

**Pneumococcal Vaccination for Pneumonia –
Achieving the Standard of Care**
**Tools and Resources for Hospital Performance Measurement
Improvement Activities**

Eighth in a series of targeted quality improvement articles

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Illinois Hospital Association

**Pneumococcal Vaccination for Pneumonia –
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Tools and Resources for Hospital Performance Measurement Improvement
Activities**

Achieving the Highest Standard of Care

Pneumococcal vaccination measure examines whether patients with pneumonia age 65 and older were screened for their pneumococcal vaccination status and vaccinated if indicated.

Illinois hospitals in the 1st quarter of 2004 achieved 38.1 % compliance compared to 42.2% for nationally reported Joint Commission on Accreditation of Healthcare Organizations (JCAHO) measurement data for the 4th quarter 2003. Among the Ten Measurement Starter Set, *pneumococcal vaccination* provides our greatest opportunity for improvement both in Illinois and nationally! The goal for all Illinois hospitals is **100% compliance** with the standard of care.

Pneumococcal Vaccination for Pneumonia Measurement Description

Pneumonia is characterized by an acute inflammation of the lungs, the primary body organ responsible for gas exchange, a necessary function for life. Pneumonia causes substantial morbidity and mortality, the incidence of pneumonia increases with age, and more than 90% of the deaths due to this condition are in the persons age 65 and older. Evidence-based medicine has demonstrated that pneumococcal vaccination is up to 75% effective in preventing pneumococcal bacteremia and meningitis.

Calculating the Measure's Performance. Pneumococcal vaccination for pneumonia is reported as a percent, based on:

- Numerator includes patients with pneumonia, age 65 and older that were screened for pneumococcal vaccine status and were vaccinated prior to discharge, if indicated.
- Denominator includes inpatients age 65 and older with:
 - o Principle Diagnosis code of Pneumonia or
 - o Principal Diagnosis code of Septicemia or Respiratory Failure and Other Diagnosis code of Pneumonia.

A Fuller Understanding of the Measure

Due to the shortcomings in the measure listed below, this measure is not necessarily a true estimate of vaccination rates in all hospitals patient populations. This measure's rate reflects two activities, screening for vaccination status and administering the vaccine. The reasons for this are:

- The measure is limited to patients age 65 and older with a working diagnosis of pneumonia; specifically a patient population identified to be at greater risk of morbidity and mortality from a pneumococcal pneumonia infection.
- The numerator includes patients who are screened and one of the following criteria applies: patient has been previously vaccinated, the patient has refused to be vaccinated, the patient has a hypersensitivity or allergy to the vaccine, or

the patient was vaccinated prior to discharge.

Therefore, the measure reflects vaccine administered and other select screening criteria for a select patient population not the hospital's entire patient population.

The *Technical Specifications* manuals are a resource for the measure description, rationale, the numerator and denominator, inclusions and exclusions, contraindications, and how data is processed including what results in *missing data* and *not in measure populations*. To view, click on the links below and follow the additional steps.

- For JCAHO, go to:

www.jcaho.org/

Click on "Performance Measurement", click on "Core Measure Information", click on "Specifications Manual....," scroll down to "Measure Information Forms", select the Core Measurement of interest.

- For the Center for Medicare and Medicaid Services (CMS), go to:

www.qnetexchange.org/

Click on "HDC", Scroll down to "Related Resources", click on "Topic-Specific Resources, Zip Files."

Successful Quality Improvement and Compliance Experiences Shared by Illinois Hospitals

The experiences and successes for achieving compliance with pneumococcal vaccination for pneumonia are presented below from hospitals representing primarily larger, urban hospitals throughout Illinois. The Illinois Hospital Association appreciates the efforts of these hospitals in sharing their experiences with others and also the sharing of contact names at each hospital for additional follow up questions or discussions.

Some common and unique success factors or strategies include:

- . • Use of standing orders
- . • Use of electronic patient record and hospital information systems with automated reminders, triggers and mandatory field entry
- . • Multidisciplinary teams including infection control and pharmacy
- . • Coordination with hospital outpatient clinics
- . • Modified the Pyxis delivery systems

SwedishAmerican Hospital

Located in Rockford, Illinois, SwedishAmerican Hospital is a large urban hospital. The opportunity for improvement with pneumococcal vaccination started several years ago as PharmD Intern project in the hospital pharmacy, relates E. Thomas Carey, Pharm D., Director of Pharmacy Practice. Building of this initial work, Carey sought solutions that standardized and streamlined the care processes associated with vaccination administration.

“We choose to incorporate our hospital information systems into our process changes to improve our vaccination rates,” said Carey. “We need to identify patients eligible for vaccination,” relates Carey, “and the hospital programmed their computer systems to identify potentially eligible inpatients using three criteria: age 65 and older, no prior administration as an inpatient of the pneumococcal vaccine, and the patient’s vaccination history.” The last element was pulled from the Nursing Assessment, which completed at admission, is part of the electronic patient record. A report listing these eligible patients is generated and reviewed daily by a hospital pharmacist. The pharmacist may interview the patient or contact the nurse or primary care physician to clarify information as necessary.

Once eligible patients could be systematically identified, the project team worked with the primary care physicians to develop effective standing orders processes that increased the likelihood that vaccines would be given to patients at discharge, if indicated. “We wanted a process that would work,” said Carey, “pre-printed standing order forms that are placed of the chart can sometimes get lost or not filled in.” SwedishAmerican adopted a process of standing verbal orders. At discharge, a standing verbal order is executed by a pharmacist, a billing record is generated and when the vaccine is administered by the area nurse, a wallet-sized immunization record card and an educational brochure are given to the patient. Both the billing record and wallet-card are used to establish vaccination history for the patient in the future.

With vaccination rates increasing, Carey continues to find improvements in the vaccination care processes. One area was to reduce unnecessary re-vaccinations. Two interventions have helped.

- . • First, to reduce repeat vaccinations in SwedishAmerican Health System’s outpatient clinics, listings of vaccinated patient discharges by primary care physicians are provided to each of these clinics.
- . • Second, with patients being admitted frequently from nursing homes settings, Carey is working to identify the vaccination requirements and status area nursing homes as another means to assess the patient’s vaccination history.

With continued success of the current processes, SwedishAmerican plans to expand these practices to include the influenza vaccine assessment and administration. Contact: E. Thomas Carey Pharm D., Director of Pharmacy Practice at tcarey@swedishamerican.org.

Gottlieb Memorial Hospital

Gottlieb Memorial is a community-based hospital located in suburban Melrose Park, Illinois. Prior to adding Pneumonia as their 3rd core measurement set in January 2004, Gottlieb Memorial Hospital's Continuum of Care Performance Improvement Committee had been monitoring key pneumonia care indicators. Cathy Paulus, Infection Control Coordinator reports, "Our success in ensuring that eligible patients receive pneumococcal immunization has been an ongoing challenge for us. While all patients are screened during admission to assess their eligibility for a pneumococcal vaccination at discharge, capturing documentation that the vaccine was actually given at discharge has been a recurrent problem."

Over the past year, areas of noncompliance were identified and key improvements were implemented to improve the care processes and compliance with the standards of care:

- . • Implemented Pneumococcal Vaccine Standing Orders in November 2003. All patients age 65 and older are screened at admission to determine eligibility for the vaccine and vaccine information sheets are given to patients.
- . • Conducted unit based inservices on the pneumonia standards of care and the vaccine standing orders and introduced posters and reminders to reinforce learning and sustain desired changes.
- . • Modified the Meditech electronic patient record to make key fields mandatory entry in order to complete the documentation process. Nurse's completing the patient's Discharge Instruction Sheet must provide information to confirm that the pneumococcal vaccine was given or a reason why patient did not receive the vaccine. The nurse can select optional text to facilitate documentation.
- . • Implemented a "Community Acquired Pneumonia Protocol" in February 2004 that reflects the clinical evidence of the best medical practices for pneumonia. Emergency area physician order forms were updated to include a "pneumonia order set."
- . • Modified medication-stocking practices. Pharmacy now stocks single-dose vials pneumococcal vaccine in the Pyxis machines in order to minimize any delay at discharge.

"Gottlieb Memorial Hospital's pneumococcal vaccination rate in 2003 was very low. By 1st quarter 2004, we raised our compliance to over 50% and this performance has continued to improve," states, Paulus. "One continuing problem we experienced was the *time lapse* between admission and discharge. The patient is assessed for vaccine eligibility upon admission, but the standing order is to give the vaccine at discharge. With the paper form, the standing order gets lost in the patient's medical record. At discharge the nurse has many priorities and needs effective reminders to check the patient's vaccination status. The addition of the mandatory fields to the computer based patient discharge instructions is improving our compliance."

Gottlieb Memorial Hospital Infection Control Coordinator also conducts audits to assess

compliance and provide regular and timely feedback to the care units and nursing staff. These communications help maintain awareness of the importance of vaccination. Contact: Cathy Paulus, Infection Control Coordinator at cathy_paulus@ghr.org.

Elmhurst Memorial Hospital

Located in the western suburbs of Chicago, Elmhurst Memorial Hospital is a large community based hospital with a comprehensive range of services. Elmhurst has made a commitment to improve patient care outcomes with the use of the core measures. “The planned changes with the computerized documentation should get us to 100% compliance with the pneumococcal vaccination assessment,” states Marjorie Chrencik, Director, Quality Resource Management.

Elmhurst’s significant opportunity for improvement came about with a change in documentation processes. “We moved from a paper record to an electronic based patient record,” relates Chrencik. During the development stage of the electronic record, Elmhurst involved the nursing staff in defining the screening tools. “Immunization assessment, both pneumococcal and influenza, are included in the nursing assessment taken when a patient is initially admitted to the hospital,” said Chrencik. Screening is accomplished for all patient admissions, not just pneumonia patients aged 65 years old as outlined in the pneumococcal vaccination assessment core measure.

Once the patient was assessed, the nurse would take the appropriate action to communicate this information. “In the past, if the patient had no history of immunization, an order sheet would be placed in the patient record prompting and reminding the physician,” relates Chrencik. However, recent updates to the electronic record are designed to enhance and streamline these processes. “Now, when the nursing assessment is completed, the system will automatically print an immunization standing order on to a physician order sheet for the patient record, if indicated. The standing orders offer physicians options to choose and were designed to enhance physician documentation when contraindications for administration are present. Typically, patients would receive a vaccination on the day prior to discharge,” states Chrencik.

Physician leadership and involvement were key elements to improved performance with the standards of care. Dr. James Allen, Chair, Infectious Diseases, was instrumental in the development of the standing orders that were approved by key medical staff and committees to ensure physician buy-in and acceptance. Dr. Allen led the physician education process. “Once the physicians understood our improvement initiatives and activities,” relates Chrencik, “they were able to take ownership of the process... and get behind and support the initiatives.”

Appropriate documentation in the patient record is crucial to achieving high compliance with the core measures. Emphasizing the documentation requirements and issues to the physicians was a key message in their education. “We needed to share with the physicians that each patient record needs to stand on its own...that although patients may be admitted several times, key information needed to be documented in the current record.” Contact: Marjorie Chrencik, Director, Quality Resource Management at mchrenc@emhc.org.

St. John's Hospital

St. John's Hospital, located in Springfield, Illinois, attributes their success with pneumococcal vaccination to an organized change and improvement effort driven by their commitment to quality. Barbara Burneson, Project Facilitator, Quality & Resource Management, describes process improvement changes and efforts.

The hospital organized a multidisciplinary team in mid 2002 to examine existing care processes and recommend interventions to improve performance with pneumococcal vaccination assessment and administration. The effort was part of an Intervention Collaborative facilitated by the Illinois Medicare Quality Improvement Organization, Illinois Foundation for Quality Health Care (IFQHC). The Collaborative sought to accelerate learning about best practices and allow hospitals to learn from one another as innovations were tested and measured.

With the organizational culture in mind, the team developed a "one-page tool that includes vaccine assessment criteria, a protocol order, and a place to document vaccine administration," relates Burneson, who was the Project Facilitator for the team. "Assessment criteria are built into an algorithm, which is used to determine whether or not the vaccine is indicated."

The creation of "standing orders" was a critical component in achieving desired results, relates Burneson. Standing orders for vaccination were developed and approved by the Infection Control and Medical Executive Committees. When assessment criteria indicate that the vaccine is needed, a "conditional order for vaccination" is created for the patient. Vaccine administration is then scheduled for the day of discharge. Entering a "discharge order" in the hospital information system triggers an on-screen reminder to activate the conditional order. "One barrier to improvement has been remembering to activate the conditional order," said Burneson. A variety of "reminder methods" are currently being used to ensure that this action is completed.

"Ongoing education and follow-up have contributed to sustained improvement," said Burneson. When the program was first implemented, team members made frequent rounds on nursing units. Interactive methods such as computer-based learning have been used to reinforce understanding. A database was created to track compliance and provide feedback to clinical managers and staff. "We continue to evaluate our outcomes and make additional adjustments to improve our performance," notes Burneson. "It really is about ongoing, continual improvement." Contact: Barbara Burneson, Project Facilitator, Quality & Resource Management at barbara.burneson@st-johns.org.

Pneumococcal Vaccination for Pneumonia Based Resources

See Appendix I. for additional resources for Pneumococcal Vaccination for Pneumonia Based Resources.

Future Series

October 15 Antibiotic Timing (CAP-5)

November 05 Oxygenation Assessment at Arrival (CAP-1)

For additional information about Pneumococcal Vaccination for Pneumonia, the Ten Measurement Starter Set, or to comment on this series, please contact Tim Philipp, Director, Quality Improvement at tphilipp@ihastaff.org.

APPENDIX I. Pneumonia Web Based Resources

This document offers web resources about Pneumonia care and quality measures useful in your improvement efforts. A similar document with direct links to these resources can be viewed on the IHA web site.

For a general description of the web sites used, see the document “Generic Sources of Information for All Measures: on the IHA web site. To access the materials below, click on or enter the web address and follow the additional steps.

Clinical Guidelines.

- Review the CDC Recommendations of the Advisory Committee on Immunization Practices (ACIP). Recommendations are organized by: *Comprehensive and Vaccine-Specific Recommendations*. Review the multiple listings; also see Pneumococcal Polysaccharide at:

<http://www.cdc.gov/nip/publications/acip-list.htm>.

Evidence-Based Materials.

- Pneumonia Literature Review (December 2003, 44 pages) is an annotated bibliography of the general clinical and quality improvement literature, guidelines and standards. The evidence base literature addresses clinical prediction rules, early assessment and detection, antibiotic administration, adult vaccination, and smoking cessation.

Intervention Tools.

- The QIO Quick Start Guide to the National Pneumonia Project provides an orientation to Medqic based for pneumonia. Direct links are given for the 17 Medqic references.
- CMS overview including questions and answers of ACIP guidelines, Medicare coverage and payment including contacts/resources for additional information.

Frequently Asked Questions – (FAQs) FAQs often reflect the insights and concerns of hospital staff involved in clinical care and data collection. Use FAQs as your first source to answer clinical and data related questions. FAQs are also an important educational tool for novice & expert.

- Select Pneumonia for the Topic. Different “key words” (Pneumococcal, Vaccination, PPV) will increase your returns (with some duplication). Responses address clinical situations about evidence of prior vaccination, physician documentation, and contraindications, patient condition and (acceptable) reasons for not vaccinating.

To review FAQs or to ask a new question, go to: www.medqic.org, click on Pneumonia (top bar), click on FAQs (left bar).

American Health Quality Association – (AHQA)

The AHQA web site lists four hospital projects related to pneumococcal vaccination for pneumonia. Contact names are provided. Locate these projects under the states of California, Missouri, New Jersey and Virginia. To view these project descriptions, go to: www.ahqa.org, locate “Quality Improvement in Action”, click on “state” then locate by state.