-day readmission rates for heart attack	30-day readmission rates for heart failure	30-day readmission rates for pneumonia
Fairview Southdale	99.86	97.95	95.38	98.08	68	18.90	24.80	19.60
North Mississippi	98.91	97.24	97.13	97.38	81	20.90	22.70	17.80
Park Nicollet	99.4	96.22	96.65	96.2	65	17.60	20.60	19.30
Providence St. Vincent	98.66	95.57	97.37	97.10	79	18.20	21.40	15.60
National top 10%	99.89	99.29	98.37	95.58	82	18.40	22.40	16.50
National average	97.5	92.34	93.0	95.08	69	19.97	24.73	18.34

Note: Data in bold indicates within the national top 10%; data in red indicates worse than the national average.

Reporting period: First through fourth quarter of 2009 for the composite quality measures, and third quarter 2006 to second quarter 2009 for the readmission rates.

Source: www.whynotthebest.org, accessed June 29, 2011.

Fairview Southdale was able to accelerate its average door-to-balloon time for heart attack patients after implementing wireless technology that allows emergency medical technicians to send electrocardiogram results from the ambulance to the hospital. As a result, the hospital's average door-to-balloon time has dropped from 90 minutes to 50 minutes—40 minutes faster than the 90-minute standard established by the IHI. The faster treatment time saves lives. Fairview Southdale's 30-day mortality rate for heart attack patients is 14.40 percent—close to the rate of the top 10 percent of all hospitals nationally (14.10%)—and the hospital materially outperforms the national average (16.17%).

Fairview Southdale's efforts in transforming the way care is delivered in the system's primary care clinics has also led to remarkable results. The new "teamlet" structure has eliminated much of the time physicians dedicate to administrative work and has increased access to primary care in the community by expanding the number of patients in a physician panel by 30 percent.

CONCLUSION: LESSONS FOR HOSPITALS AND HEALTH SYSTEMS

The case studies of four "Highest Value Hospitals" offer strategies that may help hospital and health system leaders achieve greater efficiency, provide greater value to their patients and payers, and help them prepare for lower payments from government and private payers. These strategies are listed below.

Pursue quality and access, not efficiency per se.

The four hospitals profiled were intent on delivering high-quality care, serving their communities, and/or being patient-centered. To achieve these goals, the hospitals put great emphasis on and made investments in changing processes to reduce length of stay and readmissions, standardize supplies and procedures, hasten patient flow, match staffing to need, reduce mistakes and errors, and improve clinical outcomes. These results also tend to lead to lower costs for the hospital and better "value" for patients and payers. But

administrative and clinical leaders insist that cost reduction is a consequence and not the primary goal of their efforts.

Reinforce the culture by giving staff meaningful opportunities to improve patient care.

These four "Highest Value Hospitals" use clear, repeated messaging and tools to align beliefs and goals with practice. The hospitals' priorities, whether clinical excellence or patient-centeredness, must be continually communicated and reinforced from top administrative and clinical leadership. This ongoing reinforcement should include both informal methods, such as discussions between the medical director and physicians who are identified as "outliers" on adherence to clinical standards, and formal mechanisms such as regular celebrations of success or financial incentives for meeting performance goals.

Quality improvement strategies such as ongoing monitoring and comparing of performance indicators against benchmarks help motivate physicians and frontline staff and nurture a culture of improvement. Techniques such as the Kaizen method, Lean, and the Plan-Do-Study-Act improvement cycle are useful for identifying areas in need of improvement and giving staff a structure for solving problems. Clinical and operations staff, including those outside the quality department, should be trained in improvement techniques.

Use technology as tools to improve quality and efficiency.

While technology by itself does not assure quality or efficiency, it can help tremendously when incorporated into daily routine and culture. Health information technology (HIT) tools that support staff and enhance efficiency in the hospitals examined include EHRs, which allow faster and more accurate sharing of information. This can be particularly effective when EHRs are shared between the hospital and outpatient settings, enabling clinicians in both locations to view patient medical histories, including recent procedures, medications, and test results. Doing so eases transitions into

and out of the hospital, and reduces duplication of tests and procedures. Evidence-based clinical guidelines can also be programmed into electronic records, giving instructions and reminders to nurses and physicians at the bedside.

Other technologies that can enhance efficiency include bed tracking systems that improve patient flow and facilitate staff management to meet patient needs, wireless technology that connects emergency medical technicians in ambulances to the hospital emergency department, and e-visits that allow patients to ask questions and seek medical guidance without face-to-face visits. The experience of the four high-performing hospitals suggests that hospital information systems should be developed in house or adapted from vendors to incorporate clinician input as this promotes buy-in and utilization of the information systems.

Manage staffing and adjust roles to meet patient needs and reduce costs.

There are a number of tools and strategies hospitals can use to align staff skills and levels with patient needs, and at the same time reduce labor costs. Use of hospitalists to manage patients while they are in the hospital is increasing among the high-value hospitals. Hospitalists bring value through faster and easier implementation of new hospital protocols, easier communications to and from administration, and more opportunities for patient discharges throughout the day. One hospital noted that while some patients have a hard time with an unfamiliar hospitalist physician, it favored hospitalists on balance.

Some of the staffing strategies require flexibility by both administration and staff. For example, staggering shift start and end times in the emergency department (and potentially in other units) helps smooth out the otherwise abrupt changes in staffing levels. Also, a hospital that encourages and provides the tools for “borrowing” and “loaning” staff across units and departments based on need can address short-term staff shortages, and reduce expensive overtime and temporary agency fees. Further, sharing nurses and hospitalists across intensive care units and

critical care units based on patient demand can reduce the need to close units, thereby maintaining access to services.

Emphasize communication among providers, patients, and families to improve transitions.

The experiences of the high-value hospitals studied suggests that better communication among providers, patients, and families helps ensure safer transitions and outcomes, and reduces avoidable readmissions. Two of the hospitals are organized by service lines, and one teams up a clinical and administrative leader to work together to meet performance goals and improve care. Multidisciplinary care teams foster communication across disciplines, and “huddles” promote the sharing of information and create agreement among a patient’s caregivers on treatment plans and discharge goals. This requires changing roles, away from physician-centered care and toward team-based care.

Communication tools and protocols ease patient handoffs between hospital departments and between inpatient and outpatient settings. With an emphasis on patient education and electronic sharing of information with a patient’s primary care provider at discharge, hospitals can ensure transitions are safer and reduce avoidable readmissions.

Standardize processes and supplies.

Hospitals that standardize and simplify processes can eliminate redundancy and improve patient flow. Standard protocols can be applied to most services and tasks. Staff engaged in these tasks on a daily basis should be involved in developing the protocols as administration-driven protocols are typically met with resistance. Further, regular assessments of processes can identify unnecessary steps that can then be eliminated.

Similarly, hospitals can enhance efficiency by standardizing supplies and purchasing in bulk with other buyers. Just showing physicians the evidence on effectiveness of supplies and their cost can prompt immediate changes in their supply-ordering patterns, especially if they are assured that savings will get invested in other ways to improve patient care.

Integrate in either real or virtual systems.

Being part of an integrated system has advantages such as being able to view patients' experience across settings and over time, HIT support, economies of scale, bulk purchasing, and sharing of best practices across hospitals. Also, integrated systems are better positioned to align goals and incentives across inpatient and outpatient settings. For example, members of systems that include physician practices and hospitals could be encouraged to view the benefits of reducing hospital admissions with less concern about hurting the hospital's bottom line.

Those hospitals that are not part of integrated systems may be able to enjoy some of these benefits through different types of relationships with other health care providers. Quality improvement or HIT collaboratives among hospitals and/or other providers or stakeholders can result in the sharing of best practices, interconnectivity, and even bulk purchasing.

NOTES

- ¹ See www.leapfroggroup.org/about_us (accessed Nov. 29, 2010). In 2011, the recognition program has taken a different form.
- ² H. J. Aaron, “Waste, We Know You Are Out There,” *New England Journal of Medicine*, Oct. 30, 2008 359(18):1865–67.
- ³ S. Klein and D. McCarthy, *Genesys HealthWorks: Pursuing the Triple Aim Through a Primary Care-Based Delivery System, Integrated Self-Management Support, and Community Partnerships* (New York: The Commonwealth Fund, July 2010); D. McCarthy and S. Klein, *QuadMed: Transforming Employer-Sponsored Health Care Through Workplace Primary Care and Wellness Programs* (New York: The Commonwealth Fund, July 2010); S. Klein and D. McCarthy, *CareOregon: Transforming the Role of a Medicaid Health Plan from Payer to Partner* (New York: The Commonwealth Fund, July 2010).
- ⁴ According to sections 3001 and 10335, hospitals will receive increased base rate-per-discharge payments for meeting certain clinical quality measures for specified conditions, including acute myocardial infarction, heart failure, certain surgical procedures, health care–associated infections, and pneumonia starting in fiscal year 2013. Beginning in fiscal year 2014, the U.S. Department of Health and Human Services must ensure that the payment formula includes efficiency measures, such as Medicare spending per beneficiary. Funding for these payments will be generated through reduced inpatient payments under the Prospective Payment System to hospitals in the following amounts for the following fiscal years: 1% for 2013, 1.25% for 2014, 1.5% for 2015, 1.75% for 2016, and 2% for 2017 and thereafter. See www.healthlawyers.org/Events/Programs/Materials/Documents/HCR10/barry_luband_lutz.pdf; http://healthreform.gov/documents/title_iii_improving_the_quality_and_efficiency.pdf.
- ⁵ Excess readmissions are those that exceed a predicted readmission rate based on the national average, adjusted for the hospital’s patient mix.
- ⁶ Southern California Evidence-Based Practice Center—RAND Corporation, *Identifying, Categorizing, and Evaluating Health Care Efficiency Measures*, (Rockville, Md.: Agency for Healthcare Research and Quality, June 2008), www.ahrq.gov/qual/efficiency/efficiency.pdf.
- ⁷ In addition, the hospitals also had to meet the following criteria: ranked within the top half of hospitals in the U.S. on a composite of Health Quality Alliance process of care (core) measures as reported to CMS; full accreditation by the Joint Commission; not an outlier in heart attack and/or heart failure mortality; and no major recent violations or sanctions.
- ⁸ J. B. Fowles, E. A. Kind, S. Awwad et al., *Performance Measures Using Electronic Health Records: Five Case Studies* (New York: The Commonwealth Fund, May 2008).

Appendix A. Selection Methodology

The selection of hospitals for inclusion in the case study series on efficiency is based on their designation by the Leapfrog Group as a “Highest Value Hospital.” To be eligible for this recognition, a hospital must have completed and submitted a Leapfrog Hospital Survey to the Leapfrog Group during the 2008 survey cycle.* During this cycle, 1,282 hospitals voluntarily submitted surveys, with a majority participating at the request of local employers and/or regional business coalitions.

Leapfrog’s efficiency scoring methodology takes into consideration both resource use and quality of care for a subset of all hospital patients: those undergoing a coronary artery bypass graft (CABG) or a percutaneous coronary intervention (PCI), or being treated for an acute myocardial infarction (AMI) or pneumonia. The resource use measure for a procedure or condition is a comparison of a hospital’s actual length of stay compared with their risk-adjusted expected length of stay, further adjusted for readmission. If a patient is readmitted for any reason within 14 days of discharge, the resource utilization is considered higher. The quality measures for CABG and PCI are based on a hospital’s case volume, their risk-adjusted mortality rates as reported by national or regional registries or public state reports, and adherence to nationally endorsed process-of-care measures. The quality measures for AMI and pneumonia are those voluntarily reported by hospitals to the Centers for Medicare and Medicaid Services (CMS), known as the core measures. A hospital whose relevant patients have higher-quality care, a shorter than expected length of stay, and are without a readmission within 14 days for any reason are scored as highly efficient.

Leapfrog’s detailed scoring algorithms are available at: http://www.leapfroggroup.org/media/file/Leapfrog_Resource_Utilization_Risk-Adjustment_Model_White_Paper.pdf.

For a hospital to be deemed “Highest Value,” it needed to be in the top performance category for efficiency for at least three of the four procedures and conditions.

The Leapfrog methodology has some limitations. It does not take into account the care provided to patients with other conditions, nor does it examine resource use other than length of stay (adjusted for readmissions). Further, participation is voluntary on the part of hospitals. Therefore, hospitals included in this case study series may not be representative of all hospitals considered efficient using other metrics. However, the Leapfrog Group’s resource use measure has been endorsed by the National Quality Forum and appears to be the only national source for efficiency data.

While designation as a “Highest Value Hospital” by the Leapfrog Group was the primary criterion for selection in this series, the hospitals also had to meet the following criteria: ranked within the top half of hospitals in the U.S. on a composite of Health Quality Alliance process-of-care (core) measures as reported to CMS; full accreditation by the Joint Commission; not an outlier in heart attack and/or heart failure mortality rates; and no major recent violations or sanctions.

Since 2009, the Leapfrog Group has been using a different efficiency measurement to designate “Top Hospitals,” rather than “Highest Value Hospitals.” The main difference is that the new methodology looks at measures of efficiency at the hospital level, rather than at the condition level. Details can be found at the Leapfrog Group Web site, <http://www.leapfroggroup.org/media/file/2010LHRPScoringMethodology.pdf>.

The Commonwealth Fund’s [WhyNotTheBest.org](http://www.whynotthebest.org) Web site does not post these Leapfrog data, though it does include some indicators of efficiency such as readmission rates.

* Leapfrog had not yet completed its analysis of 2009 survey data when we began our hospital selection process.

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