Idalia Rodriguez Memorial Immunization Project

Authors: Schumacher AC, Seltzer RE, Sumulong AC, Cluff BJ, Diaz-Rios KT, Nelson DP, Zamora JD, Ledger RD, Troxler JA.
Hidalgo Medical Services Family Medicine Residency
Silver City, NM

BACKGROUND
Among the “Ten Great Public Health Interventions in the 20th Century,” according to the Centers for Disease Control and Prevention, are “Immunizations” and “Control of Infectious Diseases.” Per “Health, United States, 2013,” their collaborative report with the Department of Health and Human Services and the National Center for Health Statistics, there is a significant discrepancy as vaccination rates between American Hispanic/Latino populations (e.g., 43% of adults have been vaccinated for pneumonia) versus non-Hispanic/Latinos (61%).

AIMS
Given the demographics of our regional Area Health Education Center population here in Southwestern New Mexico, and the fact that our geriatric community is more vulnerable to morbidity and mortality related to influenza and pneumococcal disease, we sought to improve our influenza and pneumococcal vaccination rates among community members ages 65 and older by 25% relative to our baseline rates.

RESULTS

**IMMUNIZATION RATES for 65+ year-olds**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza</td>
<td>29.5%</td>
<td>43.9%</td>
<td>46.2%</td>
<td>29.5%</td>
<td>43.9%</td>
<td>46.2%</td>
</tr>
<tr>
<td>Pneumococcal</td>
<td>31.8%</td>
<td>61%</td>
<td>61%</td>
<td>31.8%</td>
<td>61%</td>
<td>61%</td>
</tr>
</tbody>
</table>

**IMMUNIZATION RATES for Annual Flu Season**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza</td>
<td>48.9%</td>
<td>41.8%</td>
<td>56.4%</td>
<td>51.8%</td>
</tr>
<tr>
<td>Pneumococcal</td>
<td>46.5%</td>
<td>51.8%</td>
<td>56.4%</td>
<td>51.8%</td>
</tr>
</tbody>
</table>

METHODS
We utilized Plan-Do-Study-Act (PDSA) cycles to guide our improvement process around improving vaccination rates among community members ages 65 and older. We conducted several PDSA cycles, including hosting several events, both on-site and off-site, and implementing trigger reminders to initiate conversation regarding these immunizations between patients and their providers.

DISCUSSION
Residents, faculty, and providers at large improved our knowledge base around current indications for these immunizations.

In addition, residents and faculty learned better how to implement improvement initiatives, in particular by utilizing Plan-Do-Study-Act (PDSA) cycles, addressing workflows and processes, optimizing specific key questions of data sets, and defining populations.

We identified several highly impactful interventions to adopt for the future, and have several more PDSA cycles to implement in the upcoming months to maintain the gains achieved and further integrate them into our daily practice.

FUNDING
Senior Immunization Grant Award made possible by the AAFP Foundation, through a grant from Pfizer Inc.

REFERENCES

PDSA CYCLES

**RESULTS I**
We successfully improved our pneumococcal vaccination rate by 43.6%, May relate to a push for vaccination around influenza season, while pneumococcal vaccine is indicated year-round.

**RESULTS II**
We improved our influenza immunization rates by 11.5%, though did not reach our aim of a 25% relative improvement from baseline.

For improved future cycles, consider better publicizing of "Red Cards.” Worked well: clinics using "Red Cards" had highest immunization rates. Worst: "Red Cards” had lowest immunization rates among community members are unobtainable in a timely fashion. "Red Cards” had highest immunization rates. Most significant efficacy: Tabled for next year. Turnout for "Red Cards" was high. Widespread implementation of "Red Cards” had highest immunization rates. Among community members ages 65 and older by 25% relative to our baseline rates.

**DISCUSSION**
We successfully improved our pneumococcal vaccination rate by 43.6%, May relate to a push for vaccination around influenza season, while pneumococcal vaccine is indicated year-round.

**METHODS**
We utilized Plan-Do-Study-Act (PDSA) cycles to guide our improvement process around improving vaccination rates among community members ages 65 and older. We conducted several PDSA cycles, including hosting several events, both on-site and off-site, and implementing trigger reminders to initiate conversation regarding these immunizations between patients and their providers.

**RESULTS**
We successfully improved our pneumococcal vaccination rate by 43.6%, May relate to a push for vaccination around influenza season, while pneumococcal vaccine is indicated year-round.

**DISCUSSION**
We successfully improved our pneumococcal vaccination rate by 43.6%, May relate to a push for vaccination around influenza season, while pneumococcal vaccine is indicated year-round.

**METHODS**
We utilized Plan-Do-Study-Act (PDSA) cycles to guide our improvement process around improving vaccination rates among community members ages 65 and older. We conducted several PDSA cycles, including hosting several events, both on-site and off-site, and implementing trigger reminders to initiate conversation regarding these immunizations between patients and their providers.
Name of Family Medicine Residency Program
Hidalgo Medical Services (HMS) – Rural Training Track FMRP

Contact Information

1) Name, Title, Email of residents completing the report:
   Rachel Seltzer, MD, MPH (rseltzer@hmsnm.org)
   Alan Schumacher, MD (aschumacher@hmsnm.org)
   Algele Cid Sumulong, MD (asumulong@hmsnm.org)
   Benjamin Cluff, MD (cluffb@hmsnm.org)

2) Project Contact information if different from above:
   Joyce Troxler, MD, Associate Program Director

3) Name(s) of Resident(s) presenting Immunization Awards Poster at the 2015 National Conference:
   Alan Schumacher, MD
   Rachel Seltzer, MD, MPH

Title of Project:
Idalia Rodriguez Memorial Immunization Project

Statement of Goal(s) (including primary metrics):

Primary Metrics:
We will increase immunizations to obtain a:
- 25% relative increase in influenza immunization rate (1270 total flu immunizations) among seniors; and
  - Baseline = 43.9% (Average of previous two seasons)
  - Goal = 54.9%
- 25% relative increase in pneumococcal immunization rate (635 total pneumonia immunizations).
  - Baseline = 29.5% (average of previous two years)
  - Goal = 36.9%

Secondary Metric:
- Four family medicine residents will direct all project activities during the project period, and execute all activities with necessary faculty support.

Impact on Target Population
1. PATIENT DATA – Please see APPENDIX 1.

2. KEY OUTCOMES
   • Influenza: improved by 11.5% over the average of the past two influenza seasons.
     We did not achieve our goal of a 25% relative improvement.
   • Pneumococcal: improved by 41.3% over the average of the past two influenza
     seasons, and by 43.6% over the average of the past two years.
   • Residents took ownership of and conducted this initiative, and became familiar with
     the improvement process. Now residents in this residency program will be able to
     facilitate productive improvement projects as part of our residency curriculum in the
     future.

3. KEY PROGRAM COMPONENTS (a.k.a. Interventions, or Plan-Do-Study-Act (PDSA)
   Cycles; please see APPENDIX 2)
   • HMS Day
     Organization-wide health fair that was held at multiple clinic sites providing general
     health care screening and information to the public, and during which free
     vaccinations were provided to our target (65+) population.
   • Red Cards
     Red Cards were 3x5” red construction paper cards that front desk staff were asked
     to give to patients aged 65 and older at the time of check-in. Patients were
     instructed to present them to the provider during the encounter. This intervention
     was intended to be a clear physical trigger-reminder for the provider to address
     immunization status during this visit. On one side of the card in very large font was
     written “65+”; on the other side was a five-question survey regarding barriers to
     immunization. (Please see APPENDIX 3.)
     Based on the Red Card responses, the most common source cited for learning
     about the importance of immunizations was “The Clinic.” The biggest barrier that
     patients cited to becoming immunized was “Scheduling”. And patients cited
     “Provider recommendation” as the biggest reason they chose to become vaccinated
     that day.
   • Reach-out reminders to clinics
     Regular emails and telephone conversations, and personal visits to clinic staff and
     providers encouraging and requesting Red Card utilization and collection.
   • Designed and hosted off-site immunization events
     Two half-day free immunization clinics provided off-site at two different locations,
     intending to reach a large number of the target population, including individuals
     outside of the HMS patient population.
   • Data accumulation and verification
     Clarified data queries to our information technology (IT) Department to ensure the
     most accurate data for the appropriate time periods and patient population.

4. THINGS THAT WORKED BEST (to accomplish your activities)
   • HMS Day
   • Red cards
   • Data accumulation and verification
5. LESSONS LEARNED

Project-Specific:
- Novel, short-term interventions can be highly effective
- If precedent examples or brainstorm ideas exist, e.g. the list in APPENDIX 4, it would be helpful for future initiatives to make them available at the beginning of the project.
- Referencing Everett Roger’s Principle of Diffusion of Innovation, “The Tipping Point,” there will always be Late Adopters and Laggards.
- We started small, appropriate to our setting as a rural FQHC. We were further along in the process when we appreciated we could have gone “bigger” with this grant award.
  a) We have shown that significant impacts can be made on a smaller budget;
  b) For future, we learned we can budget less conservatively from the outset.

Process-Specific:
- Budget intentionally and realistically.
- Systematic, proactive, protected time for improvement project work.
- With protected time residents can design and conduct improvement projects, even on a low budget, that can significantly impact the culture of our clinic organization and the care we as a provider group deliver to our patient population.
- Residents are capable of integrating and implementing improvement processes within the context of the greater clinic organization.

6. PERSONAL STORY

Our initial intervention was a set of health fairs across multiple HMS clinic locations, called HMS Day. In Lordsburg, NM, one of our visitors had not had healthcare for years. By discussing the benefits (and risks) of the immunizations, she plugged back into our organizational clinic system, and has now established with a PCP, and is receiving regular primary care. This project really served two-fold: one to bring awareness of vaccines in the community and preventing hospitalization, and also to re-engage previously disenfranchised members of the community back into the fold of primary care in addition to prevention.

~Cid Sumulong, MD

Impact of Interventions - Complete Information In Appendix 4.

We increased the rate of influenza and pneumococcal vaccinations as a result of our directed interventions, primarily with our Red Card provider reminder-trigger. The interventions were most impactful early in the process when the reminder concept was novel. The long term impact was still effective at increasing our overall rate of immunizations throughout the entire organization.

Impact on Residents and Team Members

1. Provide a general description of those who worked on the quality-improvement and/or community-based project.

The primary improvement team has been the four residents (Benjamin Cluff, MD, Algele “Cid” Sumulong, MD, Alan Schumacher, MD, and Rachel Seltzer, MD, MPH. Our Associate Program Directors have been instrumental in this project: Joyce Troxler, MD, our project lead, and Kristan Diaz-Rios, MD, as well as Darrick Nelson, MD, our residency program director, Russ Ledger, who has run the data reports from our
electronic health record, Tiffany Howard, our resident medical assistant, who volunteered on her day off for our immunization clinics, and Jade Zamora, MBA, our residency coordinator.

2. Address the current and future impacts of this project on the residents &/or members of the team.
   A. For the residents, our faculty, and our medical assistant support, as well as our information technology colleagues, this process has improved our familiarity with data evaluation processes within our organization.
   B. We have also become familiar with the Improvement process, including PDSA cycles and creativity around interventions and initiatives.

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)

After reviewing the evidence from these Centers for Disease Control and Prevention Morbidity and Mortality Weekly Reports and the studies they referenced, we provided the following information and recommendation to all providers in our clinic:
- So far, the evidence appears to be based on serum antibody concentration only;
- There is not yet evidence regarding outcomes directly related to this intervention;
- Implementation would mean an increase in interventions and cost;
- At the time we made the decision to not provide this additional pneumococcal immunization, CMS was not providing this as a covered expense for their enrolles.

Recommendation: Do not implement at this time given insufficient evidence to justify costs to our FQHC organization and patient community.

Our clinic chose not to institute these new recommendations at this time.

Therefore, the new Advisory Committee on Immunization Practices recommendation to conduct a two-step pneumococcal immunization process, beginning with the 13-valent pneumococcal conjugate vaccine, followed by the 23-valent pneumococcal polysaccharide vaccine, did not significantly impact our outcomes.

Education and Outreach

1. Summary of accomplishments
   • Designed and optimized a high impact provider reminder-trigger intervention with Red Cards;
   • We improved our clinic immunization rates by 11.5% and 43.6% for influenza and Pneumococcal respectively;
   • We learned how to conduct an improvement initiative, utilizing PDSA cycles;
   • We learned more about the specific indications and contraindications for both influenza and pneumococcal vaccines.
   • List of clinical & patient education and outreach materials produced or used in this project.
     - Radio advertisement (Please see APPENDIX 5)
2. List of presentations with the date(s) and brief description of the audience.
   Topic: Immunization information presentations
   Location: HMS Ena Mitchell Senior & Wellness Citizens Center (Population: Aged 65+)
   8/2014 – Ben Cluff, MD
   9/2014 – Cid Sumulong, MD
   10/2014 – Alan Schumacher, MD

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.
   - Red Card Questionnaire (Please see APPENDIX 3)

4. Barriers to Outreach:
   Although the rate of influenza vaccination had a relative increase of only 11.5%, the rate of pneumococcal vaccination had a large relative increase of 43.6%. Potential barriers to achieving higher flu vaccination rates include issues of both documentation and administration as well as some specific logistical barriers. In our community, multiple providers provide flu vaccinations, including those outside of HMS. We maintain a significant number of same-day appointments, so some of our patients consider a non-HMS provider as their primary care provider, yet visit our clinic for more urgent same-day appointments. Vaccinations are also administered in our regional hospital, and at local pharmacies. Consequently, it is possible that the rate of flu vaccination may be underreported if patients received the vaccination outside of HMS and correspondingly declined vaccination for that reason. An intervention (a free drive-through flu vaccine clinic) held during the last 2 years was not held during the 2014-2015 flu season due to administrative decisions. This potentially could have bolstered our rate of flu vaccinations given. In addition, there was a new administrative decision this flu season to charge patients $10 out-of-pocket to receive the flu vaccine through a nurse visit (when the vaccine is given during a visit, the vaccine is included in the visit cost). This led to some confusion, and likely to a monetary barrier for some patients. Regarding our off site outreach events, we utilized radio announcements. The radio advertisements, though numerous, may have not reached our target audience efficiently, as they seemed to come on only during mid-day business hours, not during high volume hours of radio listening. Additionally, given the lead-time required to obtain appropriate gap insurance coverage for outreach clinics, there were some delays scheduling these off-site events. The combination of these issues likely lead to our small turn-out for these events. Lastly, our organization tends to have a strong push to vaccinate for influenza early in the flu season. We typically begin administering the vaccine in September, and the time frame set for this project began after our clinics gave their first immunizations against influenza. Our data collection process looked at patients who had contact with HMS during the 2014-2015 flu season and did not capture immunizations given before or after that window. Also since there is such a strong push to vaccinate early there was likely some attenuation over the course of the season.

Sustainability
Discuss how the FMRP will carry the best practices and gains into the future.
- We will continue with the Red Cards for the next influenza season.
- We hope to further optimize the already implemented Red Cards by writing the questions into a survey format on an iPad. We aim to pilot this with the residents’ patient panels first, and if successful and impactful, then expand the initiative to other providers and their patient panels.
• We hope to more optimally educate a greater proportion of our patient population by placing 32” monitors in waiting areas with informational material about immunizations and other preventive health actions. We intend to start at two clinics, then survey patients about their experiences in order to evaluate for the cost versus benefit of implementing at all clinics.

• We hope to more optimally educate and empower a greater proportion of our patient population by inviting them to utilize the American College of Physicians Immunization Advisor application for the iPad, to allow them to input their age, medical conditions, etc., for pre-programmed, up-to-date, patient-specific immunization recommendations.

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?

By providing the financial support, we have found a viable way to engage our patient population and consequently increase the vaccination rates in our small community. In doing so, it has provided the residency with the skills and foundation to institute further systems change for the benefit of our patients, organization, and community. Without the fiscal backing, this foundation for change would not have been possible. In essence, the donors have not only given us the spear to sustain ourselves but also the skills needed to sharpen it.

Budget Update – Complete information in APPENDIX 6.
APPENDIX 1: Patient Data

KEY:
S1 = 2012-2013 Season
S2 = 2013-2014 Season
S3 = 2014-2015 Season
Baseline = Average of S1 & S2

CALCULATIONS:
Relative Improvement in Vaccination Rate = \{S3 - [(S1+S2) / 2]\} / Baseline

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: 1088

1b. Total # of seniors who received an influenza vaccine from 9/1/14 - 3/31/15: 2224

1c. Historical Data

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza Vaccine Rate (%)</td>
<td>41.79%</td>
<td>45.94%</td>
<td>48.92%</td>
</tr>
<tr>
<td>Numerator/Denominator (absolute numbers used to calculate rate)</td>
<td>916/2192</td>
<td>1204/2621</td>
<td>1088/2224</td>
</tr>
</tbody>
</table>

1d. Summary of methodology used to obtain the data and information:
After introducing the Red Card System in which tangible reminder-triggers for addressing flu and pneumonia vaccines were integrated into a clinic workflow, as well as reach out reminders to clinics and immunization events, the vaccination rates were measured before and after interventions. Data was obtained from Electronic Clinical Works (eCW), the electronic health record for HMS.

Relative Improvement in Influenza Vaccination Rate
= \{48.92 - [(41.79+45.94)/2]\} / Baseline
= \{48.92 – 43.87\} / 43.87
= 5.06 / 43.87
= 0.115
= 11.5%

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: 533

2b. Total # of seniors who received a PPSV23 vaccine from 9/1/14 – 3/31/15: 1155

2c. Historical Data

### PNEUMOCOCCAL VACCINATION RATES DURING THE FLU SEASON

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>PPSV23 Pneumococcal Vaccine Rate (%)</td>
<td>30.02%</td>
<td>35.29%</td>
<td>46.45%</td>
</tr>
<tr>
<td>PPSV23 Numerator/Denominator (numbers used to calculate rate)</td>
<td>658/2192</td>
<td>925/2621</td>
<td>1033/2224</td>
</tr>
<tr>
<td>*Number of seniors who received PCV13 during specific time period</td>
<td></td>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>

### ANNUAL PNEUMOCOCCAL VACCINATION RATES

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>PPSV23 Pneumococcal Vaccine Rate (%)</td>
<td>27.01%</td>
<td>31.92%</td>
<td>42.29%</td>
</tr>
<tr>
<td>PPSV23 Numerator/Denominator (numbers used to calculate rate)</td>
<td>741/2743</td>
<td>1088/3408</td>
<td>1253/2963</td>
</tr>
<tr>
<td>*Number of seniors who received PCV13 during specific time period</td>
<td></td>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>

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

After introducing the Red Card System in which tangible reminder-triggers for addressing flu and pneumonia vaccines were integrated into a clinic workflow, as well as reach out reminders to clinics and immunization events, the vaccination rates were measured before and after interventions. Data was obtained from Electronic Clinical Works (eCW), the electronic health record for HMS.

Relative Improvement in Pneumococcal Vaccination Rate – Flu season:

\[
= \frac{(46.15 - \frac{[(30.02+35.29)/2]}{2})}{\text{Baseline}}
\]

\[
= \frac{(46.15 - 32.66)}{32.66}
\]

\[
= 13.49 / 32.66
\]

\[
= 0.413
\]

\[
= 41.3\%
\]

Relative Improvement in Pneumococcal Vaccination Rate – Annual:

\[
= \frac{(42.29 - \frac{[(27.01+31.92)/2]}{2})}{\text{Baseline}}
\]

\[
= \frac{(42.29 - 29.46)}{29.46}
\]
IMMUNIZATION RATES for 65+ year-olds

<table>
<thead>
<tr>
<th></th>
<th>2012-2013 Flu Season</th>
<th>2013-2014 Flu Season</th>
<th>Baseline</th>
<th>10/1/14-11/30/14</th>
<th>10/1/14-1/31/15</th>
<th>2014-2015 Flu Season</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Influenza</strong></td>
<td>41.8%</td>
<td>45.9%</td>
<td>43.9%</td>
<td>56.4%</td>
<td>51.8%</td>
<td>48.9%</td>
<td>-</td>
</tr>
<tr>
<td><strong>Pneumococcal</strong></td>
<td>27.0%</td>
<td>32.9%</td>
<td>29.5%</td>
<td>46.2%</td>
<td>46.2%</td>
<td>46.5%</td>
<td>42.3%</td>
</tr>
</tbody>
</table>

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.

All our interventions were based around our community-based Federally Qualified Health Center.
Please see above sections I and II for this information.