



Case Study

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Western Baptist Hospital: Problem-Solving with Pneumonia Care Performance Improvement Teams

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HEALTH MANAGEMENT ASSOCIATES

Vital Signs

Location: Paducah, Ky.

Type: Private, not-for-profit hospital

Beds: 349 beds

Distinction: Top 3 percent in composite of seven pneumonia process-of-care measures, among more than 2,800 hospitals with 50 or more beds (more than half of U.S. acute-care hospitals) eligible for the analysis.

Timeframe: April 2007 through March 2008. See [Appendix](#) for full methodology.

This case study describes the strategies and factors that appear to contribute to high performance on pneumonia process-of-care measures at Western Baptist Hospital. It is based on information obtained from interviews with key hospital personnel, publicly available information, and materials provided by the hospital during July through November 2009.



SUMMARY

Western Baptist Hospital is one of the top-performing hospitals in the country in the pneumonia care process-of-care, or “core” measures. The core measures, developed by the Hospital Quality Alliance (HQA) and publicly reported by the Centers for Medicare and Medicaid Services (CMS), relate to provision of recommended treatment in four clinical areas: heart attack, heart failure, pneumonia, and surgical care. Western Baptist also performs well, above the 85th percentile, on the heart attack and heart failure core measures, though it does not perform as well—below the 50th percentile—on the surgical care core measures.

Western Baptist has been focused on quality improvement since joining the CMS/Premier Hospital Quality Incentive Demonstration project. It did so in part to position itself for the future of health care, which its leaders believe is moving in the direction of evidence-based care, pay-for-performance, transparency, and public reporting.

Performance improvement teams, led by physician champions, have helped the hospital achieve its success in pneumonia care. The hospital also builds systematic process improvements into staff routines to facilitate compliance with the core measures and standardize care.

Organization

Western Baptist is located in Paducah, Kentucky. It is a regional referral center that serves approximately 200,000 patients a year. The hospital is part of the not-for-profit Baptist Healthcare System, which owns five hospitals and manages one hospital in Kentucky.

Hospital-Wide Strategies

Administrative leaders at Western Baptist facilitate quality improvement efforts by providing the necessary staff and other resources. For example, the hospital hired data analysts and an outcomes manager to support its core measures performance improvement teams. It also hired emergency room case managers and patient care coordinators to conduct concurrent review.

Western Baptist is in the process of implementing a comprehensive electronic medical record (EMR) system. The nursing record is already electronic, with reminders and other prompts intended to increase compliance with the core measures. There are plans to implement computerized physician order entry in the next year or two. Through a medication safety system called Admin-Rx, nurses use handheld devices at the bedside to verify that patients receive the right medication, in the right dosage, at the appropriate time.¹

Performance Improvement Teams

At Western Baptist, there are multidisciplinary performance improvement teams, with team leaders and facilitators, for each of the core measure sets. The teams monitor core measure performance data,

including instances of noncompliance, and identify areas for improvement. Members conduct detailed reviews of negative trends and identify potential problems and solutions, with data processing and support from the data analysts. Once areas for improvement are identified, the teams are responsible for catalyzing changes in care processes throughout the organization. “The teams are very persistent,” says Kim Wrye, R.T., M.S., C.P.H.Q., outcomes manager and pneumonia team facilitator. “As soon as they hit a wall, they start looking at other avenues.”

Each team includes at least one physician champion. Notably, the physician champion’s role is established in a formal agreement. The hospital contracts with physicians to: 1) provide reports and updates at medical staff meetings on core measure performance and proposed quality improvement initiatives; 2) review core measure performance data and instances of noncompliance; and 3) meet one-on-one with the physicians involved in cases that fall out of compliance. Physician champions also use their influence to encourage their peers to buy in to improvement efforts. They track and are compensated for the time spent on these various responsibilities. All hospitals in the Baptist Healthcare System compensate their physician champions; while the level of reimbursement for this work is lower than for patient care, it can still serve as an incentive for physicians to participate. Participation is voluntary, however, and the hospital has had trouble recruiting physician champions in some departments.

The performance improvement teams aim to be proactive, rather than reactive. When CMS and the Joint Commission issue a new version of the Specifications Manual for National Hospital Quality Measures, they immediately begin work on process changes, before the new or revised measures become effective.²

¹ The Horizon Admin-Rx application system is used to improve patient safety and prevent medication errors. See http://www.mckesson.com/en_us/McKesson.com/For%2BHealthcare%2BProviders/Hospitals/Interdisciplinary%2BCare%2BSolutions/Horizon%2BAdmin-Rx.html.

² The Specifications Manual for National Hospital Quality Measures sets forth standardized specifications for hospitals to follow in reporting core measure performance to CMS.

Collaboration with Peers

Western Baptist has participated in state and national improvement initiatives such as the Health Care Excel Pneumonia Collaborative and the CMS/Premier Hospital Quality Incentive Demonstration Project. The Health Care Excel Pneumonia Collaborative in particular proved to be a good networking opportunity for the hospital; its participation led it to adopt best practices, including: having a supply of antibiotics in the emergency department and inserting smoking cessation education materials in discharge instructions. “These projects and collaboratives provided access to ideas, resources, and tools that we brought back and tweaked to fit our own organization,” says Lisa Smith, R.T.T., R.C.P., director of respiratory care and pneumonia team leader.

Western Baptist also collaborates with peers within the Baptist Healthcare System. Each month, leaders from the quality department and performance improvement teams take part in systemwide

conference calls to discuss what is and is not working in their organizations, share best practices, and exchange ideas.

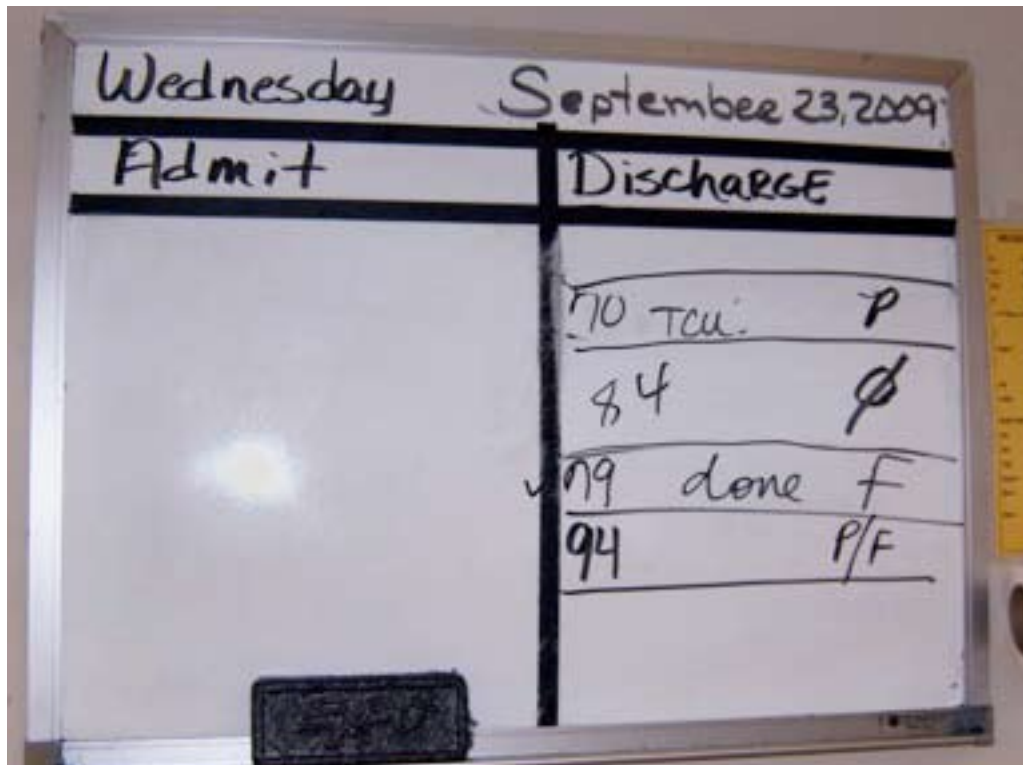
Pneumonia Care Improvement Strategies

Western Baptist uses education and feedback to encourage staff compliance with the core measures. A general core measures staff training is conducted each year, and the core measures also are discussed during nursing orientation sessions. Each month, the hospital posts “bathroom reading” materials—posters describing standards related to antibiotic administration, vaccination administration, and other topics—as a way of disseminating information in well-trafficked areas.

Ensuring Vaccination Screening and Administration

At Western Baptist, all patients are screened for vaccination need through a vaccination assessment tool at the time of admission. When the hospital implemented the policy, many of the community physicians

Figure 1. Western Baptist Hospital Vaccination Tracker



Source: Western Baptist Hospital, 2009.

Exhibit 2. Western Baptist Hospital Community-Acquired Pneumonia Standard Order Set



WESTERN BAPTIST HOSPITAL

ADULT COMMUNITY-ACQUIRED PNEUMONIA STANDARD ORDERS

Date/Time & Signature of Nurse Checking Orders	Date/Time: _____	901	Time faxed to Pharmacy & HUC or Nurse's Initials
Admit to Dr. _____ <input type="checkbox"/> Inpatient <input type="checkbox"/> Observation <input type="checkbox"/> Med/Surg <input type="checkbox"/> Telemetry <input type="checkbox"/> Critical Care Diagnosis: _____ Resuscitation status* <input type="checkbox"/> Full code <input type="checkbox"/> DNR <input type="checkbox"/> Limited DNR _____ <input type="checkbox"/> Comfort measures only			
Diagnostic Tests/Respiratory Pulse oximetry on admission ⓧ Blood gases (ABG with COOX) as needed for respiratory distress, call results ⓧ Chest X-ray on admission <input type="checkbox"/> PA & LAT <input type="checkbox"/> Portable one view <input type="checkbox"/> Blood culture every 15 minutes x 2 (STAT) then start antibiotics ⓧ <input type="checkbox"/> Sputum gram stain and culture (ASAP) <input type="checkbox"/> Complete blood count with automated white cell differential <input type="checkbox"/> Comprehensive metabolic panel <input type="checkbox"/> Legionella and pneumococcal urine antigen* <input type="checkbox"/> Oxygen via nasal cannula at _____ LPM, per _____ <input type="checkbox"/> Duoneb (albuterol/ipratropium) nebulizer every _____ hours <input type="checkbox"/> Albuterol 2.5 mg (full strength) nebulizer every _____ hours			
Antibiotics: First dose STAT <u>after</u> blood cultures obtained or within 6 hours of arrival ⓧ <u>Non-Critical Care:</u> <input type="checkbox"/> Ceftriaxone (Rocephin) 1 gm IV Q 24h + Azithromycin (Zithromax) 500 mg IV x 1 dose followed by 500 mg PO daily <input type="checkbox"/> Levofloxacin (Levaquin) 500 mg IV Q 24h <input type="checkbox"/> Levofloxacin (Levaquin) 750 mg IV Q 24h <u>Critical Care:</u> <input type="checkbox"/> Ceftriaxone (Rocephin) 1 gm IV Q 24h + Azithromycin (Zithromax) 500 mg IV Q 24h <input type="checkbox"/> Ceftriaxone (Rocephin) 1 gm IV Q 24h + Levofloxacin (Levaquin) 750 mg IV Q 24h <input type="checkbox"/> <u>Documented beta-lactam allergy:</u> Levofloxacin (Levaquin) 750 mg IV Q 24h + Aztreonam (Azactam) 1 gm IV Q 8h <input type="checkbox"/> <u>Pseudomonas Risk (bronchiectasis; structural lung disease & history of repeated antibiotic or chronic systemic corticosteroids):</u> <input type="checkbox"/> Piperacillin-tazobactam (Zosyn) 4.5 gm IV Q6h + Levofloxacin (Levaquin) 750 mg IV Q24h <input type="checkbox"/> Piperacillin-tazobactam (Zosyn) 4.5 gm IV Q6h + Tobramycin (dose per pharmacy) + Levofloxacin (Levaquin) 750 mg IV Q24h <input type="checkbox"/> Piperacillin-tazobactam (Zosyn) 4.5 gm IV Q 6h + Tobramycin (dose per pharmacy) + Azithromycin (Zithromax) 500 mg IV Q 24h <input type="checkbox"/> <u>Documented beta-lactam allergy:</u> Aztreonam (Azactam) 1 gm IV Q 8h + Tobramycin** (dose per pharmacy) + Levofloxacin (Levaquin) 750 mg IV Q 24h <small>**MD may remove with renal insufficiency</small> <input type="checkbox"/> Other _____			
Physician Signature: _____ Date: _____ Time: _____			

* = Evidence based order item
 ⓧ = CMS required

expressed concerns that they would have no way of knowing whether their patients had been vaccinated. Physician champions from the pneumonia performance improvement team spoke at medical staff committee meetings about the issue. Eventually, Western Baptist created a vaccination database and agreed to notify physicians each time a patient received a vaccination at the hospital. To do so, the hospital sends a letter to community physicians and scans the letter into the patient's electronic medical record. Physicians and other clinical staff have access to these electronic records from remote locations.

Other reminders are built into patient care processes. The pneumonia preprinted order sets include vaccination reminders, and discharge expeditors track vaccinations on a dry-erase board behind the nursing station (Figure 1). Based on guidelines from CMS and the Centers for Disease Control and Prevention, Western Baptist allows nurses to administer pneumococcal and influenza vaccinations utilizing a preprinted protocol; they are not required to have a physician's order.

Based on a recommendation from the pneumonia performance improvement team, pneumococcal and influenza vaccinations are stored in the automated

medication dispensing cabinets on each nursing unit, to ensure that nurses have what they need to administer vaccinations at discharge. In addition to aiding compliance with the core measures, this has increased patient satisfaction by reducing discharge time.

Prior to the beginning of flu season (October 1 to March 31), reminders are sent to the nursing units that flu season is approaching. On October 1, all current inpatients are screened for needed influenza vaccination administration. Prior to implementing this process, patients were falling through the cracks and not receiving the influenza vaccination, since they would not have been screened upon admission.

Retooling Antibiotic Administration

Western Baptist uses preprinted orders in the emergency room to ensure that a blood culture is taken prior to antibiotic administration (Figure 2). Before adding a standing order to the preprinted order sets, blood cultures were not consistently ordered for pneumonia patients. Now, this process is automatic, with the emergency department nurse taking the blood culture and administering the antibiotic.

Although the standing orders helped ensure that blood cultures were taken prior to antibiotic

Exhibit 3. Western Baptist Hospital Scores on Pneumonia Care Core Measures Compared with State and National Averages

Pneumonia Care Improvement Indicator	National Average	Kentucky Average	Western Baptist Hospital
Percent of pneumonia patients given oxygenation assessment	99%	99%	100% of 314 patients
Percent of pneumonia patients assessed and given pneumococcal vaccination	83%	85%	99% of 255 patients
Percent of pneumonia patients whose initial emergency room blood culture was performed prior to the administration of the first hospital dose of antibiotics	90%	89%	100% of 226 patients
Percent of pneumonia patients given smoking cessation advice/counseling	88%	92%	100% of 154 patients
Percent of pneumonia patients given initial antibiotic(s) within 6 hours after arrival	93%	93%	98% of 241 patients
Percent of pneumonia patients given the most appropriate initial antibiotic(s)	87%	84%	94% of 187 patients
Percent of pneumonia patients assessed and given influenza vaccination	79%	80%	97% of 202 patients

Source: www.hospitalcompare.hhs.gov. Data are from July 2007 through June 2008.

administration, emergency room staff still struggled to obtain blood culture results in a timely manner. The pneumonia performance improvement team met with lab staff to try to understand the reason for the delays. Lab staff said that they did not consider blood cultures to be a high-priority test. Emergency room physicians explained the clinical significance of administering antibiotics soon after admission. Eventually, this interdepartmental communication improved the timeliness of blood culture results.

The pneumonia performance improvement team also found that there were delays in antibiotic administration for patients with a pneumonia diagnosis who were admitted to the hospital by their community physicians. To solve this problem, the hospital made antibiotic orders part of the registration process. Now, when a pneumonia patient is admitted to the hospital by their family physician, a nurse faxes an order for the appropriate antibiotic to the pharmacy. According to Wrye, “the antibiotic is waiting when the patient arrives on the nursing unit.”

Each time CMS and the Joint Commission update the list of antibiotics recommended for pneumonia patients, Western Baptist makes sure the antibiotics are available and on its formulary. It also includes the list of appropriate antibiotics on the pre-printed order sets to remind physicians about the antibiotics that should be ordered in various contexts.

Appropriate timing of antibiotics in the ICU continues to be a challenge for Western Baptist. The Joint Commission/CMS standard requires that appropriate antibiotics be administered to patients within 24 hours of their transfer to the ICU. Because so few pneumonia patients are transferred to the ICU, any time a case falls out of compliance the hospital’s performance is affected significantly. In addition, because ICU nurses and physicians have many demands on their time, it can be difficult to make sure antibiotics are ordered and administered within 24 hours. To help, a pharmacist has been stationed in the ICU. In addition, the pneumonia performance improvement team, under the direction of the infectious disease physician champion, has provided clinical evidence to the phar-

macist and ICU nurses supporting the need to administer appropriate antibiotics within 24 hours of transfer.

Monitoring and Feedback

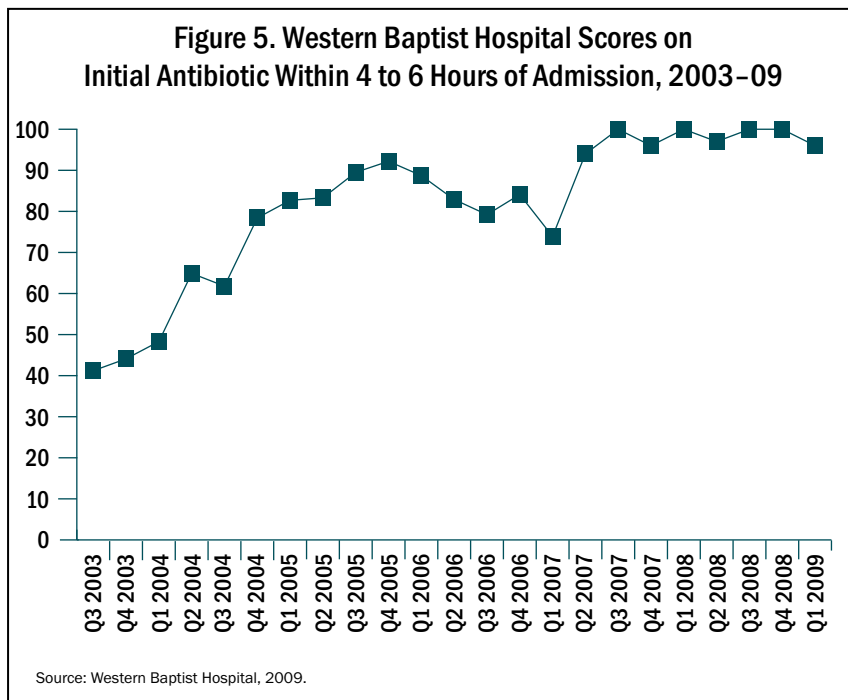
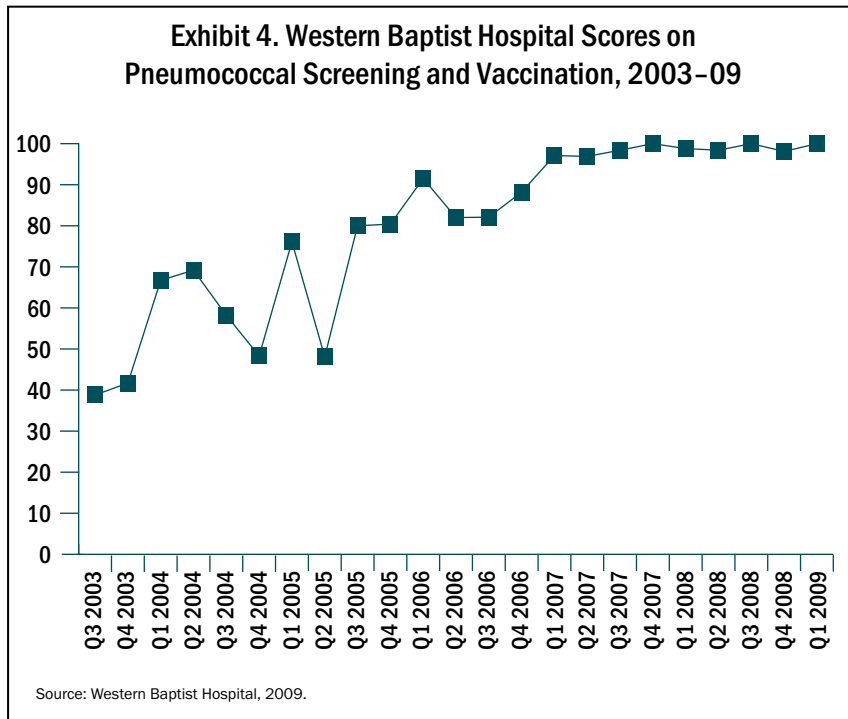
Like other hospitals in the pneumonia case study series, Western Baptist relies on concurrent review as a way to address noncompliance with the core measures before patients are discharged. Emergency room case managers and patient care coordinators review charts and meet with clinical staff to talk about noncompliant cases. These meetings are viewed as educational opportunities, rather than disciplinary sessions. The performance improvement team and department director are also notified about noncompliant cases through biweekly outlier reports.

Physicians receive feedback on their performance through physician indicator reports, which are mailed on a quarterly basis. These reports become part of the physician re-credentialing process. If needed, physician champions meet with their peers to talk about noncompliant cases and trends.

Western Baptist recognizes achievements in the pneumonia care core measures. When the organization performs well, all units involved get treats, banners, or other tokens. In an effort to show nurses they could administer vaccinations without a physician’s order, the hospital gave nurses an ink pen each time they did so.

Results

Western Baptist exceeds state and national averages on all of the pneumonia care core measures submitted to CMS. Figure 3 displays the most recent year of data for Western Baptist on the pneumonia care core measures. Figures 4 and 5 show the trends over time for two pneumonia care core measures in which Western Baptist has shown the greatest improvement: pneumococcal screening and vaccination and antibiotic within four or six hours of admission.



CHALLENGES AND LESSONS LEARNED

Hospitals looking to achieve high performance in the pneumonia care core measures might take the following lessons from Western Baptist's experience:

- Secure the human resources needed to support concurrent review and data analysis, and establish teams dedicated to monitoring and improving performance in each of the core measure sets.
- Physician champions can encourage their peers to collaborate on quality improvement efforts. Establish a formal relationship with physician champions to make responsibilities and expectations clear, and to compensate physicians for their time.
- Get a jump-start on improvement by implementing process changes as soon as the Joint Commission and CMS issue a revised Specification Manual; do not wait until the new standards become effective to respond.
- Elicit the concerns of community physicians and include them in developing process improvements.

One of the biggest obstacles Western Baptist faced in its early improvement efforts was the culture of the organization. Staff often focused on their own work, rather than their role in ensuring quality care. "Quality was seen as the responsibility of the quality department," says Meri Curtis, R.N., B.S., C.P.H.Q./C.P.H.R.M., director of quality resources. "It took a long time for the culture of the organization to shift." Smith and Wrye credit this shift to the educational efforts and constant reinforcement of the clinical value of evidence-based care. One infectious disease physician in particular conducted several continuing medical education training sessions on the pneumonia care core measures. "We met with resistance at first, but the staff now embrace quality improvement initiatives and the core measures," notes Smith.

Western Baptist initially struggled—and at times continues to struggle—to identify pneumonia

patients. Since emergency room physicians naturally do not want to unnecessarily administer antibiotics, it is very important that patients are accurately diagnosed. The emergency room physicians have sought to educate nurses on how to identify pneumonia patients. And, as permitted by the Specifications Manual, physicians can document in the patient's record that an antibiotic was not ordered because of diagnostic uncertainty.

The SCIP Experience and Additional Lessons Learned

Western Baptist has had difficulty achieving the same high level of performance on the surgical care improvement project (SCIP) core measures as it has on the pneumonia measures. Western Baptist's experience is informative, since it shows that even proven improvement strategies—particularly the formal designation of physician champions, the development of performance improvement teams, and the utilization of preprinted order sets—need to be adapted to suit different clinical contexts.

For example, the hospital has not been able to find a colon surgeon willing to take on the role of physician champion to lead surgical improvement efforts in this area. Although physician champions are compensated, the colon surgeons have been reluctant to give up time with patients and their families in order to review data, provide updates at medical staff meetings, and meet with the physicians involved in cases that fall out of compliance. The lack of physician leadership may have contributed to the hospital's lagging performance in the SCIP core measures for colon surgery; its performance is better in those surgical areas that have designated physician champions.

Western Baptist is trying to find both short- and long-term solutions. For now, it has asked its chief of surgery and chief medical officer to follow up with physicians involved in cases that fall out of compliance. Meanwhile, it has been eliciting physicians' feedback to restructure the physician champion program. The responsibilities of physician champions will largely stay the same, but the restructuring is intended to reduce the amount of time required by eliminating duplication of effort across specialties.

Western Baptist also has learned that it is important to have clinical leaders representing all of the surgical specialties affected on the SCIP core measures performance improvement team. Originally, its SCIP performance improvement team was led by a hip and knee surgeon. As the number and type of surgeries included in the measures have expanded, Western Baptist has discovered that the leadership of the performance improvement team has had to evolve in order to keep up. The hip and knee surgeon has been replaced with the director of surgery and the director of surgical/vascular nursing.

Unlike the other core measure sets, the SCIP measures involve an increasingly diverse group of physicians, including vascular surgeons, hip and knee surgeons, colon surgeons, and others. As a result, Curtis and her team have found that it takes more time and effort to elicit buy-in among the physicians; it also takes longer to standardize improvements to patient care process. Hospital leaders hope that recent investment in clinical guidelines and order sets from Zynx Health, a company that specializes in evidence-based clinical decision support tools, will help attain physician buy-in.³ Curtis and her team are also working to retool existing order sets to better meet the surgeons' needs. For example, the hospital is seeking to improve its performance in the SCIP core measures related to venous thromboembolism (VTE) prophylaxis. Following recommendations in the professional literature, Western Baptist developed a VTE order set that was separate from its preprinted order sets for surgery. The surgeons found two separate order sets to be cumbersome, and requested that the VTE orders be embedded in the preprinted order sets for surgery. Curtis and her team are in the process of merging the two order sets. Because the combined order set will be easier to use, hospital leaders anticipate that the number of surgeons using preprinted orders for VTE prophylaxis will increase and performance in the SCIP core measures related to VTE prophylaxis will improve.

FOR MORE INFORMATION

Contact Lisa Smith, R.R.T., R.C.P., director of respiratory care/pneumonia team leader, at lsmith@bhsi.com, or Kim Wrye, R.T., M.S., C.P.H.Q., outcomes manager/pneumonia team facilitator at kwrye@bhsi.com.

³ See Zynx Health, available at <http://www.zynxhealth.com/>.

Appendix. 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 seven measures that are publicly available on the U.S. Department of Health and Human Services' Hospital Compare Web site, (www.hospitalcompare.hhs.gov). The measures, developed by the Hospital Quality Alliance, relate to practices in pneumonia care.

Pneumonia Care Process-of-Care Measures

1. Percent of pneumonia patients given oxygenation assessment
2. Percent of pneumonia patients assessed and given pneumococcal vaccination
3. Percent of pneumonia patients whose initial emergency room blood culture was performed prior to the administration of the first hospital dose of antibiotics
4. Percent of pneumonia patients given smoking cessation advice/counseling
5. Percent of pneumonia patients given initial antibiotic(s) within 6 hours after arrival
6. Percent of pneumonia patients given the most appropriate initial antibiotic(s)
7. Percent of pneumonia patients assessed and given influenza vaccination

The analysis uses all-payer data from July 2007 through June 2008. To be included, a hospital must have submitted data for all seven measures (even if data submitted were based on zero cases), with a minimum of 30 cases for at least one measure, over four quarters. The top 3% among 2,887 hospitals eligible for the analysis and with 50 or more beds were considered high performers.

In calculating a composite score, 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 pneumonia care improvement process-of-care measures was the primary criteria for selection in this series, the hospitals also had to meet the following criteria: at least 50 beds, not a government-owned hospital, not a specialty hospital, ranked within the top half of hospitals in the U.S. in composite HQA core measure score and 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

Aimee Lashbrook, J.D., M.H.S.A., is a senior consultant in Health Management Associates' Lansing, Mich., office. Ms. Lashbrook has six years of experience working in the health care industry with hospitals, managed care organizations, and state Medicaid programs. She provides ongoing technical assistance to state Medicaid programs, and has played a key role in the development and implementation of new programs and initiatives. Since joining HMA in 2006, she has conducted research on a variety of health care topics. Aimee earned a juris doctor degree at Loyola University Chicago School of Law and a master of health services administration degree at the University of Michigan.

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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.

