Thank you for joining

The presentation will begin shortly
Rise to Immunize™ Monthly Webinar

Pneumococcal 101
Featuring Frank Colangelo, M.D., M.S.-HQS, FACP
Today’s Webinar

Campaign Updates
• AMGA Annual Conference
• Blinded Comparative Report

Pneumococcal 101
• Featuring Frank Colangelo, MD, MS-HQS, FACP
• Campaign measures update

Q&A Session
Webinar Reminders

Today’s webinar recording will be available the week of 3/21

- Will be sent via email
- Will be available on website

(RiseToImmunize.org → “Resources” → “Webinars”)

Ask questions during the webinar using the Q&A feature

- Questions will be answered at the end of the presentation
AMGA Annual Conference 2022

RIZE participants networking over breakfast

Foundation Celebration remarks from Eric Anderson, Director, US Adult Vaccines, Pfizer Inc. (Founding Sponsor)

Limited edition RIZE mugs for campaign participants at AC22
Thank you for submitting your data!

The blinded comparative report will be provided on March 29

<table>
<thead>
<tr>
<th>Flu Season (Measurement Year)¹</th>
<th>Reporting Quarter²</th>
<th>Report Due Date</th>
<th>Blinded Comparative Report Provided</th>
</tr>
</thead>
<tbody>
<tr>
<td>2021</td>
<td>Q3 2021</td>
<td>Feb 15, 2022</td>
<td>Mar 29, 2022</td>
</tr>
<tr>
<td></td>
<td>Q4 2021</td>
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<td></td>
<td>Q1 2022</td>
<td>Apr 15, 2022</td>
<td>May 27, 2022</td>
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<tr>
<td></td>
<td>Q2 2022</td>
<td>Jul 15, 2022</td>
<td>Aug 26, 2022</td>
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<td>2022</td>
<td>Q3 2022</td>
<td>Oct 14, 2022</td>
<td>Nov 29, 2022</td>
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<td></td>
<td>Q4 2022</td>
<td>Jan 17, 2023</td>
<td>Feb 28, 2023</td>
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<td>Q1 2023</td>
<td>Apr 14, 2023</td>
<td>May 26, 2023</td>
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<tr>
<td></td>
<td>Q2 2023</td>
<td>Jul 14, 2023</td>
<td>Aug 25, 2023</td>
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<td>2023</td>
<td>Q3 2023</td>
<td>Oct 16, 2023</td>
<td>Nov 29, 2023</td>
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<tr>
<td></td>
<td>Q4 2023</td>
<td>Jan 16, 2024</td>
<td>Feb 27, 2024</td>
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<tr>
<td></td>
<td>Q1 2024</td>
<td>Apr 15, 2024</td>
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<td>Q2 2024</td>
<td>Jul 15, 2024</td>
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<td>Q3 2024</td>
<td>Oct 15, 2024</td>
<td>Nov 26, 2024</td>
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<tr>
<td></td>
<td>Q4 2024</td>
<td>Jan 15, 2025</td>
<td>Feb 26, 2025</td>
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<tr>
<td></td>
<td>Q1 2025</td>
<td>Apr 15, 2025</td>
<td>May 28, 2025</td>
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<tr>
<td></td>
<td>Q2 2025</td>
<td>Jul 15, 2025</td>
<td>Aug 26, 2025</td>
</tr>
</tbody>
</table>
Frank Colangelo, MD, MS-HQS, FACP

Chief Quality Officer, Premier Medical Associates, P.C.
Pneumococcal 101

Francis R Colangelo MD, MS-HQS, FACP
Director, Outcomes Office, Allegheny Health Network
Chief Quality Officer, Premier Medical Associates
PRACTICE INTRODUCTION
Introduction

Premier Medical Associates
• Formed 1993
• 106 Providers
• 1:1 PCP/Specialist
• Eastern Suburbs of Pittsburgh, PA

Allegheny Health Network
• Part of blended health organization between Highmark Health and the Allegheny Health Network
• 14 hospital system in Western PA and Western NY
• 2,600 providers
VACCINE PREVENTABLE DISEASE IMPACT
THE COSTS OF VACCINE-PREVENTABLE DISEASE

Flu, pneumococcal disease, shingles and whooping cough cost $27 billion to treat each year in adults over the age of 50.

$27 BILLION in treatment

SOURCE:

Data Reporting Tracks

Participating organizations can choose to report data to the campaign according to either the Basic Track or Core Track. Groups have the option to advance from the Basic to Core Track at any point during the four-year campaign.

<table>
<thead>
<tr>
<th></th>
<th>BASIC TRACK</th>
<th>CORE TRACK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza (19+)</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Pneumococcal (66+)</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Td/Tdap (19+)</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Zoster (50+)</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Bundle</td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>

https://www.amga.org/rise-to-immunize/measurement/data-reporting-tracks/
Current Campaign Measure for Pneumococcal Vaccination

3.4.4 Measure 2 (Pneumococcal) Flowchart

Active Patient Population

Age 66 or older on the first day of the Measurement Year

No

Exclude

Yes

Measure 2 Denominator

Received the pneumococcal vaccination in the MP\(^1\) (at the HCO or elsewhere)

No

Documented as receiving the vaccine prior to the MP

No

Ever had an adverse reaction to the pneumococcal vaccine

No

Not Numerator Compliant

Yes

Numerator Part A

Yes

Numerator Part B

\(^1\) MP = Measurement Period (See Tables 1 & 2)
PNEUMOCOCCAL DISEASE-CLINICAL IMPLICATIONS
“In children and in healthy adults the outlook is good. In the debilitated, in drunkards and in the aged the chances are against recovery. So fatal is it in the latter class [i.e. the elderly] that it has been termed the natural end of the old man...”
S. pneumoniae

• First isolated by Pasteur in 1881
• Development of gram stain in 1884 helped with reliable identification
• Efforts to develop an effective vaccine began as early as 1911
• Interest decreased after the advent of penicillin

https://www.cdc.gov/vaccines/pubs/pinkbook/pneumo.html
S. pneumoniae

- Complex polysaccharides on surfaces help to determine pathogenicity
- Over 100 serotypes identified by 2020
- Most serotypes can cause serious disease
- Only a few cause most pneumococcal infections
- Asymptomatic carriage rates:
  - Adults 5-10%
  - Children 20-60%

https://www.cdc.gov/vaccines/pubs/pinkbook/pneumo.html
# Clinical Presentations

<table>
<thead>
<tr>
<th>Non invasive infections</th>
<th>Invasive Disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pneumonia without bacteremia</td>
<td>Pneumonia with bacteremia</td>
</tr>
<tr>
<td>Otitis media</td>
<td>Meningitis</td>
</tr>
<tr>
<td>Sinusitis</td>
<td>Septic arthritis</td>
</tr>
<tr>
<td></td>
<td>Bacteremia without obvious infection</td>
</tr>
<tr>
<td></td>
<td>Osteomyelitis</td>
</tr>
</tbody>
</table>
Pneumococcal Disease Manifestations

- Pneumococcal Pneumonia
  - Most common clinical presentation
  - 30% of adult CAP
  - 150,000 admits/yr in US
  - 5-7% case fatality rate
    - Higher if older or underlying illness

https://www.cdc.gov/pneumococcal/clinicians/clinical-features.html
Pneumococcal Disease Manifestations

**Bacteremia:**

- 4,000 cases per year without known source of infection in US
- Can lead to septic arthritis, endocarditis and meningitis
- More common in children
- Case fatality rate 20% (younger) to >60% if older
- Especially bad if prior splenectomy

https://www.cdc.gov/pneumococcal/clinicians/clinical-features.html
Pneumococcal Disease Manifestations

Meningitis:
• 2,000 cases per year in US
• Half of all bacterial meningitis
• Case fatality rate 22% adults
• Neurologic sequellae in >50% of survivors

https://www.cdc.gov/pneumococcal/clinicians/clinical-features.html
Those Adults Most at Risk

- **Chronic Diseases**
  - Chronic CSF Leak
  - Chronic Renal Failure
  - Nephrotic Syndrome
  - Immunosuppressant Drugs

- **Immunocompromising Conditions**
  - HIV
  - B and T Cell deficiencies
  - Complement Deficiencies
  - Phagocytic Disorders

- **Malignancies**
  - Generalized
  - Leukemia
  - Lymphoma
  - Radiation Therapy

- **Other**
  - Cochlear Implants
  - Solid Organ Transplants
  - Multiple Myeloma
  - Anatomic or Functional Asplenia
Additionally at Risk

- **Medical Conditions**
  - Diabetes
  - Chronic Heart Disease
  - Chronic Lung Disease (includes asthma)
  - Inflammatory Bowel Disease

- **Group Living Situations**
  - SNFs/assisted living
  - Jails
  - Homeless

- **Racial/Ethnic Groups with Higher Disease Burden**
  - Black/African Americans
  - Alaska Natives
  - American Indians
<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Disease Incidence Cases/100,000 (number of cases)</th>
<th>Death Rate Deaths/100,000 (number of deaths)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;1</td>
<td>17.7 (702)</td>
<td>0.20 (8)</td>
</tr>
<tr>
<td>1</td>
<td>12.6 (500)</td>
<td>0.20 (8)</td>
</tr>
<tr>
<td>2–4</td>
<td>5.07 (606)</td>
<td>0.13 (16)</td>
</tr>
<tr>
<td>5–17</td>
<td>1.23 (659)</td>
<td>0.00 (0)</td>
</tr>
<tr>
<td>18–34</td>
<td>2.33 (1,757)</td>
<td>0.08 (60)</td>
</tr>
<tr>
<td>35–49</td>
<td>6.48 (3,982)</td>
<td>0.46 (284)</td>
</tr>
<tr>
<td>50–64</td>
<td>14.8 (9,326)</td>
<td>1.47 (932)</td>
</tr>
<tr>
<td>65–74</td>
<td>18.0 (4,952)</td>
<td>2.17 (597)</td>
</tr>
<tr>
<td>75–84</td>
<td>29.0 (4,042)</td>
<td>4.53 (631)</td>
</tr>
<tr>
<td>≥85</td>
<td>45.4 (2,856)</td>
<td>11.4 (718)</td>
</tr>
<tr>
<td>Total</td>
<td>9.14 (29,382)</td>
<td>1.01 (3,254)</td>
</tr>
</tbody>
</table>
VACCINE OVERVIEW
Pneumococcal Vaccine Development

- 1977 14 valent polysaccharide vaccine
- 1983 23 valent polysaccharide vaccine
- 2000 PCV 7 conjugate vaccine
- 2010 PCV 13
- 2021 PCV 15 and PCV 20
<table>
<thead>
<tr>
<th>Vaccine Composition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Polysaccharide (PPSV-23)</strong></td>
</tr>
<tr>
<td>Purified polysaccharide antigens</td>
</tr>
<tr>
<td><strong>Conjugate (PCV 13, 15 &amp; 20)</strong></td>
</tr>
<tr>
<td>Capsular polysaccharide antigens conjugated to a protein carrier (non-toxic diphtheria CRM$_{197}$ protein)</td>
</tr>
</tbody>
</table>
Serotypes contained in current and new pneumococcal vaccines

|     | 1 | 2 | 3 | 4 | 5 | 6A | 6B | 7F | 9V | 14 | 18C | 19F | 23F | 22F | 33F | 8  | 10A | 11A | 12F | 15B | 2  | 9N | 17F | 20 |
|-----|---|---|---|---|---|----|----|----|----|----|-----|-----|-----|-----|-----|----|----|----|-----|----|----|----|----|
| PCV13 |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |    |    |    |     |    |    |    |    |
| PCV15 |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |    |    |    |     |    |    |    |    |
| PCV20 |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |    |    |    |     |    |    |    |    |
| PPSV23 |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |    |    |    |     |    |    |    |    |

For analysis purposes:

- **PCV15 non-PCV13**: includes serotypes **22F and 33F**
- **PCV20 non-PCV15**: includes serotypes **8, 10A, 11A, 12F, and 15B/C**
- **PPSV23 non-PCV20**: includes serotypes **2, 9N, 17F, and 20**

https://www.cdc.gov/vaccines/acip/meetings/downloads/slides-2021-06/02-Pneumococcal-Gierke-508.pdf
Vaccine Side Effects

- Injection site pain and swelling
- Muscle pain
- Fatigue
- Headache
- Arthralgias

***Can not use conjugate vaccines in those patients with severe allergies to diphtheria toxin***
A HISTORY OF PNEUMOCOCCAL VACCINE GUIDELINES
1984: “Support the broader use of pneumococcal vaccines in the US, especially in ‘older adults’ and those with chronic conditions/asplenia.

1989: Added HIV patients/those living in special situations.

1997: Use vaccines more extensively. “All patients” with chronic conditions and over age 65.

2010: Added patients with asthma and those who are cigarette smokers. Boosters after 5 years.

2012: Added PCV-13 to high risk patients.
Two other Important Guideline Dates

- 2000 PCV7 for Children
- 2010 PCV 13 for children
Fulton and DeKalb Counties, GA

“Highly significant declines in all the serotypes contained in PCV7 in all unvaccinated populations (5–19, 20–39, 40–64, and >64 years) from 2000 to 2003 were found under the model. No significant change in incidence was seen from 1994 to 1999, indicating rates were stable prior to vaccine introduction.”

2014 ACIP Recommendation

Box. Sequential administration and recommended intervals for PCV13 and PPSV23 for adults aged ≥65 years — Advisory Committee on Immunization Practices, United States

Pneumococcal vaccine-native persons aged ≥65 years

PCV13 at age ≥65 years → PPSV23

6–12 months*

Persons who previously received PPSV23 at age ≥65 years

PPSV23 already received at age ≥65 years → PCV13

≥1 years

Persons who previously received PPSV23 before age 65 years who are now aged ≥65 years

PPSV23 already received at age <65 years → PCV13 at age ≥65 years → PPSV23

≥1 years + 6–12 months*

≥5 years

Abbreviations: PCV13 = 13-valent pneumococcal conjugate vaccine; PPSV23 = 23-valent pneumococcal polysaccharide vaccine.

*Minimum interval between sequential administration of PCV13 and PPSV23 is 8 weeks; PPSV23 can be given later than 6–12 months after PCV13 if this window is missed.
Basis for Change


- Netherlands
- ~85,000 patients >age 65
- Randomized controlled trial
- PCV-13 vs placebo
- Findings:
  - 45.6% efficacy against pneumonia (p=0.0006)
  - 75% efficacy against IPD (p=0.0005)
Primary Care Physicians’ Struggle with Current Adult Pneumococcal Vaccine Recommendations

Laura P. Hurley, MD, MPH, Mandy A. Allison, MD, MSPH, Tamara Pilishvili, MPH, Sean T. O’Leary, MD, MPH, Lori A. Crane, PhD, MPH, Michaela Brtnikova, PhD, MPH, Brenda L. Beaty, MSPH, Megan C. Lindley, MPH, Carolyn B. Bridges, MD, and Allison Kempe, MD, MPH

Introduction: In 2012, the Advisory Committee on Immunization Practices recommended 13-valent pneumococcal conjugate vaccine (PCV13) in series with 23-valent pneumococcal polysaccharide vaccine (PPSV23) for at-risk adults ≥19; in 2014, it expanded this recommendation to adults ≥65. Primary care physicians’ practice, knowledge, attitudes, and beliefs regarding these recommendations are unknown.

Methods: Primary care physicians throughout the U.S. were surveyed by e-mail and post from December 2015 to January 2016.

Results: Response rate was 66% (617 of 935). Over 95% of respondents reported routinely assessing adults’ vaccination status and recommending both vaccines. A majority found the current recommendations to be clear (50% “very clear,” 38% “somewhat clear”). Twenty percent found the upfront cost of purchasing PCV13, lack of insurance coverage, inadequate reimbursement, and difficulty determining vaccination history to be “major barriers” to giving these vaccines. Knowledge of recommendations varied, with 83% identifying the PCV13 recommendation for adults ≥65 and only 21% identifying the recommended interval between PCV13 and PPSV23 in an individual <65 at increased risk.

Conclusions: Almost all surveyed physicians reported recommending both pneumococcal vaccines, but a disconnect seems to exist between perceived clarity and knowledge of the recommendations. Optimal implementation of these recommendations will require addressing knowledge gaps and reported barriers. (J Am Board Fam Med 2018;31:94–104.)

Keywords: Family Physicians, Insurance Coverage, Pneumococcal Vaccines, Primary Care Physicians, Vaccination

### 2019 ACIP Recommendation

#### TABLE 1. Recommendations for 13-valent pneumococcal conjugate vaccine (PCV13) and 23-valent pneumococcal polysaccharide vaccine (PPSV23) among adults aged ≥19 years

<table>
<thead>
<tr>
<th>Medical indication group</th>
<th>Specific underlying medical condition</th>
<th>PCV13 for persons aged ≥19 years</th>
<th>PPSV23* for persons aged 19–64 years</th>
<th>PCV13 for persons aged ≥65 years</th>
<th>PPSV23 for persons aged ≥65 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>None of the below</td>
<td>No recommendation</td>
<td>No recommendation</td>
<td>Based on shared clinical decision-making†</td>
<td>Based on shared clinical decision-making†</td>
</tr>
<tr>
<td>Immunocompetent persons</td>
<td>Alcoholism</td>
<td>No recommendation</td>
<td>1 dose</td>
<td>1 dose if PCV13 has been given, then give PPSV23 ≥1 year after PCV13</td>
<td>1 dose if PCV13 has been given, then give PPSV23 ≥1 year after PCV13 and ≥3 years after any PPSV23 at age &lt;65 years</td>
</tr>
<tr>
<td></td>
<td>Chronic heart disease§</td>
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<tr>
<td></td>
<td>Chronic liver disease</td>
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<tr>
<td></td>
<td>Chronic lung disease§</td>
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<tr>
<td></td>
<td>Cigarette smoking</td>
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<tr>
<td></td>
<td>Diabetes mellitus</td>
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<tr>
<td></td>
<td>Cochlear implant</td>
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<tr>
<td></td>
<td>CSF leak</td>
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<tr>
<td>Immunocompromised persons</td>
<td>Congenital or acquired asplenia</td>
<td>1 dose</td>
<td>2 doses, 1st dose ≥8 weeks after PCV13</td>
<td>1 dose if no previous PCV13 vaccination</td>
<td>1 dose if no previous PCV13 vaccination</td>
</tr>
<tr>
<td></td>
<td>Sickle cell disease/other hemoglobinopathies</td>
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<tr>
<td></td>
<td>Chronic renal failure</td>
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<tr>
<td></td>
<td>Congenital or acquired immunodeficiencies**</td>
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<tr>
<td></td>
<td>Generalized malignancy</td>
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<tr>
<td></td>
<td>HIV infection</td>
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<tr>
<td></td>
<td>Hodgkin disease</td>
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<tr>
<td></td>
<td>Iatrogenic immunosuppression‡</td>
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<tr>
<td></td>
<td>Leukemia</td>
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<tr>
<td></td>
<td>Lymphoma</td>
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<tr>
<td></td>
<td>Multiple myeloma</td>
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<tr>
<td></td>
<td>Nephrotic syndrome</td>
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<tr>
<td></td>
<td>Solid organ transplant</td>
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</tbody>
</table>

Abbreviations: CSF = cerebrospinal fluid; HIV = human immunodeficiency virus.

* Only refers to adults aged 19–64 years. All adults aged ≥65 years should receive 1 dose of PPSV23 ≥5 years after any previous PPSV23 dose, regardless of previous history of vaccination with pneumococcal vaccine. No additional doses of PPSV23 should be administered following the dose administered at age ≥65 years.

† Recommendations that changed in 2019.

§ Includes chronic obstructive pulmonary disease, emphysema, and asthma.

** Includes B- (humoral) or T-lymphocyte deficiency, complement deficiencies (particularly C1, C2, C3, and C4 deficiencies), and phagocytic disorders (excluding chronic granulomatous disease).

†† Diseases requiring treatment with immunosuppressive drugs, including long-term systemic corticosteroids and radiation therapy.
Why the Change?

- From 2014–2017, no further reduction in PCV13-type IPD incidence was observed among adults aged ≥65 years with the incidence stable at five per 100,000 population.
- With this low prevalence, the numbers needed to vaccinate to prevent illness are 2,600 for pneumonia and more than 26,000 for invasive pneumococcal disease.
- The cost per quality-adjusted life-year exceeds $200,000 and may be as high as $560,000.

Trends in invasive pneumococcal disease among adults aged ≥65 years old, 1998–2018

*PPSV23 serotypes: 1, 2, 3, 4, 5, 6B, 7F, 8, 9N, 9V, 10A, 11A, 12F, 14, 15B, 17F, 18C, 19A, 19F, 20, 22F, 23F, and 33F

*PCV13 serotype: 1, 3, 4, 5, 6A, 6B, 7F, 9V, 14, 18C, 19A, 19F, and 23F

# 2021 ACIP Recommendation

## Table 3. ACIP Pneumococcal Vaccine Recommendations for Adults

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>≥65 years old</td>
<td>▶️ PPSV23³ OR ▶️ PCV13, followed by PPSV23³</td>
<td>▶️ PCV20 OR ▶️ PCV15, followed by PPSV23⁶</td>
</tr>
<tr>
<td>19-64 years old with CSF leak or cochlear implant</td>
<td>▶️ PCV13, followed by 1 dose PPSV23⁵</td>
<td>▶️ PCV20</td>
</tr>
<tr>
<td>19-64 years old with immunocompromising conditions⁸</td>
<td>▶️ PCV13, followed by 2 doses PPSV23⁹</td>
<td>▶️ PCV20</td>
</tr>
<tr>
<td>19-64 years old; smoker or chronic medical conditions¹⁰</td>
<td>▶️ PPSV23 (1 dose)</td>
<td>▶️ PCV15, followed by PPSV23⁶</td>
</tr>
</tbody>
</table>

PCV13 = 13-valent conjugate vaccine (Prevnar 13); PCV15 = 15-valent conjugate vaccine (Vaxneuvance); PCV20 = 20-valent conjugate vaccine (Prevnar 20); PPSV23 = 23-valent polysaccharide vaccine (Pneumovax 23).

2. For persons who have not previously received a pneumococcal conjugate vaccine or who se previous vaccination history is unknown.
4. The Advisory Committee on Immunization Practices (ACIP) has voted in favor of these recommendations. These recommendations have not yet been approved by the CDC.
5. If a dose of PPSV23 was given before age 65, one final dose of the vaccine should be given at age 65 or older and at least 5 years after the prior dose. PPSV23 should be given at least one year after PCV13.
6. No interval specified to date by the CDC.
7. PPSV23 should be given at least 8 weeks after PCV13.
8. Immunocompromising conditions include chronic renal failure or nephrotic syndrome, immunodeficiency, iatrogenic immunosuppression, generalized malignancy, HIV, Hodgkin disease, leukemia, lymphoma, multiple myeloma, solid organ transplants, congenital or acquired asplenia, sickle cell disease and other hemoglobinopathies.
9. The first dose of PPSV23 should be given ≥8 weeks after PCV13 and the second ≥5 years after the first PPSV23 dose.
10. Chronic medical conditions include alcohol use disorder, chronic heart, liver, or lung disease, and diabetes mellitus.

https://secure.medicalletter.org/TML-article-1638c
Expected Benefits

• Use of PCV20 alone or PCV15 in series with PPSV23 is expected to reduce pneumococcal disease incidence in adults aged ≥65 years and in those aged 19–64 years with certain underlying conditions.

• Findings from studies suggested that the immunogenicity and safety of PCV20 alone or PCV15 in series with PPSV23 were comparable to PCV13 alone or PCV13 in series with PPSV23.

• Cost-effectiveness studies demonstrated that use of PCV20 alone or PCV15 in series with PPSV23 for adults at age 65 years was cost-saving.

• The new policy simplifies adult pneumococcal vaccine recommendations and is expected to improve vaccine coverage among adults and prevent more pneumococcal disease
**Additional Serotype Analysis**

**From 2018–2019 surveillance data:**

- **IPD >65 yo:**
  - PCV13 serotypes accounted for 27% of cases
  - Serotypes unique to PCV15 accounted for 15% of cases
  - Serotypes unique to PCV 20 accounted for 27% of cases
  - Serotypes unique to PPSV23 accounted for 35% of cases

- **IPD aged 19–64 years (with certain underlying conditions)**
  - PCV13 serotypes accounted for 30% of IPD
  - Serotypes unique to PCV15 accounted for 13% of cases
  - Serotypes unique to PCV 20 accounted for 28% of cases
  - Serotypes unique to PPSV23 accounted for 43% of cases
Cost Effectiveness

PCV 20 at age ≥65
- 3 economic models demonstrated:
- Range from overall cost savings to $39,000 per QALY

PCV 15 + PPSV 23 at age ≥ 65
- 3 economic models demonstrated:
- Range from overall cost savings to $282,000 per QALY

MMWR 1/28/22
CURRENT STATE
Healthy People 2020 Goals

• Increase 65+ ever received pneumonia vaccine to >90%
  • From baseline 60% in 2008

• Increase high risk 18-64 vaccinated against pneumococcal disease to 60%
  • From baseline 16.6%

“Despite progress, approximately 42,000 adults and 300 children in the United States die each year from vaccine-preventable diseases. Communities with pockets of unvaccinated and undervaccinated populations are at increased risk for outbreaks of vaccine-preventable diseases.”

# Pneumonia Vaccine rates By Race/Ethnicity 2020

<table>
<thead>
<tr>
<th>Location</th>
<th>White</th>
<th>Black</th>
<th>Hispanic</th>
<th>Asian/ Native Hawaiian or Pacific Islander</th>
<th>American Indian/ Alaska Native</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>73.8%</td>
<td>60.4%</td>
<td>57.1%</td>
<td>70.0%</td>
<td>63.4%</td>
<td>62.9%</td>
</tr>
</tbody>
</table>

2020 Overall Pneumococcal Vaccine Rates

Marked Reduction of Socioeconomic and Racial Disparities in Invasive Pneumococcal Disease Associated With Conjugate Pneumococcal Vaccines

PRACTICAL ADVICE
### PMA Adult Immunization Collaborative Experience

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Baseline as of 12/31/16</th>
<th>Improvement as of 3/31/17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza Age 19 and Up</td>
<td>60.9%</td>
<td>67.0%</td>
</tr>
<tr>
<td>Elderly Pneumonia Vaccine (&gt;65)</td>
<td>92.3%</td>
<td>93.4%</td>
</tr>
<tr>
<td>High Risk Pneumonia Vaccine (Age 19-64)</td>
<td>36.9%</td>
<td>43.9%</td>
</tr>
<tr>
<td>At Risk Pneumonia Vaccine (Age 19-64)</td>
<td>54.7%</td>
<td>61.2%</td>
</tr>
</tbody>
</table>
Premier conducted three outreach campaigns with Optum One and Emri solutions. The electronic medical record was used to identify populations across all 3 populations:
- Patients > 65 years old,
- Patients 19 – 64 with at least 1 high risk condition, and
- Patients 19 – 64 years of age with at least one at risk condition.

The patients were uploaded into Optum One for outreach and result tracking.

Calls were customized to identify the call as coming from Premier, and to announce the name of the patient’s PCP. Once connected, patients were told that a pneumonia vaccine was due, and given education about the importance of vaccination. The patient could then elect a soft transfer to schedule an appointment, make a note of provider contact information to schedule at a later date, or state that the vaccination had been received.

Table 1

<table>
<thead>
<tr>
<th>Population</th>
<th># Patients Identified</th>
<th># Engaged</th>
<th>% Engaged</th>
<th>Engaged Patients Vaccinated</th>
<th>% Engaged Patients Vaccinated</th>
</tr>
</thead>
<tbody>
<tr>
<td>65+, needing one or more</td>
<td>1,295</td>
<td>524</td>
<td>40.5%</td>
<td>215</td>
<td>41%</td>
</tr>
<tr>
<td>19 – 64 high risk needing one or more</td>
<td>840</td>
<td>592</td>
<td>70.5%</td>
<td>112</td>
<td>18.9%</td>
</tr>
<tr>
<td>19 – 64 at risk ONLY needing one or more</td>
<td>5,702</td>
<td>2576</td>
<td>46%</td>
<td>935</td>
<td>34.9%</td>
</tr>
</tbody>
</table>
PMA Performance Over Time on Pneumonia Vaccine Measure

12/31/17 (end of AI 2): 95.1%
2/28/21 (current with PPSV-23 indication): 82.7%
2/28/21 (current with conjugate vaccine recommendation): 49.7%
Current Variation in Pneumonia Vaccine Performance by Provider Panel - PMA
# Health Equity Focus at PMA: Bundle Performance

## Race-Q2020 Data

<table>
<thead>
<tr>
<th></th>
<th>Numerator</th>
<th>Denominator</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Indian or Alaska Native</td>
<td>0</td>
<td>1</td>
<td>0.00%</td>
</tr>
<tr>
<td>Asian</td>
<td>27</td>
<td>67</td>
<td>40.30%</td>
</tr>
<tr>
<td>Black or african american</td>
<td>205</td>
<td>724</td>
<td>28.31%</td>
</tr>
<tr>
<td>Native hawaiian or other pacific islander</td>
<td>2</td>
<td>7</td>
<td>28.57%</td>
</tr>
<tr>
<td>Not recorded</td>
<td>1</td>
<td>41</td>
<td>2.44%</td>
</tr>
<tr>
<td>Unknown race</td>
<td>32</td>
<td>151</td>
<td>21.19%</td>
</tr>
<tr>
<td>White or caucasian</td>
<td>4626</td>
<td>10709</td>
<td>43.20%</td>
</tr>
</tbody>
</table>
OTHER INSIGHTS/WRAP UP
CV Benefits

- Meta analysis of 18 studies
- >700,000 patients who received PPSV
- Decreased CV risk (RR 0.91, CI 0.84-0.99)
- Decreased risk of MI (RR 0.88, CI 0.79-0.98)
- Reduction in all cause mortality (RR 0.78, CI 0.68-0.88)
- Most significant effects if >65 years

COVID-19 Benefits?

“Kaiser Permanente members who received the PCV13 vaccine appeared to be diagnosed with COVID-19 less often, and when they were, they seemed to have less severe outcomes, overall,” said the senior author, Sara Y. Tartoff PhD, MPH, a scientist with the Kaiser Permanente Southern California Department of Research & Evaluation. “One of the most interesting aspects of our findings was that the patients who received PCV13 received some protection against COVID-19, while those who received PPSV23, another pneumococcal vaccine, did not.”

Call To Action

https://www.izsummitpartners.org/call-to-action-adult-immunizations/
Missed Opportunities

• Effective Vaccine Delivery Programs are needed
  • Clinicians’ offices
    • Especially those who patients who frequently visit physicians
  • At hospital discharge
    • 65% of patients admitted with severe pneumococcal disease had other admits in the prior 5 years
  • SNFs and other long term care facilities

https://www.cdc.gov/pneumococcal/clinicians/clinical-features.html
Increase the proportion of adults age 19 years or older who get recommended vaccines — IID-D03

Objective Overview

Status: Developmental

Increase the proportion of adults age 19 years or older who receive recommended age-appropriate vaccines

Summary
This objective currently has developmental status, meaning it is a high-priority public health issue that has evidence-based interventions to address it, but doesn’t yet have reliable baseline data. Once baseline data are available, this objective may be considered to become a core Healthy People 2030 objective.
### Healthy People 2030 Goals

**Reduce the rate of hospital admissions for pneumonia among older adults — OA-06**

<table>
<thead>
<tr>
<th>Status: Baseline only</th>
<th>Learn more about our data release schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>Most Recent Data:</td>
<td>Target: 642.5 per 100,000</td>
</tr>
<tr>
<td>713.9 hospital</td>
<td>Desired Direction: Decrease desired</td>
</tr>
<tr>
<td>admissions for</td>
<td></td>
</tr>
<tr>
<td>pneumonia per</td>
<td></td>
</tr>
<tr>
<td>100,000 adults (2016)</td>
<td></td>
</tr>
</tbody>
</table>

Baseline: 713.9 hospital admissions for pneumonia per 100,000 adults aged 65 years and over occurred in 2016
Measurement Changes

**Current state** (for baseline measures submitted):
- Any pneumococcal vaccine by age 66

**Future state** (starting with July 1, 2022 reporting):
- Any conjugate vaccine will count for numerator compliance
- Prior PCV-13 are compliant
  - But should get PPSV-23 1 year after PCV-13
- If receive PCV-20 will be considered compliant
- If PCV 15 will need PPSV-23 1 year later to be considered compliant
“Osler died in December 1919 of lung abscess and empyema which were complications of the pneumonia he contracted after an exhausting and bitterly cold two-day motor drive from Newcastle to Oxford, necessitated by a rail strike...To a friend he had earlier referred to ‘enjoying one of my recurring attacks of bronchitis’, and that he had ‘carried the pneumococcus for a great many years’”

Pneumococcal Measure Update
Updated CDC Guidelines

Adults aged >65 years who have not previously received PCV or whose previous vaccination history is unknown should receive 1 dose of PCV (either PCV20 or PCV15). When PCV15 is used, it should be followed by a dose of PPSV23.

- Adults who have only received PPSV23
  - May receive a PCV (either PCV20 or PCV15) ≥1 year after their last PPSV23 dose. When PCV15 is used in those with history of PPSV23 receipt, it need not be followed by another dose of PPSV23

- Adults who received PCV13
  - The incremental public health benefits of providing PCV15 or PCV20 to adults who have received PCV13 only or both PCV13 and PPSV23 have not been evaluated. These adults should complete the previously recommended PPSV23 series

- Adults who received PCV13 but have not completed their recommended pneumococcal vaccine series with PPSV23
  - One dose of PCV20 may be used if PPSV23 is not available


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Impact on RIZE Measures

• Current Measure 2 (Pneumococcal):

  *Number of denominator patients who were administered a pneumococcal vaccination* any time during the Measurement Year or are documented as up-to-date on their pneumococcal vaccination
Impact on RIZE Measures

- Measure 2 (Pneumococcal) will be changed to:

  *Number of denominator patients who were administered any conjugate pneumococcal vaccine during the Measurement Year or are documented as up-to-date on their pneumococcal vaccination*

- **Any conjugate =**
  - PCV20, OR
  - PCV15 (regardless of PPSV23), OR
  - PCV13* (regardless of PPSV23)

*PCV13 will count for previously vaccinated patients (Numerator Part B)*
Impact on RIZE Measures

• These measures are designed for benchmarking purposes and should not be used in place of clinical guidelines

• Changes effective **July 1, 2022 (Q3 2022, report due on Oct. 14, 2022)**
  • Data for Q3 2019-Q2 2022 (submitted on Feb. 15, 2022, April 15, 2022, and July 15, 2022) are unaffected by these changes
  • These submissions will continue to follow the current Measurement Specifications and be reported using the current value set

• We will provide updated Measurement Specifications and a value set prior to the change
National Advisory Committee

- **Randy Bergen, M.D.**, Outpatient Pediatrics, Walnut Creek Medical Center, The Permanente Medical Group; Pediatric Infectious Disease Consultant; Clinical Lead, Kaiser Permanente, Northern California Flu Vaccine Program*

- **Frank Colangelo, M.D., FACP, M.S.-HQS**, Chief Quality Officer, Premier Medical Associates, P.C.

- **Heidi Rens, PharmD**, Director of Patient Safety and Clinical Programs, Integrated Quality Services, Sutter Health-Sutter Valley Medical Foundation

- **Leon Jerrels, RN, CPHQ**, Director Quality Improvement, Kelsey-Seybold Clinic

- **David Kim, M.D., M.A., CAPT**, U.S. Public Health Service, Director, Division of Vaccines, OIDP, OASH, U.S. Department of Health and Human Services

- **Stanley Martin, M.D.**, Director, Division of Infectious Diseases, Geisinger

- **Mitchel C. Rothholz, R.Ph., M.B.A.**, Chief Strategy Officer, American Pharmacists Association

- **Carrie Regnier, RN, M.P.H.**, Director, Quality and Clinical Effectiveness, Norton Medical Group

- **Vincenza Snow, M.D.**, Senior Medical Director of Vaccines, Pfizer Inc.

- **Elizabeth Sobczyk, M.S.W., M.P.H.**, Project Director, American Medical Directors Association – The Society for Post-Acute and Long-Term Care Medicine

- **Litjen (L.J.) Tan, M.S., Ph.D.**, Chief Strategy Officer, Immunization Action Coalition; Co-chair, National Adult Immunization Summit and National Influenza Vaccine Summit

- **Charles Van Duyne, M.D., M.S.**, Chief Medical Information/Innovation Officer, USMD Health System

*Emeritus*
PneumoRecs VaxAdvisor
App from the Centers for Disease Control and Prevention (CDC)
Upcoming Webinar

Topic: Zoster 101

Date/ Time: April 21, 2pm ET

Presenter: Dr. Nimit Patel, Premier Medical Group
Questions?

Submit your questions using the **Q&A feature** at the bottom of the screen.