



Case Study

High-Performing Health Care Organization • April 2010

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Walla Walla General Hospital: Setting Staff Up for Success in Pneumonia Care

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HEALTH MANAGEMENT ASSOCIATES

Vital Signs

Location: Walla Walla, Wash.

Type: Private, nonprofit hospital

Beds: 72

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

Timeframe: July 2007 through June 2008. See [Appendix A](#) 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 Walla Walla General Hospital. It is based on information obtained from interviews with key hospital personnel, publicly available information, and materials provided by the hospital during October through November 2009.



SUMMARY

Walla Walla General Hospital is one of the top-performing hospitals in the country on the pneumonia process-of-care measures, or “core,” measures. The core measures, developed by the Hospital Quality Alliance and reported to the Centers for Medicare and Medicaid Services (CMS), relate to the provision of recommended treatment in four clinical areas: heart attack, heart failure, pneumonia, and surgical care. Walla Walla ranks in the 99th percentile for the pneumonia care core measures, the 91st percentile for the heart failure core measures, and the 97th percentile for the surgical care core measures. The hospital also performs very well on the heart attack core measures, but treats too small a population to reliably tell how well it is doing, according to CMS guidelines.

Those interviewed credit the hospital’s high performance on the pneumonia care core measures to education and reinforcement, as well as improvements to care processes, reminders, and other supports created to give staff the tools they need to succeed.

ORGANIZATION

Walla Walla General Hospital, in Walla Walla, Washington, is a small community hospital with 72 acute-care beds. It is part of the Adventist Health system, which includes 17 hospitals and oversees regional delivery systems in California, Hawaii, Oregon, and Washington. The Walla Walla medical staff includes 100 physicians; most are based in the community, though there are three staff hospitalists.

Walla Walla serves more than 55,000 patients each year, with 10,000 emergency department visits, 1,900 inpatient visits, 40,000 outpatient visits, and 2,200 surgeries.

Walla Walla recently received two quality-related awards. In 2008, Qualis Health, an independent, nonprofit health care quality improvement organization, presented Walla Walla with the “Award of Excellence in Healthcare Quality” for demonstrating leadership and innovation in improving compliance with the core measures. In 2009, Walla Walla was recognized with a 2009–10 Hospital Value Index: Best in Value Award by Data Advantage, LLC, a national health care measurement organization.¹

HOSPITAL-WIDE STRATEGIES

Adventist Health hospitals are managed individually, with local boards of directors, administration, and medical staff. However, the Adventist Health corporate office provides a number of supports to its facilities. It has invested in a clinical information system for all of its hospitals in an effort to improve quality, patient safety, and documentation.

The clinical information system was built with triggers and reminders about core measure care processes, and is now being rolled out. At Walla Walla, these triggers and reminders have been electronic since 2006, but certain parts of the medical record are still manual, including the surgical and anesthesiology

record. Walla Walla expects to have a fully functional computerized physician order entry system by the end of 2010.

In addition to investing in technology, Adventist Health monitors the performance of its hospitals and shares results across the system, so that member hospitals can see how they compare with their peers. This “friendly competition” has been a motivating factor in Walla Walla’s quality improvement efforts.

Building a Quality Culture

Both Adventist Health and Walla Walla have sought to foster a culture that supports patient safety and improves care. A partnership between Adventist Health and John Hopkins Hospital formed in 2006 helped jump-start their efforts. Ten Adventist Health hospitals, including Walla Walla, participated in an initiative funded by the Robert Wood Johnson Foundation to eliminate central line–associated bloodstream infections in the intensive care unit (ICU). The project mirrored similar efforts across the country, but was unique in that it aimed to quantify the contributions of the nursing team by examining the causal relationship between national nursing measures and bloodstream infection rates. It depended largely on a nurse-driven protocol and relied on nurses to be assertive patient advocates by championing the program in their ICU.

Since March 2008, Walla Walla has not experienced any central line infections. This success and the culture of patient safety created by the nurse-driven initiative spilled over into other departments across the Adventist Health system and created momentum for Walla Walla to pursue quality improvement work in other areas.

Adventist Health encourages its facilities to participate in state and federal quality improvement programs. All Adventist Health hospitals participate in the Institute for Healthcare Improvement’s 100,000 Lives and 5 Million Lives Campaigns, which aim to reduce medical errors by helping hospitals adopt evidence-based interventions. Ten Adventist Health hospitals have joined the CMS/Premier Hospital Quality Incentive Demonstration. Walla Walla is not an official

¹ Walla Walla’s Best in Value Award was accompanied by the following distinctions: Best in Value: Affordability & Efficiency; Best in Value: Superior Quality Merit Award; Hospital Value Index: Best in Region; and Hospital Value Index: Best in State. See the Hospital Value Index – Data Advantage at <http://hospitalvalueindex.com/> for further detail.

participant, but does track its progress against the demonstration project's quality measures.

Walla Walla staff credit the hospital's "top-down" commitment with establishing the organization's quality culture and improving core measure performance. In 2004, department leaders formed a Core Measures Team and asked stakeholders to identify and help resolve barriers to compliance with each group of core measures, such as those for pneumonia or surgical care. Stakeholders were charged with providing "layers upon layers of protection" to ensure compliance with the core measures. Once plans were in place for each task, which varied from new patient care processes to workarounds to automated patient care reminders, it became apparent that a fine-tuning process was needed. The hospital hired a quality management nurse, Rhonda Clark, R.N., to lead the Core Measures Team, track fallouts from the care standards, and work with team members to identify problems and potential solutions. As hospital staff have adjusted to the core measures, this team has been absorbed into a larger Patient Care Executive Committee, which oversees the hospital's performance on the core measures.

Since she was hired in February 2007, Clark has worked with department leaders to educate physicians and other clinical staff about the core measures and their relationship to improved outcomes. Leaders post compliance data, discuss core measures during nursing staff meetings, and meet with nursing staff members involved in a fallout or "near miss." As part of their annual evaluations, nursing staff must take online tutorials on the core measures and pass quizzes on the material. Physician core measure performance is also a component of physician Ongoing Professional Practice Evaluation, the hospital's biannual review of physician performance, and the results are shared with physicians in a formal report. Physicians learn about the core measures through medical staff meetings, newsletter articles, new physician orientation, individual core measure report cards, posters, one-on-one meetings, and reference materials such as wallet cards and preprinted order sets.

Core measures are presented as tools to help improve the quality of care provided to patients. Clark emphasizes that, at a small hospital like Walla Walla, each case is important, since even one missed opportunity will skew the overall results.

Walla Walla tracks individual and group performance on the core measures. Monthly core measure "report cards" compare data between departments. Departments that show improvement receive treats and are recognized in hospital newsletters and posters. All physicians also receive individual core measure report cards (Exhibit 1). This inspires friendly competition within and between departments. For example, to improve compliance with the heart attack core measure mandating fibrinolytic administration within 30 minutes of arrival, the emergency department director posted a sign on the staff bulletin board entitled "The Team to Beat" that named the physicians and staff involved in achieving the shortest door-to-drug time.

Patient cases that fall out of compliance with the core measures are handled in different ways, depending on the providers involved. When a physician is involved in a case that falls out of compliance, the case goes through a formal peer-review process. The patient's chart and a description of the fallout are forwarded to the appropriate medical staff subcommittee for review and discussion. The subcommittee determines a follow-up action, which may range from a letter to the physician to medical staff education or updating of the preprinted order set.

When nurses are involved in a case that falls out of compliance with the core measures, the department leader meets with the nurses involved to solicit feedback and identify ways to avoid recurrence. The solutions proposed by nurses and other staff are commonly adopted into the patient care process. For example, to improve performance on the surgical care core measure regarding administration of beta-blocker therapy during the perioperative period for patients on beta-blocker therapy at home, the hospital adopted a number of recommendations proposed by staff involved in noncompliant cases. A reference manual

Exhibit 1. Walla Walla General Hospital Core Measures Report Card

Core Measures Report Walla Walla General Hospital

For:

Month:

Compliance Rate

DESCRIPTION	AMI	HF	PNEU	SCIP
# of patients you had in this category				
* Your core measure compliance percent				
Total # of patients in this category				
Average physician compliance percent				
Average hospital compliance percent				

DESCRIPTION	OUTPATIENT: AMI / CHEST PAIN
# of patients you had in this category	
* Your core measure compliance percent	
Total # of patients in this category	
Average physician compliance percent	
Average hospital compliance percent	

DESCRIPTION	OUTPATIENT: SURGERY
# of patients you had in this category	
* Your core measure compliance percent	
Total # of patients in this category	
Average physician compliance percent	
Average hospital compliance percent	

*** Missed Opportunities:**

outlining an up-to-date list of beta-blockers is attached to all mobile computer stands in patient care areas. Also, a process for reconciling home medications with hospital medications has been adopted. Preadmission screening nurses will review a patient's home medications prior to surgery. If the patient is on a beta-blocker, the nurse will instruct the patient to take the drug at their regular time, even if the patient is otherwise restricted from drinking or eating prior to surgery. The preadmission nurse also will flag the patient chart so the admitting nurse can follow up to see if and when the beta-blocker dose was taken. If the dose was not taken within 24 hours of surgery, the nurse will notify the anesthesiologist or surgeon of the need for a beta-blocker order.

The hospital board reinforces the importance of quality improvement by monitoring core measure performance, among other indicators. Core measure performance is included on an operational dashboard report prepared for the board.

Hospitalist Team

In November 2007, Walla Walla implemented a hospitalist program. The hospital went from working with a number of on-call community physicians to having just three hospitalist physicians responsible for its inpatient population. Since this change, Walla Walla has spent less time educating physicians about the core measures and securing their buy-in. The hospitalists carefully scrutinize inpatient care to ensure it adheres to evidenced-based protocols, such as the core measures.

Since implementing the hospitalist program, Walla Walla has experienced better outcomes, including fewer ICU admissions and fewer readmissions. There also have been fewer inpatient cardiopulmonary arrests, fewer calls to the Rapid Response Team (a team of clinicians that brings critical care to non-ICU patients), shorter average lengths of stay, and improved patient satisfaction.

Concurrent Review

Like many hospitals interviewed in this case study series, Walla Walla reviews its patient census daily to see which patients fall into the core measures. Clark performs a concurrent review of the identified patients' medical records to pinpoint opportunities to improve patient care and ensure compliance with the core measures before patients leave the hospital. Clark also reviews patient medical records five to 10 days after discharge to correct charts as may be necessary (e.g., ensure documentation is dated) and collect compliance data.

PNEUMONIA CARE IMPROVEMENT STRATEGIES

Walla Walla works in its community to reduce the number of pneumonia patients who must be admitted to the hospital. In addition to screening all inpatients and some outpatients for their eligibility to receive pneumococcal and influenza vaccines, Walla Walla supports a community-wide annual influenza vaccination program by providing staff resources and assistance in reaching the public. The "Flu Round-up" is a three-day program held each October that provides flu shots to community residents at the local county fairgrounds. Also, community physicians have access to Walla Walla's electronic medical record system, which allows them to access patients' medical history, such as antibiotic use, immunization status, and chest X-ray reports.

Standardizing Pneumonia Care

In 2006, Walla Walla's pharmacists and physicians partnered to standardize the pneumonia care process with the aim of providing consistent, high-quality care. A team of pharmacists, physicians, and medical executives developed a pneumonia care order set, which included appropriate antibiotics and other core measures. The pneumonia care order set was distributed to the emergency department, ICU, and the medical/surgical unit. At the same time, quality department staff provided outreach and education to make sure the hospital's physicians understood that the order set was

based on the best available evidence and available for use.

The pneumonia care order set, which can be printed from any computer at the hospital, is updated as needed (Appendix B). It now includes standing orders for smoking cessation counseling, vaccination screening and administration, oxygenation assessment, and blood culture prior to antibiotic administration. It also includes a list of appropriate antibiotics for non-ICU, ICU, and pseudomonas-risk patients. Though its use is optional, it is now used in about 70 percent of cases.

Obtaining physicians' buy-in of a standing order for blood culture prior to antibiotic administration was difficult, as many did not believe the blood culture was needed to ensure appropriate antibiotic administration. To convince physicians, the pharmacy director conducted a literature review and shared findings with physicians. When the standing order was finally adopted, the majority of physicians agreed that blood culture prior to antibiotic administration was a best practice.

Smoking cessation counseling has been built into the pneumonia care process. All patients receive such counseling upon admission because the hospital recognizes that everyone can benefit from the education. This smoking cessation advice is included in a healthy lifestyle tips pamphlet distributed at admission.

A trigger is also built into the nursing assessment, which is part of the electronic medical record, to remind nurses to talk to pneumonia patients about smoking. When a patient is a smoker, the nurse may submit a request for a respiratory therapy consult for smoking cessation counseling or provide the education herself.

Collaborating with Laboratory Staff

The use of a simple visual cue, followed by improved communication between nurses and laboratory staff, helped the hospital improve its performance on the pneumonia care core measure related to blood culture prior to antibiotic administration. The hospital's scores on this measure had lagged because it was not always apparent to nursing staff whether a blood culture had

Exhibit 2. Red Coban Indicating Blood Culture Taken



Source: Walla Walla Hospital, 2010.

been taken. In brainstorming sessions about this issue, a staff member suggested that red bandages be used to identify patients after the blood culture was drawn and Lou Roosma, M.T.A., A.S.C.P., director of laboratory services, embraced the idea (Exhibit 2). The visual cue helped identify patients in the often chaotic environment of the emergency department: nurses understood that when a patient wore a red bandage, their blood culture had been drawn and they were to proceed promptly with the administration of antibiotics. Eventually, the red bandages were retired as communication between the laboratory and nursing staff dramatically improved; Walla Walla laboratory staff now notify nursing staff in person after the blood culture has been obtained. "Lab staff and nursing staff are no longer 'ships passing in the night,' but are partners in making sure antibiotics are administered in a timely way," says Clark. "The need for the red coban flag is no longer necessary." Walla Walla's leaders believe that redundancies in the core measure compliance plan should be regularly scrutinized. Those that lose relevancy, such as the red bandages, are retired to maintain an efficient system.

The quality department staff worked with laboratory staff to ensure accurate documentation of the blood draw time. Laboratory staff had been documenting the blood draw time as the time the blood culture was *received* by the laboratory department; quality

department staff taught them to instead document the time the blood culture was *collected*. To supplement this education, quality department staff followed up individually with laboratory staff who failed to document the time correctly. Until the quality department was satisfied with the laboratory staff's documentation, emergency room nurses were asked to record the blood draw time as well.

Such collaborations have had positive results, beyond improved core measure performance. The laboratory staff now feel like a valued part of the team, and understand that they are essential in helping make sure the hospital meets its goals.

Supporting Hospital Staff

Through reminders and other support systems, Walla Walla tries to design care processes so that staff are set up for success. For example, delays in placing central IV lines when a peripheral IV cannot be established can prevent timely administration of antibiotics. To avoid such delays, the quality department instructed staff to use an antibiotic in pill form until a central IV line can be established.

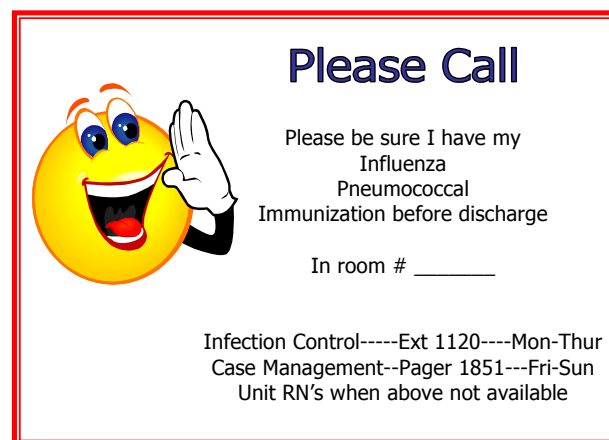
Walla Walla also created pneumonia "pocket cards," including reminders to help clinicians meet the core measures. For example, the cards list the appropriate antibiotics for non-ICU, ICU, and pseudomonas-risk patients. Common exceptions are also included to advise clinicians of situations in which their practice may deviate from the core measures.

Like other hospitals in this case series, Walla Walla transferred the responsibility for administering vaccinations from physicians to nurses in order to improve performance on this core measure. The hospital's infection control nurse also developed a vaccination screening tool to identify eligible patients. Despite these efforts, performance in vaccination screening and administration initially lagged. The quality department discovered that many nurses were not administering

vaccinations when indicated because they thought particular patients were "too sick." After educational efforts about the appropriateness of vaccinations for sick patients failed to change nurses' behavior, the hospital decided to take the decision to vaccinate out of nurses' hands and put it into the hands of patients. Today, if patients are not ruled out by the vaccination screening tool, they are given educational materials about the risks and benefits of vaccination and, before discharge, offered vaccination. If they refuse, this is documented and their case is not included in the core measures. If they request vaccination, a nurse will administer it.

When it is not clear whether a patient has been vaccinated, the infection control nurse or case managers explore alternative sources for the information (e.g., nursing home or physician office records) and assist with the screening tool and patient education. When vaccination is needed, a "calling card" instructs the nurse to administer the vaccination before the patient is discharged, and provides contact information in the event there are questions or concerns (Exhibit 3).

Exhibit 3. Walla Walla General Hospital Immunization Calling Card



Source: Walla Walla Hospital, 2010.

Exhibit 4. Walla Walla General Hospital Scores on Pneumonia Care Core Measures Compared with State and National Averages

Pneumonia Care Improvement Indicator	National Average	Washington Average	Walla Walla General Hospital
Percent of pneumonia patients given oxygenation assessment	99%	100%	100% of 47 patients
Percent of pneumonia patients assessed and given pneumococcal vaccination	84%	84%	100% of 40 patients
Percent of pneumonia patients whose initial emergency room blood culture was performed prior to the administration of the first hospital dose of antibiotics	91%	90%	100% of 46 patients
Percent of pneumonia patients given smoking cessation advice/counseling	89%	88%	93% ^a of 15 patients
Percent of pneumonia patients given initial antibiotic(s) within 6 hours after arrival	93%	93%	100% of 34 patients
Percent of pneumonia patients given the most appropriate initial antibiotic(s)	87%	87%	92% of 26 patients
Percent of pneumonia patients assessed and given influenza vaccination	82%	79%	83% ^b of 6 patients

^a According to Hospital Compare, the number of cases is too small (<25) to reliably tell how well a hospital is performing.

^b According to Hospital Compare, the number of cases is too small (<25) to reliably tell how well a hospital is performing.

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

RESULTS

Walla Walla outperforms most other U.S. hospitals on all the pneumonia care core measures submitted to CMS, although it sees relatively few pneumonia patients each year. Exhibit 4 displays the most recent year of data, while Exhibit 5 shows the trends over time in the pneumonia care core measures.

As shown in Exhibit 5, Walla Walla has dramatically improved its pneumonia care core measures scores since 2004. Development of a pneumonia care order set in 2006, the addition of core measure prompts in the electronic documentation system in 2006, and implementation of the hospitalist program in 2007 have been credited with helping the hospital move its compliance rate over the 90 percent threshold. Walla Walla has been able to maintain its strong compliance rate despite the drop in overall pneumonia cases. The drop in pneumonia cases is consistent with an overall decline in patient volume at Walla Walla.

CHALLENGES AND LESSONS LEARNED

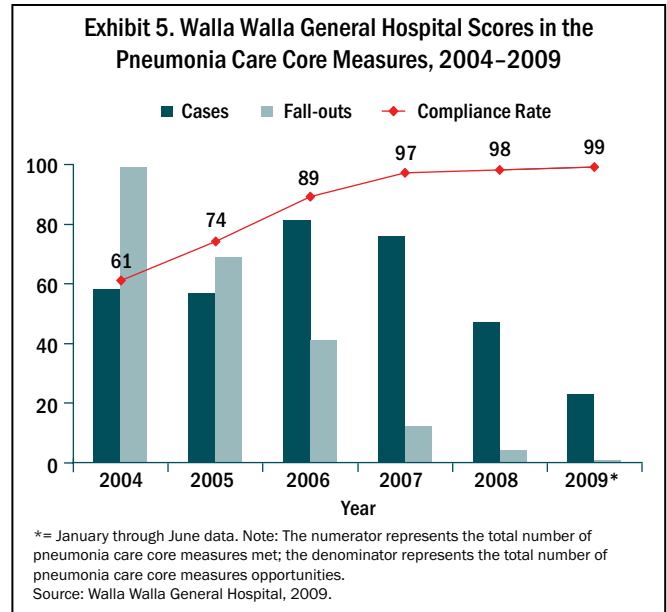
Hospitals seeking to improve performance on the pneumonia care core measures might take the following lessons from Walla Walla's experience:

- A successful quality improvement initiative can have ripple effects across a hospital and/or health care system by jump-starting a culture of quality and patient safety.
- Empower frontline staff, particularly those involved in noncompliant cases, by looking to them for opportunities to improve care processes.
- The core measures should be presented as improvement tools and their importance should be reinforced by department leaders, education, one-on-one counseling, positive recognition, and individual feedback.

- Order sets developed with feedback from a multidisciplinary team can standardize and improve pneumonia care.
- Employing staff physicians, such as hospitalists and emergency department physicians, enables the quality improvement department to spend less time securing physician buy-in and more time improving patient care.

FOR MORE INFORMATION

For more information, contact Rhonda Clark, R.N., quality management nurse, at ClarkRL@ah.org.



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 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 surgical care improvement process-of-care measures was the primary criterion 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 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.

Appendix B. Walla Walla General Hospital Pneumonia Order Set

WALLA WALLA GENERAL HOSPITAL
PHYSICIAN ORDERS

Care Set: Pulmonary

Pneumonia

Allergies _____

Diagnosis: Pneumonia _____

ADMIT TO:

LEVEL OF CARE:

Med/Surg

Inpatient Acute

Telemetry

Critical Care

Intensive Care

ACTIVITY & VITAL SIGNS:

Activity as tolerated

Vital signs every _____ hours

NUTRITIONAL SERVICES:

Diet _____

Intake and Output

CONTINUOUS INFUSIONS:

❖MEDICATIONS: ANTIBIOTICS

❖Draw Blood Cultures first, then give first dose antibiotics ASAP

Pharmacy to adjust dose of antibiotics per calculated renal function

Non-critical care (Non-ICU):

Single Agent:

Levofloxacin 750 mg IVPB every 24 hours

Levofloxacin 500 mg IVPB every 24 hours

OR

Ceftriaxone 1 gram IVPB every 24 hours

Ceftriaxone 2 grams IVPB every 24 hours

Plus One of the Following:

- Azithromycin 500 mg IVPB every 24 hours

OR

- Doxycycline 100mg e IVPB very 12 hours

Critical Care (ICU):

- Ceftriaxone 1 gram IVPB every 24 hours

- Ceftriaxone 2 grams IVPB every 24 hours

Plus One of the Following:

- Azithromycin 500 mg IVPB every 24 hours

OR

- Levofloxacin 750 mg IVPB every 24 hours

- Levofloxacin 500 mg IVPB every 24 hours

For Penicillin allergic patient:

- Levofloxacin 750 mg IVPB every 24 hours

- Levofloxacin 500 mg IVPB every 24 hours

Plus

- Aztreonam 1 gram IVPB every 8 hours

- Aztreonam 2 gram IVPB every 8 hours

Pseudomonal Risk: (Defined as: Recent antibiotic use, recent hospitalization, nursing home patient, bronchiectasis, and immune compromised including taking steroids)

- Piperacillin-tazobactam 4.5 gm every IVPB six hours

Plus

- Levofloxacin 750 mg IVPB every 24 hours

OR

- Piperacillin-tazobactam 4.5 gm IVPB every six hours

Plus

- Aminoglycoside (Gentamicin or Tobramycin) extended dosing interval-Pharmacy to dose per protocol

Plus

- Azithromycin 500 mg IVPB every 24 hours

❖ Core Measures

Pneumonia (Continued)

For Penicillin allergic patient

- Levofloxacin 750 mg IVPB every 24 hours

Plus

- Azithromycin 500 mg IVPB every 24 hours

❖ Core Measures

Pneumonia Antibiotic Consensus Recommendations

Non-ICU Patient	ICU Patient	Pseudomonal Risk
<p>2.10</p> <p>β-lactam (IV or IM) Table 2.3+ macrolide (IV or oral) Table 2.5</p> <p>Or</p> <p>Quinolone monotherapy (IV or oral) Table 2.9</p> <p>Or</p> <p>β-lactam (IV or IM) Table 2.3+ doxycycline (IV or oral) Table 2.10</p> <p>β-lactam = ceftriaxone, cefotaxime, ampicillin-sulbactam, ertapenem</p> <p>Macrolide = erythromycin, clarithromycin, azithromycin</p> <p>Quinolones = levofloxacin, gatifloxacin, moxifloxacin, gemifloxacin</p>	<p>β-lactam (IV) Table 2.3 + macrolide (IV) Table 2.6</p> <p>Or</p> <p>β-lactam (IV) Table 2.3 + quinolone (IV) Table 2.9</p> <p>Or</p> <p>If documented β-lactam allergy: Quinolone (IV) Table 2.9 +/- Clindamycin* (IV) Table 2.12</p> <p>β-lactam = ceftriaxone, cefotaxime, ampicillin-sulbactam, ertapenem</p> <p>Macrolide = erythromycin, azithromycin</p> <p>Quinolones = levofloxacin, gatifloxacin, moxifloxacin</p> <p>*Clindamycin is optional</p>	<p>These antibiotics would also be acceptable for ICU and Non-ICU patients with pseudomonal risk</p> <p>IV antipseudomonal β-lactam Table 2.4 + IV antipseudomonal quinolone Table 2.8</p> <p>Or</p> <p>IV antipseudomonal β-lactam Table 2.4 + IV aminoglycoside Table 2.11 + either IV antipneumococcal quinolone Table 2.9</p> <p>Or</p> <p>IV macrolide Table 2.6</p> <p>Or</p> <p>If documented β-lactam allergy: Aztreonam Table 2.7 + Antipneumococcal quinolone Table 2.9 +/- aminoglycoside* Table 2.11</p> <p>Antipseudomonal quinolone = ciprofloxacin, levofloxacin</p> <p>Antipseudomonal β-lactam = cefepime, imipenem, meropenem, piperacillin-tazobactam, piperacillin</p> <p>Aminoglycoside = gentamicin, tobramycin, amikacin</p> <p>Antipneumococcal quinolone = levofloxacin**, gatifloxacin, moxifloxacin</p> <p>Macrolide = azithromycin, erythromycin</p> <p>*Aminoglycoside is optional</p>

Source: Walla Walla Hospital, 2010

ABOUT THE AUTHORS

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. Ms. Lashbrook 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.

