



Case Study

High-Performing Health Care Organization • July 2011

Providence St. Vincent Medical Center: Improving Efficiency by Standardizing Care and Ensuring Access

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Vital Signs

Hospital: Providence St. Vincent Medical Center

System: Providence Health and Services

Location: Portland, Oregon

Type: Private, nonprofit teaching hospital

Beds: 523

Distinction: Recognized as one of 13 “Highest Value Hospitals” by the Leapfrog Group in 2008, based on efficiency scores that took into account quality of care as well as resource utilization. The hospital, which was selected from nearly 1,300 hospitals that had voluntarily submitted data, received a top efficiency score for three out of four major conditions/procedures (coronary artery bypass graft, percutaneous coronary interventions, and treatment of acute myocardial infarction). See [Appendix A](#) for full methodology.

Timeframe: Hospital data from 2007.

Focus: This case study describes the strategies and factors that appear to contribute to high efficiency at Providence St. Vincent Medical Center. It is based on information obtained from in-person interviews with key hospital personnel, materials provided by the hospital during the spring of 2010, and publicly available information.



SUMMARY

Providence St. Vincent Medical Center (St. Vincent) was recognized by the Leapfrog Group as a “Highest Value Hospital” in 2008. But it was its pursuit of quality and accessibility, not efficiency, which appears to have been the driving force behind its success. The designation can be traced to three notable initiatives: its Safe Patient Access Capacity Enhancement (SPACE) project, the simplification of surgical orders, and the use of staff councils to address safety concerns. The SPACE project focused on shortening the length of time from

admission to discharge by increasing staff productivity, streamlining and standardizing processes, and redesigning roles. Surgical order simplification reduced variation in surgical supplies, order sets, and care processes, which increased consistency, quality, and safety, while lowering supply costs. Staff councils have developed innovative safety improvements at low cost and measured their impact on reduced falls and patient injuries.

Several lessons from these experiences emerged that may help to guide other hospitals toward similar outcomes:

- Improving efficiency did not start with a financial analysis; it started with an understanding of ways in which the hospital was not achieving its goals for patient access, satisfaction, quality, and safety. Assuring access, reducing variation, and safeguarding patients are all consistent with improving efficiency.
- Supporting a major initiative that rallies staff around improving patient care can create a strong culture of teamwork that spans different units in the hospital, resulting in improved care processes and patient outcomes. Initial improvements in patient flow and falls are leading to new improvement work that builds on lessons learned.
- Integrating system and hospital decision-making through formal structures—some financial and some clinical—helps to align resources and rationalize decisions.

INTERNAL AND EXTERNAL ENVIRONMENT

The Hospital

Providence St. Vincent Medical Center is a large, 523-bed community hospital, located in the southwest suburbs of Portland, Oregon. It plays a leading role in serving the region's stroke and cardiac care patients as well as the uninsured. Its leaders describe a dynamic organization in which the roles of executive team members are not strictly defined, allowing them to

WhyNotTheBest.org

Efficiency Case Study Series

Eager to foster higher value in the health care system, providers and payers have worked to promote more rigorous adherence to quality standards and reduced resource use, particularly when higher utilization can be demonstrated to be of little or no added value to patients.

This case study is part of a series that highlights best practices among hospitals that have excelled at meeting these efficiency criteria. We used the Leapfrog Group's Highest Value Hospital recognition program to identify eligible hospitals. For more information on how hospitals in this series were selected, see [Appendix A](#).

take on a variety of new responsibilities when appropriate and necessary. St. Vincent does not employ a chief medical officer. However, departmental physician leaders are funded to serve in positions such as chief of medicine, chief of surgery, and as various medical directors of specialties. An extensive set of quality councils ensures that every staff member is represented in organizational agenda-setting.

Most hospitalized patients are followed by their community physicians, but a hospitalist program has been growing since 2001 in response to the increased number of patients without a medical home. An electronic health record (EHR) system is used throughout most of the hospital and is accessible to physicians in its physician group practice.¹ In 2006, St. Vincent had almost 82,000 emergency department visits, 41,626 admissions, and 6,300 births. It provided close to \$36 million in community benefits in 2008.

The System

St. Vincent joined Providence Health and Services, a nonprofit, Catholic health system, in the 1990s as one of its 27 hospitals in the Pacific Northwest and one of seven hospitals in Oregon. The local Portland metropolitan area includes four Providence Health hospitals, 30 clinic locations, more than 200 physicians, and a

health plan. Providence has over 30 percent of the hospital market share in the Portland area, with St. Vincent being the largest with about 20 percent. The Providence Health Plan has one million members, or approximately 25 percent of the Oregon market share.

Resource allocation decisions are made by a systemwide body with hospital representation. High-level financial management also occurs at the system level. Regional resource councils, organized by specialty, make recommendations for products and services to be purchased by the system. Purchasing medical and nonmedical supplies, capital equipment, and certain services through the Voluntary Hospital Association purchasing group saved the system more than \$40 million in 2008, keeping the cost of supplies as a percentage of net revenue well below national benchmarks.²

The seven Providence Health hospitals in the Oregon region have forgone the common medical staff model and are organized using the service line structure in order to combine staff caring for patients with the same conditions and promote clinical expertise and specialization. Janice Burger, B.S., M.H.A., CEO, views the service line structure as a “conduit to engage physicians in quality improvement efforts.” The hospital’s division chiefs oversee physician leaders in the service line.

The Providence Health Plan was an early innovator in reimbursing providers for e-visits. “MyProvidence Doctor’s Office” is a patient portal that allows patients to e-mail their doctor, complete online visits for nonurgent health concerns, as well as schedule appointments, refill prescriptions, and view test results.

The Environment

The Portland health care market has a very high managed care enrollment, relatively low bed supply, a higher ratio of primary care to specialty care providers, and lower health care prices than most other parts of the United States.³ All area hospitals are nonprofit, and private purchasers (employers and health plans) are ahead of most of the country in negotiating contracts based on value.⁴

Being part of a system and a health plan helps insulate us from the perverse incentives that are part of Medicare reimbursement.

Janice Burger, B.S., M.H.A., CEO

Oregon was hit hard by the recent economic downturn, experiencing the second-highest unemployment rate in the country. The hospital’s mix of payers has shifted away from commercial payers to more Medicaid and self-pay patients, resulting in more charity care. Utilization patterns are also changing as patients defer more care, particularly elective surgeries, causing the hospital’s case mix to increase in acuity.

The Leapfrog Group’s recognition of St. Vincent as an efficient hospital occurred early in the recession, but the challenging economic environment is putting pressure on the hospital to pursue efficiency more deliberately going forward. “Throwing more [full-time equivalents] at a problem is not going to be an option,” says Debbie Foster-Peiris, B.S., manager of access services. Instead the hospital expects to see more redesigned work processes in the future to lower costs when possible, while still improving quality.

ORGANIZATIONAL/CULTURAL FACTORS THAT MAY CONTRIBUTE TO EFFICIENCY

The hospital staff interviewed described a standard of excellence that is infused into the culture at St. Vincent and drives the hospital’s ongoing commitment to improving its performance. Top leaders all reported that efficiency is not a high priority per se. The hospital focuses on quality and what is right for the patient, and views efficiency as a “trailing indicator.” For example, St. Vincent only hires nurses with at least a bachelor’s degree (as opposed to those with two-year associate’s degrees) on the belief that their additional education leads to superior critical thinking and problem-solving capabilities. At least 40 percent of nurses are certified in a particular clinical area. The hospital also has a high staff-to-patient ratio, but believes high staffing costs are justified because they increase quality.

There is also a strong culture of caring and being part of a larger community that leads to a high degree of staff commitment to the hospital's priorities. The hospital created the "Pink Glove Dance" video to raise breast cancer awareness. The video features hospital staff—from janitors to the CEO—dancing at the hospital wearing disposable pink gloves. The video has had more than 13 million views on YouTube and has garnered national press attention (<http://www.youtube.com/watch?v=OEdVfyt-mLw>). Martie Moore, R.N., B.S.N., M.A.O.M., C.P.H.Q., chief nursing officer, says creating the video and seeing its impact have contributed to staff unity and promote a patient-centered focus.

"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...[and] a trailing indicator."

Dennis Noonan, former CFO

System and hospital quality priorities appear to be well aligned. The system sets many of the goals for quality—and makes decisions about how to attain them—at the local level. Regional resources including a department called Strategic Management Services (SMS) are available to help each hospital with quality improvement projects. SMS staff use Lean process improvement practices and the Plan-Do-Study-Act cycle of process change.⁵ The department includes Six Sigma "Black Belts," information technology project managers, and a strategic planning unit.⁶ In addition to having access to the SMS department, all staff receive problem-solving training as part of their job. Lean principles are disseminated and taught throughout the organization. Marla London, B.A., M.A., professional development manager, indicates that as a result, the hospital has "a very organic approach to solving problems and tackling quality improvement projects."

The Providence Health Plan is another key partner in strategic decision-making. Along with hospital and system leaders, the health plan leaders contribute

to decision-making and bring the purchaser perspective into deliberations. Having the health plan on the finance committee, in particular, helps focus attention on those improvements that will also help the bottom line.

STRATEGIES AND PRACTICES THAT IMPROVE EFFICIENCY

"No Patient Turned Away"—The SPACE Project

In 2007, hospital leaders recognized that the frequency with which their hospital was on ambulance diversion created a significant access barrier for the community. It prevented the hospital from fulfilling its mission to care for those in crisis—particularly the poor and sick. The hospital is the only tertiary facility in the area, and leadership strongly believed they had an obligation to guarantee access for the community. Also, a competitor was in the process of building a new hospital and St. Vincent did not want to lose market share because patients could not gain admission in emergencies. Finally, physicians were beginning to complain that they were having trouble getting their patients admitted and hospital employees feared their own family members might someday be turned away.

What began as a series of examinations of key processes and incremental changes led to the SPACE project, a multifaceted program to eliminate emergency department diversions. A multidisciplinary SPACE leadership team was created to determine the factors that led to the hospital's recurring diversion status. The team created a list of processes that needed improvement by focusing on what was in the best interest of the patient, visiting each part of the hospital, and watching how long each step took and what barriers were encountered. Learning the process from the patient's perspective and learning what happened in other units of the hospital facilitated a collaborative work attitude. Some of the main problems observed were slowdowns in registering patients, a high volume of behavioral health patients being held for observation, and delays in getting patients admitted to an inpatient unit that could meet their needs.

The cumulative effect of the project's many components was a shorter length of stay, improved quality and outcomes, and greater staff productivity. Though the work was not originally conceptualized as efficiency improvement, it has had the effect of making many processes more efficient. The project reached all units of the hospital and key services, such as patient transport, bed assignment, discharge, and triage. The project broke down interdepartmental silos and created a structure for staff to talk to each other to solve problems. "What is unique about SPACE is its acknowledgment that more than the emergency department is involved in a hospital having to close its doors," reported Tom Calverley, M.D., the emergency department's medical director.

Process improvements born out of the SPACE project include:

"Quick Registration" in the Emergency Department

- Patients are now registered upon entering and a chart is generated within one minute. Once the chart is generated, the emergency department staff can start ordering tests and blood draws, speeding up the assessment process. The hospital's internal standard for these steps is 30 minutes.
- Hospitalists, who used to see all emergency department patients, now only see the higher-acuity patients likely to be admitted. Patients likely to be discharged are treated by the department's physicians.

Added Weekend Discharges for Behavioral Health

- St. Vincent has a behavioral health observation unit in the emergency department where patients used to get backed up waiting for other patients to be discharged so that they may be admitted. Better discharge plans were adopted and have reduced the problem.
- To get psychiatric patients out of the emergency department and into a more appropriate care setting, the hospital extended its partial hospitalization

program from five days a week to seven days a week. The extended hours allowed psychiatric patients to be discharged from the psychiatric unit on the weekends, which opened up beds for psychiatric patients waiting in the emergency department.

New Bed Assignment Process

- A protocol was established to remove the subjectivity and negotiation involved in assigning patients to units. For each type of patient, there are preferred inpatient units (where staff training and the equipment are best suited to patients' needs) and backup units that are able to meet the patient's needs.
- Information about bed availability is made transparent through a new Bed Board Teletracking system. This electronic system is used across all units to display occupied beds, available beds, and unit staffing. House supervisors,⁷ a throughput manager, the patient registration department, and charge nurses use the system to view available beds and see where beds are likely to become available.
- Bed Board meetings occur three times a day, creating a roundtable for unit charge nurses to discuss bed needs and availability, potential transfers and admissions, potential discharges, and staffing needs and resources. The meetings take between five and 10 minutes and focus on priority needs and announcements affecting unit performance, such as EHR downtime.

Patient Transportation Improvements

- The team discovered a bottleneck of patients waiting to be transported during the busiest time of day, coinciding with transport worker breaks. The hospital now staggers the start time of transport staff.
- The hospital also installed a software program called "Transport Tracker." Instead of making

patient transport requests by phone, nursing staff enter the requests into the computer. Nurses can see where transporters are and the number of orders in the system, which helps them anticipate actual transport time. If the process takes longer than 10 minutes, the hospital's house supervisor is notified.

Hospital "Divert Alert" Communications Tool

- Divert Alert is an electronic reporting tool that was designed in-house to serve as a bridge between the emergency department and other hospital units, and to allow an early response to possible problems. The hospital's diversion status is posted every two hours. The house supervisor monitors it, and is also notified by the emergency department if it is experiencing heavy volume that may require it to go on diversion status. The house supervisor and throughput manager use a color-coded system to alert managers, charge nurses, and other staff if action is required to avoid diversion.
- "Near diversions" are considered a learning opportunity. The throughput manager provides briefings on near-diversions to the SPACE leadership committee, which meets monthly. If the hospital goes on diversion, the involved parties report in the next SPACE meeting and identify any resources that could have mitigated or avoided the diversion. The SPACE leadership team treats diversion status as an adverse event and will review, evaluate, and determine what can be done differently to prevent the same situation from recurring in the future.
- Signs publicizing the number of days since the hospital has been on diversion status are posted throughout the hospital to help the team stay focused and publicize its achievements.

Standardizing Care

In 2008, Providence Health began prioritizing the standardization of evidence-based care for its 27 hospitals. Standardization is a tenet of reducing errors and improving patient safety. If all care is delivered in a

manner consistent with the clinical evidence, quality is improved and savings will usually follow. Spearheading this effort is Rick Waller, M.D., medical director of the department of surgery at St. Vincent, who set a goal that doctors use best practices at least 95 percent of time. Waller is in charge of standardizing physician order sets that will be used for sepsis, discharge planning, and medical orders in the four hospitals in the Portland region. Waller explains his goal is to "make it difficult for physicians to deviate from evidence-based care." Through a hands-on process that engaged more than 5,000 surgeons, Waller and his team transformed 1,000 different order sets into 50.

Creating standardized order sets began with putting all the surgeons' postoperative orders side by side, and comparing them with evidence-based clinical guidelines. A best practices order set was vetted with pharmacists and nurses and sent to every surgeon with privileges, asking for them to approve or disapprove the new order set. A link to the evidence-based guidelines was included so the surgeons could see where the new guidelines originated. Waller personally responded to each comment received.

A final, postoperative order set was created and attached to all charts with the option to use it, or a doctor's own. The order set was introduced in 2008 and by September 2009, 96 percent of surgeons were using it. At that point, Waller decided to make use of the order set mandatory. Waller asked to be notified each time a surgeon used his or her old order set, and would personally follow-up with the surgeon to discuss the surgeon's concerns. Waller's message to surgeons was a quality-based one. He only talked about and reviewed data of quality. "If you start talking about costs or length of stay, [physicians] will think you are representing the administration and will be more likely to push back." Waller reported that using the order sets has reduced variation and errors.

Pushing Responsibility to the Front Line

Many hospitals struggle with how to meaningfully engage frontline staff in improvement work. St. Vincent uses a self-governance model, which they call

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

a “one team, many hands” approach. The philosophy behind it is that everyone is interdependent on one another. An interdisciplinary partnership council that includes clinical representation and an operations council that is more administrative provides an opportunity for staff to participate as a team, share information across departments, and engage in and drive the hospital’s decision-making process.

Members of the councils each represent the staff to whom they are accountable. It is each member’s responsibility to make sure the voices of the staff they represent are heard and to bring the staff’s ideas before the council. Council meetings are also an opportunity to identify issues or concerns, struggles, and necessary resources or support. Moore oversees the council meetings and ensures the appropriate follow-up. She also presents trends in the hospital’s performance at council meetings and highlights areas for improvement. For example, patient falls rose unexpectedly, and the partnership council discussed some likely causes and potential solutions. One of the problems identified was the hospital’s use of eight different types of hospital beds, which resulted in staff having to remember how to set eight different alarms. It also became clear that the hospital lacked a universal method of identifying high-risk patients when they were outside their rooms (e.g., to walk or to go to radiology). Council members brainstormed possible solutions and made two major recommendations to reduce the number of patient falls:

- The hospital invested \$1.6 million to standardize the type of hospital bed used in the facility, a funding request that was approved by the governance council.

- The hospital purchased \$80,000 worth of teal patient gowns to identify the patients at a higher risk of falling. Everyone from the janitors to the nurses was taught to recognize the signs of an unsteady patient and provide assistance. The teal gowns serve as a universal signal of the patient’s status, even if they leave their unit.

After implementing these solutions, patient falls dropped to 4.8 per 1,000 patient days in the first quarter of 2007 and are now steady at 2.8 falls per 1,000 patient days in the second quarter of 2010.

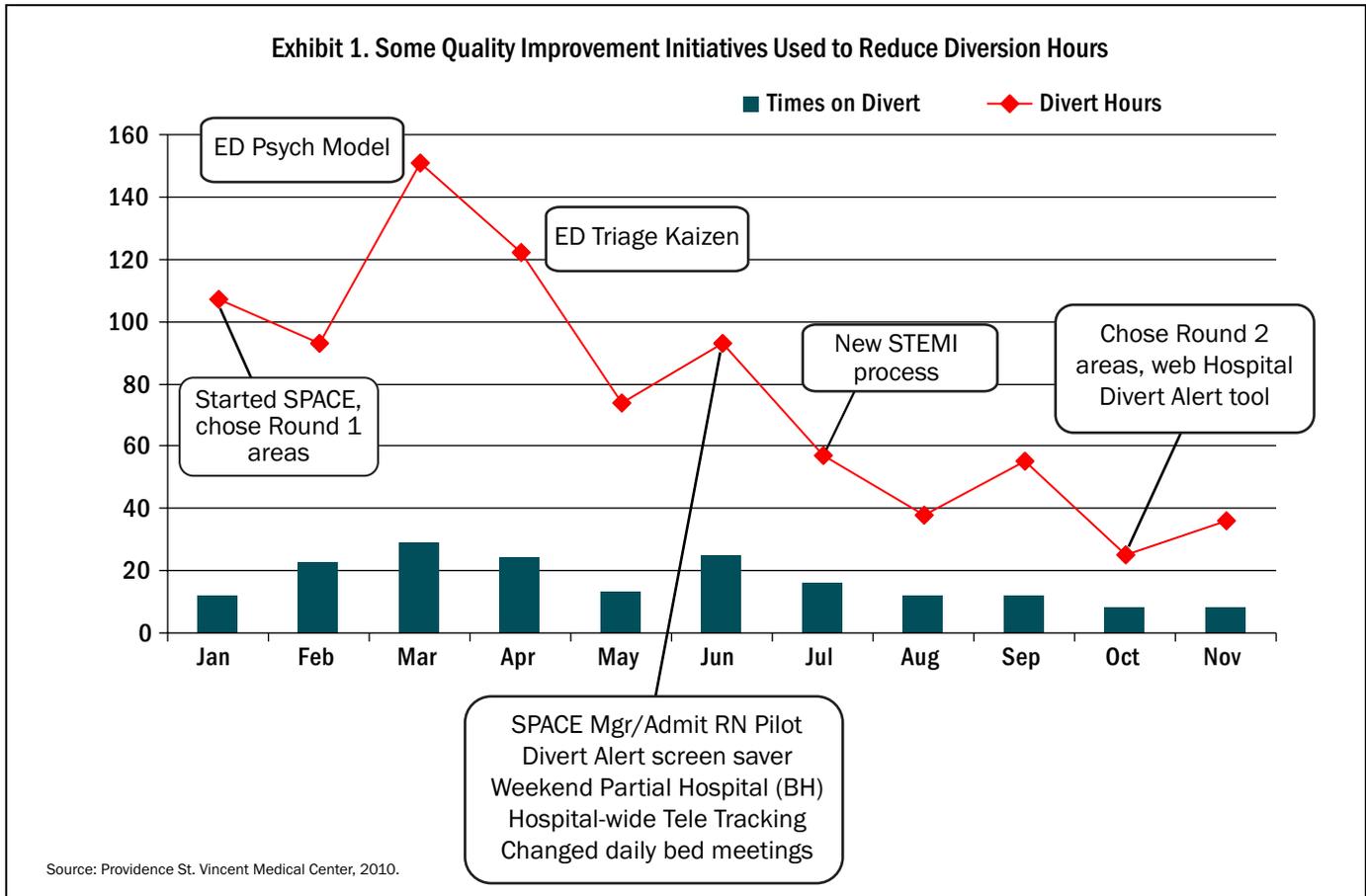
Measurement and Accountability

Providence Health and Services has set performance targets that are tracked and reported regularly at the hospital and system levels. They include:

- all hospitals perform in the 90th percentile on national quality measures;
- no preventable deaths or injuries; and
- patients, members, residents, physicians, and staff rate the facility as providing the best care in the community.

Regional quality management committees meet monthly to review quality data. There is also an on-site quality management committee at the hospital and leadership has online access to the hospital’s budget and results. Labor hours, payer mix, budgeted versus actual expenses, and other indicators are updated on a daily basis for each department. The number of patients in each unit is also available. Although much information is available online and updated daily, the hospital hopes to initiate a more formal process of reviewing key indicators on a recurring basis and is in the process of creating a new dashboard for leadership. The dashboard is being modeled on a sister hospital’s dashboard.

The hospital’s participation in a variety of clinical registries provides an opportunity to benchmark its outcomes against other hospitals. It also motivates the hospital to improve. Doctors receive data about their



patients benchmarked against their peers and professional pride drives the doctors to improve.

In addition, some doctors are eligible for financial incentives for meeting quality goals. Medical directors also have financial incentives for meeting quality goals. Emergency department physicians and intensivists are eligible for a separate set of financial incentives if they meet shared goals.

“WOW Awards” recognize staff whose extra efforts are noticed by fellow staff members, a patient, or a patient’s family. In addition to recognition, the award comes with a coupon for a free coffee.

The hospital’s newest focus is on improving the care management process inside and outside of the hospital. This year has been dubbed “The Year of the Discharge.” The hospital conducted a study and determined that the following had the longest length of stay: the uninsured, Medicaid enrollees, the elderly, patients with co-morbidities, and surgical patients. The hospital aims to redesign the case management process to touch all patients. The hospital is piloting a new

patient assessment tool to be used by the case managers to determine needs for social supports after discharge. The hospital is also designing a standardized discharge instruction form and exploring options for a home monitoring system. The hospital also reaches out to parish-based nurses to ensure they are part of the care continuum.

RESULTS

Work on access, process improvements, and standardizing high-quality care has helped make Providence St. Vincent one of the most efficient hospitals in the country, as assessed by the Leapfrog Group.

The hospital experienced immediate results from process improvements born out of the SPACE initiative. Exhibit 1 shows the changes that occurred just in 2008, and the corresponding changes in the number of hours the emergency department was on diversion. Exhibit 2 shows the longer trend in diversions for the period 2006 to 2011. In 2006, the hospital was on diversion an average of 119 hours per month.

Exhibit 2. Trends in Emergency Department Diversions and Visits, 2006–2011

	2006	2007	2008	2009	2010	2011 YTD
Average number of hours per month the emergency department was closed to ambulances	119	68	72	33	9	5.8
Patient volume, emergency department	6,828	7,179	7,270	7,344	7,266	7,342

Source: Providence St. Vincent Medical Center, 2011.

In 2007, it was 68 hours per month, in 2008 it was 72 hours per month, in 2009 it was 33 hours per month, and in 2010 it was just 9 hours per month.

St. Vincent found that from 2007 to 2009, there was a 21 percent drop in emergency department users leaving without being seen or against medical advice, and also a 17 percent drop in nonurgent care seekers using the ED.

Other positive results from process improvements born out of the SPACE initiative include

- Shorter wait times for patients, improved patient experience, and an increase in patients seen in a day.
- The time from bed request to bed assignment is now typically just 10 minutes or less.
- There has been a three-minute reduction in the average patient transport time.

St. Vincent’s ongoing work to standardize evidence-based care is showing strong results. Already 93 percent of doctors are using the standardized order sets.

Other quality measures reported to the Centers for Medicare and Medicaid Services, including process of care, mortality, readmissions, and patient satisfaction, are shown in [Appendix B](#).

LESSONS

Efficiency can result from an organization pursuing its core values and trying to do what is best for the patient.

Each of the activities described in this case study is credited with improving St. Vincent’s outcomes while

lowering costs. For example, the SPACE initiative represents process improvements that affected the hospital’s efficiency, but were originally designed to protect the community’s access to the hospital and support the hospital’s mission of caring for persons in crisis, such as the poor, the vulnerable, and the sick. Other hospitals can similarly identify critical issues in their hospital or community that can also pay off in better outcomes or more cost-effective care.

Make it easy to do the right thing.

Standardizing postoperative order sets and taking the ambiguity out of the bed assignments are two examples of ways that St. Vincent has made it easier for staff to provide better care. Process redesign is a key tool of quality and safety improvement. Though some may worry about restricting clinician choice or autonomy, the demonstrable link between standardization and good outcomes suggests more hospitals may benefit from standardizing processes.

A great organization is built on people. Technology can support but not replace a strong culture.

The hospital employs a self-governance model and looks to staff for solutions. With the economic downturn, leadership turned to its managers and employees and asked what changes could be made to reduce expenses by 3 percent. The staff identified a number of examples of waste in the system, and the hospital made changes based on their recommendations. When staff worked to identify new ways to prevent falls, their creative solutions paid off.

Open lines of communication, break down silos, and create a culture of teamwork.

The SPACE project illustrates the importance of inter-departmental communication and problem-solving. Different parties rallied around improving patient care. Before SPACE, the emergency department operated as its own island according to Moore. By collaborating on the SPACE teams, the different units experienced the emergency department admitting and discharge process from the patient's perspective and learned how the different units affected each other. The SPACE leadership team was trained on "Crucial Conversations," a method of communication that reduces conflict in high-stakes situations. A variety of silos exist in most institutions, and hospital leaders should look for their own ways to build connections between different employees and units that will lead to better care.

Integrated systems promote efficiency.

Interviewees at St. Vincent provided numerous examples of system leadership and initiatives that made the hospital function more efficiently. From purchasing supplies to setting clinical standards, St. Vincent has demonstrated that removing variation is one of the

ways hospitals can improve efficiency. Structures like the business development council provide an opportunity to look broadly at one hospital's ideas in the context of a very large system, and to vet the hospital's plans before making a final decision. Senior management also noted that the health plan leaders help focus attention on those improvements that will also help the bottom line. In addition, hospitals in the same system can learn from each other's successes and failures.

Technology can be tailored to support improvement work.

Innovative thinking about how to communicate time-sensitive information and track progress led the SPACE team to invent new information tools and use technology in new ways. Making these resources available to employees involved in patient flow can be a critical component of success.

FOR FURTHER INFORMATION

For further information, contact Janice Burger, B.S., M.H.A., CEO, at 503-216-2213; Janice.burger@providence.org.

NOTES

- ¹ The emergency department is not integrated into the EHR.
- ² Supplies made up 14 percent of revenue at St. Vincent as compared to 18 percent for similarly sized hospitals. See <http://www.allbusiness.com/health-care-social-assistance/499070-1.html>.
- ³ M. B. Rosenthal, B. E. Landon, and H. A. Huskamp, “Managed Care and Market Power: Physician Organizations in Four Markets,” *Health Affairs*, Sept. 2001 20(5):187–93.
- ⁴ Ibid.
- ⁵ “Lean” is a method of process improvement developed by Toyota and now widely used in manufacturing. As applied to health care, its focus is on preserving value with less work and doing so based on empirical data. The Plan-Do-Study-Act cycle is a quality improvement technique that encourages users to design and implement a process change, then assess its impact. The process repeats until the desired improvement is achieved.
- ⁶ A Six Sigma “Black Belt” is a person trained in quality improvement methods that emphasize redesigning care to render a process virtually error-free, and who uses statistical analysis to measure and promote improvement. “Six Sigma” refers to the standardization of processes to reduce defects to fewer than four per million, a term the Motorola Corporation first coined for their manufacturing process goals.
- ⁷ House supervisors serve as a liaison between the patient registration staff and nursing staff; their function is to make sure patients get into the right bed. They also work on throughput issues and organize the action plan when the hospital is about to go on divert status.

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, its 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.

Appendix B. Performance Data from WhyNotTheBest.org for Providence St. Vincent Medical Center

	Top 10% Of U.S. Hospitals	National Average	Providence St. Vincent Medical Center
Overall Recommended Care	98.42%	95.65%	97.31%
Overall Heart Attack Care	99.89%	97.50%	98.66%
Aspirin on arrival	100%	98.32%	98.93%
Patients given aspirin at discharge	100%	98.06%	98.99%
Acei or ARB for LVSD ^a	100%	96.02%	100%
Adult smoking cessation advice/ counseling	100%	99.52%	100%
Beta-blocker prescribed at discharge	100%	98.09%	97.95%
Fibrinolytic therapy received within 30 minutes of hospital arrival	85.37%	76.02%	N/A
Primary PCI received within 90 minutes of hospital arrival	100%	90.67%	97.41%
Legacy: beta blocker on arrival	N/A	89%	98.02%
Overall Pneumonia Care	98.37%	93%	97.37%
Pneumococcal vaccination	100%	91.91%	98.04%
Blood cultures performed in the emergency department prior to initial antibiotic received in hospital	100%	95.26%	100%
Adult smoking cessation advice/counseling	100%	97.9%	99.15%
Pneumonia patients given initial antibiotic(s) within 6 hours of arrival	100%	95.12%	96.98%
Initial antibiotic selection for community-acquired pneumonia (CAP) in immunocompetent patients	98.08%	91.38%	92.03%
Influenza vaccination	100%	90.53%	98.07%
Legacy: pneumonia patients given initial antibiotic(s) within 4 hours of arrival	N/A	81%	100%
Legacy: pneumonia patients given oxygenation assessment	N/A	99%	83.03%
Overall Heart Failure Care	99.29%	92.34%	95.57%
Discharge instructions	100%	87.53%	89%
Evaluation of LVS function	100%	95.99%	100%
ACEI or ARB for LVSD	100%	94.55%	98.73%
Adult smoking cessation advice/counseling	100%	99.07%	98.94%
Overall Surgical Care	98.58%	95.08%	97.10%
Pre-surgical antibiotic given at the right time	100%	95.83%	96.98%
Surgical patients who were given the right kind of antibiotic	100%	96.80%	98.94%
Preventive antibiotics stopped at right time	98.96%	93.73%	99.09%
Cardiac surgery patients with controlled 6 a.M. Postoperative blood glucose.	98.78%	92.99%	100%
Surgery patients with appropriate hair removal	100%	99.22%	100%
Surgery patients with recommended venous thromboembolism prophylaxis ordered	99.26%	93.01%	93.82%
Surgery patients who received appropriate venous thromboembolism prophylaxis within 24 hours prior to surgery to 24 hours after surgery	98.91%	91.39%	92.13%
Surgery patients on a beta blocker prior to arrival who received a beta blocker during the perioperative period	100%	92.47%	87.83%

Patient Experience (HCAHPS) - Rating 9 Or 10			
Percent of patients highly satisfied	78%	67.16%	72%
Doctors always communicated well	87%	80.18%	77%
Nurses always communicated well	83%	75.82%	74%
Patients always received help as soon as they wanted	76%	63.92%	58%
Staff always explained about medicines	68%	60.30%	60%
Pain was always well controlled	76%	69.23%	70%
Patient's room always kept quiet at night	71%	57.98%	51%
Patient's room and bathroom always kept clean	82%	71.13%	71%
Patients given information about recovery at home	88%	81.78%	82%
Patients would definitely recommend this hospital to friends and family	82%	69.31%	79%
Readmission			
Hospital 30-day readmission rates for pneumonia	16.50%	18.34%	15.60%
Hospital 30-day readmission rates for heart failure	22.40%	24.73%	21.40%
Hospital 30-day readmission rates for heart attack	18.40%	19.97%	18.20%
Mortality			
Heart attack 30-day mortality rate	14.10%	16.17%	14.70%
Heart failure 30-day mortality rate	9.40%	11.28%	12.70%
Pneumonia 30-day mortality rate	9.50%	11.68%	12.60%

^a Angiotensin Converting Enzyme Inhibitor (ACEI) or Angiotensin Receptor Blockers (ARB) for Left Ventricular Systolic Dysfunction (LVSD).

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

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