

Multi-Dimensional Approach to Increasing Influenza and Pneumococcal Vaccination in the Elderly Population in a Primarily Low-Income, Suburban Family Health Clinic

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Background

During the 2013 -2014 influenza season, the Family Health Center cared for 1346 seniors. Of these seniors, 539 (40%) were vaccinated against influenza and 65 (5%) were vaccinated against pneumococcal disease according to the electronic health medical record.

Project Objectives

Primary endpoint: To increase vaccination rates by at least 25% compared to previous flu season.

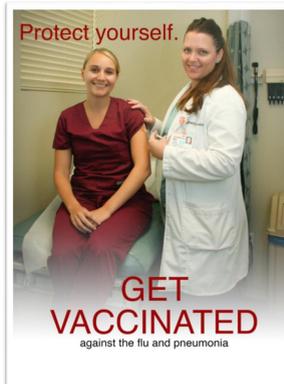
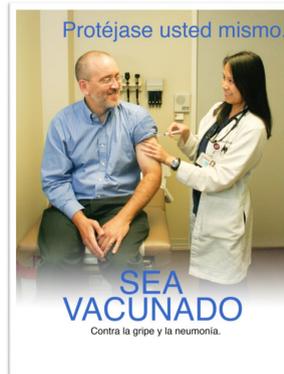
Secondary endpoint: To have 80% of seniors enrolled at the Family Health Center vaccinated against influenza and 60% against pneumococcal.

Methods

A multidimensional intervention was implemented in the Family Health Center including:

- Community outreach by reminder postcards mailed to senior patients
- Personalized telephone calls to recall patients back to clinic
- Banners advertising availability of flu/pneumococcal vaccines outside of the clinic in English and Spanish
- Personalized posters placed inside exam rooms in English and Spanish
- Pins worn by staff members encouraging vaccinations
- Education of staff and physicians through several presentations
- Patient education through informative pamphlet and video in English and Spanish
- Vaccination “report cards” given to patient to help start a conversation with their provider about the need for vaccinations

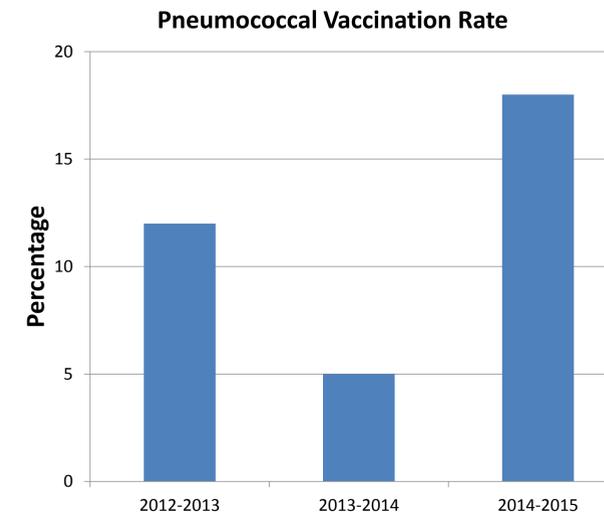
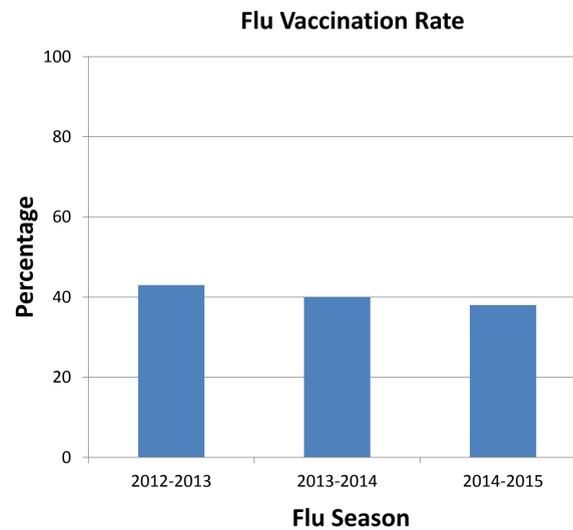
Progress was tracked periodically by generating reports from the electronic health medical record, with report cards that were collected from clinic, and through manual chart review.



Results

During the 2014 to 2015 influenza season:

- 1365 seniors were seen in the Family Health Center during the study period
- 519 received the influenza vaccine
- Influenza vaccine rate was 38% of all eligible seniors
- 205 received the pneumococcal vaccine
 - 133 received the PPSV 23 vaccine
 - 72 received the PCV13 vaccine
- Pneumococcal vaccine rate was 18% of all eligible seniors



Conclusions

- Primary endpoint for influenza vaccination rate was not successfully reached
- Primary endpoint for pneumococcal vaccination rate was successfully reached
- Neither secondary endpoints were reached at the end of the study period
- The personalized materials helped to create a sense of community and pro-vaccination environment, but were indirect and ultimately did not substantially help to achieve our goal
- The telephone calls contributed the most to reach the goal pneumococcal vaccination rate
- Direct approaches were more effective at increasing vaccination rates

Future Plans

For the next flu season, a more direct approach will be implemented at the Family Health Center, including:

- Interviewing providers with the highest vaccination rates in the Family Health Center to see what strategies work for them. An attempt at clinic-wide implementation will then be made.
- More effective use of the electronic health medical record to generate detailed reports to identify patients who have not been vaccinated. Those patients will then be personally invited to the Family Health Center for vaccination
- Consider holding a walk-in clinic and designating a dedicated staff member for vaccine administration

Acknowledgements

We would like to sincerely thank the donors who supported this project, the AAFP Foundation, and the Anthem Foundation for the opportunity to create, design, and implement a QI project in our clinic to better the health of our senior population. This project would not have been possible without your generous donations.

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

Name of Family Medicine Residency Program: Pomona Valley Family Medicine Residency Program

Contact Information

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2. Names of Residents presenting Immunization Awards Poster at the 2015 National Conference:
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Title of Project

Multi-dimensional Approach to Increasing Influenza and Pneumococcal Vaccination in the Elderly in a Primarily Low-Income, Suburban Family Health Clinic.

Statement of Goal

The goal of the project is to improve the influenza and pneumococcal immunization rate for the Family Health Center (FHC) patients ages 65 and older. The primary endpoint is to increase vaccination rates by at least 25% compared to the previous flu season. The secondary endpoint is to have 80% of seniors enrolled at the FHC vaccinated against influenza and 60% against pneumococcal.

Immunization Rates: In fall/winter 2014/2015, 1352 seniors (80% of seniors seen in the FHC in the last 6 months) will be vaccinated at the Family Health Center or have a documented vaccine, from another site, in their electronic health record. 1014 seniors (60% of the same group) will receive pneumococcal vaccine at the Family Health Center or have a documented vaccine in their electronic health record after reaching 65 years of age.

Impact on Target Population

1. PATIENT DATA – Complete information in Appendix 1.
2. KEY OUTCOMES
 - 519/1365 seniors (38.0%) vaccinated for influenza
 - 208/1177 seniors (17.7%) vaccinated for pneumococcal
3. KEY PROGRAM COMPONENTS
 - Community outreach with reminder postcards mailed to senior patients.
 - Telephone calls to recall patients back to the clinic for vaccination.
 - Banners in English and Spanish to hang outside the clinic advertising availability of the vaccines.
 - Posters showing clinic physicians giving and receiving vaccinations.
 - Pins encouraging vaccination, worn by physicians and staff to serve as reminders for physicians, staff, and patients.
 - Education of medical staff and physicians by PowerPoint presentation with question and answer sessions.
 - Patient education through an informative pamphlet and video addressing the importance and dispelling common myths of vaccination (in English and Spanish), and one-on-one discussion during appointments.

4. THINGS THAT WORKED BEST

The personalized posters, pins, outside banners, and videos drew attention to the availability of the vaccines. They also served as reminders to the providers/staff to vaccinate their patients. The posters that pictured our own Family Health Center doctors and patients particularly helped spark interest in and discussion of vaccination.

Holding staff meetings at the beginning of the trial and at the halfway point helped boost enthusiasm for both physicians and LVNs/MAs.

Creating competition amongst staff by giving small rewards for highest vaccination rates was a fun way to maintain attention throughout the course of the flu season.

Personal phone calls to patients also had a significant impact. At the time of the interim report, only 47 seniors had received the pneumococcal vaccine. After the interim report, the patients who had received the influenza vaccine, but not the pneumococcal vaccine, were contacted to schedule an appointment to discuss the pneumococcal vaccine with their primary care providers. At the end of the project, and after implementing the phone call outreach, a total of 203 seniors were vaccinated with the pneumococcal vaccine.

5. LESSONS LEARNED

While some aspects of our project were successful, there were areas that we could improve upon. We learned several things from this project: 1) We needed a more direct approach. 2) Some aspects of our project impacted clinic workflow. 3) Utilizing a project manager would be beneficial. 4) Issues with logistics affected our outcome.

We realized that though our materials were visually appealing to our patients and created a sense of community in our clinic, we may have needed a more direct approach. For instance, waiting for the posters, postcards, pins and videos to spark interest and conversation may not have worked as well as having a standing order for patients to receive the vaccinations. Then, if patients refused, the physicians could address their concerns and questions. Our data shows that attending physicians in our clinic had higher rates of vaccinations than residents (19.75% vs 11% influenza vaccination rate). Many of them have been working at the Family Health Center for a number of years. While continuity of care is a cornerstone of family medicine, residents' patients often see other providers for a variety of reasons: fewer days in clinic, away rotations, etc. Therefore patients who see attendings may have more trust in their doctors and be less reluctant to accept an offered vaccination.

Some of our materials appeared to be less effective and may have even disrupted work flow. We received feedback that the postcards mailed to patients were too generic-appearing, did not clearly identify the Family Health Center and could have been easily mistaken as "junk mail." The postcards were one of the more expensive interventions, though they seemed to have had the lowest yield in terms of impact. Given how widely popular our personalized clinic posters were, using a similar approach with our postcards may have worked better. The report cards and video message on the tablets were not very effective due to the difficulty in integrating them into the physician's and MA's workflow. We realized that it was challenging to change the workflow for our staff by adding additional tasks. Not every patient received report cards or saw the videos as we expected. Furthermore, the tablets were not ready to be used until halfway through the project due to the time it took to produce the video. On a positive note, personalizing and creating educational materials was neither as difficult nor as expensive as we originally thought. This was significant as we found that free resources for flu vaccination promotion and education did not quite fit for our target demographic and such materials for pneumococcal vaccination were largely nonexistent. Creating and having personalized signs, posters and pins helped to foster a more personable intervention.

We realized at the end of the project that we had extra money that could have been used to hire help. Some of the data-collecting tasks such as reviewing hospital records or recording the collected report cards were difficult for the primary team to sustain, and did not require the expertise of a licensed medical professional. Hiring extra staff or a project manager to oversee these tasks would have helped to maintain the project, and provide relief for the primary leaders.

Changes in our clinic logistics affected our outcome. In January, the payer changed for some of our patients. As a result, the pneumococcal vaccine suddenly required prior authorization. This became a larger issue as some of these patients were called to clinic specifically for the pneumococcal vaccine, only to learn at the time of their visit that they would not be able to receive the vaccine on that day. In addition, our clinic did not have enough flu vaccines stocked to last to the end of the CDC recommended vaccination period. Around late February/early March, our clinic had run out of flu vaccines entirely. Luckily we were able to quickly obtain more flu vaccines and the clinic was only out of the flu vaccine for one day. However, were it not for our project, it is likely that the flu vaccine may not have been replenished.

We noticed a drop off in vaccination rates after December, which coincided with decline in enthusiasm amongst staff. To remedy this, we held another presentation for the staff members of the Family Health Clinic to update them on the progress of the project and to gently remind them of the importance of vaccinating our seniors. It was well received and also provided a valuable opportunity to obtain feedback from the LVNs and MAs about how the project was going for them. Continuing to vaccinate throughout the flu season is challenging as interest amongst patients appears to wane as well. This may be due to the mistaken belief on the patients part that if they have not gotten sick, they are unlikely to. It did not help matters that the lack of efficacy of this year's flu vaccination strains was widely publicized and reported to be around 23%.

We experienced difficulties communicating with members of the team responsible for our data extraction. As a result, while the data collected is correct to the best of our knowledge, we can appreciate how dependent our outcomes are on pulling those numbers accurately. This has been a tremendous learning curve for us. In years to come, we plan to work more closely and directly with our IT department to ensure that the numbers provided are exactly what we need. It may be necessary to monitor the numbers of vaccines given on a daily or weekly basis to ensure accuracy, manually if need be. This could be a task performed by the project coordinator, a position that would be created for the next year.

6. PERSONAL STORY

Multiple patients commented on the personalized posters that were placed in patient exam rooms encouraging vaccination. Some posters showed staff giving vaccines, while other posters showed staff receiving vaccines. Patients enjoyed seeing these pictures and many of them said it made them feel more comfortable getting the shot after seeing that their own doctor got the shot. Some patients even wanted to take pictures with their doctor while specifically having their doctor's poster in the background. Although not part of the project aim, the personalized posters were also popular with the pediatric population.

7. IMPACT OF INTERVENTIONS - Complete information in [Appendix 2](#).

Impact on Residents and Team Members

1. Participants

4 lead residents, 17 total residents, 7 faculty physicians, the program director, clinic director, 3 LVNs, and 10 MAs.

2. Current and future impacts of this projects on the residents &/or members of the team.

Although we did not meet our primary endpoint at the end of the project period, our project did identify several key areas within the clinic that can be addressed in the future to improve our clinic's vaccination rate. One of the biggest factors that affected our project was the upgrade of the EHR system used in our clinic. With the upgrade, immunizations are now easier to track and the reports generated are more accurate. This is because information that was not captured previously is now being captured, such as vaccines that were given outside of the Family Health Center. With the new reports from the upgraded system, we will be able to more accurately track patients who were seen in the clinic but did not receive any vaccinations. These patients can then be directly contacted to return to the clinic to discuss vaccinations with their provider. Another problem area identified from our project is the inconsistency of documentation in the EHR system. Since the reports are built from the data entered into the EHR system, inconsistencies in documentation will skew the data that is extrapolated. In the future, we will likely plan to address this issue by implementing new policies regarding documentation.

The reports identified outlier providers who had higher than average vaccination rates. We spent time asking these providers how they do it. Stability seems to be the undertone: stability of both provider and MA. Most of his panel has been seeing him for a long time and over the years, his patients trust him enough to take his recommendations. Likewise, his MA is well-trained and very consistent with offering

Many of the materials created during our project will be available for future years, and we plan on creating new personalized posters of the residents as new classes enter our program. The materials created will help residents and attending physicians alike begin the discussion of vaccination with the patients and will also serve as educational tools that can be used in the clinic. Vaccine recommendations change often and are sometimes challenging to remember. Having yearly vaccine meetings at the beginning of the academic year allows new residents to learn these vaccine recommendations that are then reinforced each year. This helps to accomplish the overall goal of developing competent family physicians. As primary care physicians in training, we are learning our role in providing comprehensive care to our patients; one of these aspects is addressing vaccinations annually.

We anticipate that our project will ultimately span many years. In the future, residents can build upon our project and will hopefully be able to overcome the obstacles we have identified.

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>)

This was definitely an unforeseen challenge as it complicated the pneumococcal guidelines. To adapt to this change, we addressed the recommendation at the halfway point meeting to update staff. In addition, we developed a simple algorithm for the pneumococcal guidelines and posted it all throughout the clinic for everyone to reference. We do feel that the new ACIP pneumococcal recommendation had a positive impact in that it generated more attention and exposure to the pneumococcal vaccine for both patients and staff members. At the conclusion of our project, we had a total of 70 PCV13 vaccines that were given, which is 34% of the total number pneumococcal vaccines administered in our clinic. Thus, in general, the new recommendation seemed to have had a positive impact.

Education and Outreach

1. Summary of accomplishments

519 seniors received the influenza vaccine during the study period with a vaccination rate of 38%, which did not reach our primary endpoint of increasing vaccination rate by 25% from the previous year.

133 seniors received the PPSV23 vaccine and 70 seniors received the PCV 13 vaccine during the study period, for a combined pneumococcal vaccination rate of 15%, which exceeded our primary endpoint of increasing vaccination rate by 25%. Our pneumococcal vaccination rate increased by 32% compared to the previous year.

We were successful in teaching the new residents about the vaccination guidelines as several of the interns had vaccination rates of 20% in their clinic. Our project also impacted the faculty providers as several of them also had improved vaccination rates when compared to the previous year. Combined as a group, residents averaged vaccination rates increased from 9.6% the previous year to 11% this year, and faculty averaged vaccination rates increased from 17% last year to 19.75% this year.

Our biggest accomplishment was being able to identify obstacles and trouble areas impacting our clinic's vaccination rates, which helps to set the stage for next year's interventions.

2. List of clinical & patient education and outreach materials produced or used in this project.

- PowerPoint presentation to resident physicians, attending physicians, and clinic staff.
- Bilingual A-boards displayed in the lobby.
- Brochures addressing common myths associated with vaccination.
- Personalized education videos viewed on handheld tablets in English and Spanish.
- Postcards advertising vaccines in English and Spanish.
- All-weather signs in English and Spanish advertising that vaccines are available.
- Personalized posters of physicians and staff receiving vaccines displayed in clinic rooms.

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

- Introduction and In-Service Presentation of project on August 27, 2014 to LVNs, medical assistants, front office staff, and medical records staff of the Family Health Center.
- Introduction and In-Service Presentation of project on August 28, 2014 to residents and faculty physicians of the Family Health Center.
- Troubleshooting and Q&A session on September 8, 2014 with any members of the Family Health Center requiring further information or assistance with project implementation.
- Interim Evaluation presentation on December 2, 2014 to LVNs and medical assistants of the Family Health Center.

3. 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.

https://www.dropbox.com/sh/ofgcqrah9qfqqwm/AACHsSpLkYvJ7DDv_kNtoKtea?dl=0

Sustainability

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

The FMRP will continue to have a QI project team consisting of several senior residents who will be devoted specifically to increasing senior immunization rates in the clinic. Successful interventions that were used in this project, such as personalized posters of residents and providers being vaccinated and direct patient outreach with telephone calls, will be implemented again in the next flu season. Obstacles and problem areas that were uncovered by our project will be addressed in future flu seasons, and brainstorming with new members may bring new insight and problem solving to the team.

With the upgraded EHR and the more informative reports that can be generated from EHR data, community outreach to our senior population will be more personalized and direct as individual patients who has not been vaccinated can now be identified. Supplemented by our education materials, we will develop a more direct approach to vaccinations, such as having a dedicated staff member administer vaccinations before the visit, a standing order, or a walk in clinic for vaccinations.

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?

We immensely appreciate the support we received for this project. Researching, designing and implementing an intervention of this type were a new experience for all four lead residents. It gave us insight into the process of creating an intervention for a vulnerable population with specific needs and challenges. The generous financial support allowed us the freedom to explore and discover what worked for our clinic, and we were able to be creative in the process. With the funds provided, we developed personalized materials that we otherwise would not have had the resources to produce. These materials will continue to be used in the Family Health Center to remind our community yearly about the importance of vaccinations for the elderly. While we did not meet our primary endpoint for influenza vaccination rates, overall the project was still successful in improving pneumococcal vaccination rates and will continue to help improve patient care. We gained valuable experience in research methodology and managing a population in a very practical context. These skills are transferable and extremely valuable to us as family physicians. We have the tools needed to identify needs within our own practices, develop a plan, and then effect change.

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: 1365
- 1b. Total # of seniors who **received** an *influenza vaccine* from 9/1/14 - 3/31/15: 519
- 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 (%)	43%	40%	38%
Numerator/Denominator (absolute numbers used to calculate rate)	568/1333	539/1346	519/1365

- 1d. Summary of methodology used to obtain the data and information:
The data was obtained by tracking CPT codes from the electronic health record used in the Family Health Center. For patients who were immunized during inpatient hospitalization, that information was manually entered into our outpatient charts to be counted in the totals.

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: 1177
- 2b. Total # of seniors who **received** a *PPSV23* vaccine from 9/1/14 – 3/31/15: 133
- 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 (%)	12%	5%	11.5%
PPSV23 Numerator/Denominator (numbers used to calculate rate)	162/1333	65/1346	136/1177
*Number of seniors who received PCV13 during specific time period			72

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

The data was obtained by tracking CPT codes from the electronic health record used in the Family Health Center. For patients who were immunized during inpatient hospitalization, that information was manually entered into our outpatient charts to be counted in the totals.

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

The following was not applicable to our project.

2014-15 influenza 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]

- 3a. Total # of seniors served by this project through community outreach from 9/1/14 – 3/31/15: [Click here to enter text.](#)
- 3b. Total # of seniors served through community outreach who **received an influenza** vaccine from 9/1/14– 3/31/15: [Click here to enter text.](#) Is this data included in the data presented in question 1b and 1c? [Click here to enter text.](#)
- 3c. Total # of seniors served through community outreach who **received a PPSV23 vaccine** from 9/1/14- 3/31/15: [Click here to enter text.](#) Is this data included in the data presented in question 2b and 2c? [Click here to enter text.](#)
- 3d. Total # of seniors who **received a PCV13 vaccine*** from 9/1/14 – 3/31/15: [Click here to enter text.](#) Is this data included in data presented in 2c? [Click here to enter text.](#)
- 3e. Summary of methodology used to obtain the data and information: [Click here to enter text.](#)

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	331	352
Pneumococcal Pneumonia	1	3
Influenza-Related Pneumonia	14	68

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

The data received regarding hospital admissions related to Community Acquired, Pneumococcal And Influenza-Related Pneumonia was gathered by the hospital’s decision support team in the finance department. Reports were generated by a query of admissions from 9/1/2013–3/31/14 and 9/1/2014–3/31/2015 of patients 65 years of age and older with ICD 9 diagnosis codes 486, 481, 487, 487.0, 487.1, 487.8.

The significant increase in Influenza-Related Pneumonia admissions in 2014-2015 is unclear. It may be attributable to the immunization being ineffectual against the particular strain, as was reported by the CDC, however this cannot be verified.



y Health Center
Pomona Valley Hospital Center
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na Begovic, M.D.
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