Implementing Adult Immunizations in U.S. Health Systems

Elizabeth L. Ciemins, PhD, MPH, MA

National Adult and Influenza Immunization Summit, Atlanta, GA
November 4, 2022
Presentation Outline

• AMGA Overview
• AMGA’s activities in adult immunizations
• Quantitative and qualitative results, insights from health systems
• Future directions
AMGA: What we do

T2DM  Obesity  Immunizations
HTN  ASCVD

Between Groups

4 < 3.5 = Weak
3.5 to 4.0 = Moderate
> 4.0 = Strong
AMGA Research

Leveraging Evidence to Advance Practice

Integrating Evidence
Studying methods for integrating evidence-based practice into routine health care

Fostering Innovation
Discovering innovations originating in clinics that are responding to real-world challenges

Driving Change
Uncovering hidden meanings in data and the reasons driving behavior and process changes

More information at: research@amga.org
https://www.amga.org/performance-improvement/best-practices/research-analytics/
AMGA Membership

15% of AMGA members
25% of patients

OptumLabs participants
Other AMGA members
Current Research Collaborators
AMGA’s work in adult immunizations

• Adult Immunization Best Practices Learning Collaborative Pilot (n=7 AMGA member organizations; 2015-2016)

• Mixed Methods Research: Examined the Learning Collaborative Approach (Ciemins, 2019; Population Health Management)

• Adult Immunization Best Practices Learning Collaborative Group 1 (n=20 AMGA member organizations; 2017)

• Adult Immunization Best Practices Learning Collaborative Group 2 (n=20 AMGA member organizations; 2019)

• Research: Impact, Scale Up, and Spread (Ciemins, 2020; Population Health Management)

• Measure Development: Using QMs to Drive Improvement in Adult Immunizations

• Adult Immunization National Campaign: Rise to Immunize (n=70; 2021–2025)
Rise to the Challenge. Rise to Immunize™.

AMGA Foundation’s third national health campaign

Four-year campaign focused on improving rates of four types of adult immunizations

Together we can administer 25 million vaccines by 2025

www.RiseToImmunize.org

Questions? Email: RiseToImmunize@amga.org
Rise to Immunize Participating Groups
Year 1 Impact by Vaccine

3,799,935  influenza vaccines (19+)
182,872   pneumococcal vaccines (66+)
586,153   Td/Tdap vaccines (19+)
510,022   zoster vaccines (50+)

5,078,982 total vaccines administered or documented
Vaccination Rates Over Time, All Organizations (Q2 2020-2022)

- Pneumococcal
- Td/Tdap
- Influenza
- Zoster
- Bundle

Baseline
Rise to Immunize Campaign

Q2 2020: 76.5%
Q2 2021: 76.3%
Q2 2022: 77.1%

Q2 2020: 53.5%
Q2 2021: 53.3%
Q2 2022: 54.6%

Q2 2020: 38.7%
Q2 2021: 39.8%
Q2 2022: 34.7%

Q2 2020: 9.1%
Q2 2021: 12.9%
Q2 2022: 15.3%
AMGA’s Adult Immunization Best Practices Learning Collaboratives
Adult Immunization Best Practices Learning Collaborative

Collaborative Framework

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

AMGA
Advancing High Performance Health
Participants (Pilot, Groups 2 & 3): 42 organizations in 27 states
This initiative addressed both pneumococcal vaccines: pneumococcal conjugate vaccine (PCV) & pneumococcal polysaccharide vaccine (PPSV).
## Interventions

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<td>Give shots during patient visits</td>
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<td>Walk-in (or drive-in!) flu shot clinics</td>
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Intervention: Automated Patient Outreach & Engagement (Emmi)

Interactive voice recording phone calls went out to patients identified as needing one or more vaccinations based on the Collaborative measures. The data below highlights early findings of the intervention success.

- Patients Called: 109,246
- Patients Engaged: 49,888 (45.7%)

**Engagement Type:**
- Told Due: 0%
- Transfer: 10%
- Done: 20%
- Schd Info: 30%
- 65+:
- High Risk:
- At Risk:

**Early Results:**
- Based on patients who engaged in the outreach, **26.1% of age 65+ population** had a change in vaccination status after >3 months of the outreach:
  - This % change was fairly consistent across the groups.
- The populations age **19-64 high risk and at-risk** were more challenging to engage, with **5.3% and 6.5%** having a change in vaccination status, respectively.

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Operational Levers

- Robust quality department and reporting tools, e.g., SQL Manage. Studio, Crystal Reports, BI
- Care coordination program that could be tapped for immunizations (ID care gaps)
- Dedicated position to help coordinate data **PLUS** dedicated analytics staff
- Dashboards and health maintenance modules in the EHR
- High enrollment in patient portal
- EHR interoperability between specialists/primary care
- Regular data reports on quality measures for providers; real-time score cards
Results
Using Quality Measures to Drive Improvements in Immunization Rates: Findings from a Real-World Evaluation from 3 US Health Care Organizations

Kaitlyn Whiton Esselman, MHS, Elizabeth L. Ciemins, PhD, MPH, MA, Elizabeth Donckels, MSPH, Courtney Barbera, MPH, Guy D’Andrea, MBA, and Tilithia McBride

Abstract

An Adult Immunization Best Practices Learning Collaborative: Impact, Scale Up, and Spread

Elizabeth L. Ciemins, PhD, MPH, MA, Michelle Jerry, MS, Jill Powelson, DrPH, MPH, MBA, RN, CPC, Erin Leaver-Schmidt, MPH, Vaishali Joshi, BS, Earlean Chambers, RN, MS, Danielle Casanova, MBA, John W. Kennedy, MD, and Jerry Penso, MD
Pneumococcal Immunization (complete), adults ages ≥ 65

Collaborative goal
Group weighted average (QTR 4)

BL: 7/1/16–6/30/17    Q1: 7/1/17–9/30/17    Q2: 10/1/17–12/31/17    Q3: 1/1/18–3/31/18    Q4: 4/1/18–6/30/18

Ciemins et al., Population Health Management, 2019
Influenza Immunization, ages ≥ 18

<table>
<thead>
<tr>
<th></th>
<th>2</th>
<th>4</th>
<th>5</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>16</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>44.4%</td>
<td>42.9%</td>
<td>49.9%</td>
<td>48.2%</td>
<td>48.8%</td>
<td>42.3%</td>
<td>45.0%</td>
<td>44.9%</td>
<td>45.6%</td>
</tr>
</tbody>
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Collaborative goal (45%)  Group weighted average (Intervention)

Baseline: 7/1/16 – 6/30/17  Intervention: 7/1/17 – 6/30/18

Ciemins et al., *Population Health Management*, 2019
Adult Immunization Status Measure*

**Table 3. Measure Performance (Table view)**

<table>
<thead>
<tr>
<th>Rate (%)</th>
<th>Site 1</th>
<th>Site 2</th>
<th>Site 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza</td>
<td>51.9</td>
<td>57.4</td>
<td>32.6</td>
</tr>
<tr>
<td>Td/Tdap</td>
<td>68.6</td>
<td>77.3</td>
<td>54.3</td>
</tr>
<tr>
<td>Zoster</td>
<td>41.5</td>
<td>43.6</td>
<td>3.6</td>
</tr>
</tbody>
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<table>
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<tr>
<th>Rate (%)</th>
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<tbody>
<tr>
<td>Pneumococcal</td>
<td>63.7</td>
<td>66.9</td>
<td>7.0</td>
</tr>
<tr>
<td>AIS composite</td>
<td>56.4</td>
<td>61.9</td>
<td>32.6</td>
</tr>
<tr>
<td>All age-appropriate immunizations</td>
<td>22.6</td>
<td>26.7</td>
<td>7.0</td>
</tr>
</tbody>
</table>

AIS, adult immunization status; Td, tetanus and diphtheria; Tdap, tetanus, diphtheria, and acellular pertussis.

*Individual predictors of having all 4 vaccinations: number of encounters, non-Black race, non-Medicaid insurance, not self pay.

Esselman, Ciemens, Donckels et al., 2021
Use of Immunization Information Systems

2017–2018 AIS Measure Rates
With and Without External Data Source

<table>
<thead>
<tr>
<th>Site</th>
<th>With external source</th>
<th>Without external source</th>
</tr>
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<tbody>
<tr>
<td>Site 1</td>
<td>61.9%</td>
<td>32.5%</td>
</tr>
<tr>
<td>Site 2</td>
<td>37.3%</td>
<td>37.3%</td>
</tr>
<tr>
<td>Site 3</td>
<td>56.5%</td>
<td>38.3%</td>
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Esselman, Ciemens, Donckels et al., 2021
Impact of a Learning Collaborative on Pneumococcal Vaccinations
Pre-Post Pneumococcal Vaccination Rates, Adults 65+: Collaborative Compared to Matched Non-Collaborative Providers**

Ciemins et al., *Population Health Management*, 2020

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<th>Change</th>
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<td>63.2%</td>
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<td>14.0%</td>
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**p < 0.05
Pre-Post Pneumococcal Vaccination Rates, Adults 65+: Collaborative Compared to Matched Non-Collaborative Providers**

**p < 0.05

Ciemins et al., *Population Health Management*, 2020
Pre-Post Pneumococcal Vaccination Rates, Adults 65+: Collaborative Compared to Matched Non-Collaborative Providers**

Ciemins et al., *Population Health Management*, 2020

**p < 0.05
Pre-Post Pneumococcal Vaccination Rates, At-Risk Adults 19 – 64: Collaborative Compared to Matched Non-Collaborative Providers**

**p < 0.05  
Ciemins et al., Population Health Management, 2020
Pre-Post Pneumococcal Vaccination Rates, At-Risk Adults 19 – 64: Collaborative Compared to Matched Non-Collaborative Providers**

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Ciemins et al., *Population Health Management*, 2020
Pre-Post Pneumococcal Vaccination Rates, At-Risk Adults 19 – 64: Collaborative Compared to Matched Non-Collaborative Providers**

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Ciemins et al., Population Health Management, 2020
## Comparative Qualitative Analysis*

<table>
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<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>Networks &amp; Communication (+)</td>
<td>Networks &amp; Communication (-)</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%

*Using Consolidated Framework for Implementation Research (CFIR)

Ciemins et al., *Population Health Management*, 2019
### Comparative Qualitative Analysis: Facilitators

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<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>

Ciemins et al., *Population Health Management*, 2019
## Comparative Qualitative Analysis: Barriers

<table>
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<th>Issue</th>
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<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>

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Ciemens et al., *Population Health Management*, 2019
Summary
What has contributed to improved immunization rates?

- Staff education, especially about high-risk and at-risk patients for PV
- Physician champion
- Standing orders for nurses
- Prioritizing the program
- Transparent data reporting
- Bi-directional state registry feeds into EHR
- Reminders and/or gaps in care prompts in EHR
- Participating in vaccine programs (e.g., Sanford’s Vax Champ)
- Provider/staff vaccine reminders and alerts in EHR
- Emmi® (automated outreach program)
Ongoing Challenges, Future Directions

- Ongoing challenges: (Rise to Immunize Survey 9/15/22)
  - Costs to patients, no insurance, no coverage
  - Challenges providing vaccines to Medicare patients in office (Zoster, TDap)
  - Limited staff
  - Vaccine hesitancy
  - Lack of staff buy-in/ownership
  - Lack of education
  - Lack of middle management leadership and support
  - Storage and handling
  - EHR enhancements: IT queue to create care gap reports or POC alerts; vax not prioritized
  - Lack of prioritization; competing interests

- Learn from HPV: announcement training, standing orders
Questions?

Elizabeth Ciemins
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