SwedishAmerican’s Journey in Implementing a Pneumococcal Vaccination Program to Increase Quality While Reducing Costs

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Thomas Schiller, MD, SwedishAmerican Health System
Elizabeth L. Ciemins, PhD, MPH, MA, AMGA

March 10, 2018
About Us

- Located in Rockford, IL
- 1 Hospital/1 Medical Center
- Regional Cancer Center
- 26 Clinics
  
  *Primary Care & Specialty*
  - Average # of annual outpatient visits : 424,170
  - Approximately 103,000 unique lives touched annually

- Home Health Services
- A Division UW
Best Practices Learning Collaborative

• SwedishAmerican Medical Group has been an...
  – AMGA member since 2009
  – Optum One User since 2012 – AMGA Analytics for Improvement (A4i)
• AMGA Adult Immunization Collaborative
  – 1st collaborative participation
  – Successful results led to 2nd collaborative participation
Background: Adult Immunizations
Influenza and Pneumococcus

This initiative addressed both pneumococcal vaccines: PCV and PPSV
Pneumococcal Disease in the United States

- 50,622 pneumococcal-related deaths in 2014;

- Pneumococcal disease kills more people in the US each year than all other vaccine-preventable diseases combined (Immunization Action Coalition, 2017)

- 1.2 million cases of drug resistant pneumonia per year in US (CDC, 2013)

- 63.6% adults ages 65+ have ever received a pneumococcal vaccine (HP2020 goal: 90%)
  - 1 dose each of PCV13 and PPSV23

- 23% high risk adults ages 19–64 have ever received a pneumococcal vaccine (HP2020 goal: 60%)
  - High-risk: CSF leaks, cochlear implants, hemoglobinopathies, asplenia, chronic renal failure, nephrotic syndrome, organ transplant, kidney disease, immunodeficiencies, cancers: leukemia, lymphoma, Hodgkin disease, multiple myeloma, gen. malignancy

- Vaccinating ‘at-risk’ patients reduces risk of hospitalization
  - At-risk: diabetes, chronic heart, lung or liver disease, smoking, alcoholism

https://www.cdc.gov/vaccines/imz-managers/coverage/adultvaxview/coverage-estimates/2015.html#table1
Influenza in the United States

- 23,607 average deaths per year; as high as 48,614 in 2003-04 season
  - 90% of deaths are among 65+

- Flu vaccine reduced flu-related ICU admissions by 74% in children; reduced flu-related hospitalizations by 57% in adults 50+

- **41.7% of adults received the influenza vaccine in 2015-16 season**

- Vaccination rates in adults decreased by 1.9 percentage points from the 2014 – 2015 season to 2015 – 2016

- Healthy People 2020 Influenza vaccination goal: 70%

[https://www.cdc.gov/flu/fluvoxview/coverage-1516estimates.htm](https://www.cdc.gov/flu/fluvoxview/coverage-1516estimates.htm)
Are any of the following vaccines recommended for you as an adult?

<table>
<thead>
<tr>
<th></th>
<th>Yes (%)</th>
<th>No (%)</th>
<th>Don’t Know (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza</td>
<td>71.8</td>
<td>15.1</td>
<td>13.0</td>
</tr>
<tr>
<td>Hepatitis A</td>
<td>14.3</td>
<td>42.4</td>
<td>43.3</td>
</tr>
<tr>
<td>Hepatitis B</td>
<td>20.1</td>
<td>39.9</td>
<td>40.0</td>
</tr>
<tr>
<td>Pneumococcal</td>
<td>26.4</td>
<td>34.9</td>
<td>38.7</td>
</tr>
<tr>
<td>Tdap</td>
<td>11.9</td>
<td>39.0</td>
<td>49.0</td>
</tr>
</tbody>
</table>

FallStyles (September-October, 2012).
Measure Descriptions

• **Measure 1**: Patients > 65yo w 1+ E&M visit, PCP on record either pneumococcal vaccine naïve, or needing additional vaccination

• **Measure 2**: Patients 19 – 64yo w 1+ E&M visit, PCP on record, 1+ **High Risk** Conditions either pneumococcal vaccine naïve, or needing additional vaccination

• **Measure 2a**: Patients 19 – 64yo w 1+ E&M visit, PCP on record, 1+ **At Risk** Conditions either pneumococcal vaccine naïve, or needing additional vaccination

• **Measure 3**: Influenza immunization for adults age 18 and older, each flu season
Interventions

• **Staff Education**
  – Communication via Clinic Operation Managers
  – Built into rooming process
  – “Huddle Boards”*

• **Provider Education/Incentive Bonus**
  – Communication at General Physician Meeting
  – Pneumococcal Algorithm – SmartSets
  – Written communication
  – Transparent monthly reporting
  – Pneumococcal 65+ added to quality bonus scorecard

• **Patient Education**
  – Information available via waiting room
  – Signage in exam room (pneumococcal 65+ and high risk only)
  – Patient Portal Message (Influenza Only)
  – Patient Phone Calls (Emmi)*

• **Daily Care Gap Report**
• **Bi-Directional Interface**
• **Employee Health** (Influenza Only)

*2nd Collaborative Interventions
**Daily Patient Care Gap**
**Provider Summary - 04/18/2016**

| BELVIDERE SAMG - [1001] | SIMMONS, MARY - [20001] | PAP | MAM | COLORECTAL CANCER CHEST | DIABETES CONTROL | LAST A1C VALUE | LAST BP VALUE | PNEUMO CMPTD | DEPRESSION | SPIROMETRY | PEDS IMMS |
|------------------------|-------------------------|-----|-----|------------------------|------------------|---------------|---------------|--------------|------------|------------|----------|--------|
| 9:20 am                |                         | ✓   | ✓   | ✓                      | ✓                |               |               |              |            |            |          |
| 9:20 am                |                         | ✓   | ✓   | ✓                      | ✓                |               |               |              |            |            |          |
| 10:00 am               |                         | ✓   | ✓   | ✓                      | ✓                |               |               |              |            |            |          |
| 10:20 am               |                         | ✓   | ✓   | ✓                      | ✓                |               |               |              |            |            |          |
| 11:00 am               |                         | ✓   | ✓   | ✓                      | ✓                |               |               |              |            |            |          |
| 11:20 am               |                         | ✓   | ✓   | ✓                      | ✓                |               |               |              |            |            |          |
| 11:40 am               |                         | ✓   | ✓   | ✓                      | ✓                |               |               |              |            |            |          |
| 1:00 pm                |                         | ✓   | ✓   | ✓                      | ✓                |               |               |              |            |            |          |
| 1:20 pm                |                         | ✓   | ✓   | ✓                      | ✓                |               |               |              |            |            |          |
| 1:40 pm                |                         | ✓   | ✓   | ✓                      | ✓                |               |               |              |            |            |          |
| 3:40 pm                |                         | ✓   | ✓   | ✓                      | ✓                |               |               |              |            |            |          |
SmartSets

[Image of the SmartSets interface]

- **Opened SmartSets**
  - Associate
  - Primary Dx
  - New Dx
  - Providers

- **Pharmacy**

- **IMMUNIZATIONS FLU/PNEUMOVAX ADULT — Required**
  Use only when BOTH vaccines are given in same visit.
  - PNEUMOCOCCAL VACCINE TIMING
  - CDC GUIDELINES

- **DIAGNOSES**
If you are 65+
YOU NEED 2 PNEUMONIA SHOTS

Pneumonia can be life-threatening.
Pneumonia is a serious lung infection that can lead to hospitalization and death.

Older adults are at high risk for getting pneumonia.
Vaccines can help prevent a leading cause of pneumonia.

Talk to your doctor about when to get the shots.
Two different pneumonia shots are now recommended if you’re 65 or older. Even if you already got one, you need both for best protection. It could save your life.

Learn more at www.cdc.gov or call 1-800-CDC-INFO

Do you smoke?
Have asthma, diabetes,
or a weakened immune system?

You may be at high risk for pneumonia—a serious lung infection

Pneumonia can be life-threatening:
• 900,000 Americans get pneumonia every year.
• Nearly half a million are hospitalized.
• About 1 in 20 die.

If you are 19 or older with any of these conditions, ask your doctor about getting a pneumonia shot.

- Cigarette smoker
- Asthma
- Diabetes
- Certain cancers or having chemotherapy
- Heart, kidney, and liver diseases
- Sickle cell disease
- Cerebrospinal fluid leaks
- A cochlear implant
- HIV/AIDS
- A bone marrow or organ transplant

Get a pneumonia shot. It may save your life.
Learn more at cdc.gov or call 1-800-CDC-INFO.
If you smoke, call 1-800-NO-BUTTS

This publication was supported by Grant Number 5U58DP005521 from the Centers for Disease Control and Prevention (CDC).
Patient Engagement Solution: Areas for Provider/Organization Customization and Support

1. **Site-specific kickoff**
   - Identify participating sites/providers
   - Review/configure patient-facing materials and outreach

2. **Identify patients in Optum One**
   - Review and modify the list manually as needed
   - Outreach conducted 3 times throughout Collaborative
   - Patient list does not have to remain the same for outreach attempts

3. **Pneumo Vaccine Education**
   - Materials/process reviewed by providers

4. **Facilitate appointment with phone transfer**
   - Determine days/hours for outreach to occur
   - Determine where incoming calls will be directed

5. **Vaccination visit**
   - Optum will provide FAQs to office staff to assist in any support calls
   - Optum/Emmi support teams fully enabled for this program

6. **Measure & manage program performance**
   - Optum to provide additional analyses to this sub-set of the Collaborative

Red text: area for customization
Emmi

AAP: Adult Vaccination - Eligibility Profiles...

Measure 1: 65+ yo needing one or both Vaccines as of 31 Jan 2017

Measure 2: 19 - 64 yo w/ 1 or more High Risk Conditions needing one or both Vaccines as of 31 Jan 2017

Campaign 1: n = 11648

# of patients: 6,265

# of patients: 5,383

# of patients: 5,658

# of patients: 10,385

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Interactive Call
Hello, I’m calling on behalf of [client name] with a message for [patient name]. Is this [patient name]?

I’m calling because our records show you may need one or more pneumonia vaccines. The vaccines help protect you against pneumococcal disease that includes the serious sickness called pneumonia. The thing is, if you have certain medical conditions or if you’re over 65, when you catch it you can get really sick really quickly. So, even if you’ve already had one vaccine against pneumonia, it’s worth asking your healthcare provider if you need both vaccines to be fully protected. If you want, I can transfer you to set up a time to ask any questions or get either pneumonia vaccine.

Would you like me to transfer you to make an appointment?

Yes: Great, thanks! Transferring you now. Just ask about getting up-to-date on your pneumonia vaccines. [Transfer]

No: Alright. When you’re ready to schedule your appointment, just give your healthcare provider’s office a call at ###-###-####. One more time that’s: ###-###-####. Just ask about getting up-to-date on your pneumonia vaccines. [Options to Repeat]

More Info: Sure. What I said is pneumococcal disease, that’s what happens when a bacteria gets to be too much for your body to fight. Your lungs can get a lot of liquid in them, causing a harsh cough and it may also affect your blood. The truth is, it’s a lot harder for you to fight off this sickness after age 65, or if you have certain conditions like heart disease, diabetes, or lung problems or if you smoke. Meaning if you get sick with it, you get really sick and fast! The good news is, there are two vaccines that teach your body to fight off the bacteria before it makes you sick. That’s why it’s important to get up-to-date on the pneumonia vaccines that you need. If you have questions about which pneumonia vaccine is right for you- or if you want to get either pneumonia vaccine, I can transfer you to your healthcare provider’s office to set up some time with them.

Would you like me to transfer you to make an appointment?
Emmi

11,449 Patients Called | 16,728 Calls Made | 5,761 Patients Engaged

- Patient Unavailable: 663 (6%)
- Hung Up: 1,388 (12%)
- No Answer: 3,639 (32%)

5,761 Patients Engaged

- Transferred to Schedule: 720 (13%)
- Already Completed: 192 (3%)
- Given Scheduling Info: 2,493 (43%)

9,656 Patients Called | 14,156 Calls Made | 5,046 Patients Engaged

- Patient Unavailable: 411 (4%)
- Hung Up: 1,154 (12%)
- No Answer: 3,046 (32%)

5,046 Patients Engaged

- Transferred to Schedule: 699 (14%)
- Told Due: 1,966 (39%)
- Already Completed: 144 (3%)
- Given Scheduling Info: 2,237 (44%)
Success!

Increased Pneumococcal Rates 65+

Pre-Intervention

- Education
- Signage
- Physician Quality Bonus
- Monthly Reports

Interventions

- Daily Care Gap Report
- Emmi
- Huddle Boards

Increased Vaccination Rates → Better Patient Care
## All Measure Outcomes

<table>
<thead>
<tr>
<th>Measure</th>
<th>2015</th>
<th>Baseline</th>
<th>Q1</th>
<th>Q2</th>
<th>Q3</th>
<th>Goal</th>
<th>Change from Baseline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measure 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PN 65+</td>
<td>48.5%</td>
<td>79%</td>
<td>80%</td>
<td>81%</td>
<td>82%</td>
<td>90%</td>
<td>+3%</td>
</tr>
<tr>
<td>Measure 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PN High Risk (19-64)</td>
<td>11.9%</td>
<td>28%</td>
<td>32%</td>
<td>34%</td>
<td>34%</td>
<td>45%</td>
<td>+7%</td>
</tr>
<tr>
<td>Measure 2a</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>At Risk</td>
<td>N/A</td>
<td>30%</td>
<td>32%</td>
<td>34%</td>
<td>33%</td>
<td>Optional</td>
<td>+3%</td>
</tr>
<tr>
<td>Measure 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Influenza</td>
<td>30%</td>
<td>30%</td>
<td>37%</td>
<td>37%</td>
<td>15%</td>
<td>45%</td>
<td>-15%</td>
</tr>
</tbody>
</table>
Measure 1 - Pneumococcal 65+

Baseline
Q1
Q2
Q3

None
Unknown
Both
PCV
PPSV
Measure 2 - Pneumococcal High Risk (19-64)
Pneumococcal Admissions
Key Elements

• **Align Incentives to Drive Performance**
  – Providers are driven by monetary incentives and healthy competition

• **Develop a Daily Care Gap Report**
  – Improves efficiency of daily huddles
  – “Cheat sheet” with *actionable* point of care information

• **Leverage EHR to Support Efforts**
  – Develop protocols to facilitate ordering
  – Algorithm helps with timing vaccines

• **Include In-Room Signage**
  – It worked – Patients asked questions about the vaccine

• **Communication**
  – Every month, every provider and staff meeting
Impact of a Learning Collaborative Approach on Influenza and Pneumococcal Immunization Rates in U.S. Adults

March 10, 2018

Elizabeth Ciemins, PhD, MPH, MA
Director, Research and Analytics
AMGA
Talk to Your Neighbor!

• Self Reflection: (CHOOSE ONE) – ONE MINUTE
  – At your health care organization, what is one thing that you think does or could facilitate improved adult immunization rates?
  – At your health care organization, what is one major barrier to a successful adult immunization program? Is there one type of immunization that presents the biggest challenge?
  – Make notes on your 3x5 colored card

• Discuss with your neighbor: (TWO MINUTES EACH)
  – Share your thoughts on ONE of the two questions above.
  – One the back of the card, write down what your neighbor shared

• Tell us something YOUR NEIGHBOR shared that was interesting (FIVE MINUTES)
Disclosures

- This project received funding support from Pfizer.
Research Questions

1. Did the Learning Collaborative Intervention result in improved > 65 pneumococcal, high risk pneumococcal, and influenza immunization rates in seven U.S. health care organizations?

2. What organizational, individual, cultural, and contextual factors influenced the success of these adult immunization programs?
Methods
Study Sample

• Seven health care organizations in six states across the U.S. all on the same population health platform (Optum One)

• During 12-month intervention period eligible patients by immunization type:
  – Pneumococcal ≥ 65: 189,701 patients
  – Pneumococcal High- and At-Risk: 243,386 patients
  – Influenza: 628,693 patients
Study Design

• Mixed methods observational cohort study with comparison group of non-participating organizations
• Measured on three immunization rates pre- and post-intervention at the organization level
  – Pre-Intervention Period: 7/1/13-6/30/14
  – Intervention Period: 7/1/14-6/30/15
• Semi-structured interviews conducted post-intervention at most participating study sites
• One member-checking focus group
Analyses

• Propensity score matching of PCPs for pneumococcal immunization rates (≥ 65 and High Risk) on:
  – U.S. Geographic Region (organization-level; n=8)
  – Organization type, i.e., ambulatory or integrated delivery system
  – Baseline immunization rate
  – Baseline unique patient counts
  – % Medicare; % Medicaid; % Medicare Annual Wellness Visits
  – % Ethnic minorities (non-white)

• Semi-structured interviews and focus groups using constant comparative approach to identify themes

• Application of Consolidated Framework for Implementation Research (CFIR) (Damschroder 2009, Damschroder 2013)
Intervention
Adult Immunization Learning Collaborative

- Case studies, research
- Webinars
- Site visits
- Advisory committee
- Measurement
- Outreach & coaching by AMGA
- In-person meetings with networking

Collaborative Framework
Location of Participating Organizations
7 organizations in 6 states
## Custom Measures for Collaborative

<table>
<thead>
<tr>
<th>Measure</th>
<th>Denominator</th>
<th>Numerator</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Pneumo Age 65+</td>
<td>All patients in study, age 65+</td>
<td>All patients in denominator with evidence of pneumococcal vaccine, from age 65+</td>
</tr>
<tr>
<td></td>
<td>Adult Immunization Collaborative Intervention Period total: 189,701</td>
<td></td>
</tr>
<tr>
<td>2. Pneumo Age 19-64 High Risk &amp; At Risk</td>
<td>All patients in study, age 19-64, With evidence of 1+ High Risk/At Risk condition</td>
<td>All patients in denominator with evidence of pneumococcal vaccine, from age 19-64. (Patients ≥ 65 with High Risk/At Risk conditions fell under Measure 1.)</td>
</tr>
<tr>
<td></td>
<td>Adult Immunization Collaborative Intervention Period total: 243,386</td>
<td></td>
</tr>
<tr>
<td>3. Influenza age 18+</td>
<td>All patients in study, age 18+</td>
<td>All patients in denominator with any evidence of influenza vaccine from 7/1 – 6/30 of a given flu year</td>
</tr>
<tr>
<td></td>
<td>Adult Immunization Collaborative July 2015 - April 2016 total: 628,693</td>
<td></td>
</tr>
</tbody>
</table>

**Attribution:** All patients were seen by PCP, or linked to PCP, and had E/M visit during the reporting period.

**Data Collection:** Data was retrieved using identical methods.
Pneumococcal Recommendations for Adults 19-64

PPSV23 (Pneumovax®23)
- Chronic heart disease
- Chronic lung disease
- Chronic liver disease
- Alcoholism
- Diabetes Mellitus
- Smoke cigarettes

PCV13 (Prevnar®13) + PPSV23 x2

Immunocompromising conditions
- Anatomical or functional asplenia
- CSF leaks* or cochlear implants*

*Require one PPSV23
Graphic courtesy of Denver Health
Results: Quantitative
### TABLE 3: Descriptive Statistics of Baseline Variables: Full Dataset versus Matched Dataset

<table>
<thead>
<tr>
<th>Baseline Variable</th>
<th>Original Sample (Unadjusted)</th>
<th>Standardized Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Collaborative PCPs (N=878)</td>
<td>Non-Collaborative PCPs (N=74,830)</td>
</tr>
<tr>
<td>Count Patients</td>
<td>226 ± 263</td>
<td>31 ± 116</td>
</tr>
<tr>
<td>Baseline Immuniz. (ANY)*</td>
<td>0.44 ± 0.29</td>
<td>0.29 ± 0.35</td>
</tr>
<tr>
<td>Medicare Rate</td>
<td>0.48 ± 0.37</td>
<td>0.15 ± 0.31</td>
</tr>
<tr>
<td>Medicaid Rate</td>
<td>0.04 ± 0.10</td>
<td>0.05 ± 0.17</td>
</tr>
<tr>
<td>Minority Rate</td>
<td>0.10 ± 0.18</td>
<td>0.10 ± 0.24</td>
</tr>
<tr>
<td>Wellness Visit Rate</td>
<td>0.21 ± 0.26</td>
<td>0.08 ± 0.21</td>
</tr>
<tr>
<td>Census Region</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Northeast</td>
<td>284 (32%)</td>
<td>3,338 (4%)</td>
</tr>
<tr>
<td>Southeast</td>
<td>84 (10%)</td>
<td>8,991 (12%)</td>
</tr>
<tr>
<td>South Atlantic</td>
<td>94 (11%)</td>
<td>687 (1%)</td>
</tr>
<tr>
<td>South Central</td>
<td>0 (0%)</td>
<td>681 (1%)</td>
</tr>
<tr>
<td>Midwest</td>
<td>416 (47%)</td>
<td>55,896 (75%)</td>
</tr>
<tr>
<td>Mountain</td>
<td>0 (0%)</td>
<td>1,559 (2%)</td>
</tr>
<tr>
<td>Southwest</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Pacific</td>
<td>0 (0%)</td>
<td>3,678 (5%)</td>
</tr>
<tr>
<td>Group Type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amb/Amb Plus^</td>
<td>271 (31%)</td>
<td>8,152 (11%)</td>
</tr>
<tr>
<td>Hospital System</td>
<td>0 (0%)</td>
<td>7,519 (10%)</td>
</tr>
<tr>
<td>IDN</td>
<td>607 (69%)</td>
<td>59,159 (79%)</td>
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</tbody>
</table>
Unpublished results – please do not reproduce

Pneumococcal Immunization (Any) Rates Age ≥ 65
Pre-Intervention vs. Intervention Period Rates (Unadjusted)

Healthy People 2020 Goal = 90%

<table>
<thead>
<tr>
<th>HCO</th>
<th>Pre-Intervention Vaccination Rate</th>
<th>Intervention Period Vaccination Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>HCO #1</td>
<td>55%</td>
<td>72%</td>
</tr>
<tr>
<td>HCO #2</td>
<td>65%</td>
<td>72%</td>
</tr>
<tr>
<td>HCO #3</td>
<td>48%</td>
<td>70%</td>
</tr>
<tr>
<td>HCO #4</td>
<td>50%</td>
<td>64%</td>
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<tr>
<td>HCO #5</td>
<td>56%</td>
<td>77%</td>
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<tr>
<td>HCO #6</td>
<td>61%</td>
<td>76%</td>
</tr>
<tr>
<td>HCO #7</td>
<td>57%</td>
<td>73%</td>
</tr>
<tr>
<td>All HCOs</td>
<td>61%</td>
<td>80%</td>
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Source: Optum Analytics
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<td>South Atlantic</td>
<td>94 (11%)</td>
<td>687 (1%)</td>
</tr>
<tr>
<td>South Central</td>
<td>0 (0%)</td>
<td>681 (1%)</td>
</tr>
<tr>
<td>Midwest</td>
<td>416 (47%)</td>
<td>55,896 (75%)</td>
</tr>
<tr>
<td>Mountain</td>
<td>0 (0%)</td>
<td>1,559 (2%)</td>
</tr>
<tr>
<td>Southwest</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Pacific</td>
<td>0 (0%)</td>
<td>3,678 (5%)</td>
</tr>
<tr>
<td>Group Type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amb/Amb Plus*</td>
<td>271 (31%)</td>
<td>8,152 (11%)</td>
</tr>
<tr>
<td>Hospital System</td>
<td>0 (0%)</td>
<td>7,519 (10%)</td>
</tr>
<tr>
<td>IDN</td>
<td>607 (69%)</td>
<td>59,159 (79%)</td>
</tr>
</tbody>
</table>
Pneumococcal Immunization Rates Age 65+ (Any)
Adjusted Average Treatment Effects and p-values

Source: Optum Analytics

Unpublished results – please do not reproduce
Pneumococcal immunization age ≥ 65

Average Treatment Effects and P-value for Receipt of Both PCV and PPSV, By Health Care Organization Type

<table>
<thead>
<tr>
<th>Health Care Organization Type</th>
<th>All Collaborative (n=876)</th>
<th>Ambulatory (n=134)</th>
<th>Ambulatory Plus (n=135)</th>
<th>Integrated Delivery System (n=607)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATE</td>
<td>7.5%</td>
<td>1.9%</td>
<td>3.4%</td>
<td>12.4%</td>
</tr>
<tr>
<td>P-value</td>
<td>&lt;0.0001</td>
<td>0.500</td>
<td>0.227</td>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>

Definitions:

**Ambulatory**: traditional “freestanding” medical group

**Ambulatory Plus**: ambulatory group with billing data from when a physician sees a patient in the hospital

**Integrated Delivery System**: hospital system plus ambulatory
High risk pneumococcal immunization ages 19-64

Average Treatment Effects and P-value for Receipt of Both PCV and PPSV, By Health Care Organization Type

<table>
<thead>
<tr>
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<th>Ambulatory Plus (n=135)</th>
<th>Integrated Delivery System (n=607)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATE</td>
<td>1.02%</td>
<td>.44%</td>
<td>.42%</td>
<td>1.41%</td>
</tr>
<tr>
<td>P-value</td>
<td>.007</td>
<td>0.612</td>
<td>0.496</td>
<td>.006</td>
</tr>
</tbody>
</table>

Definitions:

Ambulatory: traditional “freestanding” medical group
Ambulatory Plus: ambulatory group with billing data from when a physician sees a patient in the hospital
Integrated Delivery System: hospital system plus ambulatory
Results: Qualitative
Facilitators: Pneumococcal Vaccinations, 65+ and High Risk

<table>
<thead>
<tr>
<th>Facilitator</th>
<th>Exemplary Quote</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data/technology</td>
<td>We had weekly and monthly reports... that went to the care managers [of] who we didn't have a record of a flu or pneumonia vaccine, so then the care managers could task the nursing staff/physician to give that vaccine while they were here.</td>
</tr>
<tr>
<td>Learning collaborative</td>
<td>I really like to see what the other processes were from other clinics and how they are reaching out to the patients. AND The collaborative...helped provide us some tools on how we can improve those rates, but also provide some benchmarks against other organizations to see what others are doing.</td>
</tr>
<tr>
<td>Specialists provide shots</td>
<td>I think the specialist really understands the high-risk groups...if you broke our data down [to] those that got immunized that are high-risk, many...probably would be patients that are seeing a specialist for one of those high-risk categories, and that specialist is saying &quot;You need to get this.&quot; ...</td>
</tr>
<tr>
<td>Prioritization of immunizations</td>
<td>The team was really focusing on those patients and coming together to develop the materials, the strategy, and the protocols that we were going to use to get as many patients immunized as possible.</td>
</tr>
</tbody>
</table>
## Barrier: Documentation Issues

<table>
<thead>
<tr>
<th>Issue</th>
<th>Exemplary Quote</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electronic Health Record</td>
<td>if you're not accurately document[ing] within the fields, ...you're not going to capture that patient unless you put it in the specific fields.</td>
</tr>
<tr>
<td>Patient Receives Vaccination Elsewhere</td>
<td>I think our biggest challenge was... documentation. So many people get it at their employer or Walgreen's pharmacies...it was really just getting that documentation</td>
</tr>
<tr>
<td>Providers Dictating Notes</td>
<td>I've tried to wean some [providers] from transcription and it's too hard, they go back. I think scribes are great...then you get all of those pieces of information the way you need to get it...I think that's one of our biggest hurdles right now.</td>
</tr>
<tr>
<td>Poor Documentation of High-Risk Conditions</td>
<td>...somebody would be a former smoker but they would show up as a smoker, so that was a big discrepancy... It's added to the foundation of the reason to code appropriately</td>
</tr>
<tr>
<td>Documentation for New Vaccines</td>
<td>the complicating factor was when they added Prevnar initially didn't have a specific Prevnar data point in EMR so a lot of people when you'd give a Prevnar there was no Prevnar place to put it</td>
</tr>
</tbody>
</table>
Challenges (SwedishAmerican)

• 1\textsuperscript{st} Collaborative
  – Bi-Directional Interface with State Registry
  – Specialty Clinics Lacked Appropriate Vaccine Storage
  – Lack of Focus on High Risk Patients

• 2\textsuperscript{nd} Collaborative
  – 1st Time Using an Automated Call Outreach Program (Emmi)
  – Definition of High Risk Patients (Classification of CKD)
    • 1,300 patients identified with nephrology/renal conditions
    • eGFR – What range is considered high risk?

\begin{center}
\includegraphics[width=0.5\textwidth]{gfr_diagram.png}
\end{center}
Comparative Analysis using CFIR*

<table>
<thead>
<tr>
<th>High Performing Organizations¹</th>
<th>Lower Performing Organizations²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning Climate (+)</td>
<td>Learning Climate (-)</td>
</tr>
<tr>
<td>Culture (collaborative, education, good communication, patient-centered, prevention, population health/community, quality)</td>
<td>Culture (top down, siloed, non-collaborative)</td>
</tr>
</tbody>
</table>

¹ Adjusted average treatment effect Pneumo 65+: 12% to 22%
² Adjusted average treatment effect Pneumo 65+: -1.2% to -3.4%*

*Consolidated Framework for Implementation Research ([CFIRguide.org](http://CFIRguide.org))
## Comparative Analysis: Learning Climate

<table>
<thead>
<tr>
<th>High Performing Organizations</th>
<th>Lower Performing Organizations²</th>
</tr>
</thead>
<tbody>
<tr>
<td>“We all learn from each other and you find the benefit in that. Then we said, ‘There is definitely more learning to be had here, so we'll keep going.’”</td>
<td>“I think it takes a lot to get people to be open minded to change here. I feel like there are a lot of really good ideas and I feel like our department, specifically, wants to make changes. We meet a lot of resistance in other departments. People that have been here forever and, ‘This is how we've been doing things, why are we changing things now?’ I feel like eventually they come around to it, but there's a lot of resistance at first.”</td>
</tr>
<tr>
<td>“…you learn from others, and you get best practices. It's all about getting everybody better.”</td>
<td></td>
</tr>
<tr>
<td>“As I learn things, ... I...think, ‘You know, this is something we ought to be doing.’ So you present it to folks. Because culturally it's what we've always done, ... and immediately start coming up with, ‘We could do this, we could try this other thing.’ It's a fun thing to do.”</td>
<td></td>
</tr>
</tbody>
</table>

*Unpublished results – please do not reproduce*
Comparative Analysis: Organizational Culture

<table>
<thead>
<tr>
<th>Higher Performing: Collaborative</th>
<th>Lower Performing: Siloed</th>
</tr>
</thead>
<tbody>
<tr>
<td>“...we all have each other’s backs here. We never let anybody fail... If we need help... we know that one of our team members is going to pitch in and help fill that void, and help us out a little bit. It's a familial culture. I love it. It's home.”</td>
<td>“We were in our little silo. We told you what to do, we didn’t ask you what your thoughts were on it. It just went, do this and I don’t care how you do it but I want this done.”</td>
</tr>
<tr>
<td>“... whenever there's an initiative at all, I think we do a great job of assembling the right team... we got the right players in the room ... so that we can take it back to the boots on the ground, and get it taken care of, ... involving physicians that's just part of our culture, if you want something done, and it involves ... a provider level, ... You need to involve them, you can't just make it a talk down.”</td>
<td>“There isn’t a concerted effort to get messages to those care teams. We’ve started doing that and kind of begging the other directors, can we come to your team meetings?”</td>
</tr>
<tr>
<td>“A lot of times, you’re not aware in the office of initiatives going on.”</td>
<td></td>
</tr>
</tbody>
</table>
Summary
Conclusions

- Significant increases in immunization rates made over relatively short time (14 months)
  - Importance of provider buy-in/ownership and provider champions
  - Organizational support, focus and prioritization
  - Collaboration and learning between organizations
- Achievable HP2020 goal of 90% for pneumococcal ≥ 65; improvements needed to reach goals of 60% and 70% for flu and pneumococcal high risk
- Organizational characteristics, e.g., positive learning climate and culture, may play a role in improved immunization rates, but difficult to achieve
- Other barriers, e.g., documentation, data/technology, knowledge of disease processes, may be easier to address
- In a health care environment shifting from volume to value, low-cost preventive efforts such as adult immunizations are a win-win
References


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Are you protected?
Your vaccine protects me.
My vaccine protects you.