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### Learning Outcome & Objectives

- Learning Outcome**
- As a result of this educational activity, the learners will increase and enhance knowledge and competence on recommending pneumococcal vaccination to adults.
- Learning Objectives**
- At the end of this training, the learner will be able to:
- Explain the burden of pneumococcal disease in adults.
  - Describe current coverage rates for pneumococcal vaccines for adults.
  - Summarize updates to the CDC's recommendations for the use of pneumococcal vaccines for adults.

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### Zoom Webinar Participation

- Use the chat box to ask technical & content related questions
- To turn on/off the live transcription, use the options on the bottom bar
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**Presenter**

- **Andrew Kroger MD, MPH**  
 Communication and Education Branch  
 Immunization Services Division  
 National Center for Immunization and Respiratory Diseases  
 Centers for Disease Control and Prevention

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Centers for Disease Control and Prevention  
 National Center for Immunization and Respiratory Diseases



**Making Sense of Pneumococcal Vaccines:  
 Updated CDC Recommendations for use  
 in Adults**

**Andrew Kroger M.D., M.P.H.**  
 Medical Officer  
 Immunization Services Division

University at Albany, Center for Public Health Continuing Education  
 July 5, 2022

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**Disclosures**

- Andrew Kroger is a federal government employee with no financial interest or conflict with the manufacturer of any product named in this presentation.
- I will not discuss any off-label uses for vaccines.
- The use of trade names is for identification purposes only and does not imply endorsement by the ACIP or CDC.

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**Disclosures**

- The recommendations to be discussed are primarily those of the Advisory Committee on Immunization Practices (ACIP).
  - composed of 15 experts in clinical medicine and public health
  - provides guidance on use of vaccines and other biologic products to DHHS, CDC, and the U.S. Public Health Service



Based on most recent ACIP Meeting  
June 22 and 23, 2022

<http://www.cdc.gov/vaccines/acip/meetings/upcoming-dates.html>

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**Overview**

- Clinical Disease
- Epidemiology
- Vaccine Recommendations

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**Disease**

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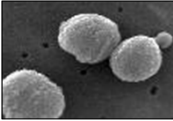
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**Streptococcus pneumoniae**

- Gram-positive bacteria
- 92 known serotypes
- Polysaccharide capsule important virulence factor
- Type-specific antibody is protective
- Limited cross-reactivity



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**Pneumococcal Disease**

- Second most common cause of vaccine-preventable disease in the U.S.
- Major clinical syndromes
  - Pneumonia
  - Bacteremia
  - Meningitis

<https://www.cdc.gov/pneumococcal/clinicians/clinical-features.html>

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**Epidemiology**

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**Pneumococcal Disease Epidemiology**

- **Reservoir**                    Human carriers
- **Transmission**                Respiratory and autoinoculation
- **Temporal pattern**            Winter and early spring
- **Communicability**            Unknown; probably as long as organism in respiratory secretions

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**Risk Factors for Invasive Pneumococcal Disease**

- Functional or anatomic asplenia, including sickle-cell disease
- Altered immunocompetence
- Underlying medical conditions, including chronic renal disease, nephrotic syndrome, and CSF leak
- Cochlear implant

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**Invasive Pneumococcal Disease (IPD) Incidence by Age Group—2017\***

Age Group (Yrs)	Rate/100,000 pop.
2-4	~5
5-17	~1
18-34	~2
35-49	~5
50-64	~15
65-74	~20
75-84	~28
>85	~42

\*CDC Active Bacterial Core surveillance 2017 report:  
<http://www.cdc.gov/abcs/reports-findings/surreports/spneu17.html>

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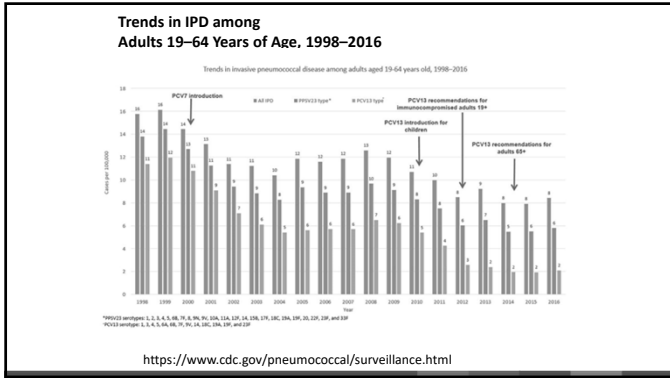
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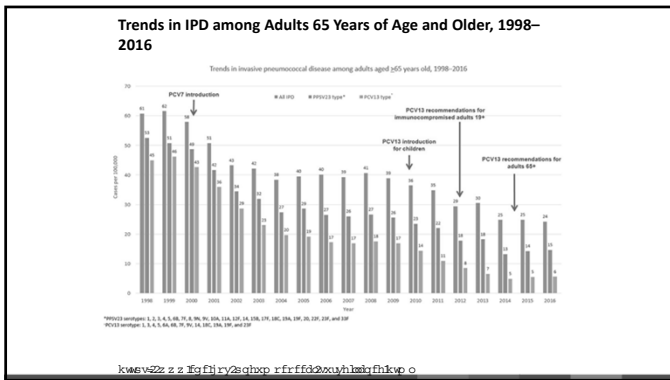
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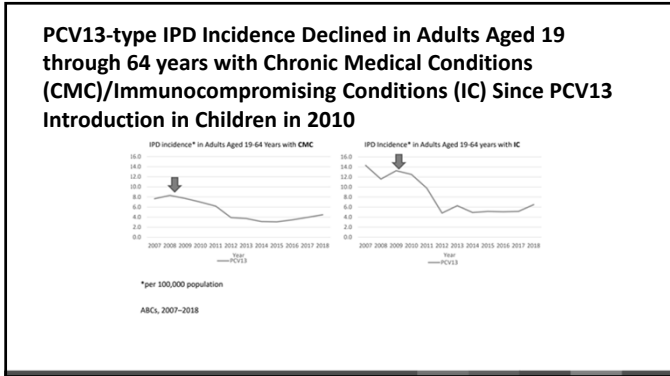
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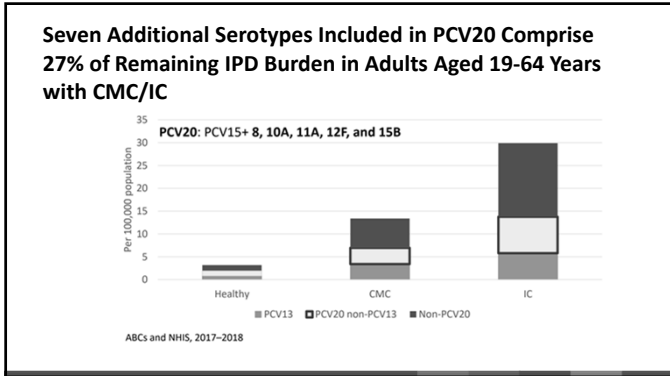
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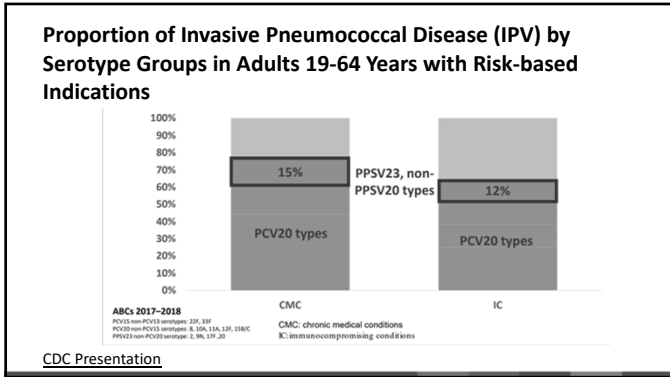
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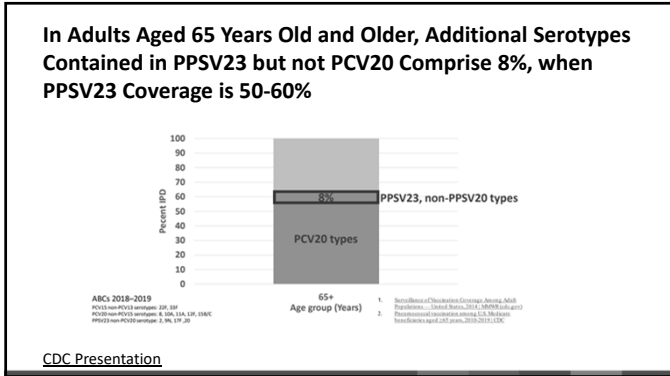
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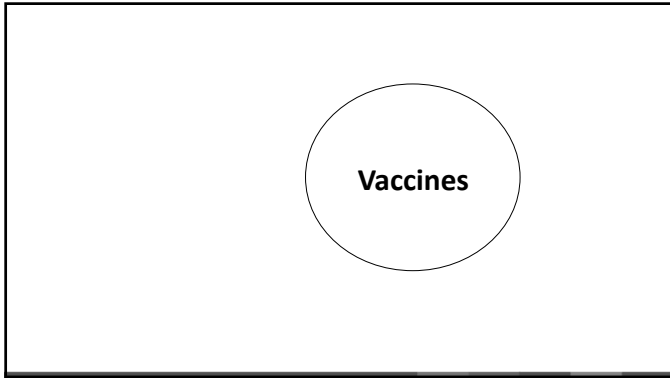
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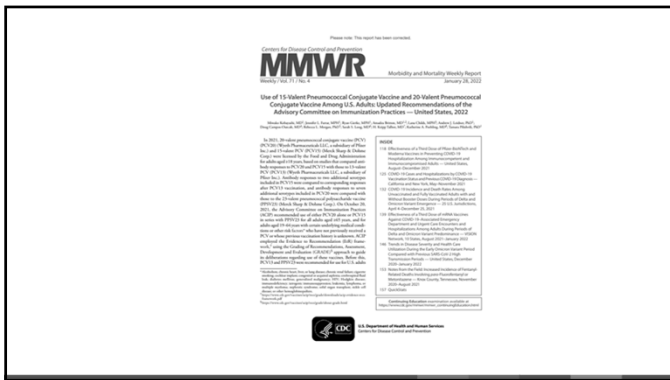
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**Pneumococcal Vaccines**

- **1983**      ▪ 23-valent polysaccharide vaccine licensed (PPSV23)
- **2010**      ▪ 13-valent polysaccharide conjugate vaccine licensed (PCV13)
- **2021**      ▪ 20-valent polysaccharide conjugate vaccine licensed (PCV20) – PREVNAR20
- **2021**      ▪ 15-valent polysaccharide conjugate vaccine licensed (PCV15) – VAXNEUVANCE – Merck

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**Serotypes Contained in New and Current Pneumococcal Vaccines**

	1	3	4	5	6A	6B	7F	9V	14	18C	19A	19F	23F	33F	8	10A	11A	32F	15B	2	9N	17F	20	
PCV13																								
PCV15																								
PCV20																								
PPSV23																								

PCV13: 13-valent pneumococcal conjugate vaccine  
 PPSV23: 23-valent pneumococcal polysaccharide vaccine

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**Pneumococcal Vaccines, Effectiveness**

- Effectiveness is bridged from immunogenicity of PCV13
- Effectiveness of PCV13 is 75% against serotype specific IPV
- Effectiveness of PCV13 is 45% against serotype specific non-bacteremic pneumonia
- Effectiveness of PPSV23 is 60-70% effective against serotype specific invasive disease in immunocompetent persons

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**Pneumococcal Vaccines, Effectiveness**

- In Phase 2 and 3 trials, in adults 18 years and older, PCV20 met non-inferiority criteria for immunogenicity for all 13 serotypes, compared with PCV13
- PCV20 had lower geometric mean titers for 12-13 of the 13 serotypes compared with PCV13
- In Phase 2 and 3 trials, in adults 50 years and older and high-risk adults, PCV15 met non-inferiority criteria for immunogenicity for all 13 serotypes, compared with PCV13
- PCV15 had higher geometric mean titers for 9 – 13 serotypes compared with PCV13

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**Pneumococcal Vaccines**

- PCV13 routinely recommended in children for prevention of invasive pneumococcal disease
- PPSV23 recommended for high-risk persons (invasive disease)
- PCV15
  - newly recommended in combination with PPSV23 for high-risk adults 19 through 64 years of age, and for adults 65 years of age and older interval between PCV15 and PPSV23
    - 1 year by routine
- PCV20
  - newly recommended for high-risk adults 19 through 64 years of age, and for adults 65 years of age and older
- No preference for PCV20 versus PCV15+PPSV23

ACIP Influenza Vaccine Recommendations | CDC

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**Pneumococcal Vaccines – High-risk Conditions**

- Functional or anatomic asplenia (including sickle cell disease)
- Immunosuppression (including HIV infection)
- Transplant
- Chronic renal failure
- Nephrotic syndrome
- Generalized malignancy
- Hematologic malignancy
- CSF leak
- Cochlear implant
- Pulmonary disease (including asthma – 18 years old and older)
- Cardiac disease (excluding hypertension)
- Liver disease (including cirrhosis) (6 years old and older)
- Diabetes
- Alcoholism (6 years old and older)
- Current cigarette smokers (18 years old and older)
- Residents of a long-term care facility

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**Adults who are PCV13 – Naïve or with an Unknown Pneumococcal Vaccine History**

- Should receive either:
  - PCV15 + PPSV23
  - or
  - PCV20

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**Pneumococcal Vaccines – Intervals**

- The routine interval between PCV15 and PPSV23 is one year
- For certain patients, providers can consider an 8 week interval instead of one year
  - functional and anatomic asplenia, immunosuppression, chronic renal disease, CSF leak, cochlear implant

ACIP Influenza Vaccine Recommendations | CDC

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**Adults Who Have Already Received PCV13, but Have NOT Received PPSV23**

- Any adult who has received PCV13, and is recommended for PPSV23, may receive PCV20 as a substitute for PPSV23 if PPSV23 is not available.
- If PPSV23 is available, it should be administered
  - intervals – PCV13 to PPSV23 = 8 weeks if Functional and anatomic asplenia, immunosuppression, chronic renal disease, CSF leak, cochlear implant
  - otherwise, the interval from PCV13 to PPSV23 should be one year

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**Adults Who Have Already Received PPSV23, but NOT PCV13**

- Persons who have already received PPSV23 but NOT PCV13 MAY receive either PCV15 or PCV20

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**Pneumococcal Conjugate (PCV15 or PCV20) Vaccine Administration**

- Administer PCV15/PCV20 vaccine via intramuscular (IM) injection
  - needle gauge: 22–5 gauge
  - needle length\*: 5/8–1.5 inch, depending on the patient’s age and/or weight
  - site\*: Deltoid muscle is preferred; vastus lateralis muscle may be used
- Administer at the same medical visit as other vaccines except MenACWY-D in asplenic or HIV positive persons (others, ok to administer)

\*Professional judgement should be used to determine the proper needle length and site. Factors influencing site include local reaction, number of vaccines to be administered, age, and muscle mass

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**Pneumococcal Polysaccharide (PPSV23) Vaccine Administration**

- Administer PPSV23 vaccine via intramuscular (IM) or subcutaneous (Subcut) injection
  - IM: deltoid muscle is preferred; vastus lateralis muscle may be used
    - site, needle length, and gauge same as for PCV15/20
  - subcut
    - site: deltoid muscle or vastus lateralis
    - needle length: 5/8 inch
    - needle gauge: 23-5 gauge
- Administer at the same medical visit as other vaccines

\*Professional judgement should be used to determine the proper needle length and site. Factors influencing site include local reaction, number of vaccines to be administered, age, and muscle mass

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**Pneumococcal Vaccines  
Adverse Reactions**

	PPSV23	PCV15/20
Local reactions	30%–50%	4%–81%
Fever, myalgia	<1%	(<1)% - 67%
Febrile seizures (PCV13)	---	Rare: 1–14/100,000; with IIV 4–45/ 100,000
Grade 3 (PCV15/20)	---	0%–1.1% (local/system)

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**Pneumococcal Vaccines  
Contraindications and Precautions**

- Severe allergic reaction to vaccine component or following prior dose of vaccine
- Moderate or severe acute illness

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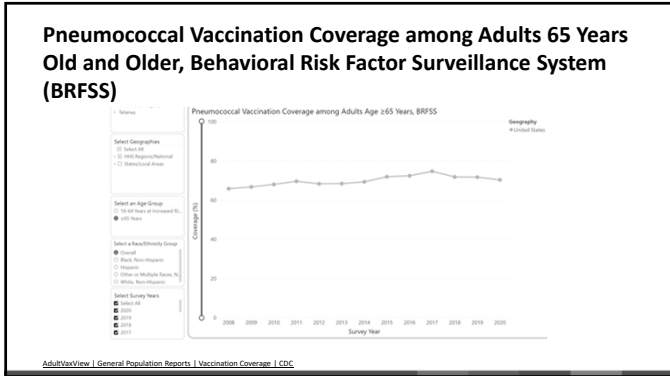
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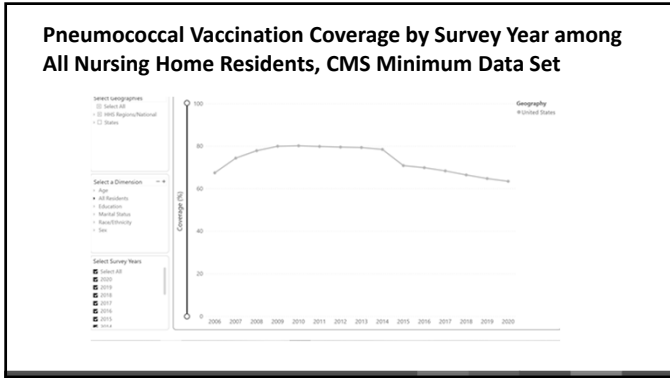
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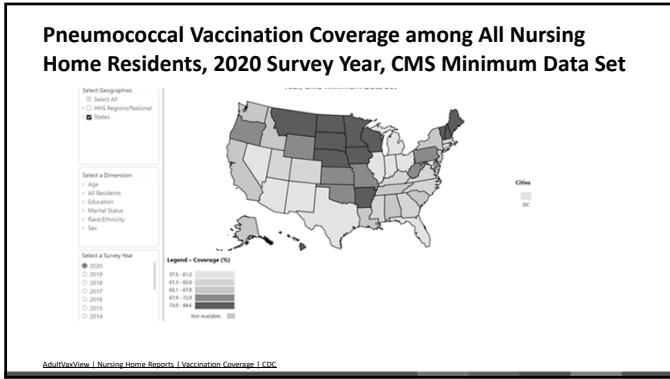
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### Continuing Education Credits

- To receive continuing education credits, please fill out the evaluation and post-test: <https://www.ualbanycphp.org/eval/SPHeval.cfm?id=617>
- CME, CNE, CHES and CPH credits are available

**Thank you!**



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