



Case Study

High-Performing Health Care Organization • April 2009

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St. Mary's Health Center: Focus on Core Measures Improves Quality

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HEALTH MANAGEMENT ASSOCIATES

Vital Signs

Location: Jefferson City, Mo.

Type: Faith-based, full-service hospital, part of the not-for-profit SSM Health Care system

Beds: 167

Distinction: Top 1 percent (with a score of 97.9% compliance) in composite of 24 process-of-care quality measures, among more than 2,000 hospitals—about half of U.S. acute-care hospitals—eligible for the analysis.

Timeframe: January through December 2007. See [Appendix A](#) for full methodology.

This case study describes the strategies and factors that appear to contribute to high adherence to process-of-care, “core” measures at St. Mary's Health Center. It is based on information obtained from interviews with key hospital personnel and materials provided by the hospital from October 2008 through March 2009.¹



SUMMARY

In 2005, under pressure to improve performance on indicators of financial well-being, patient satisfaction, and clinical quality, St. Mary's Health Center leadership made a deliberate decision to focus on Centers for Medicare and Medicaid Services (CMS) process-of-care measures, or “core” measures. They set in motion a series of activities that resulted in striking improvement in core measure scores across four clinical areas (heart attack, heart failure, pneumonia, and surgical care improvement), eventually reaching the top percentile nationwide. The main strategies were:

- clear communication of the new directive by the hospital's president and Board of Directors;
- physician-led committees taking responsibility for performance improvement and communicating the goals to medical staff;

- intensified efforts to standardize core measure and other clinical processes through order sets;
- dedicating a full-time staff member to data abstraction and initiating a system of concurrent and post-discharge review of medical charts;
- continuous measurement and analysis of performance data;
- providing feedback to staff through reporting, scorecards, and follow-up when performance varies from the care standard; and
- sharing successes, lessons, and tools across hospitals in the health system.

ORGANIZATION

Established in 1904, St. Mary's Health Center is a 167-bed, faith-based, full-service hospital in Jefferson City, Mo. An accredited Chest Pain Center, St. Mary's offers invasive cardiology and open-heart surgery, a maternal and child care center, an oncology center, and a network of primary care and specialty clinics. St. Mary's is a member of SSM Health Care, a St. Louis-based not-for-profit health system that, in 2002, became the first health care system in the United States to win a Malcolm Baldrige National Quality Award.

STRATEGIES FOR SUCCESS

Just a few years ago, St. Mary's financial position and performance on quality measures were quite poor, compared with national averages and sister SSM hospitals. In 2005, St. Mary's was in the 40th quartile nationally for heart attack measures, the 10th percentile in pneumonia measures, and below the 50th percentile for surgery care improvement measures. The hospital had a negative operating margin, and measures related to patient loyalty were in the 24th to 40th percentile.

In order to gain corporate approval to build a new facility, St. Mary's leadership knew the hospital had to improve its financial and quality performance. In addition, they knew that public reporting and pay-

for-performance programs were on the horizon. As a result, they decided to focus on core measures. The hospital adopted the core measures as the standard of care in September 2005 and dedicated a full-time staff member to perform data abstraction for these measures in May 2006.

The core measures are a set of care processes developed by the Hospital Quality Alliance and the Joint Commission, the predominant accrediting body for health care institutions, to improve health outcomes. Also called "process of care" measures, hospitals' adherence to the care processes is reported to the Centers for Medicare and Medicaid Services (CMS) and made public on the Hospital Compare Web site (<http://www.hospitalcompare.hhs.gov>). High performance on these measures is the main criterion for selection for this publication series.

Core Measure Directive

In September 2005, St. Mary's administration and Board of Directors communicated clearly, including a formal letter to the medical staff, that they must adopt core measures as the standard of care. This directive sparked several activities, described below. Though adoption of the new standard of care required efforts throughout the hospital, "it took the President and Board to say 'this is the way it will be' to set us on a new course," said Lisa Randazzo, director of Performance Management and Clinical Outcomes. Prior to this time, medical staff generally viewed the core measures as government-imposed, "extra" requirements that could eventually be tied to reimbursement.

Communication Through Physician-Led Committees and Peers

St. Mary's Medical Staff Performance Improvement (MSPI) Committee, composed of 10 to 15 physicians from a wide range of specialties plus administrative support staff, has existed for more than a decade, but in recent years the group expanded and took on greater responsibility for oversight of the quality of care. Its three key roles are to: 1) educate medical staff on core measures and quality expectations through staff

meetings, a newsletter, and other communications; 2) ensure processes to achieve improvement are in place (e.g., that order sheets are included in patient charts) and reduce procedural barriers for compliance (e.g., improve the format of order sets so physicians and nurses do not miss steps); and 3) conduct peer review when physicians do not comply with standards and/or make errors. Further, the MSPI reviews the care standards and order sets.

“It’s critical to have a good vehicle for communication between hospital administration and medical staff. MSPI serves this role,” said Denise Tritz, M.D., chair of Medical Staff Performance Improvement.

Still, it took behind-the-scenes efforts to bring all St. Mary’s physicians on board. For example, Vice President of Medical Affairs John Lucio, M.D., worked one-on-one with physicians to encourage them to buy in to the improvement initiative. This involved monitoring when physicians did not comply with a care standard, finding research studies and specialty association recommendations that support the care standards, and bringing this evidence to their attention.

“The physicians had to be convinced that the core measures did not just come from government or even hospital administration, but rather from medical research and from their own specialty organizations,” said Lucio. It was also important to have the Medical Executive Committee, composed of medical staff leaders, issue a statement that the core measures are the standards of care and physicians who vary from these standards must appear before peer review committees. “From that point on, adherence greatly improved,” said Lucio.

Standardization Through Order Sets

Though the clinical staff had been working on care pathways, or order sets, prior to the Board’s 2005 directive, it intensified these efforts after then.

Preprinted order sets became the standard for care, and they continue to be examined and refined by the MSPI

and other committees. St. Mary’s now has order sets for the core measures and other clinical areas.²

The Emergency Department (ED) physicians were early adopters of the core measures and actively worked to ensure they were doing what was needed. The ED physicians, for example, compared the data on their own compliance with national standards, and realized they needed to change their practices. To support and improve the acute myocardial infarction measure for timeliness of thrombolytics and angioplasty, the ED physicians studied and improved processes to reduce the door-to-EKG and door-to-doctor times. They borrowed order sets from other hospitals, collaborated with better performers within SSM through the health system’s clinical collaborative, and used the Plan-Do-Study-Act model to reduce and prevent variation.³ This early improvement went hand in hand with their quest to become a Certified Chest Pain Center; in late 2004, St. Mary’s became the first hospital in mid-Missouri and the second in the state to receive this accreditation.

Changing their order sets to help make a diagnosis as quickly as possible promoted the speedy treatment required by the core measures. They also stocked antibiotics in the ED, instead of waiting for the pharmacy to send them, helping to ensure timely administration of the medication. Nurse educators trained the nursing staff on the order sets.

“This unification of processes, as opposed to variations with each physician, resulted in more certainty of protocols among nursing staff, fewer errors, fewer unnecessary tests, and better outcomes,” said Tritz. Of course, physicians can change an order set if specific conditions warrant deviation, but the default is a standard, evidence-based process.

Figure 1 shows St. Mary’s heart attack care pathway and Figure 2 shows a Code STEMI checklist.

Figure 1. Heart Attack Care Pathway

**ST MARYS HEALTH CENTER
 100 ST MARYS MEDICAL PLAZA
 JEFFERSON CITY, MO 65101
 ACUTE CORONARY SYNDROME CAREPATHWAY ORDERS
 (Use routine order screen for order entry)
 (Page 1 of 2)**

Draw a line through any orders not to be implemented.

Date/Time: _____.

Admission Status/Location

1. Consult and page cardiologist _____ Date: _____ Time: _____
 paged
2. Admit/observation under Dr. _____ to CSU/ICU with telemetry
3. Cardiac rehab consult per Cardiologist/Primary Care Provider

Assessments/Treatments

1. Allergies: _____
2. Implement Chest Pain Protocol
3. Vital signs every 4hrs if stable and pain free
4. Bedrest with bedside commode
5. Diet: _____
6. I & O daily weights
7. Smoking Cessation advice/counseling if tobacco has been used in the past 12 months.

Diagnostic/Testing

1. CBC, Basic Metabolic Panel, CPK, CPK-MB, Troponin-I, EKG, Portable Chest film
2. Repeat Troponin 6 hrs after admission lab x 2
3. Obtain Consent for Cardiac Cath and Blood consent
4. UA
5. Fasting lipid profile in am
6. EKG in am
7. Cross out inappropriate orders:
 - a. Schedule Cardiac Cath/PTCA for _____ initiate orders (date)
 - b. Echocardiogram
 - c. _____ Dual Isotope Treadmill Stress Test
 _____ Dual Isotope Adenosine Stress Test
 _____ Dual Isotope Dobutamine Stress Test
 _____ Treadmill Stress Test - No Nuclear Imaging
 _____ Mibi Mibi (2 day protocol)
 _____ Stress Echo - Order # 40906 from Cardiology only
8. Most recent Echo, MUGA, Cardiac Catherization, and Stress Test reports to this chart.

Physician Signature
Telephone Order Read Back and Verify _____

Nurse Initials

Rev. 06/07

Patient Label

Cardiology

**ST MARYS HEALTH CENTER
 100 ST MARYS MEDICAL PLAZA
 JEFFERSON CITY, MO 65101
 ACUTE CORONARY SYNDROME CAREPATHWAY ORDERS
 (Page 2 of 2)**

Draw a line through any orders not to be implemented.

Date/Time: _____.

Medication

1. IV fluids of Normal Saline to keep vein open or _____

2. O2 at 2-3 L/min per NC PRN

3. NTG IV drip at 10 mcg/min. Titrate to pain relief and SBP greater than 100 and less than 160

4. Analgesia: _____

5. Initiate Heparin protocol

6. Initiate low molecular weight heparin orders (Enoxaparin) 1mg/Kg every 12 hr

7. Aspirin 81 mg tablets x 4 po now

8. Aspirin 325 mg po daily

9. Initiate Thrombolytic therapy orders

10. Initiate Integrillin administration orders

11. Tylenol 650mg po every 4hrs PRN pain

12. Beta Blocker _____ **Hold for SBP less than 90, HR less than 60;**

Titrate NTG gtt prior to holding Beta Blocker.

13. Cholesterol lowering agent: _____

14. ACE Inhibitor or ARB (indicated for EF <40%) _____

15. Other: _____

List contraindications for ASA, Beta Blocker, ARB or ACE inhibitors: _____


Physician Signature

Rev. 06/07

Patient Label

Cardiology

Figure 2. Code STEMI Checklist



St Mary's Health Center
A Member of UMass Health Care
CHEST PAIN CENTER

Date: _____ Patient Label: _____

Goal	Process Interval	Steps in Interval
10 Min.	First Patient Contact to STEMI confirmed (To be completed by ED RN)	Patient arrived @ (Time) _____ EKG done @ (Time) _____ Code STEMI activated @ Time _____ <input type="checkbox"/> ED physician interpreted ECG within 10 minutes of patient arrival, and called Code STEMI For all Patients: <input type="checkbox"/> Oxygen Administered <input type="checkbox"/> ASA Administered <input type="checkbox"/> Nitroglycerine <input type="checkbox"/> Consider Beta-Blockade <input type="checkbox"/> Consider morphine sulfate <input type="checkbox"/> Intravenous Fluids started at KVO <input type="checkbox"/> Lab work drawn: Cardiac markers, CBC, INR, basic metabolic panel, and lipid profile
5 Min.	STEMI diagnosis to activating Cardiac Cath Lab Team (To be completed by ED CA)	<input type="checkbox"/> Cardiologist Responded to page within 5 minutes Cardiologist Name: _____ <input type="checkbox"/> Cardiac Cath Lab Team responded to page within 5 minutes <input type="checkbox"/> CA informed Ed physician that pages were confirmed
30 Min	Activation of Cardiac Cath Lab Team to arrival (To Be Completed by ED Physician)	<input type="checkbox"/> ED Physician explained diagnosis, coronary angiography, and PCI to patient and family before Cardiologist arrival <input type="checkbox"/> Informed consent form prepared for diagnostic Cath and PCI <input type="checkbox"/> ED and Cardiac Cath Lab Team shared responsibility – staff communicate among the team with the first available staff transporting the patient when the Cath lab is "ready"
35 Min	Cardiac Cath Lab Team arrival to intervention (To Be Completed by ED Physician)	<input type="checkbox"/> Cardiologist confirmed "ready to go" within 30 minutes of page <input type="checkbox"/> Cardiac Cath Lab Team confirmed "ready to go" within 30 minutes of page <input type="checkbox"/> ED nurse and Cath Lab nurse completed nursing hand-off

ED RN: _____ (Please Print) ED Physician: _____ (Please Print)

To be completed by CCL RN:

Time CCL Called / Paged: _____	Time Patient to Table: _____	Inflation Time: _____
CCL1 _____ Arrival Time: _____	Concerns:	
CCL2 _____ Arrival Time: _____		
CCL3 _____ Arrival Time: _____		

Concurrent and Retrospective Chart Reviews

In May 2006, St. Mary’s dedicated one full-time staff member—a nurse who has experience in reviewing medical charts for quality management—to core measure chart abstraction. (Prior to this, a few people did retrospective chart reviews at the end of each quarter in addition to their other responsibilities.) The goal was to achieve 100 percent adherence on all core measures. Having a staff member dedicated to chart abstraction enabled the hospital to conduct two stages of chart review: concurrent chart reviews, while patients are still hospitalized, as well as retrospective reviews for follow-up with providers.

“We do as much as possible while the patient is in the hospital. Our goal is to identify variances and correct the problems in real time so that the patient gets the standard of care identified. This is a huge change from the old way of retrospective review, where a variance would be identified months after the fact and nothing could be done to correct for that patient,” said Randazzo.

Each day, the abstractor reviews the prior day’s admissions list and other custom reports in order to identify patients with conditions related to the four sets of core measures: heart attack, heart failure, pneumonia, and surgery. She then goes to the patients’ units and checks their charts to see whether the appropriate care processes are in place and documented. If not, the abstractor notifies the patient’s nurse and unit director of the variance; she also notifies the vice president of nursing if the issue is nursing-related. For problems related to physicians, the abstractor had initially contacted the physician directly. But it has proven more effective for the vice president of Medical Affairs to approach physicians for a peer-to-peer discussion in cases where variances are identified and followed up in real time. When an uncorrected variance is later discovered (e.g., during retrospective review), the case undergoes medical staff peer review.

As with the physicians, “the nurses are very good about doing the processes as long as they know why; not just that CMS wants us to, but that studies

have shown that it benefits the patients,” said Ruth Purcell, St. Mary’s quality analyst, who performs the core measure abstraction.

After patients are discharged, the abstractor reviews their charts again to ensure that all care processes were conducted and recorded. St. Mary’s was the first hospital in its health system to fully implement concurrent review in addition to retrospective review, resulting in the two-chart review process. Within a short period of time the core measure percentages improved significantly and remained high, requiring little intervention during concurrent review.

While Purcell focuses on patients related to core measures, staff in quality improvement and other departments monitor other quality indicators and take action accordingly.



Ruth Purcell, R.N., Quality Analyst, conducting concurrent chart reviews, a key strategy for improving core measure compliance at St. Mary’s Health Center.

Transparency and Data Analysis

Core measure compliance and clinical outcomes have become the key indicators of performance at St. Mary’s. Composite scores for the different clinical areas are published and publicly posted throughout the hospital. Clinical departments have incorporated them into their departmental goals and performance in meeting them is posted monthly.

The performance data are also reported to nearly all levels at the hospital and its parent health system. “We strive to be as transparent as possible—the data are everywhere you look,” said Randazzo. The data are reviewed by the hospital’s individual departments, physician co-management companies, medical staff committees, performance improvement review committee, SMHC management group, Administrative Council, Board, and system leadership; in addition, they are publicly reported to third-party payers, CMS, the Joint Commission, and others.

Beginning in 2006, the abstractor created weekly reports of core measure compliance and variances for the Administrative Council. Because variances from recommended care have declined since then, she currently provides a monthly overview in addition to reporting each variance as it occurs. The monthly reports include data, trends, and explanations

of how any variances have been addressed. When performance indicators decline, unit managers conduct root cause analysis to find the reason and then address the problem.

Each clinical unit sets a clinical improvement goal each year. Strategies and an action plan are developed and progress toward meeting the goal is measured and discussed with staff on a monthly basis. The improvement goals have included applicable core measure indicators (e.g., the ED tracks time to thrombolytics and to percutaneous coronary intervention; the operating room tracks timing of initial antibiotics) as well as other clinical goals such as glycemic control and the rate of patient falls that result in harm.

St. Mary’s does not participate in the CMS/Premier Pay-for-Performance demonstration program, which offers financial incentives for reaching quality goals, but staff members closely monitor the compliance levels of high performers and benefit from the lessons learned by sister SSM hospitals that have been participating for the past four years.⁴ The possibility that the hospital would eventually be subject to pay-for-performance programs did jump-start its focus on core measure performance. “At first we just wanted to not lose money on pay-for-performance whenever it went live. But once we realized we could be a top performer, we saw that we could also potentially benefit

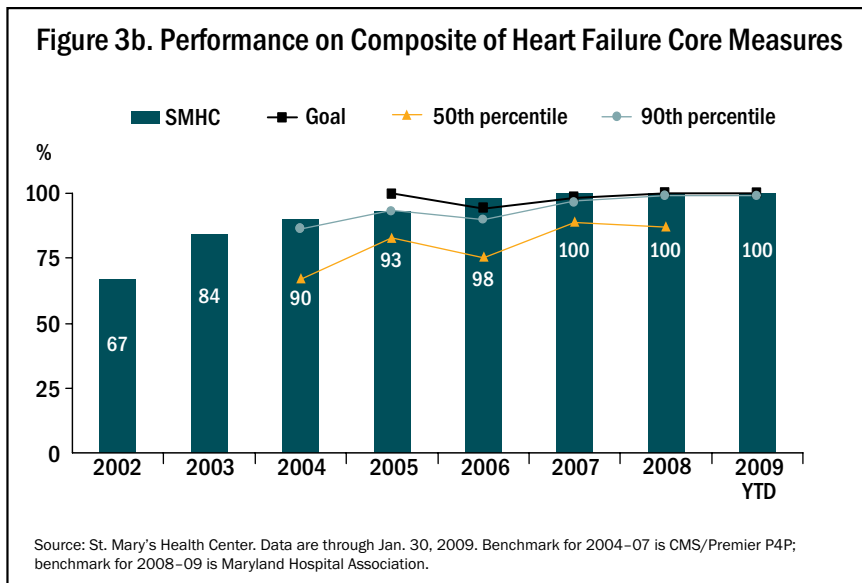
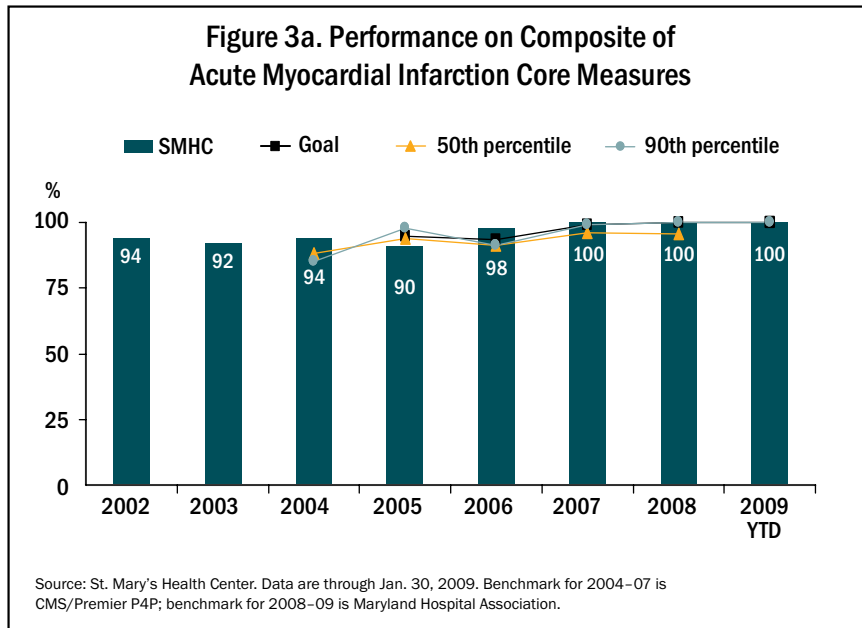
financially in the future under pay-for-performance. First and foremost, our goal remains to do the right thing for our patients by providing exceptional health care, which is our mission. Earning a financial incentive for doing that would just be an added bonus,” said Randazzo.

Providing Feedback and Rewards

Being part of the SSM corporate system contributed to St. Mary’s success. Sister hospitals share data, order sets, and tools through clinical collaboratives set up for each core measure group. A Performance Indicator Report is each hospital’s balanced scorecard, which

includes composite measures for each of the four core measure clinical areas. SSM Health Care compares scores within and across sister hospitals and with competitor hospitals as well. The Performance Indicator Report and quarterly ranking were big motivators for change. “We didn’t want the red light or to be at the bottom of the ranking ever again,” said Randazzo.

Yet St. Mary’s also needed to adapt best practices to its local culture. It developed a physician scorecard as part of the required credentialing and reappointment processes to track performance and promote accountability. The scorecard shows how well each physician is doing on quality indicators including



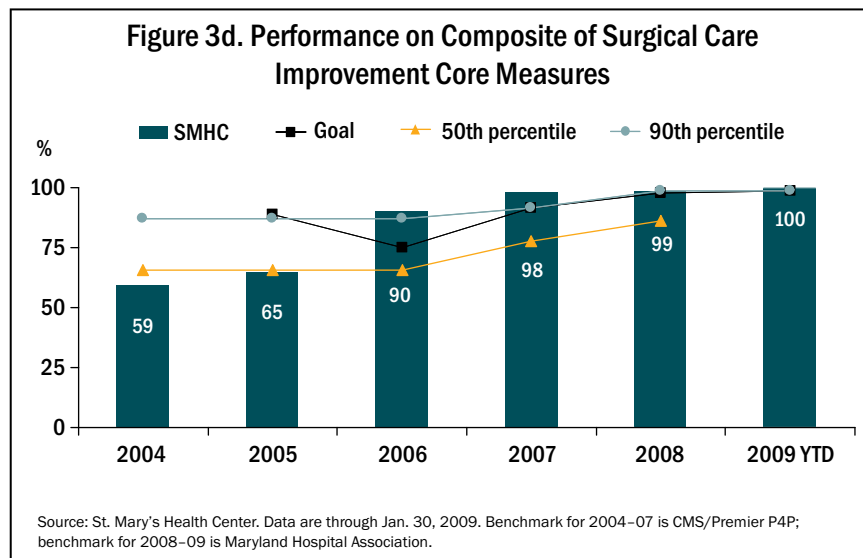
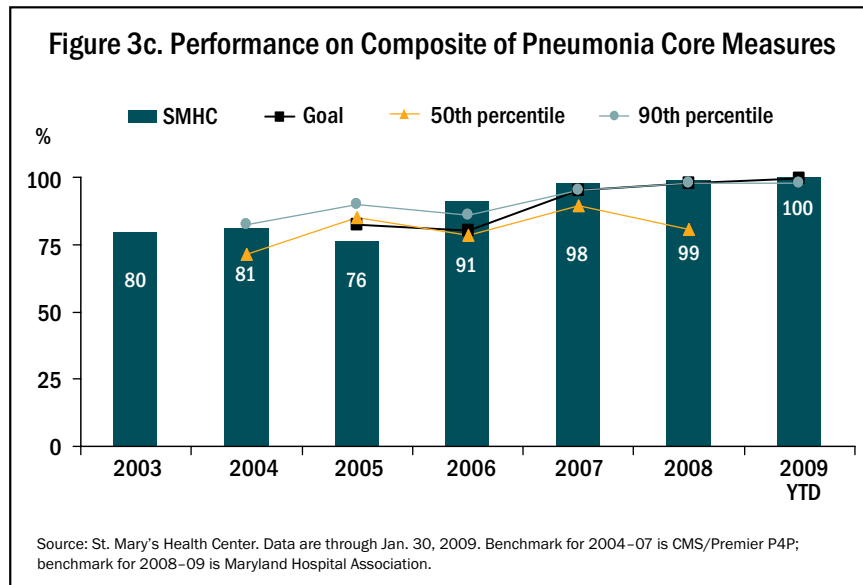
core measures, complications, mortality, and patient management. Reviewed by the Medical Executive Committee during reappointment, the scorecard is given to every member of the medical staff along with benchmark goals.

Though it took some time to get physicians to pay attention, they are now quite interested in their scores. "If they don't get 100 percent, they call to find out how to improve it," said Purcell, the quality analyst.

RESULTS

St. Mary's focus on core measures has resulted in dramatic improvement. Variances from full (100%) compliance are rare. Figure 3 illustrates significant improvement in the four clinical areas from 2002 to 2008.

Figure 4 compares St. Mary's performance with that of other hospitals in its region in 2007, illustrating 100 percent compliance for all heart attack and heart failure measures and performance levels above state and national averages on all core measures. St. Mary's is now in the top percentile in a nationwide ranking



based on core measures by HealthInsight, the Quality Improvement Organization in the Nevada/Utah region.⁵

Along with the improvement in scores, there has been a striking change in staff attitudes. “Core measures weren’t on our radar five years ago,” said Randazzo, “but when we recently identified our first variance in an AMI [heart attack] core measure in about two years, it just broke our hearts.” Though in this case the patient was fine, the potential harm caused much consternation and resulted in a change in hospital practice.

“Our success in core measures has given us the hunger and expectation to be just as good in other aspects of care,” said Randazzo. St. Mary’s has had no ventilator-associated pneumonia cases since April 2005 and no ICU central line associated bacteria in the bloodstream since May 2007. Also during this time, the hospital’s Medicare case mix index increased (indicating more complex cases) while its average length of stay declined. Beginning in the first quarter of 2009, St. Mary’s has expanded its performance improvement efforts to include indicators for obstetrical care and behavioral health.

In 2008, St. Mary’s was given the Courageous Leadership Award at SSM’s Leadership Conference. The hospital has earned recognition from peer hospitals, regulatory surveyors, corporate officers, and others. After an initial request was denied, St. Mary’s has now received approval to build a new hospital; teams are currently planning how they will design the facility and care processes to ensure that high quality is maintained in their new home.

Despite their marked improvement over recent years, leaders acknowledge that they still struggle with some issues, including the timing of preoperative antibiotic to avoid surgical infections and obtaining blood cultures among pneumonia patients in the emergency room. St. Mary’s has set its goals at 99 percent compliance on pneumonia and surgical care improvement measures.

Finally, St. Mary’s is experiencing improvement on measures of patient satisfaction. In February 2009,

it reached the 89th percentile on a measure gauging the likelihood of patients saying they would recommend the hospital to others.

LESSONS LEARNED

One major lesson learned at St. Mary’s was how difficult it could be to change behavior. As discussed above, initially there was grumbling among physicians and staff about what they perceived as “government-imposed rules.” Physicians who achieved good outcomes without following core measure guidelines felt justified in ignoring them. Efforts to win over medical leadership and physicians required showing them clinical evidence and having their own professional organizations endorse the core measure recommendations.

St. Mary’s also learned that the easiest first step toward improved clinical performance is emphasizing and expanding standardized order sets. Starting with best practices from professional organizations, the hospital encouraged its clinicians to develop step-by-step guidelines, thus promoting buy-in among the staff. The use of two levels of chart review, concurrent and post-discharge, facilitates immediate corrections and ensures appropriate documentation of the care provided.

St. Mary’s found that it is not enough for government to push for standards of care. A hospital’s CEO and Board of Directors, as well as its top physician governing body, must strongly set expectations and demand achievement of care standards. Staff had negative views of the government directive and pay-for-performance programs; instead, clinicians responded to doing the right thing and providing standards of care.

Randazzo notes that performance measures must be continuously monitored with identification of the variances, why they happen, and what is needed to prevent them from happening again.

Finally, St. Mary’s has realized that quality outcomes and financial performance go hand in hand. The hospital can confidently advertise their quality performance to enhance market share. The chief financial officer has taken an interest in achieving 100 percent across all four core measure areas. According to

Randazzo, “both the CFO and president have gone from ‘maybe there is something to the connection between quality and financials’ to being believers and our biggest cheerleaders.”

FOR MORE INFORMATION

For further information, contact Lisa Randazzo, Director, Performance Management & Clinical Outcomes, Elizabeth_Randazzo@ssmhc.com.

NOTES

- ¹ This study was based on publicly available information and self-reported data provided by the case study institution(s). The aim of Fund-sponsored case studies of this type is to identify institutions that have achieved results indicating high performance in a particular area, have undertaken innovations designed to reach higher performance, or exemplify attributes that can foster high performance. The studies are intended to enable other institutions to draw lessons from the studied organizations’ experiences in ways that may aid their own efforts to become high performers. The Commonwealth Fund is not an accreditor of health care organizations or systems, and the inclusion of an institution in the Fund’s case studies series is not an endorsement by the Fund for receipt of health care from the institution.
- ² The hospital has an order set for acute myocardial infarction, heart failure, and pneumonia and several order sets for surgical care improvement such as coronary artery bypass graft, hip replacement, and knee replacement.
- ³ For more information about the Plan-Do-Study-Act model, see: <http://www.dartmouth.edu/~ogehome/CQI/PDCA.html>.
- ⁴ The CMS Premier Pay for Performance demonstration is a voluntary program begun in 2003 that rewards top-performing hospitals by increasing their payment for Medicare patients. For more information see: http://www.cms.hhs.gov/HospitalQualityInits/35_hospitalpremier.asp.
- ⁵ For more information about HealthInsight see: <http://www.healthinsight.org/>.

Figure 4. St. Mary's Health Center Performance on Core Measures, Compared with Competitors and State and National Averages

Acute Myocardial Infarction	National Average	Missouri Average	Top 10% National	Competitor A	Competitor B	St. Mary's Health Center (SMHC)	SMHC YTD 2008 internal data
AMI-1 Aspirin at Arrival*	94%	90%	100%	99% of 95	96% of 224	100% of 128	100% of 91
AMI-2 Aspirin at Discharge*	91%	90%	100%	99% of 94	97% of 204	100% of 128	100% of 91
AMI-3 ACE Inhibitor or ARB for LVSD*	88%	83%	100%	92% of 12 ⁽¹⁾	90% of 40	100% of 15 ⁽¹⁾	100% of 17
AMI-4 Adult Smoking Cessation Advice/Counseling (a)	92%	93%	100%	100% of 46	99% of 99	100% of 43	100% of 37
AMI-5 Beta Blocker at Discharge*	92%	89%	100%	97% of 103	93% of 201	100% of 133	100% of 90
AMI-6 Beta Blocker at Arrival*	88%	84%	100%	100% of 83	91% of 152	100% of 119	100% of 76
AMI-7a Fibrinolytic medication within 30 minutes of arrival (a)	40%	46%	100%	No Patients in Sample	No Patients in Sample	100% of 3	No Patients
AMI-8a PCI within 90 minutes of arrival (a)	67%	74%	92%	100% of 29	74% of 38	100% of 30	95.54% of 22
30 Day Mortality	16%			No different than National Rate	No different than U.S. National Rate	No different than U.S. National Rate	
Heart Failure	National Average	Missouri Average	Top 10% National	Competitor A	Competitor B	St. Mary's Health Center	SMHC YTD 2008 internal data
HF-1 Discharge Instructions (a)	69%	70%	97%	81% of 175	81% of 197	100% of 197	100% of 141
HF-2 LVS Assessment*	87%	83%	100%	92% of 210	92% of 219	100% of 230	100% of 184
HF-3 ACE Inhibitor or ARB for LVSD* (a)	87%	88%	100%	94% of 65	63% of 70	100% of 80	100% of 97
HF-4 Adult Smoking Cessation Advice/Counseling (a)	89%	87%	100%	100% of 26	94% of 33	100% of 33 ⁽¹⁾	100% of 80
30 Day Mortality	11%			Worse than U.S. National Rate	No different than U.S. National Rate	No different than U.S. National Rate	
Pneumonia	National Average	Missouri Average	Top 10% National	Competitor A	Competitor B	St. Mary's Health Center	SMHC YTD 2008 internal data
PN-1 Oxygenation Assessment* (a)	99%	99%	100%	100% of 265	100% of 257	100% of 229	100% of 216
PN-2 Assess and Give Pneumococcal Vaccination if Indicated* (a)	78%	81%	97%	88% of 171	82% of 199	99% of 168	100% of 162
PN-3b ED Blood Cultures Performed Before 1st Antibiotic Received in Hospital (a)	90%	91%	97%	92% of 174	95% of 228	93% of 123	99.3% of 150
PN-4 Adult Smoking Cessation Advice/Counseling (a)	85%	88%	100%	99% of 78	98% of 98	97% of 63	100% of 55
PN-5c Initial Antibiotic Received Within 6 Hours after Arrival* April 07-June 07	93%	93%	100%	98% of 43	94% of 156	99% of 123	98.6% of 145

PN-6b	Initial Antibiotic Selection in Immunocompetent Patients (a)	87%	86%	97%	94% of 129	91% of 184	97% of 63	97.05% of 34 ⁽¹⁾
PN-7	Influenza Vaccination Dec 06-Feb 07	75%	79%	99%	78% of 51	77% of 62	100% of 49	100% of 113
Surgical Infection Prevention/ Surgical Care Improvement Project		National Average	Missouri Average	Top 10% National	Competitor A	Competitor B	St. Mary's Health Center	SMHC YTD 2008 internal data
SCIP INF-1	Prophylactic Antibiotic Received Within 1 Hour Prior to Surgical Incision (a)	84%	86%	98%	91% of 498 ⁽²⁾	77% of 300 ⁽²⁾	96% of 428 ⁽²⁾	95.58% of 317
SCIP INF-2	Prophylactic Antibiotic Selection (a)	91%	89%	99%	89% of 501 ⁽²⁾	73% of 297 ⁽²⁾	96% of 435 ⁽²⁾	97.7% of 349
SCIP INF-3	Prophylactic Antibiotics Discontinued Within 24 Hours After Surgery End Time (a)	82%	81%	97%	85% of 491 ⁽²⁾	78% of 298 ⁽²⁾	98% of 419 ⁽²⁾	98.21% of 337
SCIP INF-4	Blood sugar <130 at 24hrs and 48 hrs of cardiac surgery (new as of 01/01/08)	N/A	N/A	N/A	N/A	N/A	N/A	92.53% of 67
SCIP INF-6	Appropriate hair removal prior to surgery (new as of 01/01/08)	N/A	N/A	N/A	N/A	N/A	N/A	100% of 643
SCIP INF-7	Colorectal normothermia – first temp in PACU 96.8-100.4F (new as of 01/01/08)	N/A	N/A	N/A	N/A	N/A	N/A	94.02% of 67
SCIP VTE-1	VTE Prophylaxis is ordered Jan-June 07	80%	82%	97%	87% of 454 ⁽²⁾	81% of 258 ⁽²⁾	97% of 612 ⁽²⁾	100% of 421
SCIP VTE-2	VTE Prophylactic interventions are received Jan-June 07	77%	78%	95%	84% of 454 ⁽²⁾	80% of 258 ⁽²⁾	97% of 612 ⁽²⁾	100% of 421
<p>(a)=January 1, 2007 to December 31, 2007. *Original Ten "Starter Set" measures beginning Q1 2004. All measures listed will be publicly reported. (1): The number of cases is too small (n<25) for purposes of reliably predicting hospital's performance. (2): Measure reflects the hospital's indication that its submission was based on a sample of its relevant discharges. (3) : Rate reflects fewer than the maximum possible quarters of data for the measure. N/A: No publicly reported data are available from the hospital for this measure for the reporting period. Source: CMS Hospital Compare Posting 09/2008, www.hospitalcompare.hhs.gov. Grid updated 11/02/08.</p>								

Appendix A. Selection Methodology

Selection of high-performing hospitals in process-of-care measures for this series of case studies is based on data submitted by hospitals to the Centers for Medicare and Medicaid Services. We use 24 measures that are publicly available on the U.S. Department of Health and Human Services' Hospital Compare Web site (www.hospitalcompare.hhs.gov). The 24 measures, developed by the Hospital Quality Alliance, relate to practices in four clinical areas: heart attack, heart failure, pneumonia, and surgical infections.

Heart Attack Process-of-Care Measures

1. Percent of heart attack patients given ACE inhibitor or ARB for left ventricular systolic dysfunction (LVSD)
2. Percent of heart attack patients given aspirin at arrival
3. Percent of heart attack patients given aspirin at discharge
4. Percent of heart attack patients given beta blocker at arrival
5. Percent of heart attack patients given beta blocker at discharge
6. Percent of heart attack patients given fibrinolytic medication within 30 minutes of arrival
7. Percent of heart attack patients given PCI within 90 minutes of arrival
8. Percent of heart attack patients given smoking cessation advice/counseling

Heart Failure Process-of-Care Measures

9. Percent of heart failure patients given ACE inhibitor or ARB for left ventricular systolic dysfunction (LVSD)
10. Percent of heart failure patients given an evaluation of left ventricular systolic (LVS) function
11. Percent of heart failure patients given discharge instructions
12. Percent of heart failure patients given smoking cessation advice/counseling

Pneumonia Process-of-Care Measures

13. Percent of pneumonia patients assessed and given influenza vaccination
14. Percent of pneumonia patients assessed and given pneumococcal vaccination
15. Percent of pneumonia patients given initial antibiotic(s) within 4 hours after arrival
16. Percent of pneumonia patients given oxygenation assessment
17. Percent of pneumonia patients given smoking cessation advice/counseling
18. Percent of pneumonia patients given the most appropriate initial antibiotic(s)
19. Percent of pneumonia patients whose initial emergency room blood culture was performed prior to the administration of the first hospital dose of antibiotics

Surgical Care Improvement Process-of-Care Measures

20. Percent of surgery patients who received preventative antibiotic(s) one hour before incision
21. Percent of surgery patients who received the appropriate preventative antibiotic(s) for their surgery
22. Percent of surgery patients whose preventative antibiotic(s) are stopped within 24 hours after surgery
23. Percent of surgery patients whose doctors ordered treatments to prevent blood clots (venous thromboembolism) for certain types of surgeries
24. Percent of surgery patients who received treatment to prevent blood clots within 24 hours before or after selected surgeries

The analysis uses all-payer data from all four quarters in 2007. To be included, a hospital must have submitted data for all 24 measures (even if data submitted were based on zero cases), with a minimum of 30 cases for at least one measure in each of the four clinical areas. Approximately 2,000 facilities—about half of acute-care hospitals—were eligible for the analysis.

No explicit weighting was incorporated, but higher-occurring cases give weight to that measure in the average. Since these are process measures (versus outcome measures), no risk adjustment was applied. Exclusion criteria and other specifications are available at <http://www.qualitynet.org/dcs/ContentServer?cid=1141662756099&pagename=QnetPublic%2FPage%2FQnetTier2&c=Page>.

While high score on a composite of process-of-care measures was the primary criteria 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. in the percentage of patients who gave a rating of 9 or 10 out of 10 when asked how they rate the hospital overall (measured by Hospital Consumer Assessment of Healthcare Providers and Systems, HCAHPS), full accreditation by the Joint Commission; not an outlier in heart attack and/or heart failure mortality; no major recent violations or sanctions; and geographic diversity.

ABOUT THE AUTHOR

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

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This study was based on publicly available information and self-reported data provided by the case study institution(s). The Commonwealth Fund is not an accreditor of health care organizations or systems, and the inclusion of an institution in the Fund’s case studies series is not an endorsement by the Fund for receipt of health care from the institution.

The aim of Commonwealth Fund–sponsored case studies of this type is to identify institutions that have achieved results indicating high performance in a particular area of interest, have undertaken innovations designed to reach higher performance, or exemplify attributes that can foster high performance. The studies are intended to enable other institutions to draw lessons from the studied institutions’ experience that will be helpful in their own efforts to become high performers. It is important to note, however, that even the best-performing organizations may fall short in some areas; doing well in one dimension of quality does not necessarily mean that the same level of quality will be achieved in other dimensions. Similarly, performance may vary from one year to the next. Thus, it is critical to adopt systematic approaches for improving quality and preventing harm to patients and staff.

