Improvement in immunization rates for seniors, a local and community-wide effort

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Background

The senior population (≥65 years) is expected to more than double between 2012 and 2060. As the demographics of the population continue to grow, more efforts are needed to capitalize on preventive disease services, especially among low income populations. Currently vaccination rates in the elderly for pneumonia and influenza are well below Healthy People 2020 targets. Perceived susceptibility and perceived severity influence vaccination rates, especially in the senior population.

Objectives

To improve influenza and pneumococcal immunization rates in the senior population in our office by 25%

To improve understanding and acceptance of these (and other) adult vaccines in our surrounding community.

Office Initiative

Methods

- Office teams improved identification of vaccine-eligible senior patients during pre-visit planning:
  - color-coded patient lists
  - standing orders
  - exam-room reminders
  - Verbal education by MA’s and nursing staff.
  - Vaccination reminder postcards
  - Waiting/exam room
  - Posters
  - written material
  - Monthly incentives for team with best rates.
  - Revised EPC (EHR) alerts planned.

Demographics

Office:
- Community-based, university FM residency
- FQHC
- NCQA PCMH certification.
- Patient demographics closely reflect those of the community

Community:
- Urban setting
- 10.7% of patients ≥ 65 years of age
- 63% African American, 34% Caucasian, 3% Hispanic, 2% Other
- 62% female
- Average household income $10,934

Results

<table>
<thead>
<tr>
<th></th>
<th>Imm Rate 2014</th>
<th>Imm Rate 2015</th>
<th>Difference</th>
<th>% Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza</td>
<td>49.7%</td>
<td>59.4%</td>
<td>+ 9.7%</td>
<td>+19.5%</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>69.7%</td>
<td>82.3%</td>
<td>+12.6%</td>
<td>+18.1%</td>
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Conclusions and Discussion

- Although goal of 25% increase was not attained for either vaccine, strategies to increase senior immunization rates were successful. Mid-season refrigeration issue appeared to have influenced daily/weekly vaccine administration rate.
- System changes will lead to continued improvement in vaccinations of seniors during future influenza seasons. Continued improvement of office processes will further these improvements in the long term.
- Strategies to improve knowledge of the importance of flu/pneumonia vaccination, as well as acceptance of vaccinations by seniors in the community were successful. Wide dissemination of mailed reminders allowed us to widen our community.
- Community presentations were well received, creating opportunities for productive discussion and future community outreach that will continue to improve the health of our community.

Special thanks to Katherine L. Cauley, PhD and the Wright State Center for Health Communities, Center for Global Health, Department of Community Medicine, Boonshoft School of Medicine, Wright State University

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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.

Wright State University Family Medicine Residency Program

Contact Information
1. Name, Title, Email of person completing the report
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2. Project Contact information if different from above
   (same)

3. Name(s) of Resident(s) presenting Immunization Awards Poster at the 2015 National Conference
   a. Matthew Nyholm, MD
   b. Leslee McElrath, MD

Title of Project:
Sustainable Improvements in Immunization Rates for Seniors: A Local and Community-wide Effort

Statement of Goal(s) Include your Primary Metrics:
As per information sent with our initial “Detailed Report” in August, 2014, this project blossomed into a much larger project than we had initially envisioned in both the office and community outreach arenas.
The office side of the project grew to involve:
● Four residents
● An additional faculty member
● 2 medical students (who created their own “spin off” project on senior/adult immunizations, and have sent a poster in for consideration for presentation at the AAFP National Conference of Family Medicine Residents and Medical Students), and
● At various times involved significant effort from our office manager and at least one nurse.
The community outreach aspect of this program rapidly escalated to become a project of its own, involving
● Three residents
● Two MPH students (one of whom made this her culminating project for her degree, and the other, who is an MD/MPH student, will continue her involvement on some level in the future)
● Two other medical students who, while not able to be directly involved in the project this year, have followed it with interest, and will be involved on some level with doing some additional research on senior immunizations in our office and community this summer
● Assistance from faculty from another department (Community Health) and from a “Center” (Wright State Center for Healthy Communities) in the medical school outside of Family Medicine
● Multiple community partners.
Because of the growth of the project, our goals were modified and expanded, as detailed in our August 2014 and our Interim reports. Below are listed our original goals as submitted with our grant application. We are attaching a final version of our “detailed report” that was created in Aug 2014, with final updates on when/how goals were reached.

1. Residents develop plans for effective educational materials and programs by Aug 2014.
2. By Oct 2014, residents will have worked with the IT professionals to create and implement improved immunization alerts, resulting in effective, measurable change in nurse/physician ordering of immunizations.
3. Office workflows will be improved, simplifying access to vaccines by senior patients.
4. By March of 2015, influenza vaccination rates among the senior patients in our clinical office will show 30% improvement over the previous flu season.
5. By March of 2015, improved immunization workflows will have increased pneumococcal vaccinations in senior patients by 25%.
6. Enhance our community relationships with the current effort focused on reaching out to seniors to disseminate information and encourage them to obtain indicated immunizations.

Impact on Target Population

1. PATIENT DATA – Complete information in Appendix 1.
   - See attached
2. KEY OUTCOMES (Bullet points)
   (Listed here in the same general order as our original goals.)
   - Developed extensive educational material for both patients in our office and for community members and used these effectively to educate patients in our office as well as members of the community at large on the importance of pneumococcal and influenza immunizations in persons ≥ 65 years of age.
   - Improved relationship with IT departments both within the Healthcare system (that owns/operates/maintains our EMR) and within the university (that provides computer and statistical support).
     - Began the process of improving alerts within our EMR
     - Enhanced reporting ability for this grant
     - Established methods for getting information for future studies and projects
   - Improved office workflows and systems, with the result that we now are better able to:
     - Identify eligible senior patients (flagging office schedules, pre-visit planning in huddles, flagging doors, etc.)
     - Facilitate ordering and administration of vaccinations (standing orders, improved communication protocols about vaccines ordered and administered.)
   - Improved our influenza vaccination rate among senior patients in our office
   - Improved our pneumococcal vaccination rate among senior patients in our office
   - Improved office morale, in particular improved communication between front office staff, nursing/MA’s, and physicians
     - While difficult to quantify or measure, this has been commented on by several of those involved.
   - Established positive working relationship with Wright State’s Center for Healthy Communities.
     - Made several key community contacts through their efforts.
     - Residents received training through faculty at this Center in best practices in working within the community, talking with community members and groups, and working with community leaders.
     - It is interesting to note that our residency practice has been established for over twenty-five years, but until this project the residency had not taken advantage of our extensive community contacts or knowledge.
   - Disseminated information on senior immunizations, particularly influenza and pneumococcal, at multiple sites throughout the community.
     - Sent out informational mailers to over 600 of our local community members
     - Participated in 10 community presentations.
       - Responses to pre- and post-questionnaires completed by the majority of the participants at these presentations showed improved understanding of the importance of pneumococcal and influenza vaccines for those who are 65 years of age and older.
       - Pledge cards completed by meeting attendees showed that the majority of unvaccinated attendees were committed to obtaining the appropriate vaccines.
     - Flyers and other printed information were also provided for public distribution in local libraries. Some of the material was also given to “health ministers” of several local faith-based organizations through
connections made via the “Health Ministries Department” of our local hospital, and should lead to future
opportunities to spread information about senior immunizations and other health-related topics.
  
  o Also distributed written and oral information at a community health fair sponsored by the local county
health department.

• Established enduring relationships with several faith-based, and other community organizations.
  
  o Prior to this project, community outreach efforts by the residency had been chiefly working with a free
clinic in another part of the city. This clinic has been where most of the residents’ community health
requirements were completed. This grant has enabled us to begin to foster relationships with churches
and organizations in our own neighborhood. This is particularly timely because the residency will be
moving to a new building in the neighborhood this summer.
    ▪ The opening of the new building is an opportunity to invite community members into our clinic and
to further foster the relationships we are beginning to establish
  
  o The relationships we have begun to build will provide opportunities for residents and medical students to
create opportunities for positive change among these community members and organizations.
  
  o We are currently making plans to incorporate a monthly community presentation into our current
community medicine rotation completed by all residents during their second or third year. Community
connections developed during work on this grant will be the focus of our outreach. In addition, lessons
learned about how to schedule, prepare for, and give these presentations will be helpful to future
residents.
    ▪ While some presentations will be about senior immunizations, particularly influenza and
pneumococcal, we acquired a list of other health topics that the members of the local faith-based
and community organizations want to have addressed.

• A side-benefit (unexpected) that we have just been informed of is that our faculty-only practice, which is largely
staffed by our non-residency-associated faculty showed a large increase in the proportion of participating senior
patients receiving pneumococcal vaccinations administered during the time period covered by our office. While
data on percentages is not available, and we do have not currently have access to influenza vaccination rates or
numbers, and while we cannot prove causality, it appears that our presentations to the faculty and the department
had an unanticipated benefit among those providers. We were pleasantly surprised by this outcome, and are
considering whether presentations to other provider groups might be possible or practical.

3. KEY PROGRAM COMPONENTS

A. Developed and utilized educational materials and adapted other material publicly available for use in both our
Office Side and in the Community Side projects.

B. Office Side
  
  a. Educational materials, including posters, wall charts, and other printed information to alert senior patients
to ask their doctor about immunizations were developed by the end of August. Some of this material was
down-loaded from the CDC website, others were developed internally. These materials were distributed
and posted in our office.
  
  b. By mid-September there was a “friendly competition” in place among the 3 teams of residents and nurses
in our office. This generated an unusual excitement and enthusiasm for immunizing our patients.
  
  c. Project residents worked with medical and nursing directors to develop office protocols to simplify vaccine
administration in our office.
  
  d. Office teams worked together to develop streamlined office procedures for identifying eligible patients and
administering vaccines In August and September 2014, team meetings were held that included the
nurses, medical assistants, faculty members, and front office staff on each of the 3 teams in our office.
Each of these teams developed systems for identifying vaccine-eligible patients that were being seen
each day in the office. While similar, the specifics of the plan varied somewhat for each team as they
were adjusted to maximize the efforts of each team member. The various protocols involved a variety of
interventions. For instance, a variety of “flags” were developed so that there would be more than one
opportunity for the front office staff, nurses, medical assistants, and/or physician on the teams to identify
the patients who were vaccine eligible, and could discuss vaccinations with the patient. For all teams, the
front office staff flagged the names of potentially vaccine eligible senior patients who were being seen the
next day. All teams developed protocols for use during team huddles before each office session. Some
teams also developed colored flags to be placed on the doors of rooms where vaccine eligible patients
were being seen, while others developed other protocols. All team members on took responsibility for
discussing vaccination with the patients when they came in. Through these efforts, nearly every vaccine-
eligible senior patient presenting to the office during the influenza season of 2014-2015 was informed about their eligibility and offered the influenza and pneumococcal vaccines when appropriate.

e. Protocols for standing orders were investigated and adapted for use in our office in the early weeks of this project. Standing orders for our office were then developed and implemented by physicians and nursing staff. This greatly streamlined the administration of vaccines, and reduced the time burden involved for physicians and staff.

f. Developed “friendly competitions” between teams in the office to encourage improved immunizations:
   i. We initially only offered incentives to the office staff and nurses during this competition. We had an unfortunate vaccine loss (see below), for the last several weeks of the project we also gave small incentive “gifts” to the physicians on the winning teams.

g. Set goals for immunization rates in the office.

h. In order to achieve our goal influenza vaccination rate for seniors (a 30% increase over what we believed to be our 2013-14 vaccination rate), more than 73% of our eligible senior patients seen in the office every day would need to be vaccinated against the flu every day. We therefore would need to maintain a “daily vaccination rate” (DVR) (rate of vaccination of eligible senior patients seen in the office on any given day, expressed as a one week average) that was higher than 73%, since not all of our eligible patients would come in to be seen and others would refuse the vaccine. We therefore set as our goal to have a DVR of 75-80%. We met and even exceeded this goal for the first few weeks of the project, and even into November were maintaining a reasonable DVR. We were in line to meet or exceed our goal. We had excellent patient education occurring throughout the office, from the front desk through discharge, and were experiencing a high acceptance of the vaccination by most of the patients to whom it was offered.
   i. Unfortunately, in mid-December 2014, our office suffered a refrigeration failure. This resulted in the loss of most of our influenza and pneumonia vaccinations. For nearly a month, the only way our patients could get vaccinated would be to go an outside location (nearby hospital pharmacy, other local pharmacy, health department clinic, et cetera). Few patients followed the alternative plan. After one month repairs were completed and vaccines were replaced. While we encouraged office staff and providers to continue to screen for vaccine-eligible patients during this time, there was an understandable decline in the DVR to as low as 35-40% at one point. Once refrigeration was restored and vaccinations were available again, daily vaccination rates were slow to rebound, but with significant efforts by our team, DVR had nearly reached 70% by the end of the flu season.

i. Worked with IT personnel on adapting EMR alerts, resulting not in the changes we had hoped for, but developing improved relationships and gaining access to previously unavailable resources.
   i. As noted in our Interim Report, the timeline in the grant was much shorter than we had hoped for, but the improvement in alerts that we hope to eventually have implemented. The timeline for approval was longer than our study allowed as changes would affect multiple outpatient settings, not just our own. However, over the course of the past year we have been able to develop improved relationships with the IT personnel who manage our electronic health record (EHR) as we have attempted to work with them on this issue. While we have not been able to improve electronic alerts as much as we had hoped to be able to do, we are enjoying other benefits from these efforts. These include overall improved access to data for research and quality improvement purposes that will benefit residents, medical students, and faculty well into the future.

C. Community side:

a. Educational materials for the community were developed in coordination with recommendations from various community groups, faculty at The Center for Healthy Communities, and incorporated the skills and training of the MPH students working with us. Using these resources, we developed a brochure that has received positive feedback from community participants, an informational flyer, and other printed materials that were used at our community presentations. Residents, MPH students, and faculty members put in significant time in preparing printed materials for printing in time for our first community event.

b. In late August we participated in the first of ten community events, taking a part in the County Health Fair. Residents and students made additional improvements in our printed information after this event, based on feedback from the community members who attended. The improved versions were used at future community events.

c. Through already established connections between our university and community leaders, we established working relationships with several community groups.
d. With help from leaders of these groups, we organized community presentations on influenza and pneumococcal immunizations.

e. Residents, MPH students, and faculty worked with both community leaders and with other faculty knowledgeable about our community to create a PowerPoint presentation about these vaccines.

f. Information was presented by 2-5 different presenters (students and residents) at each community event to help keep the presentations interesting to attendees

g. PowerPoint presentation was improved after the first two or three community events

h. To evaluate the effectiveness of our presentations, a brief pre-and post-presentation questionnaire was administered in conjunction with each of our presentations. Evaluation showed that there is a statistically significant improvement in understanding of the importance (and safety) of pneumococcal and influenza vaccines after our presentations.

i. We also gave all attendees chance to sign a pledge card, pledging that they would get necessary pneumococcal and influenza and other adult vaccinations. At every event, all but a few of those in attendance signed a pledge card

j. Through other community partners, were able to distribute written information on influenza and pneumococcal vaccinations to many hundred additional community members

k. We were particularly successful in supplying the local libraries with written information about pneumococcal and influenza vaccinations, and were asked to continue to supply written information to the libraries to distribute to the public during the influenza season.

l. Sent informational postcards to an additional 600+ community members

   i. The postcards were originally intended to go to only our office patients. However we were not able to obtain a list early in the influenza season that had only our own patients’ addresses on it. We therefore sent the postcards to a large group of community members over the age of 64.

m. Established goals for setting up future meetings and for carrying this process forward into the future

D. Two medical students created a “spin off” study based on our efforts to vaccinate patient in the office. These 2 students interviewed adults who refused the vaccinations that were offered, and interviewed them on reasons for their refusal. The students were able to identify a few key educational themes that seemed to discourage patients from being vaccinated. These 2 students have presented on their work, and have sent an abstract in for consideration to be presented at the national conference of family medicine residents and medical students.

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

Below are comments from residents and faculty who worked directly on this grant:

- “I think what worked best for the office side of the project was teamwork. Working in combination with Faculty, Residents, staff and medical students made for a very efficient and effective method put in place.
- “Morning huddle with the nurses and MAs to identify eligible patients. Prescreening the office patients for the day to also identify and verify eligibility (i.e. even if they are 65, are they eligible)
- “Direct contact between physician providers and seniors in the community was well received and provided a venue for productive discussion and interaction in a neutral setting. The proactive engagement of the physicians from our team led to informative dialogue in a neutral setting.
- “Signs in the office were helpful and something that I’d want in my office
- “When talking with community members, it was easier to have a positive conversation about immunizations when focusing on family members as well as the individual I was talking with.
- “I feel having both an office group and a community group helped greatly. It was nice putting our time just into the office and trying to push staff and residents in getting their patients [vaccinated]. It was great working on the posters and having [and implementing] new ideas to become more efficient
- “I would use huddles for pre visit planning and mail reminders to my own patients. I would continue to present at local organizations about healthcare issues that they are facing.
- “Our outcome measure showed that we were successful in that we saw a change in community knowledge about influenza and pneumococcal vaccinations for the senior population. We also hoped [that this changed] the community’s perception of vaccine safety and efficacy.
- “Positive relationships with community organizations have been established and will provide further opportunities for collaboration with family practice residents and public health students to educate and improve the health of the community.
- I think the staff incentives and overt tracking of immunizations given per team increased the general vigilance among the majority of office staff. I attribute the achieved rate increase to this vigilance. In the future, in my own practice I will certainly consider an annual effort to similarly increase the vigilance of my own staff.
5. LESSONS LEARNED

Below are comments from residents and faculty who worked directly on this grant:

- “One of the most important things that happened to move forward the community side of this project was finding out about relationships and programs were already in place through our university that we were able to take advantage of. We discovered that there was a center, called the “Center for Healthy Communities” that had already made connections with many community organizations. They were able to put us in contact with the leaders at several of these organizations. This was a great “kick start” to our community involvement.

- Talking with community members after the presentations about vaccinations provided me an opportunity to figure out strategies to combat [misperceptions when I talk with patients in the office.]

- “The Center for Healthy Communities also help this train residents and MPH students in needed skills when working with community members and community organizations. I feel this is part of why we were successful in our outreach efforts.

- “One of the things that benefited the community side of this project the most was that we were able to work with two MPH students who did a tremendous amount of work for us. One of the students was an MD/MPH student in her second year of medical school, who had done about one year’s worth of MPH studies. She brought insight to our work from both the medical side of the project and the public health side. She was able to help with making community connections and, in addition, did a great deal of the technical work for us on the project. The other MPH student was a more experienced student who had worked in the healthcare industry for many years and had returned to get her MPH. She chose to work with us and to make this project her “Culminating Experience” (final project) for her MPH degree. She was instrumental in making connections and communicating with a variety of local organizations, spreading the word about our project, generating interest in what we were doing, and often was the one who actually set up the community events for us. We would not have been nearly as successful without her assistance. We, in turn, were happy to be able to provide her this opportunity dominated project that she felt was directly related to what she wanted to accomplish in her mph studies.

- “Our project was further benefited by the enthusiastic support of our program director, the office medical director, and our department chair. Our program director was very helpful in helping resident schedule to be flexible so that they can participate. She was also instrumental in encouraging continued resident involvement, and push the residents to present the findings and accomplishments of the project. The medical director in the office worked with the office side residents to help them get the program going in the office in a way that garnered support from office staff and nursing. Our department chair gave significant time in helping us develop and write up the needed reports. She provided us opportunity to practice her presentations in front of the faculty of faculty meetings, which helped residents and students become more comfortable and allowed for constructive criticism in a friendly environment that vastly improved our presentations. She also donated department funds to help pay for research assistants at various points of the project will be just needed a little extra help to keep momentum going.

- “One of the lessons learned is that something can always go wrong. Having those 4 weeks without vaccinations [because of the refrigeration failure] did put a speed bump on our progress. We had to get staff and residents back into the groove once we were back in production. Staying positive is key, and working on problem solving is a must.

- “I think the biggest lesson I learned was needing to always have a backup plan if initial plan fails. This is in response to refrigerator error. We should have had back up immunizations brought from the hospital daily by an efficient method so we didn’t lose dozens of patients. Always have a plan and a backup plan and a plan to back up the backup plan. :)

- I was surprised by the great disparity in immunization rates among providers. This was not reported data but trends showed what I interpreted as complete lack of “buy-in” by a few providers in our office. I would advise people leading future efforts to recognize this early and attempt intervention as “buy-in” from a few more providers could have increased our rates even more.

- “Never trust fully in others to accomplish the work requested. While nobody is perfect, it seemed a number of [providers] persistently failed to ask about or [give] vaccinations to eligible patients. When we did the final analysis, we noticed that it was almost always the same providers who “forgot”. Maybe this was a failure on our part to maintain the momentum and energy to accomplish the task.

- “Maybe we could have been more aggressive in following who among the providers was giving the vaccines and who was not. If we had done this daily or weekly as we were going along, rather than just at two or three points in the season, it might have encouraged those providers to become more proactive. And this probably
would not have had to have been done in a negative way. As they say, sometimes simply measuring what is going on leads to an improvement in what is going on.

- “In the future would it make sense to partner with a local pharmacy to provide vaccines immediately after a presentation? The assessment of the intervention may have been better if we provided vaccination during community gatherings, however, the responses on pledge cards were encouraging.

- “Answering questions in the community meetings--there were always a few “naysayers” who were very negative about vaccines. But we found that we were able to facilitate the quieter positive community voices, and in the end, these voices prevailed more than the negative voices did.

- “Moving forward: I really think an EHR prompt would help. Not only to just remind doctors to give immunizations but also to document in the proper locations [whether the vaccines were] successfully [given] or [if we attempted and were not successful, whether the patient] denied, deferred, allergy, ineligible, etc. I also agree that education should occur with interns but also with all residents on how to uniformly document efforts.

- “I hope there is an opportunity to sustain the relationships with community partners and build on relationships that are in their infancy.

- “Be prepared for everything. Speak to a small group as you would to a large group.

- “A lesson I learned is that if I show how much I care about the community, then [the] community will always stand by me.

- “Showed me that research isn’t just looking up papers on things that other people have done, but an opportunity to actually do something in the community.

- “Focusing on family members (as well as the individual) when I was talking with [about the need for vaccinations] seemed to sway opinions more than just focusing on the needs of the individual.

- “This project helped me realize the importance of reaching out to community leaders and gaining a partnership with them before reaching out to the community members.

- “I learned how one small presentation on one topic can bring hope for many communities for future health initiative collaborations.

- “Collaboration is the way to get a big project done.

- “There are more opportunities than I have imagined to share our skills and her messages with the community. Community literates were much more receptive than I had just it would be to our offers to share information with their organizations.

- 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.

Below are a few stories provided by the residents and students involved in working on this grant.

- “When discussing with patients the need to have their yearly flu shot or to just get there pneumonia shot after the age of 65 was not always the easiest obstacle to overcome. It felt great when you talked to a patient and got to educate them on the importance of getting [vaccinated], having them ask questions, and [watching them] get involved in the their own care. I had patient who had many questions and it took many visits, and reading [a lot of] patient [educational] material [until] they came in on their own and said, “Doc I’ll get the 2 shots today.”!

- “I think what touches me the most is seeing sick patients in the hospital with pneumonia and knowing that we had a chance to prevent it by educating them. I saw a patient while on inpatient who had to be intubated due to respiratory distress who was >65 years old that we could [likely] have kept out of the hospital with a simple [vaccination]. PNA stays are a huge hospital burden with intensive therapy, consults and imaging for something we can attempt to prevent before it happens.

- “[I was] at one of the events, talking about the misconceptions of immunizations after the presentations. It was amazing to see a couple of the people ‘come around’ and agree to get the vaccinations who had been very negative to start with. Seeing positive change in people was very fulfilling.

- “In the initial stages of this project the idea of developing community relationships to increase education about vaccines was very daunting idea. I wondered how much the community [would] care about one health issue. I wondered about how much interest [the] community [would] take in our project. As time passed, I realized that each community really cares a great deal about their own. [All] of them were very welcoming, with open arms. [Many] saw how we are able to help [them, both] now and in future. Once they saw our sincerity that we [were there] not only for this grant, but for future collaborations [as well], they took a great deal of interest in helping us.

- “I was impressed that with a little education (either through outreach or education provided in office) many patients quickly became amenable to receiving immunization. They even frequently voiced gratitude and
expressed that they would help spread the word. I think this education had beneficial impact on our patients and the community as a whole.”

- 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).
   - Dr. Choksy, Second year resident (R2): Team leader of community outreach efforts, Scheduled and directed Community Side planning meetings, gave and followed-up on assignments, coordinated development of educational materials and the scheduling of community presentations, Assisted with presentations, with review/improvement follow-up sessions, data collection and analysis, abstract and poster development, etc. Presented poster at DAGMEC and STFM (see information below under Education and Outreach, number 3. “List of presentations…” letters “s” and letter “t”.)
   - Dr. Raju, Third Year Resident (R3): Team leader office side of project. Organized Office Side efforts and coordinated all activities with office medical director. Made sure team was organized and set goal dates for completion of duties. Gave out and followed up on assignments. Assisted with improving alerts, establishing standing orders, office team meetings, “friendly competition”, data collection and analysis, award presentations, etc. Coordinated Poster preparation for Office Side of project. Presented poster at DAGMEC.
   - Dr. Siddiq, (R3): Obtained and developed office posters, organized printing, set-up, and care of posters. Arranged for the donation of postcards and postage for our project. Sent out over 600 informational postcards about pneumococcal and influenza vaccines to local community residents with the help of several other residents whom he recruited for the project. Coordinated data collection for the office “Friendly Competition.” Was in charge of giving out the incentive rewards for the competition. Presented poster at DAGMEC.
   - Dr. Nyholm (R2): Was in charge of statistical analysis of gathered data. Was instrumental in data collection and processing. Also participated in many aspects of both the Community Side and Office side of the project, helping with posters, postcard preparation/addressing and send-out, promoting the office Friendly Competition, and helped present at many community events. Presented poster at DAGMEC.
   - Dr. McElrath (R2): Helped with many parts of the Community Side of the project, including attending the early planning and training sessions with Centers for Healthy Communities and with various community leaders. She also helped with planning community presentations and with development of PowerPoint presentations. She was the primary developer of our informational flyer. She assisted with most of the community presentations and other community outreach activities. She developed a research protocol for evaluating our community presentations, and was primarily responsible for collecting and analyzing the data for this part of the project. Presented poster at DAGMEC.
   - Dr. Nowell (R2): Assisted with all Office Side activities. In addition, wrote and submitted IRB application for office side of project. Instrumental in data collection and data processing, spending multiple nights on this when reports were coming due. Presented poster at DAGMEC.
   - Dr. Baldwin (R2): Assisted with all Community Side activities. Wrote and submitted IRB application for community outreach. Helped coordinated community outreach events. Compiled promotional materials to distribute at community events and attended various presentations and planning meetings with community leaders. Instrumental in preparing presentation to Family Medicine Faculty and in giving the presentation. Covered the inpatient service so that other team members could participate in the DAGMEC poster presentation.
   - Dr. Kellar: Faculty director for the overall project. Involved to some degree in all aspects of the project, including design, budgeting, scheduling, implementation, and reporting.
   - Dr. Righter: Faculty supervisor for office side of the project. Worked with the office side residents to help them get the program going in the office in a way that generated support from office staff and nursing.
   - Dr. Zryd: Program director. General over-all support. Facilitated faculty and resident participation. Very helpful in helping resident schedules to be flexible so that they could participate. She was also instrumental in encouraging continued resident involvement, being supportive of office initiatives, and in encouraging the residents to present the findings and accomplishments of the project.
Dr. Zink: Department chair: General over-all support. Encouraged and mentored faculty and residents. Assisted with grant application and with reviewing all reports. Helped make initial University and community connections that were key to the success of the Community Side of the project. Gave time from department research assistants to help support the project.

L. Lopez, MPH student: Instrumental in helping organize the Community Side of the project. Key person in developing posters, printed flyer and other materials, and in giving them all a professional look. Assisted in organizing and helping run our planning meetings. Served as our “point contact” for arranging participation at many of our community outreach sites. Kept everyone going and on track. Made sure the right people showed up for the presentations at the right time and place, that all of the printed materials, computer, projector, small incentive gifts for participants, etc., were all there. Presented poster at DAGMEC.

K Yutzy, MD/MPH student: Assisted with various aspects of the Community Side of the project. Attended and contributed to planning and training sessions. Was key in developing, ordering, and keeping track of small “incentive gifts” for community members. Helped develop printed materials and community outreach presentations. Attended and presented at many of the community outreach sites. Helped with reports at all stages of the project.

M Rechel, Medical Student: Developed a research project that dovetailed with our Sen Immunization Grant. Project involved interviewing senior patients who refused to be vaccinated to discover their reasons for refusal. These students, with minimal involvement from faculty, applied for and obtained IRB approval for the project, made necessary arrangements with office personnel to allow their carrying it out, carried it out, analyzed data, prepared a poster on their results, and presented poster at the Wright State Boonshoft School of Medicine Annual Medical Student Research Symposium April 8, 2015. Their abstract/poster has also been accepted at the National Conference of Family Medicine Residents and Medical Students in Kansas City, July-Aug 2015, and they have received a scholarship to attend.

J Scholtz, Medical Student: Second medical student on project with M Rechel (see above)

M Gandhi, Medical Student: Has been following our project this year, and although she has not been able to be actively involved during this academic year, she and another medical student (see below) will be in our office for an elective during the summer, where they will work on a “spin-off” project from this grant that will involve both improving office immunization information and will also involve strengthening relationships with the community partners we worked with during this grant.

D Taitao-Ritter, Medical Student: Also has been following our project during this academic year, and like M Gandhi (see above) will be doing an elective in our office this summer and helping on the “spin-off” project.

A total of 24 other residents (names provided on request) contributed to the office side of our project by participating in team meetings where they helped develop plans for identifying and vaccinating all eligible senior patients, the participated in the Office Side “Friendly Competition” to increase vaccination rates against influenza and pneumococcus among our senior patients.

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

“...with the staff and current residents who will be here next year, I believe it will be taught and pushed year to year. New residents will be pushed by current residents/staff/nursing and will then become part of the circle.

Moving forward it has been etched in the current residents minds to ask about immunizations to all our [patients] over 64+. We will need to educate incoming interns of the importance of [giving] both the PNA and Flu immunizations so they too can take responsibility to help our community. I have all the confidence in our residency program and have been one of the biggest advocates for the project since it was launched to be successful. We need to realize that just because the project has been completed or the gift cards have gone dry that it is always about the patients first that matters most and I think we have a great group of residents who will hold that true.

Positive relationships with community organizations have been developed and will provide future opportunities for educational outreach to assist in improving the health of the community.

This project was an amazing effort in personal development. I have personally and professionally improved. I saw how much community matters. When we take care of the community, the community takes care of us.

I think through this project, we are being able to develop future community relationships that will help future residents in their efforts going through residency.
• "On the office side long-lasting effects are being seen already has preparations are being made for the next influenza season by both the office staff and by the residents. It appears that the effects of this project will be long-lasting.
• "On the community side plans are being developed to incorporate community presentations as part of the requirements for residents doing the community health rotations. Most residents are excited by this prospect and the potential to make a positive impact in their community.
• "I believe we now all have a better appreciation of the efforts required to implement projects involving public health and a better appreciation of the effects these efforts can make. I believe we also all now have a better understanding of the socioeconomic status of our patients and surrounding community."

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)
• The new guidelines did not significantly impact this project. We incorporated the new guidelines into our community presentations, and I believe that that will help community members to get both vaccines as they go to their doctor’s offices and etc. In our office because of budget restrictions, there was not much PCV13 available to give to our patients this season. Therefore it did not have much of an impact on us, except that we told our patients that this was coming and that they should return for this new vaccine within a year. In the coming year that should change, as the PVC13 becomes more widely available in our office.

Education and Outreach
1. Summary of accomplishments
This has been extensively discussed above. However to summarize:
   a. We developed printed materials both for community outreach presentations and for patient education in the office.
   b. Gave multiple community presentations and received positive feedback as well as commitments to become vaccinated from those in attendance
   c. A significant amount of time was spent by all residents and students on educating patients on a one on one basis
   d. A spin-off project has identified patients who refused vaccinations. We hope to be able to address reason why patients refuse through new patient information/education that will be developed. A poster on this project was presented at a local Medical Student Research Day and has been sent to the National Conference of Family Medicine Residents and Medical Students for consideration.
   e. A poster on our project was presented at our local Resident/Fellow research day in April.
   f. A poster on our project was presented at STFM national meeting in April/May.

2. List of clinical & patient education and outreach materials produced or used in this project.
   a. Several posters downloaded and printed from the CDC website
      i. Three large posters were created for use with our community presentations (some can be seen in the attached pictures of our community events)
      ii. Some were printed and posted in our office.
   b. Donated posters from a local pharmaceutical company representative (posters were de-identified (i.e. had no indication that they came from the sponsoring company))
   c. Several smaller "posters" were made internally by the residents and posted in many places in our office
   d. A professional-quality flyer was developed for use in our office and at our community presentations, and to be given out to the public. Flyers were given to various organizations, such as the Dayton City Libraries and the Community Action Partnership, for distribution with other educational information set out for the public to browse and take as desired.
   e. An informational flyer was developed for use at our community events and in our office to give to those who wanted more detailed information about the influenza and/or pneumonia vaccinations.
   f. Pledge cards were developed and given out at community events. Attendees were encouraged to use them as reminders to make an appointment for their vaccinations.

3. List of presentations with the date(s) and brief description of the audience.
a. 7/9/2014 -- Center for Healthy Communities Community Council Meeting. Meeting with about 25 leaders of various community organizations. Learned about the efforts of (and needs of) these organizations. Presented our project to these leaders, discussing with several of them after the meeting, and collecting contact information from several organizations. (It was interesting that although we had not considered these leaders our target audience, many of them commented to us afterwards that they were “in that age range”, and were going to go get their own immunizations after our presentation. This happened repeatedly at other “planning meetings” throughout the rest of this project, where we often found senior leaders being reminded of their own need for vaccinations.)

b. 8/11/2014 -- Presented our project at a training session with directors of Center for Healthy Communities. Discussed project and best ways to assist various community organizations.

c. 8/12/2014 -- Community Action Partnership, presented to several leaders of this community organization, discussed opportunities to spread information about influenza and pneumococcal vaccinations. Gave written information to be utilized.

d. 8/12/2014 -- Presented to a representative of the local county health department, discussed goals of our project and best practices in reaching our audience.

e. 8/14/2014 -- Met with leaders of the “Silver Saints” group at local church to present our project and discuss options for presentation with their group.

f. 9/3/2014 -- Presented our project and “kicked off” the office side of the project to residents, office staff, faculty, and medical students. Discussed community side of the project and got volunteers (from among residents not leading the project) to help present in our community presentations.

g. 9/6/2014 -- Westtown Health Fair, presented our message to over 100 community members, at least half of whom were senior citizens.

h. 10/11/2014 -- Mt Calvary Baptist Church Silver Saints, presentation on Immunizations to a large (>50) group of local senior community residents.

i. 10/25/2014 -- Women’s Fellowship Meeting at Summit Christian Church, presented to a group of senior female community members.

j. 11/25/2014 -- Church Women United, Memorial Presbyterian Church, presented to a group of senior female community members.

k. 12/9/2015 -- Presented our project to the Family Medicine Department faculty. Received feedback on our message and presentation. Encouraged immunization of senior patients in the faculty office and encouraged the faculty to update their own immunizations as needed.

l. 12/18/2014 -- Summit Christian Church Senior’s Fellowship, presented to a group of senior community members.

m. 12/19/2014 -- Met with personnel from the Dayton City Libraries and offered to supply written information on pneumococcal and influenza vaccines for distribution to the public. Our offer was enthusiastically received, and several hundred flyers we left to be given out. (Most appeared to have been given out within about 6 weeks, and we supplied another several hundred.)

n. 2/12/2015 -- Roosevelt Center (local community center). Presented to a large group (>50) of senior community members.

o. 2/12/2015 -- Good Samaritan Health Ministries, presented to a large group of mostly volunteer “Health Ministers” that serve in many communities serviced by our local “Good Samaritan” hospital. Most of these were older, but not senior, adults. However, they expressed excitement that we are making ourselves available to give these presentations, and a few have made contact with us since, and/or given us their contact information.

p. 4/14/2015 -- Presented our poster on this project to the Department of Family Medicine, with good response and enthusiasm.

q. 4/23/2015 – “DAGMEC” (Dayton Area Graduate Medical Consortium): Presented poster at DAGMEC’s “16th Annual Virginia C. Wood Resident Research Forum” (an area-wide forum for residents and fellows in all local residencies/fellowships to present their research, educational, and patient-safety findings), presented to many local medical students, residents, and faculty. WERE WON THE SECOND PLACE POSTER award, the first time our department has even placed in the poster competition.

r. 4/27/2015 – STFM (Society for Teachers of Family Medicine Annual Spring Conference 2015, Orlando, FL) presented poster on our project, poster # FP108. Received positive feedback from many at the conference.
s. 4/27/2015 -- Senior Group Ice Cream Social at Biltmore Towers, presented to a small group (about 15) of senior community residents at a local subsidized housing apartment building immediately following their ice cream social. Generated significant discussion among participants.

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.
   a. Dr. Kellar has most of these and will attach.

Sustainability

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

- As mentioned above by several residents, our office atmosphere has changed to be more aware in general of the need to give adults, and particularly older adults, indicated vaccines. We have now created much better office protocols that are making this happen on a more consistent basis, and have every expectation that this will continue well into the future.
- Our residency program has committed to incorporate community presentations and outreach more fully into our academic curriculum. We will begin by working with Dr. S. Sherlock, director of the area free clinic where our residents currently do most of their community medicine rotation, to establish a curricular requirement that every resident both help plan and participate in at least one community outreach project and/or presentation during their community medicine rotation. This addition to the curriculum has been tentatively approved by the faculty. Most residents view it in a positive light. We believe that this will help us as a program become a positive influence in the community. The MPH student (now graduated with her MPH) who worked with us on this grant has committed a few hours per week for several weeks to work with us codify this curricular change. We hope that this will be first steps in what we see developing into a much more involved community outreach.

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 greatly appreciate the grant. The thank you deeply for your generosity in sponsoring this project. We have seen many positive benefits from participation in this project. For instance, we have increased our office immunization rates and have also developed office and community health initiatives which will be sustained long into the future. In addition, however, we have enjoyed other, unexpected consequences. Some have simply been better responses to our efforts than we expected--for instance after “practicing” our community presentation on several non-residency medical school faculty, their office began to show a rapid and sustained improvement in pneumococcal vaccinations rates.

In addition to the above, the opportunity to participate in this project has given opportunities for some of our residents to gain leadership experience that they otherwise would not have had, and seems to have molded them into better physicians as well. The community reach-out has touched some of their lives, and will likely make them better contributors to whatever community they live in. Thank-you for giving them this opportunity, and for changing lives not only of our patients, but of the residents and students who have been had the privilege to be involved in this project.

Budget Update – Complete information in Appendix 3.

See attached.pdf file “669511 Fiscal Report 050115.pdf”
Please also see “...”
Appendix 1: PATIENT DATA for 2014-15 Senior Immunization Grant Award

PLEASE NOTE:
As explained in great detail above (Impact on Target Population, #3 Key Program Components, B, h, i):
"In mid-December 2014, our office suffered a refrigeration failure. This resulted in the loss of most of our influenza and pneumonia vaccinations. For nearly a month, the only way our patients could get vaccinated would be to go an outside location (nearby hospital pharmacy, other local pharmacy, health department clinic, etc). Few patients followed this alternative plan. After one month repairs were completed and vaccines were replaced. While we encouraged office staff and providers to continue to screen for vaccine-eligible patients during this time, there was an understandable decline in the DVR (daily vaccination rate) to as low as 35-40% at one point. Once refrigeration was restored and vaccinations were available again, daily vaccination rates were slow to rebound, but with significant efforts by our team, DVR had nearly reached 70% by the end of the flu season."
Unfortunately, even this rebound did not compensate enough for us to reach our goals.

We include this note here as this significantly impacted our vaccination rates. In fact, when we look at DVR through November, we were at or close to on track to reach our goals, and were significantly hurt by this setback. If/when this happens again, we will have a better backup plan in place.

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: 329
   (Our original application indicated that we had approximately 682 senior patients in our practice. We reported that number based on information given to us by our hospital system’s IT department. It appears that they were counting all senior patients seen (perhaps both by us and by others in our office network) in the past many years. A more accurate count of senior patients in our practice at any given time appears to be closer to 250-300.)
   1b. Total # of seniors who received an influenza vaccine from 9/1/14 - 3/31/15: 174
   1c. Historical Data – Enter data in the table by clicking on the box and typing in the numbers

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<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Influenza Vaccine Rate (%)</td>
<td>58.3%*</td>
<td>49.7%</td>
<td>53.0%*</td>
</tr>
<tr>
<td>Numerator/Denominator (absolute numbers used to calculate rate)</td>
<td>13/39*</td>
<td>116/233</td>
<td>174/329</td>
</tr>
</tbody>
</table>

1d. Summary of methodology used to obtain the data and information:
*Numbers used to calculate 2012-2013 rate were obtained by manually checking charts from a list of patient names given to us by IT of senior patients (>/= 65 yrs of age) seen in our practice from 2011-2014. The list consisted of about 380 patients, and we extracted data from 80 of the charts (approximately a 21% sample) to get data for the 2011-12 and 2012-13 influenza seasons.
By extrapolation, it appears that we actually saw about 300 patients >/= 65 yrs old during the 2012-13 flu season. While this chart extraction was not an ideal way to obtain this data, it was the best we could do, given the resources that we had at the time. Since then the IT department has put into place improved methods for requesting data (although still somewhat clumsy, which led to our having to do a small degree of chart extraction for this final report as well). In addition, we have developed improved relationships with IT personnel.
*It appears from a briefly looking at data that we were given recently, that the rate for 2012-2013 may actually have been closer to 40-45%.
These numbers appear to be quite accurate. About 2 weeks before the IT department gave us their final “data pull” for the project, three of our residents very carefully combed through the office visit of every patient >/=65 yrs old seen in our office at any time during the 2014-15 influenza season. These are the numbers they found. These numbers were nearly identical to the numbers given to us by the IT dept.
*PLEASE NOTE: when the residents did the manual chart extraction of all visits in the 2014-5 season, they checked the office note on each chart, and noted each patient who refused the influenza vaccine once it was offered. When these patients (36) were excluded from the calculations (174/(329-36)) our Influenza rate rises to 59.4%.
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: 330

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

2c. Historical Data – Enter data in the table by clicking on the box and typing in the numbers

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>PPSV23 Pneumococcal Vaccine Rate (%)</td>
<td>40.0%</td>
<td>69.7%</td>
<td>76.7%</td>
</tr>
<tr>
<td>PPSV23 Numerator/Denominator (numbers used to calculate rate)</td>
<td>112/280</td>
<td>138/198</td>
<td>253/330</td>
</tr>
<tr>
<td>*Number of seniors who received PCV13 during specific time period</td>
<td></td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

2d. Summary of methodology used to obtain the data and information:
For 201213 and 2013-14 data, used both manual extraction of data from charts of recently seen patients, and did manual extraction of charts from a list of names supplied by IT. For 2014-15 data manually extracted the records of EVERY senior patient seen in our office during dates mentioned. Compared these results with data extracted by IT department (matched very closely).

III. COMMUNITY-BASED PROJECTS ONLY: INFLUENZA & PNEUMOCOCCAL INFORMATION: 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: Approximately 350 seniors were served directly through community presentations. Another 630+ were sent informational postcards. >300 flyers and other written information pieces were distributed through community partners (public libraries, et cetera). Total served >1280 seniors in our community.

3b. Total # of seniors served through community outreach who received an influenza vaccine from 9/1/14–3/31/15: We cannot be certain, but of the 350 who attended our presentations, about 90% or more signed pledge cards to get their vaccinations updated (315). Many more were vaccinated through our outreach to the department’s faculty practice office. We assume that many of the others reached through mailers and flyers would also have updated their vaccination status. We estimate that at least 300 more would have done so, for a total of at least 615. Is this data included in the data presented in question 1b and 1c? no

3c. Total # of seniors served through community outreach who received a PPSV23 vaccine from 9/1/14-3/31/15: Similar answer to that above. We estimate not quite as many updated their pneumococcal status, as this is not a yearly vaccine, and several of those with whom we talked had already received their pneumococcal vaccination. We estimate about 450 received this vaccine as a result of our efforts. Is this data included in the data presented in question 2b and 2c? no

3d. Total # of seniors who received a PCV13 vaccine* from 9/1/14 – 3/31/15: In our office, only one. However, in the faculty practice we were told that “a large number” received this vaccination (over 100, it appears). We assume that some community members also received this vaccine. It is our estimate that about 150-200 seniors received this vaccination. Is this data included in data presented in 2c? no

3e. Summary of methodology used to obtain the data and information:
Estimations based on percentages of pledge cards signed at presentations, then guessing at a rate of about ½ of those reached by mail and flyers, with decreasing percentages calculated for pneumococcal and PVC13 vaccinations.