



Successful Implementation of Electronic Pneumococcal Vaccine Protocol: An Electronic Medical Record

Protocol for Better Promotion of Vaccine Administration and Compliance in a Tertiary Care Facility.

Suganya Chandramohan MD¹, Amar Krishna MD², Yazan Kherallah MS³, David Trupiano PharmD⁴, Paru patel⁵, Keith Kaye MD⁶, Teena Chopra MD, MPH⁷

^{1,2,3,6,7} Department of Infectious Disease, Wayne state University, Detroit, Michigan. ^{4,5} Detroit Medical Center, Detroit Michigan

Poster # 740.
Schandra @dmc.org

ABSTRACT

Background: In 2014 the Center for disease control and prevention's Advisory Committee on Immunization Practices (CDC ACIP) updated its vaccine guidelines and recommended the administration of a 13-valent pneumococcal conjugate vaccine (PCV13) in series with the 23-valent pneumococcal polysaccharide vaccine (PPSV23) for adults >65 year and adults 19-65 year with high risk conditions. As a part of this core measure we implemented an updated electronic medical record(EMR) protocol that aides the nursing staff (NS) to screen and immunize eligible patients. The aim of our study is to analyze the effect of this new protocol on vaccination rate and compliance.

Methods: This study was conducted in 8 hospital tertiary care facility in Detroit. The pneumococcal vaccine assessment protocol (PVAP) was launched in October 2015, which is a user friendly electronic guideline compliant with the new CDC ACIP guidelines. The PVAP popped up on the EMR anytime a new patient was admitted and prompted the NS to fill the checklist aiding them to screen for eligible patients (figure 2). We analyzed the effect on vaccination rate and compliance with ACIP guidelines pre and post PVAP launch. Compliance was defined as the percent of patients who were eligible for the vaccine per the ACIP guidelines and were administered the correct schedule of vaccines.

Results: 500 newly admitted adult patient (age >18) who met the ACIP pneumococcal vaccine criteria were selected via EMR search 6 months pre and post PVAP. Compliance rate pre PVAP ranged from 96 - 98percentile. Post PVAP launch the vaccination rate continued to remain steady around the same range (Figure1). Also complete information on patients' immune status, risk factors and eligibility was easily accessible from a single screen in the EMR following the PVAP launch. PVAP was considered a user friendly and convenient tool by the NS.

Conclusion: The pivotal role of pneumococcal vaccine on prevention of invasive pneumococcal infection is well known. However the new CDC APIC guidelines can be perplexing to NS especially in facility with higher patient volume. PVAP proved to be an efficient tool to aide NS to comply easily to the new ACIP recommendations.

INTRODUCTION

- Streptococcus pneumoniae [Pneumococcus] remains the leading infectious cause of serious illness including bacteremia, meningitis and pneumonia in older adults and individuals with certain immunocompromising conditions. Disease rates in immunocompromised adults can be more than 20 times than those without these conditions.
- PPSV 23 prevents Invasive Pneumococcal disease [IPD] but not Pneumococcal Pneumonia whereas PCV13 prevents both IPD and Pneumonia.
- Current guidelines from CDC and ACIP recommend use of both PPSV23 and PCV13 vaccines for all older adults ≥ 65 years of age and adults ≥19 years of age with immunocompromising conditions, functional or anatomic asplenia, cochlear implants or CSF leaks.
- Despite this, PPSV23 and PCV13 vaccination coverage in 2014 among adults 19-64 years at high risk was 20.3% and among adults aged ≥65 years was 61.3%. In addition, more than 65% of persons who have been hospitalized for severe pneumococcal disease had been admitted in the hospital in the preceding 3-5 year, yet few had received pneumococcal vaccine.

OBJECTIVE

- The aim of our study was to analyze the effect on pneumococcal vaccination rates and compliance with ACIP guidelines after implementation of an updated EMR protocol that aides in screening and immunization of eligible patients .

FIGURE 1

Pneumococcal Vaccination Assessment

Pneumovax vaccine (PPSV23) [pneumococcal 23-valent]

Two doses of Pneumovax [pneumococcal 23-valent] vaccine should be administered at least 5 years apart to:

- 1) Patients aged 65 years or older
- 2) Patients aged 19 years or older with a high risk condition

Prenvar vaccine (PCV13) [pneumococcal 13-valent] vaccine

A single dose of Prevnar [pneumococcal 13-valent] vaccine should be administered to:

- 1) Patients aged 65 years or older
- 2) Patients aged 19 years or older with **CERTAIN** high risk conditions

(Review below for the reference list of conditions)

**** If exact dates of pneumococcal administration are known, please update the Immunization History before completing this form. (Information documented there is incorporated into this process). ****

Has the patient ever received a pneumococcal vaccine before? If so, which ones? (Select all that apply)

- No
- Yes, unknown which ones
- Yes, Two Doses of Pneumovax [pneumococcal 23-valent]
- Yes, Single Dose of Pneumovax [pneumococcal 23-valent] within 5 years
- Yes, Single Dose of Pneumovax [pneumococcal 23-valent] greater than 5 years
- Yes, Single Dose of Pneumovax [pneumococcal 23-valent] unsure of date
- Yes, Single Dose of Prevnar [pneumococcal 13-valent]
- Unknown

Contraindications to receiving a pneumococcal vaccine

- No documented reason
- Allergy/Sensitivity to vaccine
- Bone marrow transplant last 12 months
- Chemotherapy this hospitalization or less than 2 wks prior
- Currently receiving a scheduled course of chemotherapy
- Currently receiving a scheduled course of radiation therapy
- Radiation tx this hospitalization or less than 2 wks prior
- 5-18 yrs of age or older, conjugate vaccine previous 8 wks
- Shingles vaccine within last 4 weeks

High risk conditions that indicate a need for immunization **High Risk Condition indicating need for Prevnar-13 [pneumococcal 13-valent vaccine]**

METHODS

- Study conducted in a Eight hospital tertiary care facility in Detroit region.
- PVAP: user friendly electronic protocol consistent with the new CDC ACIP recommendations was launched in October 2015. Nursing education on PVAP was done at the time protocol was launched.
- The PVAP pops up on the EMR anytime a new patient is admitted. Complete information on patient's immune status, risk factors and eligibility are easily accessible from a single screen in EMR.
- PVAP prompted the NS to fill the checklist aiding them to screen and immunize eligible patients (figure 1).
- For evaluating outcomes, newly admitted adult patients ≥18 years of age who were eligible for vaccination per ACIP guidelines were selected via EMR search 6 months prior to and 6 months after PVAP launch.
- Compliance, defined as percent of patients who were eligible for vaccination and received the correct vaccine type.

RESULTS

- 500 patients each were selected pre and post PVAP implementation.
- Compliance rate pre PVAP was ranging from 96 -98 percentile and continued to remain steady around the same range post PVAP launch. (Figure 2).
- The PVAP was considered user friendly and convenient tool by the NS.

CONCLUSION

- High adherence to ACIP Pneumococcal vaccination recommendations was noted with use of an updated PVAP protocol in hospitalized adults ≥18 years. Nursing education is critical at the beginning to achieve higher compliance to the protocol.

FIGURE 1 Continued

- No high risk condition
- No high risk condition (patient aged 65 or older)
- Asthma (19 years or older)
- Alcoholism
- Chemotherapy
- Chronic Cardiac Disease
- Chronic Pulmonary Disease
- Chronic Liver Disease
- Chronic Renal Failure
- Cochlear Implant
- Congenital or acquired asplenia
- Congenital or acquired immunodeficiency
- CSFLeak
- Diabetes Mellitus
- Functional/Anatomic Asplenia
- Generalized Malignancy
- HIV Infection
- Hodgkins Disease
- Iatrogenic Immunosuppression
- Leukemia/Lymphoma
- Multiple Myeloma
- Nephrotic Syndrome
- Neurologic Disorders Affecting Respiratory Muscles
- Resident of long-term care facility
- Sickle cell disease/other hemaglobinopathy
- Smoker (19 years or older)
- Solid Organ Transplant
- Systemic Corticosteroids

- 1) Cerebrospinal fluid leak
- 2) Cochlear implant
- 3) Sickle cell disease / other hemaglobinopathy
- 4) Congenital or aquired asplenia
- 5) Congenital or aquired immunodeficiency
- 6) Human immunodeficiency virus infection
- 7) Chronic renal failure
- 8) Nephrotic syndrome
- 9) Leukemia
- 10) Lymphoma
- 11) Hodgkin disease
- 12) Generalized malignancy
- 13) Iatrogenic immunosuppression**
- 14) Solid organ transplant
- 15) Multiple myeloma

**** Diseases requiring treatment with immunosuppressive drugs, including long-term systemic corticosteroids and radiation therapy.**

Patient / guardian refused pneumococcal vaccine? Yes No

Preferred Route (Prevnar 13 will only be given IM)

Administer 0.5 ml Pneumococcal vaccine, IM

* Administer 0.5 ml Pneumococcal vaccine, SQ

Administer vaccine SQ FOR:
* Coagulopathy deficiencies
* Severe Thrombocytopenia (platelets < 20,000)

Figure 2

