Organizational Strategies to Improve Influenza and Pneumococcal Vaccinations Compliance in Patients Age 65 and Older

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INTRODUCTION

Influenza and pneumonia are common but serious illnesses that can increase mortality in the senior adult population. Studies consistently show vaccines significantly reduce the occurrence of serious influenza and pneumococcal outcomes, including severity, hospitalizations and death, yet vaccination rates continue to be markedly lower in the older adult population compared to the pediatric population (1,2,3). It has been suggested that uncertainties and misinformation regarding vaccine roles and their effectiveness in preventing morbidity and mortality may have an effect on adult immunization rates (3).

In an effort to increase vaccinations in this vulnerable population, The Family Medicine Center (FMC) at Georgia Regents University (GRU) Augusta was awarded an American Academy of Family Physicians (AAFP) Senior Immunization Grant Award in 2014. This award has allowed the practice to implement high-impact, team-based interventions to increase influenza and pneumococcal vaccination rates in our senior adult patient population.

PURPOSE

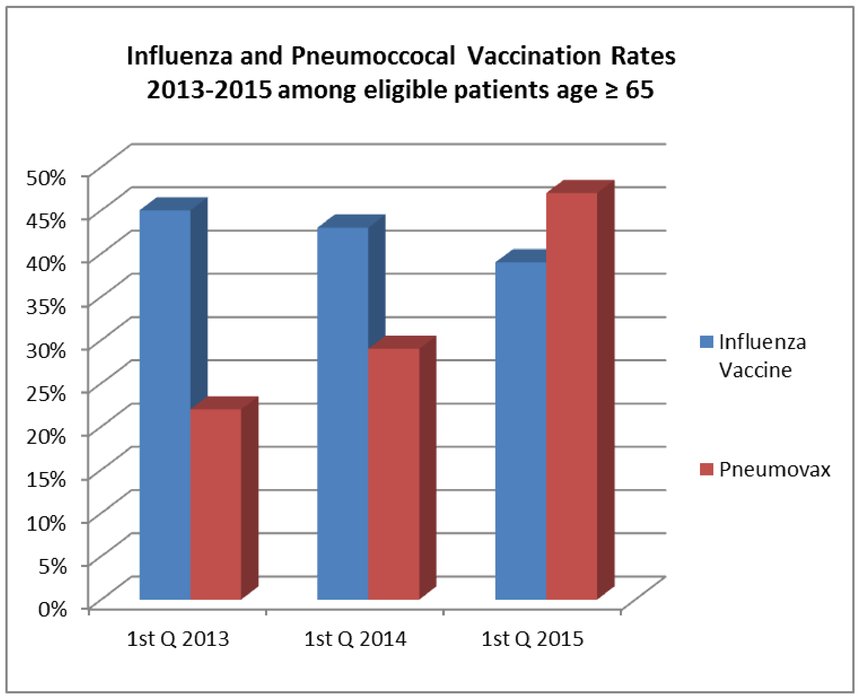
The objective of this study was to increase influenza and pneumococcal vaccination rates in our senior adult patient population; patients age ≥65, while evaluating the effectiveness of clinical interventions during the 2014-2015 flu season.

METHODS

A series of standing orders were initiated allowing nursing staff to administer vaccines to eligible patients during intake. Patient schedules were reviewed weekly and charts flagged for those patients needing vaccinations. Early in the flu season, eligible patients were sent a postcard highlighting vaccination facts encouraging them to call for an appointment. Later in the season, a second post card was sent as a reminder to those patients still not compliant. An automated telephone message was also utilized in which patients had the option to speak with a clinic representative to schedule an appointment. Internally, we hosted an educational session for faculty, residents and clinical staff to highlight vaccination guidelines and encourage their participation in the ongoing push to increase vaccination rates.

RESULTS

Baseline data showed that 45% (887) of eligible patients received an influenza vaccination and 22% (426) received pneumococcal vaccination during the 2012-2013 flu season. Results were calculated in April 2015 at the conclusion of the study. Among the 2129 eligible patients, results showed a compliance rate of 39% (833) for influenza vaccination and 47% (1001) for pneumococcal immunization. Although the flu vaccination rate has slightly decreased, the use of standing orders, flagging patients' charts and the use of patient reminders has increased the number of pneumococcal vaccinations administered and documented.



ACKNOWLEDEGEMENTS

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CONCLUSIONS

Implementation of standing orders has resulted in a streamlined workflow allowing nursing staff to evaluate and administer vaccinations during intake. This has significantly increased the likelihood of vaccination compliance at each visit.

Important information from the CDC regarding the 2014-2015 flu season indicated a significant mismatch between the vaccines and the viruses in the community, with H3N2 being the most common circulating strain. Consequently, the CDC also recorded the highest flu-associated hospitalization rates since 2005 (4). It is unclear if this influenced vaccination rates in the population later in the flu season once this information was widely available.

Also of note, our clinical practice initially had intentions to create an interface between the Georgia State Immunizations Database (GRITS) and the FMC electronic medical record (EMR). Our hope was that this interface would aid in updating patient records to more accurately reflect patient immunization rates, but as the project progressed this intervention proved to be problematic in regard to time and funding. We were unable to develop the interface due to the time restraints of the study. It is our hope that further development would allow for an interface in the future.

Overall, the results from this study raise hope that these interventions—standing orders, flagging of patient files and patient reminders—could be used to streamline administration of vaccinations to other populations.

REFERENCES

1. Nichol KL, Baken L, Nelson A. Relationship between influenza vaccination and outpatient visits, hospitalization, and mortality in elderly persons with chronic lung disease Ann Intern Med. 1999 Mar 2;130(5):397-403.
2. Nichol KL . Influenza vaccination in the elderly: impact on hospitalization and mortality Drugs Aging. 2005;22(6):495-515.
3. Nichol KL, Margolis KL, WouremnaJ, von Sternberg T. Effectiveness of influenza vaccine in the elderly, Gerontology. 1996;42(5):274-9.
4. Centers for Disease Control and Prevention. What You Should Know for the 2014 – 2015 Influenza Season. Retrieved from: http://www.cdc.gov/flu/about/season/flu-season-2014-2015.htm

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.

GEORGIA REGENTS UNIVERSITY ~ AUGUSTA FAMILY MEDICINE RESIDENCY PROGRAM

Contact Information

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Title of Project: Organizational Strategies to Improve Influenza and Pneumococcal Vaccination Compliance in Patients 65 and Older

Statement of Goal(s) Include your Primary Metrics:

The objective of this study was to evaluate the effectiveness of physician education and enhancement of clinic protocol to improve influenza and pneumococcal vaccine rates in Georgia Regents University Family Medicine Center (FMC) patients age 65 and older while enhancing residents' quality improvement training. Influenza and Pneumonia pose a great health risk to the geriatric population resulting in increased admissions and mortality. By providing physician education and implementing protocol changes in the FMC we anticipated an increase in influenza and pneumococcal vaccination rates.

Primary Metric: Increase pneumococcal and influenza vaccination compliance among patients age ≥ 65 with a specific goal of 1,627 (76%) seniors receiving an influenza vaccine and 236 (11%) seniors receiving a pneumococcal vaccine during the 2014-2015 flu season.

Secondary Metric: Increase knowledge and awareness of senior vaccinations through the use of resident led education projects

Impact on Target Population

1. PATIENT DATA – Complete information in Appendix 1.

2. KEY OUTCOMES (Bullet points):
   - Pneumococcal vaccination rate increased from 22% in FY13 to 47% in FY15 (p=0.001).
   - Influenza vaccination rate declined from 45% in FY13 to 39% in FY15 (p<0.001).

3. KEY PROGRAM COMPONENTS:
   Baseline data was obtained from first quarter FY2013 and FY2014 clinical quality reports. These reports allow for evaluation of overall practice and individual provider performance. A resident project leadership team was identified, which consisted of two PGY-2 residents and one PGY-3 resident. The resident team developed and presented a lecture highlighting vaccination guidelines and compliance to FMC residents and faculty, then facilitated a practice wide chart review focusing on compliance with guidelines. The overall project team which included residents, faculty, clinical and research staff developed a protocol for standing orders which would allow nursing staff to administer necessary influenza and pneumococcal vaccinations during intake. The protocol was evaluated and approved by

the executive council, then implemented in the FMC. Changes to workflow were presented to clinical staff. In addition, clinical staff evaluated weekly appointment lists and identified patients requiring influenza and/or pneumococcal vaccinations then reconciled this list with current vaccination information available through the Georgia Registry of Immunization Transactions and Services (GRITS) and updated any information that was previously not recorded in the FMC electronic medical record (EMR). Those patients requiring influenza and/or pneumococcal vaccinations had a flag added to their chart which prompted clinical staff to administer vaccinations during the patient's next appointment.

In addition to clinical education and protocol development, the project also allowed for patient notification and education. At the beginning of the 2014-2015 flu season a postcard was developed by the project team which highlighted influenza and pneumococcal vaccination. The postcard was mailed to all FMC patients age 65 and over who were not in compliance with influenza and/or pneumococcal vaccination guidelines. Patients who were still not in compliance by January 2015 received a second postcard mailing in addition to an automated phone message which allowed the patient the option of speaking directly with an operator to schedule an appointment. Adult vaccination was also highlighted using electronic bulletin boards in the patient waiting areas. To facilitate ongoing patient education, tablets were purchased to allow providers and clinical staff to easily reference immunization guidelines. The tablets will also be used to educate patients through PowerPoint and video presentations which patients can view while waiting to see their provider.

4. THINGS THAT WORKED BEST (to accomplish your activities):
   The development and implementation of standing orders streamlined clinical workflow and increased vaccination compliance by allowing nursing staff to administer necessary vaccinations anytime during the patient visit.

   The use of quality data reports can increase provider awareness and compliance to recommended guidelines. By highlighting areas of deficiency at the clinical and individual provider levels, providers are better able to focus on quality measures that directly impact patient outcomes.

5. LESSONS LEARNED:
   Important information from the CDC regarding the 2014-2015 flu season indicated a significant mismatch between the vaccines and the viruses in the community, with H3N2 being the most common circulating strain. Consequently, the CDC also recorded the highest flu-associated hospitalization rates since 2005. It is unclear if this influenced vaccination rates in the population later in the flu season once this information was widely available and frequently publicized on common news outlets.

   The initial project had intentions to create an interface between our state immunizations database (GRITS) and the FMC EMR to streamline reconciliation of patient records and more accurately reflect patient immunization rates, but as the project progressed this intervention proved to be problematic in regard to time and funding. We were unable to develop the interface during the course of this project due to current unavailability of necessary EMR development personnel.

6. PERSONAL STORY:
   Undertaking the objective of increasing the clinic's immunization rates, especially for influenza, this past season was challenging. Some of our patients have been misinformed, and some were generally unaware of how immunizations could benefit them. This has increased provider awareness of some patients' hesitancy to receive vaccinations. This is built on preconceived notions that immunizations may make them sick, or in some cases give them the actual disease. The residents of our clinic had to educate their patient population on common misconceptions and give them information on why vaccinations are important. It is easy to convince parents to vaccinate their children because overwhelmingly they want to make sure their child is healthy. It becomes a difficult task to convince an older adult of the clear benefit of receiving the pneumococcal vaccine and to have an annual influenza vaccine. The best evidence we can give is the amount of elderly people that end up in the hospital because of the flu as well as pneumonia. As these illnesses affect an older individual, the likelihood of mortality goes up significantly. It was helpful to see the hesitancy on whether to receive the vaccination

or not. This can best be seen in clinic, where after the main problems have been addressed and the question of whether they want a flu shot this year comes up. The hesitancy is good because it means they are open to it but unsure of the gain. This has been where residents, especially those involved in the project, have tried to convince their patient population of their risk factors for flu and pneumonia and how prone they are to becoming ill from certain viruses or bacteria. At this point the patient can make an informed decision and if they choose to say no it was not without long contemplation. This project has made educating the patients we serve more of a priority than just making it a checklist for health maintenance. It is important for them to understand the reason why they are being offered this in the first place.

On one occasion a patient that comes to our clinic was unsure of whether or not she wanted to have the flu vaccine this year. She has had it in the past many years ago, but nothing within the past 5 years. She declined to have the vaccine, but 2 weeks later she returned to the clinic. She was not sick, but was concerned because people in her household were sick with the "flu." The patient is immunocompromised, and from our previous conversations was aware of her risk should she contract the flu. She was also aware of the reports that many more people were catching the flu this season than in years past. She may have encountered the flu before, but her mindset was different now that she heard of the severity of it on the news, and it was happening in her own home. She received the vaccine and was told that she may have some soreness in the arm after the injection and may even have a fever. She understood all the precautions and was willing to take the risk. Thankfully for her she never got the flu, and her family fully recovered from the illness. This may have seemed like a scare tactic, but she knew that the years she declined it was because she did not have perspective of how devastating it can be.

The personal reflection above was written by Prasand Kesavan, MD, PGY-2 Family Medicine Resident. As a member of our resident project leadership team, Dr. Kesavan worked closely on all aspects of the project.

7. IMPACT OF INTERVENTIONS - Complete information in Appendix 2.

Impact on Residents and Team Members

1. Provide a general description of those who worked on the quality-improvement and/or community-based project (e.g., 18 residents, 3 medical students, and 2 MPH graduate students):

   The project team consisted of 3 residents, 2 faculty, 2 research staff, and 1 EMR systems analyst. The overall project has impacted 26 Family Medicine Residents, 19 Faculty and 19 Medical Students.

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

   Current and future impacts include continued provider and patient education. Yearly didactic lectures will be given highlighting current vaccination guidelines with emphasis on adult and child immunization schedules. Use of standing orders will continue to be evaluated and updated as necessary. Patient education through the use of electronic media in the patient room and waiting areas will facilitate patient/provider discussion and support to increase compliance rates. Increased awareness of clinical quality measures through the use of clinical and provider level quality reports will continue to foster adherence to immunization guidelines and impact patient outcomes.

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) **N/A**

Education and Outreach

1. Summary of accomplishments:
   Patient and provider education was a primary focus of this project. Through the use of mailings, automated telephone messages, web based messages, and electronic bulletin boards, our team was able to distribute pertinent information regarding current guidelines for influenza and pneumococcal

vaccinations in our target population. Providers attended a resident led didactic lecture and chart review highlighting current vaccination guidelines.

2. List of clinical & patient education and outreach materials produced or used in this project:
    - **Pre-season Postcard**: Early in the project a postcard was developed and mailed to our target population prior to the beginning of flu season. This post card contained information regarding influenza and pneumococcal vaccination encouraging patients to schedule an appointment.
    - **Electronic Bulletin Board**: Slides highlighting awareness and benefits of adult immunization were developed and displayed on electronic bulletin boards in patient waiting areas.
    - **Didactic Lecture and Chart Review**: The resident team presented a lecture to all providers regarding current adult vaccination guidelines with emphasis on geriatric guidelines.
    - **Televox Campaign**: In January 2015 patients who were still non-compliant with influenza and pneumococcal vaccination were identified and contacted through mailing and automated phone messages. The automated messaging system allowed patients the option to speak with an operator to schedule an appointment.

3. List of presentations with the date(s) and brief description of the audience.

    In October 2014 the resident team developed and presented a lecture and chart review highlighting vaccination guidelines and compliance to FMC residents, faculty, and medical students.

    Gititu E, Kesavan P, Agabin E, Coffin J., Duffie C, Andrews H, Hatch P. Organizational Strategies to Improve Influenza and Pneumococcal Vaccinations Compliance in Patients Age 65 and Older. 48th STFM Annual Spring Conference, Orlando, Florida, April 2015.

4. Include the materials developed and implemented as an attachment (in a jpg or pdf format) or provide the web address where they can be accessed.
    Attachment 1: Pre-season Postcard
    Attachment 2: PowerPoint slides used in resident led didactic session
    Attachment 3: Chart review template
    Attachment 4: Abstract submitted as *resident work in progress* to STFM Annual Spring Conference
    Attachment 5: Poster presented at STFM Annual Spring Conference

Sustainability

Discuss how the FMRP and residents will carry the best practices and gains into the future.
The gains made through the interventions implemented through this project will be sustained by embedding them within a larger system-wide effort to improve vaccination rates. Implementing a standing order that allowed nurses to investigate immunizations status and administer vaccines when indicated has now become part of the routine workflow during the intake process. There have been many patients who have utilized our Welcome to Medicare Annual Visit Program in which patients who have just recently turned 65 and transitioned to Medicare receive an hour consultation with a nurse practitioner to discuss all health matters including vaccinations, DEXA scans, colonoscopies, and other preventative care measures that often cannot be fully addressed during a 15 minute visit. Our IT department has been able to identify those patients aged 65 and older who are due for an immunization, and with this information, our clinic has been able to send reminders to these patients. Institutionally, our clinic has the resources to sustain this tracking system with our in-house IT personnel and in-house research department who can analyze our data to ensure that we have met our quarterly/yearly goals. Education is a lifelong process for providers who constantly have to keep up to date with best evidence based practice. As a result, our department will continue to educate our residents, faculty, medical students, and nursing staff in the latest CDC recommendations regarding the importance of vaccinations to patient health and how to dispel myths portrayed by the media.

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?

The essence of this project was to improve vaccination rates in our geriatric population there by positively affecting patient outcomes and quality of life. Through the work of this project residents and providers have been afforded the opportunity to evaluate quality measures and implement tools to effect change. The lasting effects of this project will be felt going forward, not just in our clinic, but in the clinics and offices that our graduating residents go on to work in. The foundation of practice-based population health will serve the residents well as they move forward in their careers. Without the support of grant donors these important teaching moments would not be possible. Our program is grateful to have had the opportunity to participate in this project.

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: 2129

1b. Total # of seniors who ***received*** an *influenza vaccine* from 9/1/14 - 3/31/15: 833

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 (%)	**45%**	**43%**	**39%**
Numerator/Denominator (absolute numbers used to calculate rate)	887/1978	893/2096	833/2163

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

First quarter immunization compliance data was obtained through PPRNet reports. These customizable electronic medical record (EMR) reports calculate data on select clinical quality measures, which allows our practice to easily assess compliance and measure outcomes for any given timeframe. Numerator data were calculated from the total number of eligible patients who were in compliance with flu vaccination as of March 31 of each flu season. Denominator data were calculated from the total number of patients eligible for flu vaccination during each flu season. Eligible patients are Family Medicine Center patients age ≥ 65 with no contraindications for influenza and/or pneumococcal vaccination. Data were analyzed to assess the change in rate of vaccination using Chi-square test for proportions using SAS v.9.3. The difference in the percentage of patients who received the flu vaccine from the 2013 – 2014 flu season to the 2014 – 2015 flu season was statistically significant (p = 0.001).

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: 2129

2b. Total # of seniors who ***received*** *a PPSV23* vaccine from 9/1/14 – 3/31/15: 1001

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)
PPSV23 Pneumococcal Vaccine Rate (%)	**22%**	**29%**	**47%**
PPSV23 Numerator/Denominator (numbers used to calculate rate)	426/1978	610/2096	1001/2163
***Number of seniors who received **PCV13** during specific time period			**N/A**

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

First quarter immunization compliance data was obtained through PPRNet reports. These customizable electronic medical record (EMR) reports calculate data on select clinical quality measures, which allows our practice to easily assess compliance and measure outcomes for any given timeframe. Numerator data were calculated from the total number of eligible patients who were in compliance with pneumococcal vaccination as of March 31 of each flu season. Denominator data were calculated from the total number of patients eligible for pneumococcal vaccination during each flu season. Eligible patients are Family Medicine Center patients age ≥ 65 with no contraindications for influenza and/or pneumococcal vaccination. Data were analyzed to assess the change in rate of vaccination using Chi-square test for proportions using SAS v.9.3. The difference in the percentage of patients who received the pneumococcal vaccine from the 2013 – 2014 flu season to the 2014 – 2015 flu season was statistically significant (p<0.001).