Pneumococcal Vaccines

Grace M. Lee, MD, MPH

Pneumococcal Vaccines Work Group Chair

Advisory Committee on Immunization Practices

February 28, 2019

Pneumococcal Vaccines Work Group Members

- **ACIP members**
  - Grace Lee (Chair)
  - Keipp Talbot
  - Paul Hunter
- **Ex officio members**
  - Tina Mongeau (FDA)
  - Lucia Lee (FDA)
  - Jeffrey Kelman (CMS)
- **CDC leads**
  - Tamara Pilishvili (NCIRD)
  - Almea Matanock (NCIRD)

- **Liaison representatives and consultants**
  - Lorry Rubin (Cohen Children's Med Ctr of New York, Northwell Health)
  - Mark Sawyer (AAP/COID)
  - Rick Zimmerman (AAFP/ University of Pittsburg)
  - Jeffery Moore (AAFP)
  - Jane Zucker (AIM)
  - Jason Goldman (ACP)
  - William Schaffner (NFID)
  - Monica Farley (DVA)
  - Keith Klugman (Gates Foundation)
  - Jeffrey Duchin (IDSA)
  - Arthur Reingold (U of California, Berkeley)
  - Nancy Bennett (University of Rochester)
  - Inci Yildirim (Emory University)

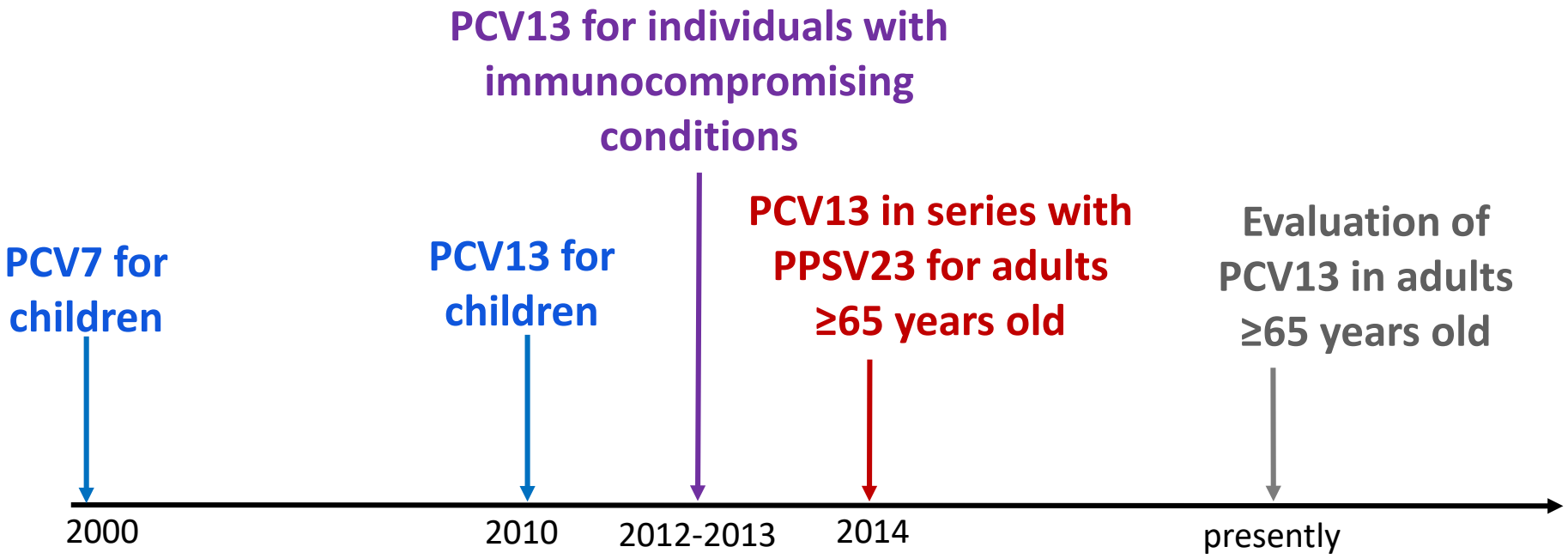
Terms of Reference

- Review current data on efficacy, effectiveness, immunogenicity, and cost-effectiveness of pneumococcal vaccines

- Review current recommendations considering up-to-date evidence, including epidemiological studies, and assess strength of the evidence

- Revise or update recommendations for pneumococcal vaccine use, as needed

Pneumococcal Conjugate Vaccine Recommendations



2014 ACIP Age Based Recommendation

- In 2014 when ACIP recommended PCV13 in series with PPSV23 for adults ≥65 years old, the rationale was:
  - Recommendation was warranted in the short-term because there was still a significant burden of disease among older adults, particularly due to pneumococcal pneumonia
  - The public health benefits in the long-term, however, were expected to be limited since the indirect effects from pediatric PCV13 use were expected to increase
- Therefore, the recommendation was made with a commitment to re-evaluate this policy 4 years later and revise as needed

Policy Question

- Should PCV13 be administered routinely to all immunocompetent adults aged ≥65 years in the context of indirect effects from pediatric PCV use experienced to date?
  - Population: Immunocompetent adults 65 years and older, with and without chronic medical conditions
  - Intervention: PCV13 in series with PPSV23, in the context of indirect effects
  - Comparison(s): PPSV23 alone, in the context of indirect effects
  - Outcomes:
    - Invasive pneumococcal disease (IPD), pneumonia, mortality, safety

Table 1. Medical conditions or other indications for administration of PCV13 and PPSV23 for adults

Medical indication	Underlying medical condition	PCV13 for ≥ 19 years	PPSV23* for 19 through 64 years		PCV13 at ≥ 65 years	PPSV23 at ≥ 65 years
		Recommended	Recommended	Revaccination	Recommended	Recommended
None	None of the below				✓	✓ ≥ 1 year after PCV13
Immunocompetent persons	Alcoholism		✓		✓	✓ ≥ 1 year after PCV13 ≥ 5 years after any PPSV23 at < 65 years
	Chronic heart disease†					
	Chronic liver disease					
	Chronic lung disease§					
	Cigarette smoking					
	Diabetes mellitus					
	Cochlear implants	✓	✓ ≥ 8 weeks after PCV13		✓ If no previous PCV13 vaccination	✓ ≥ 8 weeks after PCV13 ≥ 5 years after any PPSV23 at < 65 years
	CSF leaks					
Persons with functional or anatomic asplenia	Congenital or acquired asplenia	✓	✓ ≥ 8 weeks after PCV13	✓ ≥ 5 years after first dose PPSV23	✓ If no previous PCV13 vaccination	✓ ≥ 8 weeks after PCV13 ≥ 5 years after any PPSV23 at < 65 years
	Sickle cell disease/other hemoglobinopathies					
Immunocompromised persons	Chronic renal failure	✓	✓ ≥ 8 weeks after PCV13	✓ ≥ 5 years after first dose PPSV23	✓ If no previous PCV13 vaccination	✓ ≥ 8 weeks after PCV13 ≥ 5 years after any PPSV23 at < 65 years
	Congenital or acquired immunodeficiencies¶					
	Generalized malignancy					
	HIV infection					
	Hodgkin disease					
	Iatrogenic immunosuppression‡					
	Leukemia					
	Lymphoma					
	Multiple myeloma					
	Nephrotic syndrome					
	Solid organ transplant					

*This PPSV23 column only refers to adults 19 through 64 years of age. All adults 65 years of age or older should receive one dose of PPSV23 5 or more years after any prior dose of PPSV23, regardless of previous history of vaccination with pneumococcal vaccine. No additional doses of PPSV23 should be administered following the dose administered at 65 years of age or older.

†Including congestive heart failure and cardiomyopathies

§Including 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

Today's Pneumococcal Vaccines Session Outline

- PCV13 Direct and Indirect Effects on Serotype 3 Disease — Dr. Tamara Pilishvili (CDC/NCIRD)
- PCV13 Direct Effects on Pneumonia Hospitalizations in Adults — Dr. Fernanda Lessa (CDC/NCIRD)
- Comparison of Economic Analyses of PCV13 Use Among Adults ≥65 Years Old — Dr. Andrew Leidner (CDC/NCIRD)
- GRADE and Evidence to Recommendations for PCV13 Use Among Adults ≥65 Years Old in the Setting of Sustained Indirect Effects — Dr. Almea Matanock (CDC/NCIRD)

Key Questions for ACIP to Discuss

- What is the balance of desirable and undesirable effects of PCV13 use in immunocompetent adults ≥65 years, in the context of indirect effects from the pediatric program?
- Also considering values, acceptability, resource use, and implementation issues, what is your overall assessment of continued PCV13 use in immunocompetent adults ≥65 years?
- Unique challenges with this decision
  - Impact of adult vs. pediatric vaccination programs
  - Framing bias – implementation vs. de-implementation
  - Potential new vaccines for future consideration
- What additional information is needed to help determine whether continued PCV13 use in adults ≥65 years is warranted?

Near Future Pneumococcal Conjugate Vaccines: Two new products in Phase 3 trials (PCV15 and PCV20)

- Both conjugated to CRM_{197}
- Both working towards licensure in adults first
- PCV15
  - Serotypes: PCV13 plus 22F and 33F
  - Currently in adult Phase 3 trials (manufacturer is projecting adult Phase 3 completion ~3rd quarter 2020*)
- PCV20
  - Serotypes: PCV13 plus 8, 10A, 11A, 12F, 15B, 22F and 33F
  - Currently in adult Phase 3 trials (manufacturer is projecting adult Phase 3 completion ~end of 2019/early 2020*)

*Completion of Phase 3 estimated based upon information currently posted on clinicaltrials.gov

Today's Pneumococcal Vaccines Session Outline

- PCV13 Direct and Indirect Effects on Serotype 3 Disease — Dr. Tamara Pilishvili (CDC/NCIRD)
- PCV13 Direct Effects on Pneumonia Hospitalizations in Adults — Dr. Fernanda Lessa (CDC/NCIRD)
- Comparison of Economic Analyses of PCV13 Use Among Adults ≥65 Years Old — Dr. Andrew Leidner (CDC/NCIRD)
- GRADE and Evidence to Recommendations for PCV13 Use Among Adults ≥65 Years Old in the Setting of Sustained Indirect Effects — Dr. Almea Matanock (CDC/NCIRD)