



# Case Study

High-Performing Health Care Organization • April 2010

## Norman Regional Health System: A City-Owned Public Trust Dedicated to Improving Performance

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### Vital Signs

*Location:* Norman, Okla.

*Type:* City-owned public trust, non-teaching

*Beds:* 337 beds (Norman Regional Hospital), 45 beds (Moore Medical Center)

*Distinction:* Norman Regional Health System, a public hospital system, ranks in the top 5 percent of U.S. hospitals on a composite of 23 process-of-care quality measures. More than 2,000 public and private hospitals were eligible for the analysis.

*Timeframe:* July 2007 through June 2008. See [Appendix](#) for full methodology.

This case study describes the strategies and factors that appear to contribute to high adherence to “core” measures at Norman Regional Health System. It is based on information obtained from interviews with key hospital personnel, publicly available information, and materials provided by the hospital during June to October 2009.



### SUMMARY

Norman Regional Health System, comprising Norman Regional Hospital and Moore Medical Center, is a publicly owned trust that is both community hospital and safety-net hospital for the low-income and uninsured patients of Norman and Moore, Oklahoma.<sup>1</sup> This dual role gives staff a sense of accountability to their patients and fuels their commitment to quality and patient safety. Nearly a decade ago, Norman’s Board chair and a top physician administrator became champions for quality improvement, motivated by the fact that Norman had achieved just average scores on quality measures. Organizational, cultural, and system changes at Norman Regional, including the development of order sets and care plans, performance data transparency, concurrent review for certain patient groups, as well

as a pharmacist-driven intervention, have led to sustained progress.

This case study focuses on Norman Regional Health System's achievement in providing recommended treatment on process-of-care, or "core," measures. The measures, developed by the Hospital Quality Alliance and reported to the Centers for Medicare and Medicaid Services (CMS), relate to achievement of recommended treatment in four clinical areas: heart attack, heart failure, pneumonia, and surgical care. On average, public hospitals do not perform as well as private hospitals on the core measures. The differences in performance between public and private hospitals are not well understood, but may relate to public hospitals having more complex patients, tighter budgets, or older infrastructure. For further information about the public hospital selection process and cross-cutting lessons about their improvement efforts, please see our [introduction](#) to the public hospital case study series.

## ORGANIZATION

Norman Regional Health System (NRHS), which includes Norman Regional Hospital and Moore Medical Center, is based in the community of Norman in south-central Oklahoma. Norman Regional Hospital is licensed for 337 beds and offers a full range of acute-care services. It is the only full-service acute care hospital in Norman, although other health systems, primarily in the Oklahoma City suburbs to the north, present some competition. The hospital also serves the rural areas south of the city and into north-eastern Texas.

When Norman Regional Hospital purchased the 45-bed Moore Medical Center in February 2007, the name Norman Regional Health System was adopted to include both hospitals and affiliated entities. The quality data that NRHS reports to CMS combines data from both hospitals, although it mostly reflects care experiences at the much larger Norman Regional. For this reason, Norman Regional is the main focus of this case study. The health system also encompasses outpatient diagnostic centers, physician practices, a primary

care network, and other services. In October 2009, NRHS opened HealthPlex, a hospital featuring cardiovascular, orthopedic, neurosurgical, maternity, gynecological, and newborn/pediatric services.

In 2007, NRHS began a major electronic health record implementation project with MEDITECH.<sup>2</sup> It currently has a hybrid system, with mostly electronic records, which can be integrated with local physician office systems, and some paper records, including progress notes and orders. NRHS relies on MIDAS systems to manage core measure and other quality and safety data.<sup>3</sup> MIDAS also facilitates case managers' work in documenting and tracking the severity of illness and the intensity of patient service. NRHS is in the process of developing computerized provider order entry and an order set management tool.

## A PUBLICLY OWNED HOSPITAL

In 1947, Norman citizens approved a bond issue to build Norman Municipal Hospital in response to the closure of the city's only hospital, in 1943. In 1984, the hospital was renamed Norman Regional Hospital to reflect its growing status as a regional referral center. Norman Regional Health System continues to be a city-owned "public trust." The mayor of the city of Norman appoints hospital Board positions, with final approval of all appointments by the city council. The nine-member Board includes community members and physicians who are responsible for stewardship of all health system operations. The Board operates independently of the mayor and city council, although it needs approval for any ventures requiring indebtedness.

In most respects, Norman Regional operates as a private nonprofit organization. It does not receive city funding and has traditionally had revenues exceeding expenses. Recently, the health system reduced its workforce to compensate for lower volumes related to the economic recession. Since Norman Regional Hospital was until recently the only hospital in the community, it is perceived primarily as the community hospital, rather than the safety-net hospital. Compared with national averages, Norman serves a larger portion of "self-pay" patients, mainly rural indi-

**Exhibit 1. Payer Mix: Norman Regional Hospital and National Average**

	<b>Normal Regional Hospital (2007)**</b>	<b>National Hospital Average* (2007)</b>
Medicare	39%	39.2%
Medicaid	8%	14.8%
Commercial/Private	38%	36.5%
Self-Pay/Uncompensated	12% Self-pay***	5.8% Uncompensated
Other Government	2% Tri-care	1.5% other government
Other	2%	2.2% non-patient

\* Distribution of hospital cost by payer type, 2007.

\*\* Note: this data was prior to acquisition of MMC).

\*\*\* A portion of this is paid directly by patients; on average, 4% to 5% of billed charges are recouped for self-pay patients.

Sources: Norman Regional Hospital and American Hospital Association, <http://www.aha.org/aha/research-and-trends/chartbook/ch4.html>.

gent patients and some uninsured patients from Oklahoma City, but a smaller portion of Medicaid patients (Exhibit 1).

According to Darin Smith, Pharm.D., director of pharmacy services and performance improvement, Norman Regional’s position as a publicly owned entity fuels the staff’s commitment to quality and patient service. “This makes us feel more accountable,” he said. Indeed, the hospital has seen marked improvement and sustained high-level performance on the core measures over the past four years.

**PERFORMANCE IMPROVEMENT STRATEGIES**

**Board and Administration Support**

Beginning in 2001, Norman Regional became involved in collaboratives, including the Surgical Infection Prevention project, sponsored by CMS, and the “Quality In, Quality Out” collaborative, sponsored by Oklahoma’s Quality Improvement Organization. In examining Norman’s performance on process-of-care measures, hospital leaders found that it had significant room for improvement, with just average scores on some quality measures. This prompted the chairman of the Board and the vice president of medical affairs to become champions for performance improvement, committing their focus and resources to the effort.

For example, since many of the core measures relate to medication practices, Norman Regional cre-

ated a new pharmacist position to develop better medication practices and train staff to follow them.

Administrators implemented a gain-sharing bonus for all health system employees tied both to financial performance and performance on quality and safety measures. Additionally, part of each unit manager’s bonus is contingent on their units’ achievement of certain goals related to core measures and patient satisfaction.

The hospital also turned what had once been an unpaid position—medical director of clinical effectiveness—into a paid position. “This allowed me to devote more time to performance improvement,” said John Krodel, M.D., who holds the position and spends about 10 to 12 hours per week on such activities. Krodel reviews progress on improvement projects, examines core measure outliers (cases in which care does not comply with core measure protocols), and tries to determine underlying reasons for noncompliance. He also reaches out to physicians to discuss how they might improve their practices or documentation.

**Order Sets and Concurrent Review**

Norman Regional put systems in place to make core measures the default or standard practices, closely monitor compliance to these practices, and make corrections when appropriate. A few years ago, hospital staff developed and implemented order sets, or care maps, for acute myocardial infarction, heart failure, pneumonia, and surgical care. The order sets standard-

ize care by defining and sequencing the tasks for specific diagnoses, procedures, or symptoms.

“At first, there was resistance to order sets; the doctors called them ‘cookbook medicine,’” said Smith. But the vice president of medical affairs and the medical director of clinical effectiveness—both physician champions for performance improvement—met with members of the medical staff in small groups. They reviewed the protocols, explained how they worked, and asked for feedback, which promoted buy-in. “This was much more effective than presenting the care maps at departmental meetings, where many physicians are not present,” said Krodel.

Later, these leaders sat down with physicians who still were not using the order sets. They explained the evidence behind them and the need to improve. “We had to keep after them, but they eventually came along,” said Smith. Particular focus was given to the emergency department physicians, who see a significant number of hospital admissions related to pneumonia and acute myocardial infarction.

Exhibit 2 illustrates the order set for community-acquired pneumonia. At Norman, more than 90 percent of pneumonia patients are seen in the emergency department prior to admission. Therefore, this order set is initiated by the emergency department physician with the clear understanding that initial antibiotics, blood cultures, and other required care processes are obtained in the emergency department, before patients are admitted to the hospital. The order set with the physician’s instructions is scanned and sent electronically to the pharmacy, where it is entered into the medical record. A clinical pharmacist then follows up to ensure that patients are receiving appropriate care and staff are appropriately documenting their actions. Similar concurrent review processes are in place for heart failure and acute myocardial infarction patients, giving staff the opportunity in many cases to correct problems and provide appropriate care.

About four years ago, Norman Regional began utilizing surgical care measures and other core measures as medical staff department indicators. The medicine, family medicine, surgery, and ob-gyn depart-

ments adopted these performance measures as part of the peer review process. “It meant there were many more charts to review, but everyone bought into it,” said Krodel.

Also during this time frame, the leadership took several steps to improve employee satisfaction. Nine management-led employee teams were tasked to: develop behavioral standards for employees, conduct and follow up on employee satisfaction surveys, improve communication within the hospital, develop ways to reward and recognize employee performance, improve physician satisfaction and efficiency, and take other steps. This five-year initiative resulted in a consistently low turnover rate among nurses and physicians, which in turn helps Norman Regional maintain its quality improvement processes by reducing the need to teach the care protocols and introduce the culture of quality improvement to new staff.<sup>4</sup>

### **Performance Feedback and Transparency**

Ongoing review and reporting of performance data are critical to maintaining high levels of performance at NRHS.

Approximately two and one-half full-time employees are dedicated to retrospective data abstraction for adherence to core measures and submission to CMS. Additionally, a nurse reviews all cases of non-compliance and provides detail about the “who, what, when, where, and why” in order to provide feedback to staff and physicians. These details are documented, and reports are generated periodically for managers, physicians, and the staff members involved with each outlier. The reports include the names of the staff members involved and place accountability at the individual level.

Norman Regional developed a “dashboard” to report quarterly performance on the core measures to Board members, administrators, clinical leaders, and staff. Exhibit 3 is a sample dashboard for the surgical measures, with bright colors reflecting the level of performance.

**Exhibit 2. Pneumonia Order Set**



**Norman Regional** HEALTH SYSTEM  
 NORMAN REGIONAL HOSPITAL  
 MOORE MEDICAL CENTER  
 HEALTHPLEX

PHYSICIAN ORDERS



ORD

**Pneumonia Admit NON – ICU/CVU**

**Status**

- ADMIT TO INPATIENT BED
  - Unit \_\_\_\_\_
- ADMIT TO OBSERVATION BED
  - Unit \_\_\_\_\_

**Vital Signs**

- Vital Signs every 8 hours or per unit protocol. [Evidence](#)
- Temperature every 4 hours if GREATER THAN or equal to 37.5 degrees C.

**Activity**

- Ambulate at least BID as tolerated , encourage up in chair for meals. [Evidence](#)

**Nursing Orders**

- STAT FAX orders to pharmacy.
- Medication Instructions ANTIBIOTIC: GIVE FIRST DOSE OF ANTIBIOTIC(S) STAT after obtaining blood cultures.
  - \*\*\*Antibiotics must be given WITHIN 6 HOURS OF HOSPITAL ARRIVAL.\*\*\* DO NOT DELAY Antibiotics if unable to obtain sputum culture. [Evidence](#)
- Notify Physician/Surgeon : Any ANTIBIOTIC ALLERGY that would result in delay in therapy should be clarified STAT with the ordering physician.
- Provide Handouts/Journals/Educ : Provide tobacco cessation material & education as appropriate. Document history & Education.

**Diet**

- Diet as tolerated. (If diabetic, order 1800 calorie ADA diet.)

**Laboratory**

- Order Lab if not already done in ED
  - CBC NOW and next a.m.
  - COMPREHENSIVE METABOLIC PANEL
  - UA PRN MICROSCOPIC/NO CULTURE
  - RESPIRATORY CULTURE (Sputum) if Patient able to produce. [Evidence](#)
- Optional:**
  - \*Blood cultures prior to antibiotics. \*Do Not Delay antibiotics if unable to obtain sputum.
  - BLOOD CULTURE EVERY 15 MINUTES PRIOR TO ANTIBIOTICS X 2 [Evidence](#)

**Diagnostic Tests**

- Order Diagnostic Test if not already done in ED
  - CHEST PA AND LATERAL - STAT [Evidence](#)

**Respiratory**

- Respiratory Therapy Consult
- Administer Oxygen : If LESS THAN 90%, begin oxygen at 2 liters per nasal cannula and notify physician.
- Oxygen Saturation on Room air oxygen every AM and Pulse Oximetry every 12 hours, documented by RN.
- Oxygen Saturation on DAY 3, Ambulatory oxygen saturation on room air ( If ambulating).
- RT to convert HHN to MDI with spacer if patient is documented to be able to adequately perform.

\_\_\_\_\_  
 TIME

\_\_\_\_\_  
 DATE

\_\_\_\_\_  
 Physician's Signature

05400908

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**DO NOT WRITE ON OR BELOW THIS AREA  
 ORDERS MAY BE CUT OFF BY FAX MACHINES**



Patient Sticker

### Exhibit 3. Norman Regional Health System Surgical Care Core Measures Dashboard

## SURGICAL CARE IMPROVEMENT PROJECT



Appropriate Care is % of patients who received all measures for which they qualified.

Below 80% = Red		80-90% = Yellow							
Indicator	Goal	3rd Q 07	4th Q 07	1st Q 08	2nd Q 08	3rd Q 08	4th Q 08	1st Q 09	2nd Q 09
<b>Appropriate Care (ABX Measures Only)</b>	95%	92% (238/259)	95% (276/292)	90% (241/268)	89% (229/257)	93% (277/299)	90% (219/242)	92% (202/219)	91% (185/203)
<b>Appropriate Care (All SCIP Measures)</b>	95%	91% (613/676)	94% (671/713)	91% (596/657)	86% (339/394)	90% (378/420)	88% (323/367)	91% (301/330)	89% (284/320)
INF 1-Prophylactic Abx within 1 hr(2 hr for vanc & quinolones)	95%	98% (250/255)	99% (289/292)	94% (251/266)	93% (237/256)	97% (289/298)	95% (225/237)	97% (207/213)	97% (193/199)
INF 2-Appropriate Prophylactic Abx selection	95%	99% (256/259)	99% (289/292)	99% (261/263)	99% (248/251)	99% (296/299)	99% (239/240)	100% (219/219)	100% (201/201)
INF 3-Prophylactic Abx DC within 24 hrs (48hrs Cardiac)	95%	93% (222/240)	96% (272/282)	95% (237/250)	96% (229/238)	95% (274/287)	95% (217/228)	94% (188/199)	93% (171/184)
INF 4-CABG/Other Card Surg 6 AM postop glucose less than 200 mg/dL postop days 1 & 2	100%	89% (16/18)	76% (13/17)	91% (21/23)	97% (31/32)	80% (12/15)	88% (14/16)	94% (16/17)	73% (11/15)
INF 6-Appropriate Hair Removal Documented	100%	99% (668/676)	99% (708/712)	99% (651/657)	99% (392/394)	99% (416/420)	100% (367/367)	100% (330/330)	99% (318/320)
INF 7-Colorectal patients - postop normothermia	95%	100% (23/23)	100% (28/28)	94% (17/18)	85% (23/27)	96% (26/27)	96% (23/24)	100% (16/16)	100% (24/24)
Indicator	Goal	3rd Q 07	4th Q 07	1st Q 08	2nd Q 08	3rd Q 08	4th Q 08	1st Q 09	2nd Q 09
Card 3-Beta blocker received perioperatively (if previously on a beta blocker)	95%	90% (115/128)	95% (105/110)	89% (129/145)	92% (76/83)	92% (78/85)	81% (56/69)	85% (50/59)	90% (63/70)
VTE 1-Appropriate VTE prophylaxis <u>ordered</u>	95%	95% (334/348)	98% (377/383)	99% (322/326)	96% (312/324)	99% (356/360)	97% (94/97)	95% (72/76)	99% (87/88)
VTE 2-Appropriate VTE prophylaxis <u>received</u> within 24 hrs prior to surgery to 24 hours after surgery	95%	93% (322/348)	96% (369/383)	96% (314/326)	94% (306/324)	98% (351/360)	93% (90/97)	95% (71/75)	95% (83/87)

Source: Norman Regional Health System, October 2009.

If a case that falls out of compliance involves a physician, it undergoes peer review and results in an “outlier drill-down report” that explains what was out of compliance as well as the circumstances and possible causes. This report is then reviewed by the medical director of clinical effectiveness and returned to the physician for response. Managers are also tasked with reviewing outliers with nurses who are found to have contributed to the process failure. “It’s important to give detailed feedback. Physicians and staff can’t

argue if you present them with the specifics of the actual case,” said Smith. This process often uncovers circumstances that may have prohibited the recommended care from being provided and enables staff to discuss ways to improve care processes.

In one case, the medical director for performance improvement contacted a physician who had not given an ACE inhibitor to a patient. After both parties reviewed the case, it became clear that the physician had been correct, but had failed to document why

there should be an exception to the protocol. This physician has improved documentation since this incident.

### **Clinical Quality Council**

The implementation of the tasks associated with core measure standards often falls to nurses. To engage them, Norman Regional administrators established a Clinical Quality Council approximately two years ago. Chaired by staff nurses, the council monitors core measure performance and identifies and removes obstacles to compliance. It also uses color-coded dashboards to display data on compliance rates for core measures and other performance indicators, such as hand hygiene. Random observations are performed to ensure nurses are complying with core measures and appropriately documenting their actions; unit-level data from these observations are included in the dashboards. Staff can access the dashboards to see how well their unit performs compared with others. The Clinical Quality Council dashboards are also presented to the Performance Improvement Committee and the Board.

“The dashboards allow nursing staff to see where they need to improve, and the units take action,” said Nancy Brown, chief nursing officer.

### **Identifying Heart Failure Patients**

In the early 2000s, Norman Regional performed poorly on one particular measure—appropriate discharge planning and education for heart failure patients. Analysis revealed that nurses had difficulty identifying heart failure patients because heart failure was not consistently listed on their medical records as the primary diagnosis, and the recorded symptoms could indicate other conditions, including chronic obstructive pulmonary disease or pneumonia. A Norman team involved in a regional quality collaborative developed a screening process to be performed daily by the clinical pharmacist. It includes: checking the electronic medical record to identify patients who had one or more of the following: 1) a primary diagnosis of heart failure on previous admission; 2) cardiology consult; or 3) an elevated BNP level, which indicates heart fail-

ure. The pharmacist reviews these patients’ medical histories and physical examinations to determine if their admission was likely related to heart failure. If so, a pharmacy staff member leaves a preprinted order on their chart as a trigger to initiate heart failure education, including use of a “Home Journal” that outlines the mandated aspects of care, such as weight monitoring and follow-up.

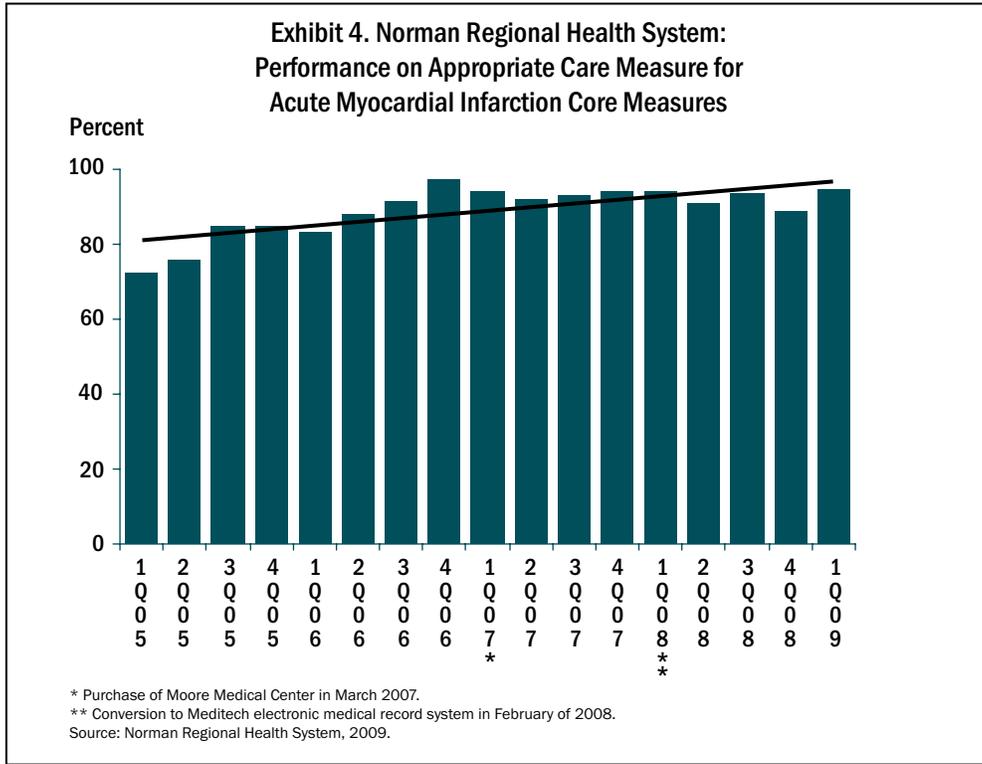
Additionally, the pharmacist evaluates flagged patients’ prior admissions to determine if previous studies for left ventricular function assessment (a diagnostic test for patients with suspected heart failure and recommended care under the core measures) are available. If so, the studies are printed, stamped as prior studies, and left on the new chart for the physician to evaluate and comment on. If the patient is a candidate for an ACE inhibitor or ARB, and no documentation of such a prescription is in the chart, the pharmacist will call the physician or leave a note for them to consider prescribing such medication.

### **Shifting Responsibility to Pharmacy and Nursing Staff**

As with other hospitals profiled on [WhyNotTheBest.org](http://WhyNotTheBest.org), Norman Regional’s success in achieving high performance levels on the core measures appears to be due in part to shifting responsibility for certain tasks away from physicians to pharmacy and nursing staff. For example, the position of smoking cessation education nurse was created to identify all patients with a history of smoking. This nurse goes on rounds, assesses patients’ readiness for smoking cessation, and provides them with follow-up options to pursue once they are discharged.

Additionally, all patients are screened by pharmacy staff for pneumococcal vaccination status (and influenza vaccination status from October to March) and vaccination orders are left by the pharmacy or case manager for all candidates. Nurses administer the doses at discharge.

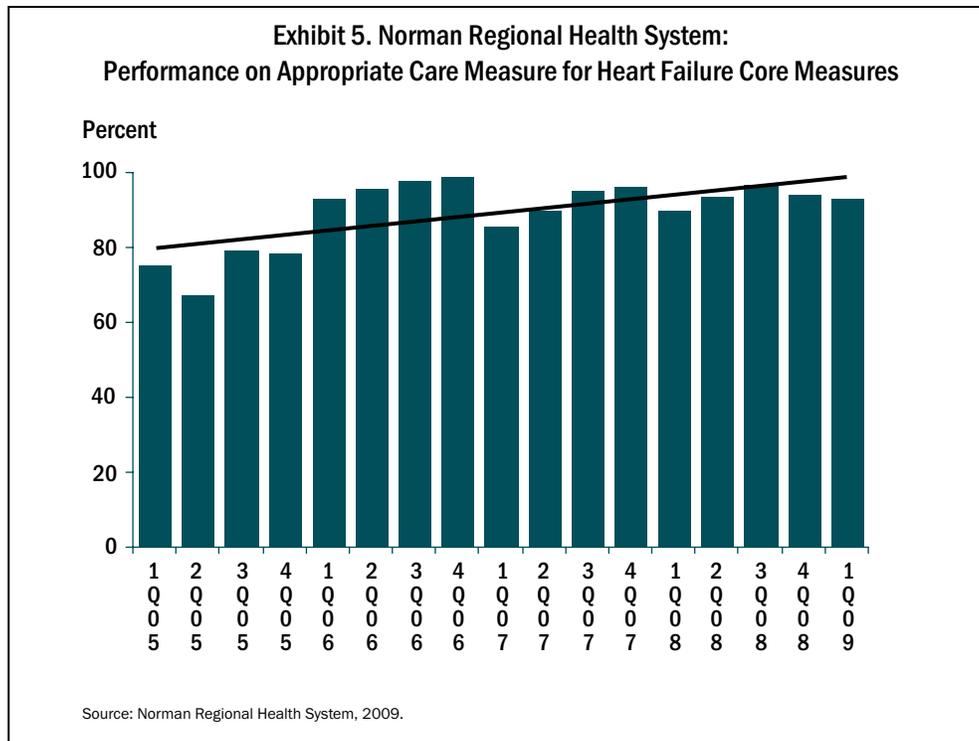
By automating these processes for all patients, physicians do not have to rely on their own memories to order or document the appropriate care.

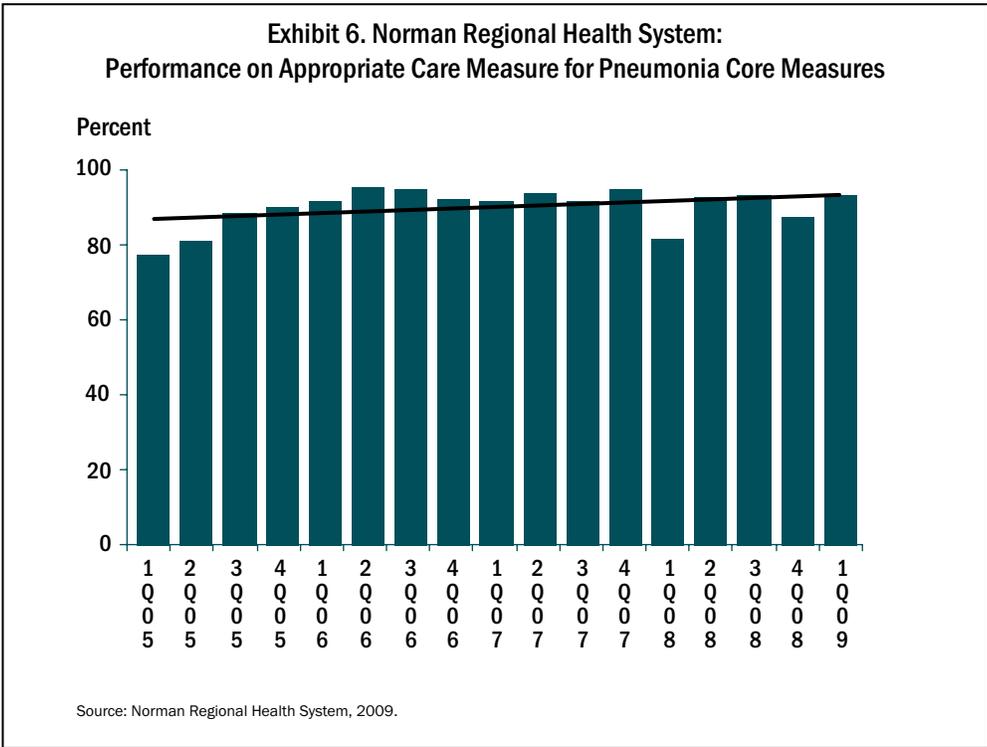


**RESULTS**

Norman Regional began to experience significant improvements in all four core measure clinical areas in late 2005 and 2006, when many of the administrative, clinical, and cultural changes discussed above were adopted. It experienced some negative trends in 2007,

when it purchased Moore Medical Center (which initially had lower core measure scores), and in early 2008, when it faced some disruptions because of the adoption of a new electronic medical record system. Norman’s improvement curve soon stabilized and



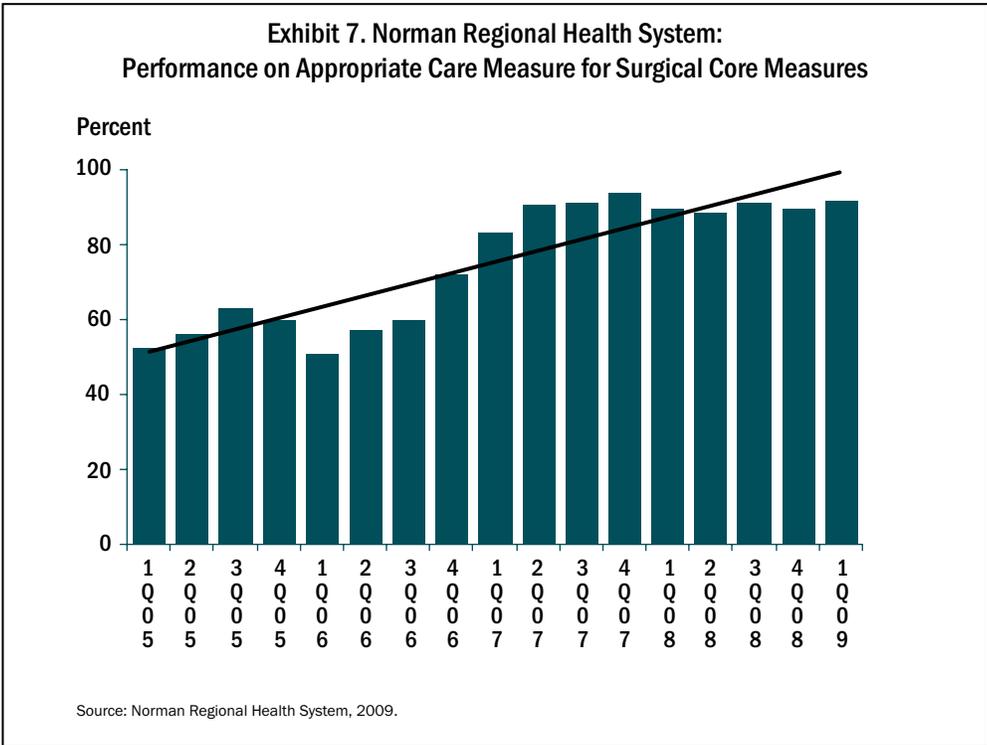


continued to climb as processes were standardized and adopted.

Exhibits 4 through 7 show Norman Regional’s performance on the Appropriateness of Care Measure (reflecting the number of times each measure was carried out 100 percent of the time for each eligible

patient) for the core measures. The superimposed line represents the trend of the scores.

In addition to improving over time, Norman Regional has performed well on the core measures compared with national and Oklahoma hospital averages (Exhibit 8).



**Exhibit 8. Norman Regional Health System Scores on Core Measures  
Compared with State and National Averages**

Indicator	National Average	Oklahoma Average	Percentage for Norman Regional Hospital
<b>Heart Failure</b>			
Percent of heart failure patients given discharge instructions	77%	62%	94% of 268 patients
Percent of heart failure patients given an evaluation of left ventricular systolic (LVS) function	90%	77%	99% of 350 patients
Percent of heart failure patients given ACE inhibitor or ARB for left ventricular systolic dysfunction (LVSD)	89%	88%	98% of 86 patients
Percent of heart failure patients given smoking cessation advice/counseling	92%	88%	99% of 100 patients
<b>Pneumonia</b>			
Percent of pneumonia patients assessed and given pneumococcal vaccination	85%	80%	99% of 365 patients
Percent of pneumonia patients whose initial emergency room blood culture was performed prior to the administration of the first hospital dose of antibiotics	92%	91%	97% of 496 patients
Percent of pneumonia patients given smoking cessation advice/counseling	90%	85%	100% of 233 patients
Percent of pneumonia patients given initial antibiotic(s) within 6 hours after arrival	93%	94%	97% of 446 patients
Percent of pneumonia patients given the most appropriate initial antibiotic(s)	88%	87%	94% of 261 patients
Percent of pneumonia patients assessed and given influenza vaccination	85%	83%	98% of 314 patients
<b>Heart Attack</b>			
Percent of heart attack patients given aspirin at arrival	94%	91%	100% of 164 patients
Percent of heart attack patients given aspirin at discharge	93%	89%	98% of 200 patients
Percent of heart attack patients given ACE inhibitor or ARB for left ventricular systolic dysfunction (LVSD)	91%	94%	94% of 33 patients
Percent of heart attack patients given smoking cessation advice/counseling	96%	88%	99% of 96 patients
Percent of heart attack patients given beta blocker at discharge	94%	85%	97% of 198 patients
Percent of heart attack patients given fibrinolytic medication within 30 minutes of arrival	41%	51%	0 patients <sup>†</sup>
Percent of heart attack patients given PCI within 90 minutes of arrival	79%	80%	85% of 39 patients
<b>Surgical Care Improvement/Surgical Infection Prevention</b>			
Percent of surgery patients who were taking heart drugs called beta blockers before coming to the hospital, who were kept on the beta blockers during the period just before and after their surgery	87%	84%	85% of 59 patients
Percent of surgery patients who were given an antibiotic at the right time (within one hour before surgery) to help prevent infection	90%	86%	95% of 1004 patients
Percent of surgery patients who were given the right kind of antibiotic to help prevent infection	94%	90%	99% of 1009 patients
Percent of surgery patients whose preventive antibiotics were stopped at the right time (within 24 hours after surgery)	89%	88%	95% of 952 patients
Percent of all heart surgery patients whose blood sugar (blood glucose) is kept under good control in the days right after surgery	87%	92%	91% of 80 patients
Percent of surgery patients needing hair removed from the surgical area before surgery, who had hair removed using a safer method (electric clippers or hair removal cream—not a razor)	97%	96%	100% of 1510 patients
Percent of surgery patients whose doctors ordered treatments to prevent blood clots after certain types of surgeries	87%	81%	97% of 856 patients
Percent of patients who got treatment at the right time (within 24 hours before or after their surgery) to help prevent blood clots after certain types of surgery	85%	79%	96% of 855 patients

<sup>†</sup> 0 patients—No patients met the criteria for inclusion in the measure calculation.

Source: [www.hospitalcompare.hhs.gov](http://www.hospitalcompare.hhs.gov). Data are from April 2008 through March 2009.

Norman Regional Health System continues to struggle with some core measures, such as the measure tracking the number of acute myocardial infarction patients receiving percutaneous coronary intervention within 90 minutes of arrival. An assessment revealed that a key factor is that Norman treats a relatively small number of qualifying patients, so any outlier makes a large percentage difference. Nevertheless, NRHS is trying to improve its performance on this measure; all outlier charts undergo review and are discussed by the Cardiovascular Committee and Emergency Department Committee. Also, NRHS is focusing on reducing both mortality readmission rates, as well as maintaining its achievements in core measure performance.

### Lessons Learned

Hospitals seeking to improve performance on the measures might take the following lessons from Norman Regional's experience:

- Hospitals that focus on performance improvement and have the support of leaders and administrators can have positive results, regardless of whether they are privately or publicly owned.

- Analysis and feedback of performance data, together with concurrent review, can help staff identify and address problems before patients are discharged.
- Information technology systems that provide templates or other prompts while patients are still in the hospital help support staff in providing recommended care.
- Nurses, care managers, and pharmacists can be enlisted to help ensure care protocols are followed and support performance improvement initiatives.
- Improving quality involves engaging staff. Staff satisfaction affects patients' and physicians' satisfaction, staff turnover rates, and a hospital's public image and ability to attract talented employees; these factors, in turn, affect the quality of care.

### FOR MORE INFORMATION

For further information, contact Darin Smith, Pharm.D., director of pharmacy services and performance improvement, Norman Regional Health System, [dsmith@nrh-ok.com](mailto:dsmith@nrh-ok.com).

### NOTES

<sup>1</sup> For this case study series on public hospitals, we examined hospitals that are government owned and/or members of the National Association of Public Hospitals. It was not possible to identify and compare hospitals by their payer mix, since hospitals may define payer categories in different ways.

<sup>2</sup> MEDITECH is a Massachusetts-based software and service company selling information systems to health care systems. For more information see: <http://www.meditech.com/AboutMeditech/homepage.htm>.

<sup>3</sup> ACS MIDAS+ sells medical information management technology to health care organizations and systems. For more information see: <http://www.midasplus.com/index.asp>

<sup>4</sup> For more information, see C. Shockey, "Magnetic Culture Attracts Employees, Pleases Customers, and Keeps the Business Healthy," *Journal of Organizational Excellence*, Spring 2006 25(2):25–38, <http://www3.interscience.wiley.com/cgi-bin/full-text/112405150/PDFSTART>.

## Appendix. Selection Methodology

Selection of high-performing public hospitals in process-of-care measures for this series of case studies was based on data submitted by hospitals to the Centers for Medicare and Medicaid Services. We considered “public” hospitals those that are listed as members of the National Association of Public Hospitals (NAPH) or government-owned facilities. We then selected public hospitals that are in the top quartile among public and private hospitals in an over-all hospital quality composite measure. For further information about the public hospital selection process and cross-cutting lessons about their improvement efforts, please see our [introduction](#) to the public hospital case study series. This composite is based on 23 measures that are publicly available on the U.S. Department of Health and Human Services’ Hospital Compare Web site, ([www.hospitalcompare.hhs.gov](http://www.hospitalcompare.hhs.gov)). The 23 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 Discharge
5. Percent of Heart Attack Patients Given Fibrinolytic Medication Within 30 Minutes of Arrival
6. Percent of Heart Attack Patients Given PCI Within 90 Minutes of Arrival
7. Percent of Heart Attack Patients Given Smoking Cessation Advice/Counseling

### Heart Failure Process-of-Care Measures

1. Percent of Heart Failure Patients Given ACE Inhibitor or ARB for Left Ventricular Systolic Dysfunction (LVSD)
2. Percent of Heart Failure Patients Given an Evaluation of Left Ventricular Systolic (LVS) Function
3. Percent of Heart Failure Patients Given Discharge Instructions
4. Percent of Heart Failure Patients Given Smoking Cessation Advice/Counseling

### Pneumonia Process-of-Care Measures

1. Percent of Pneumonia Patients Assessed and Given Influenza Vaccination
2. Percent of Pneumonia Patients Assessed and Given Pneumococcal Vaccination
3. Percent of Pneumonia Patients Given Initial Antibiotic(s) Within 4 Hours After Arrival  
OR Pneumonia Patients Given Initial Antibiotic(s) Within 6 Hours After Arrival
4. Percent of Pneumonia Patients Given Oxygenation Assessment
5. Percent of Pneumonia Patients Given Smoking Cessation Advice/Counseling
6. Percent of Pneumonia Patients Given the Most Appropriate Initial Antibiotic(s)
7. 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*

1. Percent of Surgery Patients Who Received Preventative Antibiotic(s) One Hour Before Incision
2. Percent of Surgery Patients Who Received the Appropriate Preventative Antibiotic(s) for Their Surgery
3. Percent of Surgery Patients Whose Preventative Antibiotic(s) Are Stopped Within 24 hours After Surgery
4. Percent of Surgery Patients Whose Doctors Ordered Treatments to Prevent Blood Clots (Venous Thromboembolism) for Certain Types of Surgeries
5. 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 3rd quarter 2007 through 2nd quarter 2008. To be included in the comparison pool, a hospital must have submitted data for all 23 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. A total of 2,083 public and private facilities were eligible for the total pool 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 public ownership and high score on a composite of process-of-care measures were the primary criteria for selection in this series, the hospitals (or hospital system) also had to meet the following criteria: hospital ranked (or the average score across the system's hospitals examined 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.

