Pneumococcal Vaccines

October 2024, ACIP Meeting

October 23, 2024

Pneumococcal Vaccines Work Group Chair
James Loehr, MD, FAAFP

Pneumococcal Vaccines Work Group

ACIP Members

Jamie Loehr	(Chair)
Mini Kamboj	
George Kuchel	
Robert Schechter	

Ex Officio Members

Lucia Lee	(FDA)
Tina Mongeau	(FDA)
Uzo Chukwuma	(IHS)
Mamodikoe Makhene	(NIH, primary)
Meenu Upadhyay	(NIH, alternate)
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Liaison Representatives

Lynn Fisher	(AAFP)
Monica Ardura	(AAP/COID)
Jason Goldman	(ACP, primary)
Saba Hasan	(ACP, alternate)
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Cora Hoover	(AIM)
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Robert Hopkins	(NFID, primary)
William Schaffner	(NFID, alternate)
Virginia Caine	(NMA)
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Consultants

Monica Farley	(Emory)
Keith Klugman	(Gates Foundation)
Kathy Poehling	(Wake Forest)
Arthur Reingold	(UC Berkeley)
Lorry Rubin	(CCMC)
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CDC Contributors and Consultants

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Division of Bacterial Diseases
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- Adam L. Cohen
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- Andrew Leidner
- Liz Velazquez

GRADE/EtR consultants
- Doug Campos-Outcalt
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Currently Recommended Adult Pneumococcal Vaccines

	1	3	4	5	6A	6B	7F	9V	14	18C	19A	19F	23F	22F	33F	8	10A	11A	12F	15B	2	9N	17F	20	15A	15C	16F	23A	23B	24F	31	35B
PCV15																																
PCV20																																
PPSV23																																
PCV21																																

21-valent pneumococcal conjugate vaccine (CAPVAXIVE™, Merck):

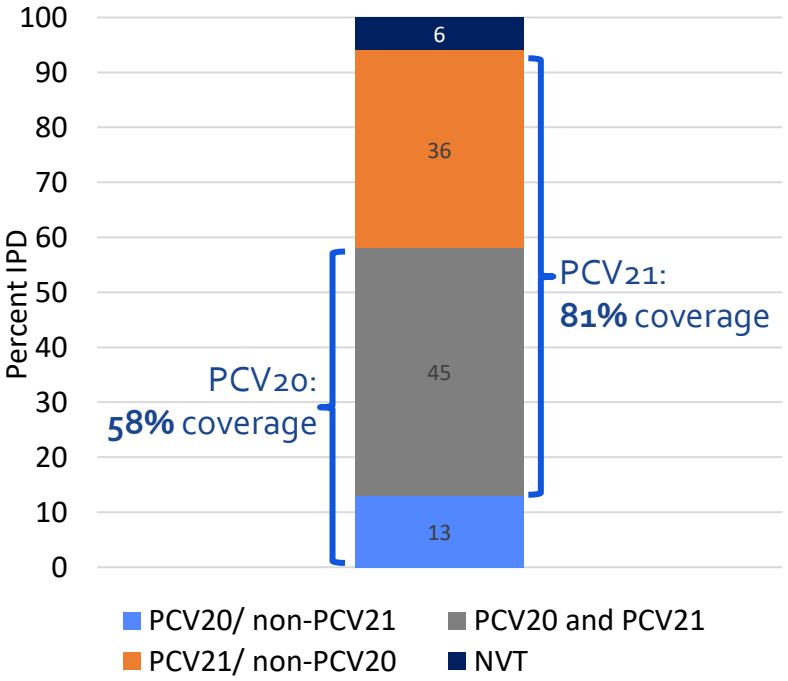
- Approved by the FDA for adults aged ≥18 years on June 17, 2024[1]

PCV15=15-valent pneumococcal conjugate vaccine
PCV20=20-valent pneumococcal conjugate vaccine
PCV21=21-valent pneumococcal conjugate vaccine
PPSV23=23-valent pneumococcal polysaccharide vaccine

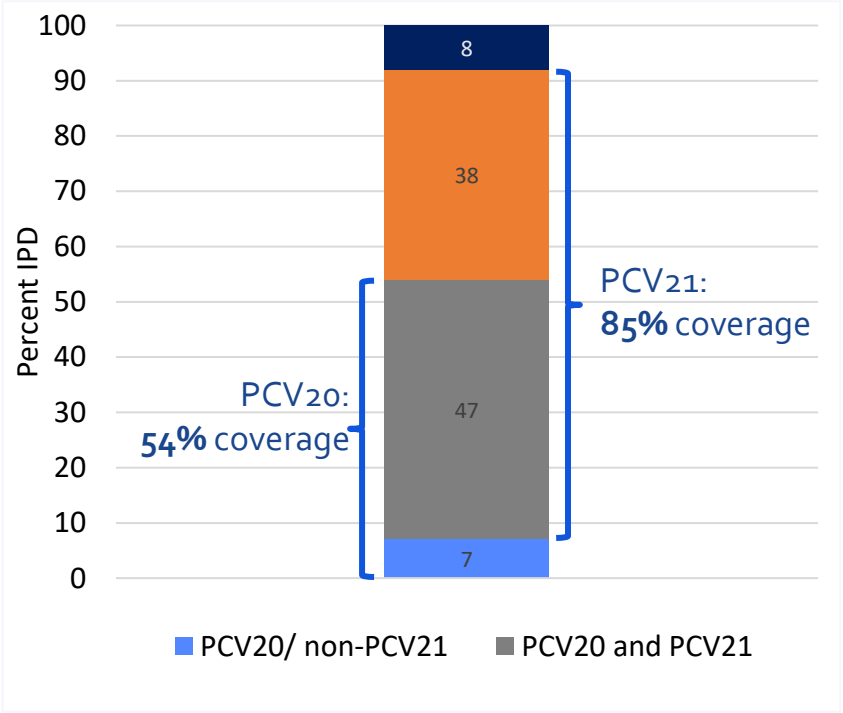
1. U.S. FDA Approves CAPVAXIVE™ (Pneumococcal 21-valent Conjugate Vaccine) for Prevention of Invasive Pneumococcal Disease and Pneumococcal Pneumonia in Adults - Merck.com

Proportion of IPD by vaccine-type among adults with a pneumococcal vaccine indication, 2018–2022

19-64 years old (*with a risk-based indication*)



≥65 years old



PCV20/ non-PCV21 serotype: 1, 4, 5, 6B, 9V, 14, 18C, 19F, 23F, 15B
PCV20/ in-PCV21 serotypes: 3, 6A, 7F, 19A, 22F, 33F, 8, 10A, 11A, 12F, +6C
PCV21/ non-PCV20 serotypes: 9N, 17F ,20, 15A, 15C, 16F, 23A, 23B, 24F, 31, 35B

Gierke February 2024 ACIP meeting presentation

New Adult Pneumococcal Vaccines in Advanced Stages of Development

	1	3	4	5	6A	6B	7F	9V	14	18C	19A	19F	23F	22F	33F	8	10A	11A	12F	15B	2	9N	17F	20	15A	15C	16F	23A	23B	24F	31	35B	7C
PCV15																																	
PCV20																																	
PPSV23																																	
PCV21																																	
Pn-MAPS24v																																	
VAX-24																																	
VAX-31																																	

24-valent pneumococcal vaccines:

- **Pn-MAPS24v (GSK):** Completed phase 1/2 study for adults; Breakthrough Therapy Designation granted and next steps in preparation; undergoing phase 2 studies in infants[1]
- **VAX-24 (Vaxcyte):** Completed enrollment for phase 2 studies in infants[2]; topline results anticipated **in 2025**

31-valent pneumococcal vaccine (VAX-31, Vaxcyte):

- Reported topline results of phase 1/2 study in adults aged ≥50 years[3]; plan to initiate phase 3 pivotal non-inferiority study by **mid-2025**
- Plans to initiate VAX-31 Infant Phase 2 Study in **Q1 of 2025** following IND submission and clearance

1. Chichili et al. Vaccine 2022; 2. Vaxcyte Completes Enrollment of Phase 2 Study Evaluating VAX-24 for the Prevention of Invasive Pneumococcal Disease (IPD) in Infants - Vaxcyte, Inc.; 3. VAX-31 Phase ½ Study Topline Results in Adults Aged 50 and Older. September 3, 2024

Adults currently recommended to receive a dose of pneumococcal conjugate vaccine (PCV)

- **Adults aged ≥65 years who have not received a PCV[1]**
- **Adults aged 19–64 years with certain underlying conditions or risk factors[2] who have not received a PCV[1]**
- **Certain adults who have received PCV13 but have not received PCV20[3]**

1. Excludes PCV7
2. Alcoholism; chronic heart, liver, or lung disease; chronic renal failure; cigarette smoking; cochlear implant; congenital or acquired asplenia; CSF leak; diabetes mellitus; generalized malignancy; HIV infection; Hodgkin disease; immunodeficiency; iatrogenic immunosuppression; leukemia, lymphoma, or multiple myeloma; nephrotic syndrome; solid organ transplant; or sickle cell disease or other hemoglobinopathies
3. Adults who have not completed the recommended vaccine series, or shared clinical decision-making for adults aged ≥65 years who have completed the recommended vaccine series

Pneumococcal Vaccine for Adults Aged ≥19 Years: Recommendations of the Advisory Committee on Immunization Practices, United States, 2023 | MMWR (cdc.gov)

PCV21 is unique from other PCVs in that it was developed to target adult disease

- **PCV21 was developed to target pneumococcal serotypes that commonly cause disease in adults.**
- **The manufacturer currently does not have plans to seek an indication for routine PCV21 use in infants.**
- **The manufacturer will seek an indication for use of PCV21 in children aged 2–18 years with a risk condition for which there is a phase 3 trial currently in progress.***
  - PCV7 and PCV13 provided indirect protection against vaccine serotypes when used in children.
  - We do not expect PCV21 to offer similar indirect protection from its additional serotypes.

*NCT06177912

Summary of Work Group (WG) discussion presented at the June 2024 ACIP meeting

- **The WG agreed that available evidence supports PCV21 use for adults currently recommended to receive a PCV.**
- **The WG could not reach a consensus on whether the age-based recommendation for PCV21 should be lowered from ≥65 years to ≥50 years.**
- **The majority of WG members believed there was insufficient evidence presented to support lowering the age-based recommendation for other recommended PCVs (i.e., PCV15, PCV20).**

Requests from the Committee to the WG at the June ACIP meeting

- **Present summary of data on whether age-based recommendation for pneumococcal vaccines should be lowered to age ≥50 years for all PCVs (not just PCV21) at the October ACIP meeting**
  - Voting members felt that there were not enough data to make a decision on PCVs other than PCV21
  - Anticipating implementation challenges by having different age-based recommendations by vaccine
- **Request to also consider discontinuing the recommendation for PPSV23**

PICO for WG discussion through October 2024

Policy question:	Should a single dose of pneumococcal conjugate vaccine (PCV) be recommended for all PCV-naïve adults aged 50–64 years?
Population	PCV-naïve adults aged 50–64 years in the United States
Intervention	One dose of PCV15*, PCV20, or PCV21 *In series with PPSV23
Comparison	Current risk-based vaccine recommendation (CMC or IC)
Outcomes	Vaccine type (VT)-invasive pneumococcal disease, VT-non-bacteremic pneumococcal pneumonia, VT-pneumococcal mortality, serious adverse events

CMC=chronic medical conditions (i.e., alcoholism; chronic heart disease, including congestive heart failure and cardiomyopathies; chronic liver disease; chronic lung disease, including chronic obstructive pulmonary disease, emphysema, and asthma; cigarette smoking; or diabetes mellitus); IC=immunocompromising condition(i.e., chronic renal failure, nephrotic syndrome, immunodeficiency, iatrogenic immunosuppression, generalized malignancy, HIV infection, Hodgkin disease, leukemia, lymphoma, multiple myeloma, solid organ transplant, congenital or acquired asplenia, or sickle cell disease or other hemoglobinopathies). Those with a cerebrospinal fluid leak and a cochlear implant are also included among those with a risk-based vaccine indication.

Initial Policy Options Considered by the WG

1. Lower the age-based recommendation for all PCVs to age ≥50 years
2. Lower the age-based recommendation for all PCVs to age ≥60 years or age ≥55 years
3. Lower the age-based recommendation to age ≥50 years for PCV21 only
4. Shared clinical decision-making for PCV use for adults aged 50–64 years who currently do not have a risk-based vaccine indication
5. Status quo (i.e., age-based at age ≥65 years, risk-based for younger adults)

Primary Options Considered by the WG

1. **Lower the age-based recommendation for all PCVs to age ≥50 years**

3. **Lower the age-based recommendation to age ≥50 years for PCV21 only**

5. **Status quo (i.e., age-based at age ≥65 years, risk-based for younger adults)**

Final recommendation of the WG

1. **Lower the age-based recommendation for all PCVs to age ≥50 years**
   - Majority supported this option after targeted discussion of the policy question
   - Future booster dose may be needed to avoid increased pneumococcal disease burden in older adults
   - Key uncertainties remain:
     - Indirect effects from new pediatric pneumococcal vaccines
     - Duration of protection from adult vaccination
     - Impact of new higher-valency vaccines for adults

Key factors in the WG recommendations

1. Health equity: Higher pneumococcal disease rates in Black/African American adults, with earlier peak
2. Risk prevalence: 33–54% of adults aged 50–64 years already with indication for risk-based pneumococcal vaccination*
3. Vaccine coverage: Age-based recommendation likely to improve uptake vs. risk-based recommendation
4. Simplicity: Easier to implement uniform recommendation across all PCVs
5. Economic consideration: PCV21 at age 50 (and 65 years) had lower cost/QALY gained than PCV20, while both PCV21 and PCV20 improved health outcomes
6. Serotype coverage: the serotype compositions of PCV20 and PCV21 are quite different

*Data is for adults with any of the following condition and is not an exhaustive list of conditions: chronic heart disease, chronic lung disease, chronic liver disease, diabetes, smoking, alcoholism, weakened immune system due to prescriptions, weakened immune system due to health condition, solid cancer (not including non-melanoma skin cancer or unknown type of skin cancer) and blood cancer. Source NHIS 2020.

†Except for In certain adult populations in the western United States where high percentages (i.e., ≥30%) of IPD caused by serotype 4 have occurred

Today's Session

Introduction	Dr. Jamie Loehr (ACIP, WG Chair)
Economic Analysis and public health impact of PCV use for adults aged ≥50 years	Dr. Charles Stoecker (Tulane)
Summary of economic analyses of PCV use in adults aged ≥50 years	Dr. Andrew Leidner (CDC/NCIRD)
Summary of WG Interpretation of EtR and policy options on PCV use in adults aged ≥50 years	Dr. Miwako Kobayashi (CDC/NCIRD)
Clinical considerations for PCV use in adults	Dr. Miwako Kobayashi (CDC/NCIRD)