Successful Use of Population Analytics to Increase Immunization in a Learning Collaborative

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Senior Physician Director Optum Analytics

The Real Enemies

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Agenda

- CDC/ACIP population information for pneumococcal vaccine and influenza
- Getting the data right
  - The Optum One platform (101)
  - Mapping
  - Normalizing to platform-wide common variables
- Defining what to measure
  - Who is a patient
  - Who is a provider
  - Goals
- Results
  - Pneumococcal 65 and older
  - Pneumococcal “Risk Conditions”
  - Influenza
- Speed Bumps
- Next Steps

Post-September 2014

<table>
<thead>
<tr>
<th>Pneumococcal vaccine major persons aged ≥65 years</th>
<th>PCV13</th>
<th>PPSV23</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCS at age ≥65 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥5 years</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Persons who previously received PCV13 at age ≥65 years</th>
<th>PCS at age ≥65 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥5 years</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Persons who previously received PPSV23 at age ≥65 years</th>
<th>PPSV23</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥5 years</td>
<td></td>
</tr>
</tbody>
</table>

| ≥12 months*                                           |        |

**Note:** These are data from the Centers for Disease Control and Prevention (CDC) and are subject to change with subsequent data collections.

http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6337a4.htm

http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6140a4.htm
Targeting Pneumococcal Vaccine Populations

- Adults 65 and older
- “High Risk”
  - PCV 13 High Risk (19 years and older)
    - Functional Anatomic Asplenia (including sickle cell)
    - Immunosuppressing Conditions (e.g., HIV infection)
    - Cough Implant
    - Central Spinal Fluid (CSF) Leaks
  - PPSV High Risk—Immunocompetent Persons (19 years and older)
    - Chronic Heart Disease
    - Pulmonary Disease (Including Asthma)
    - Liver Disease
    - Cough Implant
    - Functional or Anatomic Asplenia
    - Immunosuppression
    - Transplant
    - Chronic Renal Failure
    - Nephrotic Syndrome

Influenza Vaccination Recommendations.

Routine annual influenza vaccination is recommended for all persons aged ≥6 months who do not have contraindications.
Getting the Data Right

Optum Analytics Data Factory Overview

- Provider Data
- Clinical Systems Data
- Billing Data
- Claims Data

Stage Environment For Bulk Load

Step 1: Find Data
Step 2: Data Mapped to Common Domains
Step 3: Normalization (e.g., weight converted from pounds to kilos)

Optum One Clinical Data Repository (CDR)
- Centralized database
- Common data structure for all users (comparisons are then apples-to-apples)

Fact Marts Power Optum One Modules Including:
- Population Analytics
- Risk Analytics
- Registry
- Care Coordination
- De-identified CDR
- Pan-therapeutic
- dCDR and Pan/ther Power Life Sciences Deliverables

Provider 1 – Fact Mart
Provider 2 – Fact Mart

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Immunizations Data Sources Used to find Immunizations data in EHRs

- Immunization Tables
- Health Maintenance Tables
- CPT/G Codes
- ICD 9 Codes

Marked variation in where data was documented at the onset of the collaborative. OptumOne™ identifies and aggregates from all!

Pneumococcal Vaccine Variables

- Pt Received Pneumococcal Vaccine (Any), Age 65+
- Pt Received Pneumococcal Vaccine (Both PCV & PPSV), Age 65+
- Pt Received Pneumococcal Vaccine (PPSV), Age 65+
- Pt Received Pneumococcal Vaccine (PCV), Age 65+
- Pt Received Pneumococcal Vaccine (Unspecified), Age 65+

- Pt Received Pneumococcal Vaccine (Any), Age 19-64
- Pt Received Pneumococcal Vaccine (Both PCV & PPSV), Age 19-64
- Pt Received Pneumococcal Vaccine (PPSV), Age 19-64
- Pt Received Pneumococcal Vaccine (PCV), Age 19-64
- Pt Received Pneumococcal Vaccine (Unspecified), Age 19-64
The Influenza Variables

- Pt Received Influenza Vaccine During the Current Flu Season, Age 18+
- Pt Received Influenza Vaccine During the Previous Flu Season, Age 18+

CDC/ACIP Recommendations—Consolidation of 1330 ICD-9 Codes (linked to ICD-10) to 9 Risk Condition Variables

<table>
<thead>
<tr>
<th>Optum One Risk Condition Variable</th>
<th>At Least 1 PPSV</th>
<th>At Least 1 PCV</th>
<th>Both PPSV and PCV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immunology</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Nephrology/Renal</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Oncology</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Surgical/Transplant</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Chronic Heart Conditions</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chronic Liver Conditions</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diabetes Mellitus</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lifestyle (e.g. Smoking)</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lung Disease</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Measure Calculation Definitions

<table>
<thead>
<tr>
<th>Measure</th>
<th>Denominator</th>
<th>Numerator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pneumo Age 65+</td>
<td>All patients in study, age 65+</td>
<td>All patients denominator with any evidence of pneumococcal vaccine, from age 65+</td>
</tr>
<tr>
<td></td>
<td>ØAI Collaborative total: 334,674</td>
<td></td>
</tr>
<tr>
<td>Pneumo Age 19-64 High Risk</td>
<td>All patients in study, age 19-64, With any evidence of 1+ HR condition</td>
<td>All patients denominator with any evidence of pneumococcal vaccine, from age 19+</td>
</tr>
<tr>
<td></td>
<td>ØAI Collaborative total: 441,690</td>
<td></td>
</tr>
<tr>
<td>Influenza age 18+</td>
<td>All patients in study, age 18+</td>
<td>All patients denominator with any evidence of influenza vaccine from 7/1 – 6/30 of a given flu year</td>
</tr>
<tr>
<td></td>
<td>ØAI Collaborative total: 1,266,768</td>
<td></td>
</tr>
</tbody>
</table>

Measure Definitions

Inclusion Criteria: Patients who meet both of the following:
1. Be linkable to a PCP via one of the following:
   a) Linked to a PCP either via designation in EMR, OR
   b) Seen by a PCP-eligible provider (FM, IM, GP, NP, PA) in the trailing 24 months, AND
2. Have had at least one ambulatory evaluation and management, and/or procedure claim during the last 24 months

Inclusion Criteria:
Patients that meet criteria 1 and 2

Exclusion Criteria:
Patients with relevant allergies (i.e. Egg)
Goals

• Healthy People 2020

• AI Collaborative “Stretch”

• CDC NHIS 2012
Pneumococcal Vaccine Rates (Any PV, Age 65+)
Baseline to 1/31/16 (Last Data Refresh)

- **Al Stretch Goal = 72.5%**
- **Al Collaborative Current Median = 73%**
- **CDC 2012 = 60%**

11/30 Medians: **Al Collaborative** = 68% **Non-Participant** = 44%

Pneumococcal Vaccine Rates (Age 65+) by Group Multiple Periods

- **PCV Only**
- **PPSV Only**
- **PPSV & PCV**
- **Unidentified PV**
Pneumococcal Vaccine Rates (Any PV, Age 19-64, High Risk) as of 1/31/16 (Last Data Refresh)

Healthy People 2020 Goal = 60%
AI Stretch Goal = 38%

AI Collaborative Current Median = 19.4%
AI Collaborative Baseline Rates

Non-Participant Current Median = 18.6%
11/30 Medians: AI Collaborative = 17% Non-Participant = 16%

Influenza Vaccine Rates: '15-'16 Flu Season
Data 7/1/15 – 1/31/16 (Last Data Refresh)

Healthy People 2020 Goal = 70%
AI Stretch Goal = 48.5%

CDC 2013-'14 = 42%
AI Collaborative Median = 29.6%

Non-Participant Median = 21.4%
37% 30% 35%
Change from Baseline (%) 1/31/16 (Last Data Refresh)

<table>
<thead>
<tr>
<th>Pneumococcal Vaccine Profile</th>
<th>AI Collaborative</th>
<th>Non-Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any Pneumococcal</td>
<td>12.9</td>
<td>8.2</td>
</tr>
<tr>
<td>PCV</td>
<td>37.3</td>
<td>26</td>
</tr>
<tr>
<td>Pneum Naïve (PCV)</td>
<td>28</td>
<td>11</td>
</tr>
<tr>
<td>Both PPSV/PCV</td>
<td>25</td>
<td>13</td>
</tr>
</tbody>
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<table>
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<tr>
<th>Pneumococcal Vaccine Profile</th>
<th>AI Collaborative</th>
<th>Non-Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any Pneumococcal</td>
<td>3.8</td>
<td>1.5%</td>
</tr>
<tr>
<td>PPSV</td>
<td>2.8</td>
<td>1.6</td>
</tr>
<tr>
<td>PCV</td>
<td>3.5</td>
<td>2.4</td>
</tr>
<tr>
<td>Pneum Naïve (PCV)</td>
<td>2.0</td>
<td>1.4</td>
</tr>
<tr>
<td>Both PPSV/PCV</td>
<td>1.9</td>
<td>1.4</td>
</tr>
</tbody>
</table>

During the 2015-16 Flu Season to date: AI Collaborative Influenza Vaccine rate **24.4%** vs. Non-Participant Influenza Vaccine rate **18.9%**

Speed Bumps
Speed Bumps

- Skin Cancer
- Chronic Liver Disease/Fatty Liver
- Smoking (Lifestyle)
- Alcoholism (limits legally in mining this data)

Next Steps with Analytics


- Next Vaccine Due Date

- Improved efficiency in providing reports to providers, office managers

- State Registry Data, Pharmacy Data

- Invasive Pneumococcal Disease Rates