

Age-appropriate Immunization Improvement Initiative

Camille Moreno, D.O., David Tessier, M.D., Nicole Kornder, M.D., Anthony Nguyen, D.O.,
William Buoni, M.D., W. Fred Miser, M.D. M.A.

Department of Family Medicine, The Ohio State University, Columbus, OH

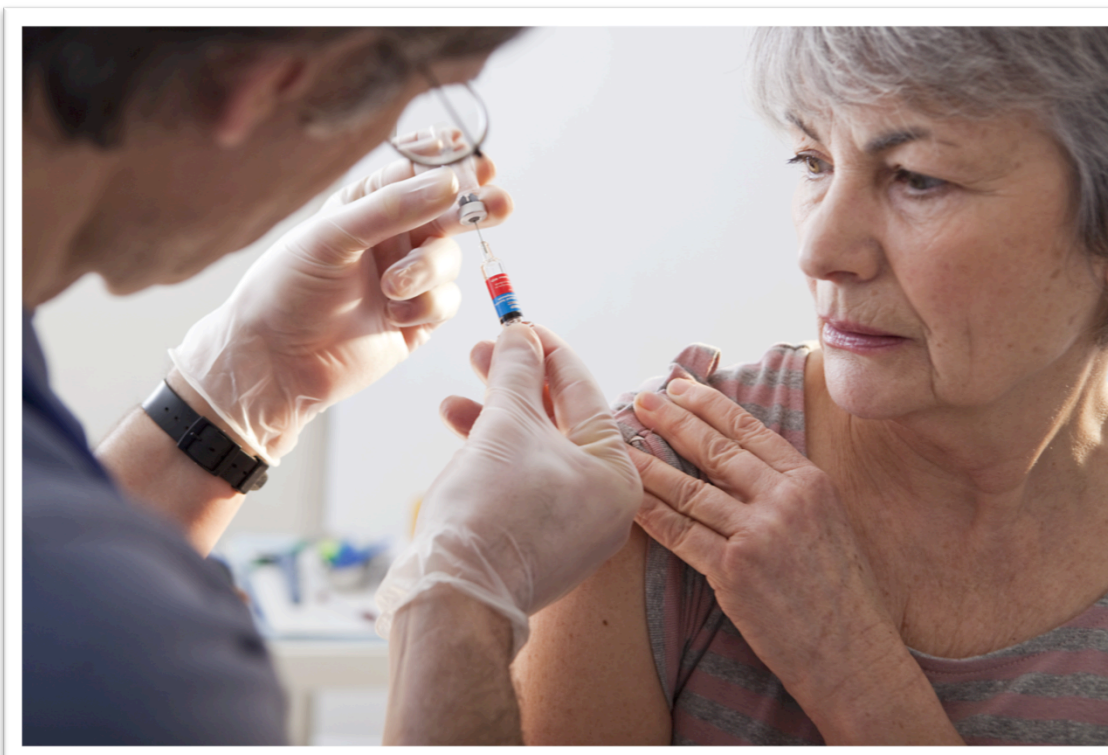


THE OHIO STATE
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WEXNER MEDICAL CENTER

Introduction

- Vaccine-preventable illnesses like pneumonia and influenza cause over 55,000 deaths annually in the US
- Adults ages 65 years and older are disproportionately affected, but less than 66% are adequately vaccinated



Aim Statement

- Improve pneumonia and influenza vaccination rates for patients aged 65 and older by addressing barriers to care and improving patient education in 6 months

Methods

- A pre-assessment survey was used to determine patient, provider, and system barriers
- 16 actions were created to validate, disprove, and discover new barriers

Identified Barriers

- Patient Barriers: concern for safety and efficacy of vaccines, financial constraints, provider mistrust and misinformation regarding administration of vaccines
- Provider Barriers: time constraint in the clinic to discuss vaccines
- System Barriers: maintaining an adequate supply of vaccines

Immunization Data

Reporting Period

- September 1, 2014 – March 31, 2015

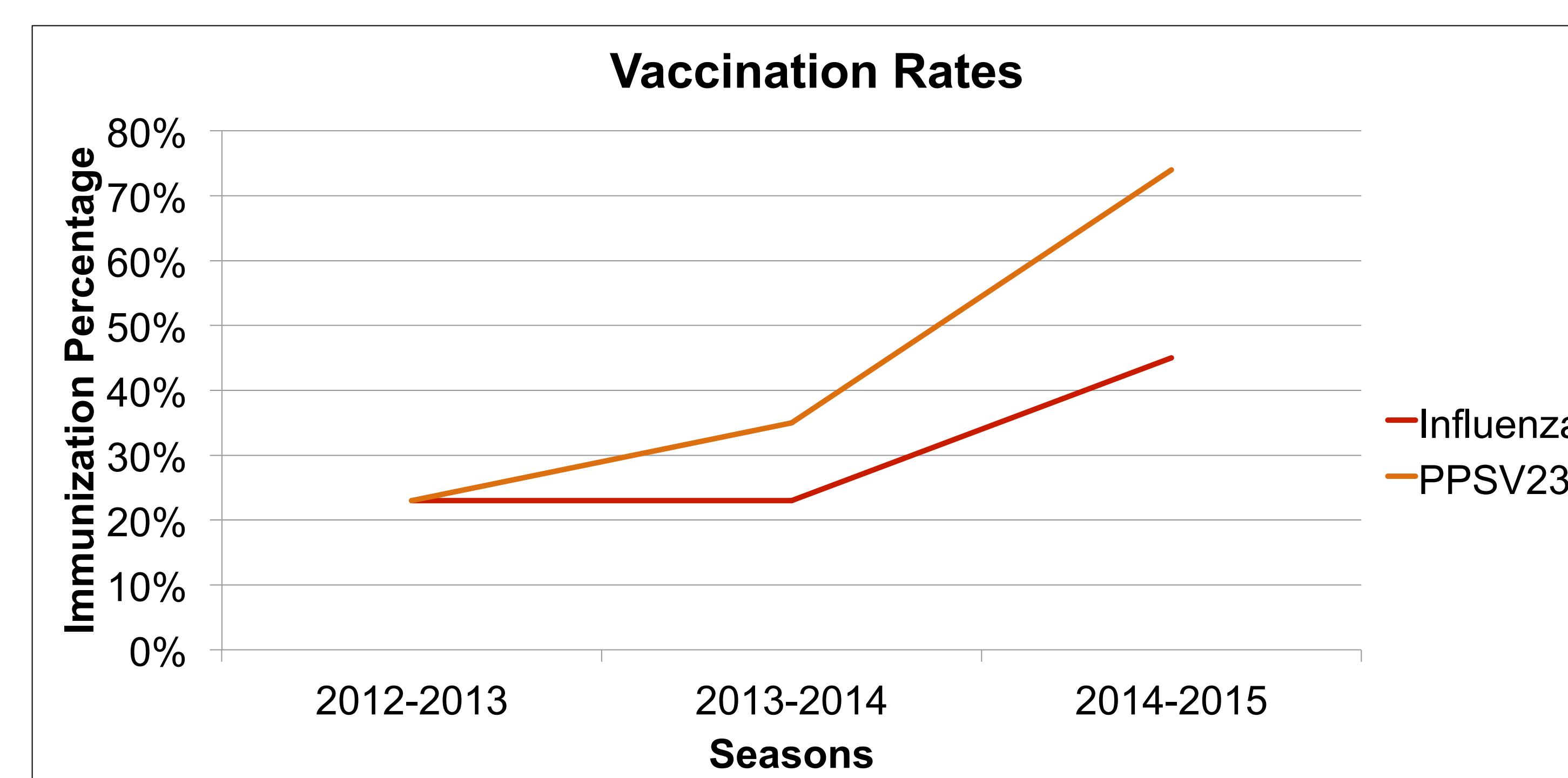
Demographics

- Ages: 65 years and older
- Total number of patients: 261
- Total number of seniors who received *influenza* vaccine: 148 patients
- Total number of seniors who received *PPSV23* vaccine: 244 patients
- Locations: 2 urban family medicine residency program sites

Results

Seniors (age 65 and older)	2012-2013 Flu Season (Sep 2012-Mar 2013)	2013-2014 Flu Season (Sep 2013-Mar 2014)	2014-2015 Flu Season (Sep 2014-Mar 2015)
Influenza Vaccine Rate (%)	23%	23%	45%
Numerator/Denominator (absolute numbers used to calculate rate)		60/261	148/329

Seniors (age 65 and older)	2012-2013 Flu Season (Sep 2012-Mar 2013)	2013-2014 Flu Season (Sep 2013-Mar 2014)	2014-2015 Flu Season (Sep 2014-Mar 2015)
PPSV23 Pneumococcal Vaccine Rate (%)	23%	35%	74%
PPSV23 Numerator/Denominator (numbers used to calculate rate)		91/261	244/329



Key Components

Documentation

- Generation of monthly reports that identified patients in need of pneumococcal and influenza vaccinations
- Review of patient charts labeled “Need for Influenza or Pneumococcal Vaccination”
- Utilization of EMR functions such as “Health Maintenance” and “Best Practice Advisory” for proper documentation of vaccine administration and to serve as reminders to residents

Obtaining Vaccine

- Maintenance of adequate vaccine supply

Compliance Education

- Utilization of care coordinators to contact target population and offer immunization appointments
- Production of patient education videos available for viewing on YouTube™

Supervision

- Generation of periodic reports to measure improvement
- Usage of Information Technology for information organization and sharing of project information

Conclusion

- By identifying and addressing barriers to vaccination in adults 65 years and older, we were able to almost double influenza vaccination rates and almost triple PPS23 vaccination rates.

Reference: <http://www.cdc.gov/nchs/fastats/deaths.htm>

Disclosure/Funding: The Senior Immunization Grant from Anthem Foundation, sponsored by the AAFP Foundation



2014-15 Senior Immunization Grant Awards FINAL REPORT FORM for RESULTS & FINDINGS

Instructions

- The information requested, including Appendix 1-3, should be included in your Final Report.
- Your Final Report is due by May 1, 2015.
- Please include any attachments, graphs, pictures (jpg, if possible) or other items that capture the essence of the outcomes realized by your project.

OHIO STATE UNIVERSITY FAMILY MEDICINE PROGRAM

Contact Information

William G Buoni, M.D., FAAFP Assistant Clinical Professor, Buoni.1@OSU.EDU

Doctor David Tessier is slated to present the Immunization Awards Poster at the 2015 National Conference. He may be accompanied by other residents.

Title of Project **Ohio State University Family Medicine Program Senior Immunization Improvement Program**

Statement of Goal(s)

Immunization Rates ("Primary Metric"): Our most ambitious goal was to achieve an overall immunization rate of 75% for both influenza and pneumococcal vaccines. A reachable goal was to increase the influenza vaccine rates from 23% to 48% (a 25% increase) and to increase pneumococcal vaccine rates from 35% to 60% (a 25% increase). The 25% increase was nearly reached for influenza (45%) and was exceeded for pneumonia (77%).

Residents ("Secondary Metric"): All of our residents (26) were actively engaged in the implementation this system based QI project from start to finish.

Impact on Target Population

1. PATIENT DATA – see appendix 1
2. KEY OUTCOMES (Bullet points)

Five reports have been generated for influenza vaccine administration.

The July 2014 analysis shows that 0 of 351 (0%) of the target population has received vaccine.

The September 2014 analysis shows that 0 of 290 (0%) of the target population has received vaccine.

The November 2014 analysis shows that 79 of 304 (26%) of the target population has received vaccine.

The January 2015 analysis shows that 146 of 326 (45%) of the target population has received vaccine.

The March 2015 analysis shows that 148 of 329 (45%) of the target population has received vaccine.

Five reports have been generated for pneumococcal vaccine administration.

The July 2014 analysis shows that 201 of 351 (57%) of the target population have received vaccine.

The September 2014 analysis shows that 176 of 290 (61%) of the target population have received vaccine.

The November 2014 analysis shows that 176 of 290 (65%) of the target population have received vaccine. The January 2015 analysis shows that 217 of 304 (72%) of the target population has received vaccine. The March 2015 analysis shows that 244 of 329 (74%) of the target population has received vaccine. If the ten additional PCV13 are included then, 254 of 329 (77%) of the target population have received vaccine.

3. KEY PROGRAM COMPONENT

The Ohio State University Wexner Medical Center's electronic medical record was queried to identify patients meeting the following criteria:

1. Age 65 years of age or older.
2. Primary care resident physicians practicing at either Ohio State University Family medicine residency program site.
3. The query resulted in a list of patients , 65 years of age or older. A specific vaccine was considered incomplete if it was not documented in the appropriate section of the electronic medical record.

Five reports have been generated for influenza vaccine administration, as noted previously.

Our care coordinators contacting patients resulted in updating the immunization documentation in the electronic medical record for the patients.

It is difficult determining the cause for the small improvement for influenza vaccine. One barrier stated by our patients was the numerous media reports stating that the influenza vaccine was of limited effectiveness. We continued to apply our improvement methodology to increase the immunization rate despite the media reports of vaccine ineffectiveness.

Five reports have been generated for pneumococcal vaccine administration as noted previously

Our care coordinators contacting the patients resulted in an updated electronic medical record for a patient. The final results have been quite impressive. As we look at our previously stated most ambitious goal for pneumococcal vaccine, there is a 77% immunization rate.

We attempted to perform sixteen actions. It was our hope that some would be high yield and easy to perform in a residency clinic setting. We achieved improvement even though some actions proved difficult to complete. We encountered barriers to completion for some of our sixteen actions.

The core component of our process improvement proceeded well. We continued to apply our improvement methodology to increase the immunization rate throughout the grant timetable despite barriers that appeared. These barriers to achieving appropriate immunizations rates fall into three categories - systems, providers, and patients.

Barriers reported by patients: access to transportation, financial constraints, and provider mistrust and misinformation regarding administration of vaccinations. Patients commonly report concern that they may become sick with the flu after receiving vaccination or concern that vaccinations may contain compounds that are damaging to their health.

System barriers can be seen to vaccine supply challenges. Due to the variable nature of the vaccination market we occasionally replaced vaccines from a different manufacturer. This made ordering vaccine for an individual

confusing.

A final barrier we often encounter is patients with multiple medical problems. Limited clinic time did not allow for an adequate discussion about vaccinations.

ACTION 1 We have generated periodic reports that identify patients that are in need of pneumococcal vaccinations or influenza vaccination. Only our final report (March 2015) accounts for the recent ACIP/CDC Prevnar recommendation as we chose not to modify our original EMR reporting template. We added those receiving PCV 13 as their first pneumonia vaccine in our final vaccine totals.

ACTION 2 The care coordinators contacted our patients in the targeted population and offered an appointment to receive immunizations. They also updated the medical record in the event the vaccines were received elsewhere. We have offered transportation barriers and inform patients of reimbursable cab or bus fare. No patients availed themselves of free transportation to our office. Even though patients were made aware of transportation, they either did not understand or were suspicious and afraid to accept it.

ACTION 3 We utilized a new EMR enhancement called Health Maintenance that automatically lists a need for influenza vaccine. It requires the physician to “click” and open it. This extra step is a small but real barrier. The residents were able to use this function to remind themselves to order the vaccine for their patients. We utilized a new EMR enhancement called Best Practice Alert that automatically lists a need for pneumonia vaccine. The residents were able to use this function to remind themselves to order the vaccine for their patients.

ACTIONS 4,5,6 We will gain information from our patients to determine what specific barriers they face.

We found the survey on paper was the easiest to use. The results were consistent with previously published research regarding patient barriers to immunization with one exception. Our survey showed the patient uncertainty over the cost of the vaccine was more of a barrier than seen in previous published reports.

Using social media or email to gather patient survey information proved to be cumbersome and was abandoned.

The residents responsible for the face-to-face group visit intend to perform this action later in early summer.

ACTION 7 Proper documentation in the electronic medical record required occasional reminders to the residents. The increased documentation allowed for more accurate vaccine administration reports.

ACTION 8 A vaccine leadership team has been created to help with implementation, development, support, analysis. The Google docs information sharing has been partially effective, though it did serve as a superior way to organize information over the course of the project.

ACTION 9 Each month a report will be generated that identifies all relevant elderly patients with scheduled upcoming appoints who are not up to date on immunizations. Designated personnel and/or residents will review those charts and add, “Need for Vaccination” to the chief complaint. This will cue our Medical Assistant to “pend” all necessary vaccination orders when patients are roomed. This became a time consuming task that was abandoned.

ACTION 11 Posters and written patient education materials have been distributed in both resident clinics.

ACTION 12 Production of patient education videos are completed and are available for viewing on Youtube.

The Flu Can Be Prevented—Vaccines Can Help Older Adults

<https://youtu.be/hVi1FRM92CQ>

Pneumonia Can Be Prevented—Vaccines Can Help Older Adults

<https://youtu.be/5WE8xhq8hyc>

ACTION 13 Patients identified as needing vaccinations will be provided with informational brochures upon check in. This was too difficult and time consuming to perform and was abandoned.

ACTION 14 We considered providing \$10 gift cards to 10 randomly selected targeted individuals who received a flu or pneumococcal vaccination during this grant period. Since this required institutional approval, the gift cards were not obtained.

ACTION 15 We will to use a simple method to order vaccinations based upon the supplies that are currently in stock. Despite this we did have supply shortfalls on at least two occasions.

ACTION 16 Doctor David Tessier is slated to present the Immunization Awards Poster at the 2015 National Conference, though he may be accompanied by other residents.

The entire residency has accepted varying levels of responsibility for the sixteen actions. Significant improvement in the immunization rate has occurred. This improvement is a result of a small number of the sixteen actions. Involvement of care coordinators contacting patients, residents understanding the ACIP/CDC guidelines, residents receiving simple instructions to order vaccine and ensuring adequate supply of vaccine are the simple ingredients of immunization improvement success.

1. What outreach and/or public awareness results have you achieved so far?

The primary focus of our improvement project has been internal process improvement rather than outreach and public awareness. The impact has been felt more at the clinical office level than the community level.

4. THINGS THAT WORKED BEST (to accomplish your activities)

The entire residency program has accepted responsibility for the sixteen actions. Our analysis shows that measurable improvement in the immunization rate has occurred. This improvement is a result of a small core of the sixteen actions.

Involvement of care coordinators contacting patients in need of vaccine

Residents understanding the ACIP/CDC guidelines

Residents receiving simple instructions to order vaccine in the electronic medical record

Ensure adequate supply of vaccine.

Many of the residents have commented that the results are out of proportion to the energy that they put into the project. They appreciate that they have not had to work “harder” to get significant results. Other

residents were surprised that some of the incomplete sixteen actions were time consuming and difficult to implement. We had significant improvement despite incomplete actions.

The production of patient education videos hopefully will positively influence patient immunization decisions. They have the potential to have far reaching impact, though we have no way to measure this.

5. LESSONS LEARNED

While Google Docs allowed for quick means of organizing progress reports, it may not be as effective at reminding some residents to stay on task to complete their individual responsibilities. If electronic means are to be utilized further, an immunization champion could supplement Google Docs with reminder emails, text messages and quick individual or small resident group sessions.

6. **PERSONAL STORY** Please provide a personal account that shows a difference was made as the result of the work you and your team have done on this project. It can be a story that reflects on a resident or on someone from the patient population you are serving.

A small number of residents offered to write a personal story though none have produced a story by the time of final submission. If any appear at a later date, they will be forwarded as late addendum.

7. IMPACT OF INTERVENTIONS - see appendix 2

Impact on Residents and Team Members

1. Provide a general description of those who worked on the quality-improvement

The OSU Family Medicine Residency Program is an NCQA level III Patient-Centered Medical Home (PCMH). The program has two residency-based offices: OSU Rardin Family Practice Center and OSU Family Medicine at CarePoint East. Combined, these two practices are comprised of 26 residents, 17 faculty physicians and a support staff of medical assistants, two nurses, two certified nurse practitioners, and administrators.

2. Address the current and future impacts of this project on the residents &/or members of the team.

The underlying design of our process improvement was lean six sigma, using DMAIC fundamentals. While the residents have received basic process improvement education, this project allowed the residents to perform using these principles in their clinical practice. There are numerous examples when process improvement is imposed on a clinical practice. To a large extent this project allowed the residents to actually participate in the design of the project. This experience serves as an introduction to the design and participation in quality improvement efforts in their future family medicine practices.

3. If applicable, describe the impact (on your project) of the new ACIP pneumococcal recommendation issued on September 19, 2014 (Both PCV13 and PPSV23 should be administered routinely in series to all adults aged ≥65 years. <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6337a4.htm#box>)

An unanticipated ACIP recommendation announcement was issued during the Senior Immunization Project. PCV13 was to be included as part of the routine immunization series for all adults aged ≥ 65 years. The initial response by the project leadership was to gather complete specific information about this change and then determine how and when PCV13 could be incorporated into the project. The most obvious adjustment to our program was to include the new recommendation and account for it in our reports as much as possible. This was followed by an educational session with the residents. The recommendation was incorporated over the course of the remaining months of the project. In some cases the vaccine could not be given until the ACIP recommended one year interval between immunizations had past. In other cases the PCV13 was given immediately. Our initial electronic medical record report was not designed to include PCV13. It was determined that we would not alter our original report template to include PCV13. The number of patients who received the new vaccine would be added separately to the final report.

Education and Outreach

1. List of clinical & patient education and outreach materials produced or used in this project.
2. Questionnaire to determine patient reasons to refuse vaccines to be attached to final report email
3. Posters and brochures from the CDC that were obtained directly or printed locally

<http://www.cdc.gov/vaccines/hcp/patient-ed/adults/for-patients/index.html>

4. Patient education videos

The Flu Can Be Prevented—Vaccines Can Help Older Adults

<https://youtu.be/hVi1FRM92CQ>

Pneumonia Can Be Prevented—Vaccines Can Help Older Adults

<https://youtu.be/5WE8xhq8hyc>

Sustainability

Discuss how the FMRP and residents will carry the best practices and gains into the future.

1 The residents have become very familiar with current ACIP immunization charts. They have learned the importance of the ACIP immunization footnotes. They have become proficient at using the electronic medical record system to quickly and correctly order immunization for seniors as well as all age groups.

2 The residents have learned that population management using care coordinators will not only improve immunization rates but also improve electronic medical record documentation.

3 It is expected that this introduction to a clinical quality improvement project will lead to an increased comfort and participation in other unrelated quality improvement projects.

Project Impact Statement for Donors

What would you like the donors who supported this project to know about this project and the benefit you derived from receiving this grant?

One component of the Senior Immunization Project was the creation of patient education videos. Without the support of the AAFP Foundation and the grant donors it would have been impossible to acquire the expertise to produce videos to help senior patients overcome barriers to receiving immunizations. Now that some expertise has been gained in video production, it is hoped that a series of patient education video could be produced to help patients improve their health.

Budget Update – Complete information in Appendix 3.

Appendix 1: PATIENT DATA for 2014-15 Senior Immunization Grant Award

I. INFLUENZA VACCINE INFORMATION: 2014-15 Flu Season

- 1a. Total # of seniors (adults aged ≥ 65) served by your residency who were **eligible** for an *influenza* vaccine from 9/1/14 -3/31/15: At the beginning of the project there were 261 resident assigned patients and 2068 faculty assigned patients
- 1b. Total # of seniors who **received** an *influenza vaccine* from 9/1/14 - 3/31/15: 148 resident patients
- 1c. Historical Data – Enter data in the table by clicking on the box and typing in the numbers

Seniors (age 65 and older)	2012-2013 Flu Season (Sep 2012-Mar 2013)	2013-2014 Flu Season (Sep 2013-Mar 2014)	2014-2015 Flu Season (Sep 2014-Mar 2015)
Influenza Vaccine Rate (%)	23%	23%	45%
Numerator/Denominator (absolute numbers used to calculate rate)		60/261	148/329

- 1d. Summary of methodology used to obtain the data and information:

The query of the Ohio State University Wexner Medical Center's electronic medical record resulted in an initial list of 261 current patients managed primarily by residents. All were 65 years of age or older assigned to a primary care resident practicing at an Ohio State University Family Medicine residency program outpatient site. An influenza vaccine was considered complete if documentation was present for the immunization in anticipation of and before the end of a required season. A vaccine was considered incomplete if it was not documented in the appropriate section of the electronic medical record. To determine a percentage rate of immunization completion, we calculated completed vaccine of patient records reviewed divided by the number of individual patient records examined for each of the report.

An influenza vaccine is considered complete if documentation was present for the immunization in anticipation of and before the end of a 2014-2015 season.

It should be pointed out that the initial query of the Ohio State University Wexner Medical Center's electronic medical record resulted in a list of 261 patients. This underestimated the number of patients who are medically treated by the residents. There are over 9,500 patients in the two locations in which both faculty and resident patients are seen side by side. The improvement processes that are targeted toward resident patients will also be received by most of the other patients age 65 and over. As staff and physicians are focused of the goal of vaccine administration improvement, past experience has shown that other similar classes of patients will also benefit from these process improvements.

II. PNEUMOCOCCAL VACCINE INFORMATION: 2014-15 Flu Season

*Note: New ACIP recommendations for PCV13 and PPSV23 use in adults aged ≥ 65 were issued on Sep 19, 2014 during the course of this grant. They were NOT required to be implemented by grant recipients.

- 2a. Total # of seniors who were **eligible** for a PPSV23 vaccine who were served by your residency from 9/1/14 - 3/31/15: column f arrange data in ascending order, expand the selection ***
- 2b. Total # of seniors who **received** a PPSV23 vaccine from 9/1/14 – 3/31/15: At the beginning of the project there were 261 resident assigned patients and 2068 faculty assigned patients 244 of the resident assigned patients received PPSV23
- 2c. Historical Data – Enter data in the table by clicking on the box and typing in the numbers

Seniors (age 65 and older)	2012-2013 Flu Season (Sep 2012-Mar 2013)	2013-2014 Flu Season (Sep 2013-Mar 2014)	2014-2015 Flu Season (Sep 2014-Mar 2015)
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PPSV23 Pneumococcal Vaccine Rate (%)	23%	35%	74%
PPSV23 Numerator/Denominator (numbers used to calculate rate)		91/261	244/329
*Number of seniors who received PCV13 during specific time period			10

2d. Summary of methodology used to obtain the data and information:

The query of the Ohio State University Wexner Medical Center's electronic medical record resulted in an initial list of 261 current patients managed primarily by residents. All were 65 years of age or older assigned to a primary care resident practicing at an Ohio State University Family Medicine residency program outpatient site. A pneumococcal vaccine was considered complete if documentation was present for the immunization. This cumulative total each season for pneumococcal vaccine resulted in an increasing result compared to the previous year. A vaccine was considered incomplete if it was not documented in the appropriate section of the electronic medical record. To determine a percentage rate of immunization completion, we calculated completed vaccine of patient records reviewed divided by the number of individual patient records examined for each of the report.

A pneumococcal vaccine is considered complete if documentation was present for the immunization after 65 years of age and before the end of a 2014-2015 season. This cumulative total each season for pneumococcal vaccine results in a larger result compared to the previous year.

It should be pointed out that the initial query of the Ohio State University Wexner Medical Center's electronic medical record resulted in a list of 261 patients. This underestimated the number of patients who are medically treated by the residents. There are over 9,500 patients in the two locations in which both faculty and resident patients are seen side by side. The improvement processes that are targeted toward resident patients will also be received by most of the other patients age 65 and over. As staff and physicians are focused of the goal of vaccine administration improvement, past experience has shown that similar classes of patients will also benefit from these process improvements.

It is documented in the EMR that there are 2068 faculty assigned patients eligible to receive the pneumonia vaccine for the upcoming year. In order to exceed 75% rate in administration then a total of 1552 patients would require pneumonia vaccine previously after turning age 65 or in the coming year.

It is important to point out that the faculty assigned patients were subjected to a **pneumonia vaccine** patient centered medical home / meaningful use initiative. These action began previous to and concurrent with this resident improvement project. We have evidence that the faculty assigned patients pneumonia vaccine rate is similar to that of the residents.

III. COMMUNITY-BASED PROJECTS ONLY: INFLUENZA & PNEUMOCOCCAL INFORMATION: 2014-15

Not applicable

IV. PNEUMONIA-RELATED HOSPITALIZATION RATES FOR AGE ≥ 65, Reported Over 2 Flu Seasons

4a. Historical Data – Enter data in the table by clicking on the box and typing in the numbers

PNEUMONIA-RELATED HOSPITALIZATION RATES FOR SENIORS AGE ≥ 65		
Patients 65 and older	2013-2014 Flu Season (Sep 2013-Mar 2014)	2014-2015 Flu Season (Sep 2014-Mar 2015)
Community Acquired Pneumonia	Not readily available	
Pneumococcal Pneumonia		

4b. Summary of methodology used to obtain the data and information:

Unfortunately accurate historical and recent hospitalization data is not readily available at the present time.

Hospitalizations due to pneumonia and influenza

In Franklin County, the county in which the Ohio State University Wexner Medical Center is located, approximately 8 per 1,000 people of all ages were hospitalized due to pneumonia, compared to 10 per 1,000 people in Ohio.

Approximately 2 per 1,000 people of all ages were hospitalized due to influenza, compared to 1 per 1,000 people in Ohio.

Pneumonia and influenza cause the most hospitalizations in Franklin County due to infectious disease.

hospitalization rates

	FRANKLIN COUNTY RESIDENTS RATE PER 1,000 POPULATION	OHIO RESIDENTS RATE PER 1,000 POPULATION
Cardiovascular/stroke*	56.6	71.5
diabetes	25	28.9
asthma	10.5	10.1
pneumonia	7.5	10.3
premature births	1.7	2.0
influenza	1.7	1.1

diagnosis at discharge

* hypertension, heart failure, heart attack, stroke

There were 8,640 Franklin county residents hospitalized with the diagnosis of pneumonia and there were 1,902 Franklin county residents hospitalized with the diagnosis of influenza

SOURCE: 2009 OHIO HOSPITAL ASSOCIATION

In 2006, those 65 and older accounted for approximately 57% of the total number of pneumonia discharges nationally. The hospital discharge rate for pneumonia was lowest for those 15–44 years of age (8.5 per 10,000) followed by those under 15 (28.3 per 10,000) and those 45–64 years (33.4 per 10,000). Those over 65 had the highest hospital discharge rate at 189.0 per 10,000.¹⁹

It is assumed the national statistics listed above reflect the experience of the Ohio State University Wexner Medical Center.

19 Center for Disease Control and Prevention. National Center for Health Statistics. National Hospital Discharge - 2005 and 1998 published data, 2006.

In 2006, the national hospital discharge rate for influenza could not be calculated reliably for those 15–44 and 45–64 years of age due to the relatively small number of influenza discharges within these age groups. Those over 65 had the highest number of discharges (18,000) and the highest discharge rate of 4.9 per 10,000 persons.²⁰

It is assumed the national statistics listed above reflect the experience of the Ohio State University Wexner Medical Center.

20 Center for Disease Control and Prevention. National Center for Health Statistics. National Hospital Discharge - 2005 and 1998 published data, 2006.