



CDC Adult Immunization Update

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Disclosure

I, Andrew Kroger, have been asked to disclose any significant relationships with commercial entities that are either providing financial support for this program or whose products or services are mentioned during this presentation.

I have no relationships to disclose.

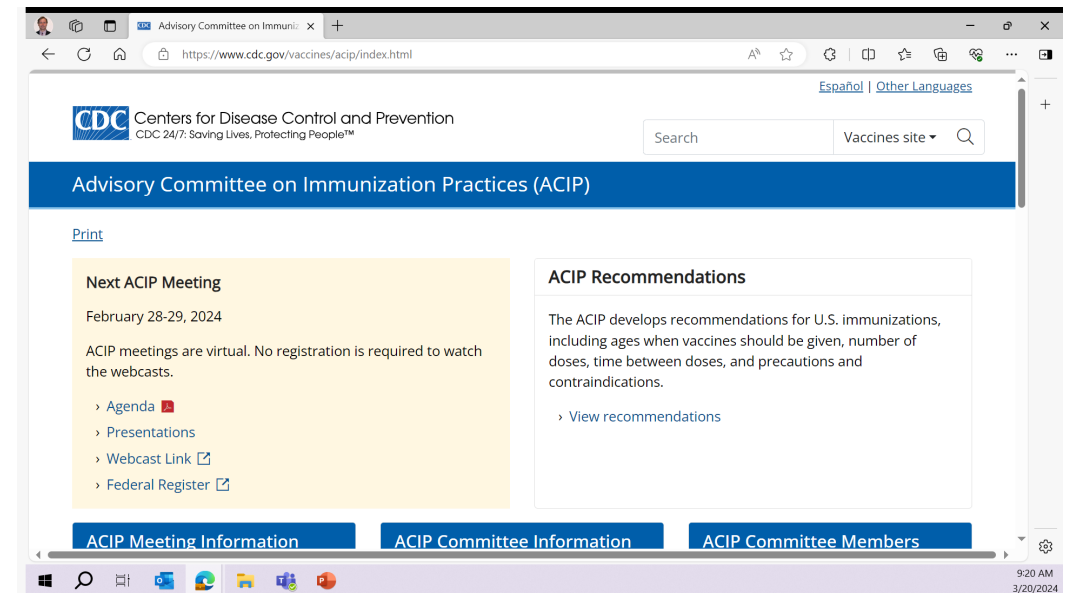
I may discuss the use of vaccines in a manner not approved by the U.S. Food and Drug Administration, but in accordance with ACIP recommendations.

Disclosures (CDC)

- Andrew Kroger has not had any financial relationships with any ineligible companies.
- Andrew Kroger will discuss off-label CDC guidelines for COVID-19 vaccine
- The use of trade names is for identification purposes only and does not imply endorsement by the ACIP or CDC.

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



Objectives

- After this presentation the participant will be able to:
 - Recommend adult vaccines in accordance with ACIP's recommended immunization schedule
 - Locate resources to assist with timing and spacing of vaccine doses

Overview

- Schedule overview
- RSV vaccine
- COVID-19 vaccine
- Influenza vaccine
- Pneumococcal vaccine
- Mpox vaccine
- Polio vaccine
- Updates
- Resources

Adult Immunization Schedule Overview

Immunization Schedules for Healthcare Professionals | CDC

The screenshot shows the CDC website's 'Immunization Schedules for Healthcare Providers' page. The page features a navigation menu on the left with categories like 'For Healthcare Providers', 'Child & Adolescent Immunization Schedule', 'Adult Immunization Schedule', 'Schedule Changes & Guidance', 'Resources', and 'For You and Your Family'. The main content area is titled 'For Healthcare Providers' and includes a prominent pink alert box with an exclamation mark icon. The alert text reads: '2024 Immunization Schedules are now available and effective immediately. Reminder: the schedules summarize final recommendations that were previously adopted and made official by the CDC director.' Below the alert are two links: 'Child and Adolescent Recommended Immunization Schedule, 2024' and 'Adult Recommended Immunization Schedule, 2024'. At the bottom of the main content area, there are two columns: 'Child and Adolescent Schedule' with a sub-section for 'Birth to 18 Years' and 'Adult Schedule' with a sub-section for '19 Years or Older'. Each sub-section includes a small thumbnail image of a schedule chart. The page also includes a search bar, a language selector for 'Español | Other Languages', and a footer with the CDC logo and tagline 'CDC 24/7: Saving Lives. Protecting People™'. The browser's address bar shows the URL 'https://www.cdc.gov/vaccines/schedules/hcp/index.html' and the system tray at the bottom indicates the time is 1:55 PM on 2/23/2024.

Immunization Schedules for Healthcare Providers

For Healthcare Providers

2024 Immunization Schedules are now available and effective immediately.
Reminder: the schedules summarize final recommendations that were previously adopted and made official by the CDC director.

- [Child and Adolescent Recommended Immunization Schedule, 2024](#)
- [Adult Recommended Immunization Schedule, 2024](#)

Child and Adolescent Schedule

Recommended vaccination schedule for ages 18 years or younger

Birth to 18 Years

Adult Schedule

Recommended vaccination schedule for ages 19 years or older

19 Years or Older

Recommended Adult Immunization Schedule

Table 1 Recommended Adult Immunization Schedule by Age Group, United States, 2024

Vaccine	19–26 years	27–49 years	50–64 years	≥65 years
COVID-19	1 or more doses of updated (2023–2024 Formula) vaccine (See Notes)			
Influenza inactivated (IIV4) or Influenza recombinant (RIV4)	1 dose annually			
Influenza live, attenuated (LAIV4)	1 dose annually			
Respiratory Syncytial Virus (RSV)	Seasonal administration during pregnancy. See Notes.			≥60 years
Tetanus, diphtheria, pertussis (Tdap or Td)	1 dose Tdap each pregnancy; 1 dose Td/Tdap for wound management (see notes)			
	1 dose Tdap, then Td or Tdap booster every 10 years			
Measles, mumps, rubella (MMR)	1 or 2 doses depending on indication (if born in 1957 or later)			For healthcare personnel, see notes
Varicella (VAR)	2 doses (if born in 1980 or later)		2 doses	
Zoster recombinant (RZV)	2 doses for immunocompromising conditions (see notes)		2 doses	
Human papillomavirus (HPV)	2 or 3 doses depending on age at initial vaccination or condition	27 through 45 years		
Pneumococcal (PCV15, PCV20, PPSV23)				See Notes
				See Notes
Hepatitis A (HepA)	2, 3, or 4 doses depending on vaccine			
Hepatitis B (HepB)	2, 3, or 4 doses depending on vaccine or condition			
Meningococcal A, C, W, Y (MenACWY)	1 or 2 doses depending on indication, see notes for booster recommendations			
Meningococcal B (MenB)	19 through 23 years	2 or 3 doses depending on vaccine and indication, see notes for booster recommendations		
Haemophilus influenzae type b (Hib)	1 or 3 doses depending on indication			
Mpox				

Recommended vaccination for adults who meet age requirement, lack documentation of vaccination, or lack evidence of immunity

 Recommended vaccination for adults with an additional risk factor or another indication

 Recommended vaccination based on shared clinical decision-making

 No recommendation/Not applicable

RSV Vaccination

RSV Vaccination Recommendations

- ACIP and CDC recommend that adults ages 60 years and older may receive a **single dose** of RSV vaccine using **shared clinical decision-making**.
- For adults ages 60 years and older who decide with their health care provider to get an RSV vaccine, the best time to get vaccinated is in late summer and early fall – just before RSV usually starts to spread in the community. Protection is currently known to last 2 years.

<https://www.cdc.gov/mmwr/volumes/72/wr/mm7229a4.htm>
<https://www.cdc.gov/vaccines/vpd/rsv/index.html>



Considerations for Shared Clinical Decision-Making

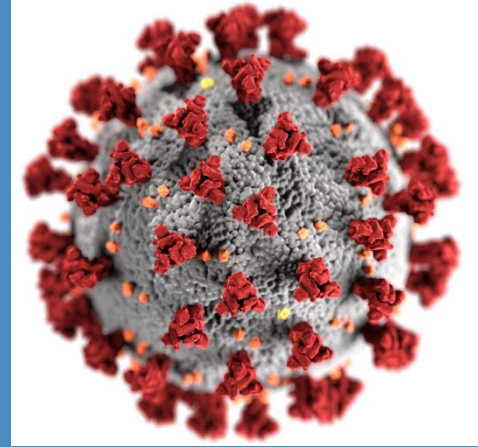
- Does patient have underlying medical conditions or other factors associated with increased risk:
 - Lung disease
 - Cardiovascular disease
 - Moderate or severe altered immunocompetence
 - Diabetes mellitus
 - Neurologic or neuromuscular condition
 - Kidney disorder
 - Liver disorder
 - Hematologic disorder
 - Residence in nursing homes or other long-term care facilities
 - Frailty (diminished grip strength, exhaustion, slow walking speed, low physical activity, unintentional weight loss)

RSV Vaccine Contraindications and Precautions

- Contraindication
 - History of severe allergic reaction, such as anaphylaxis, to any component of the vaccine
- Precaution
 - Severe or moderate acute illness with or without fever

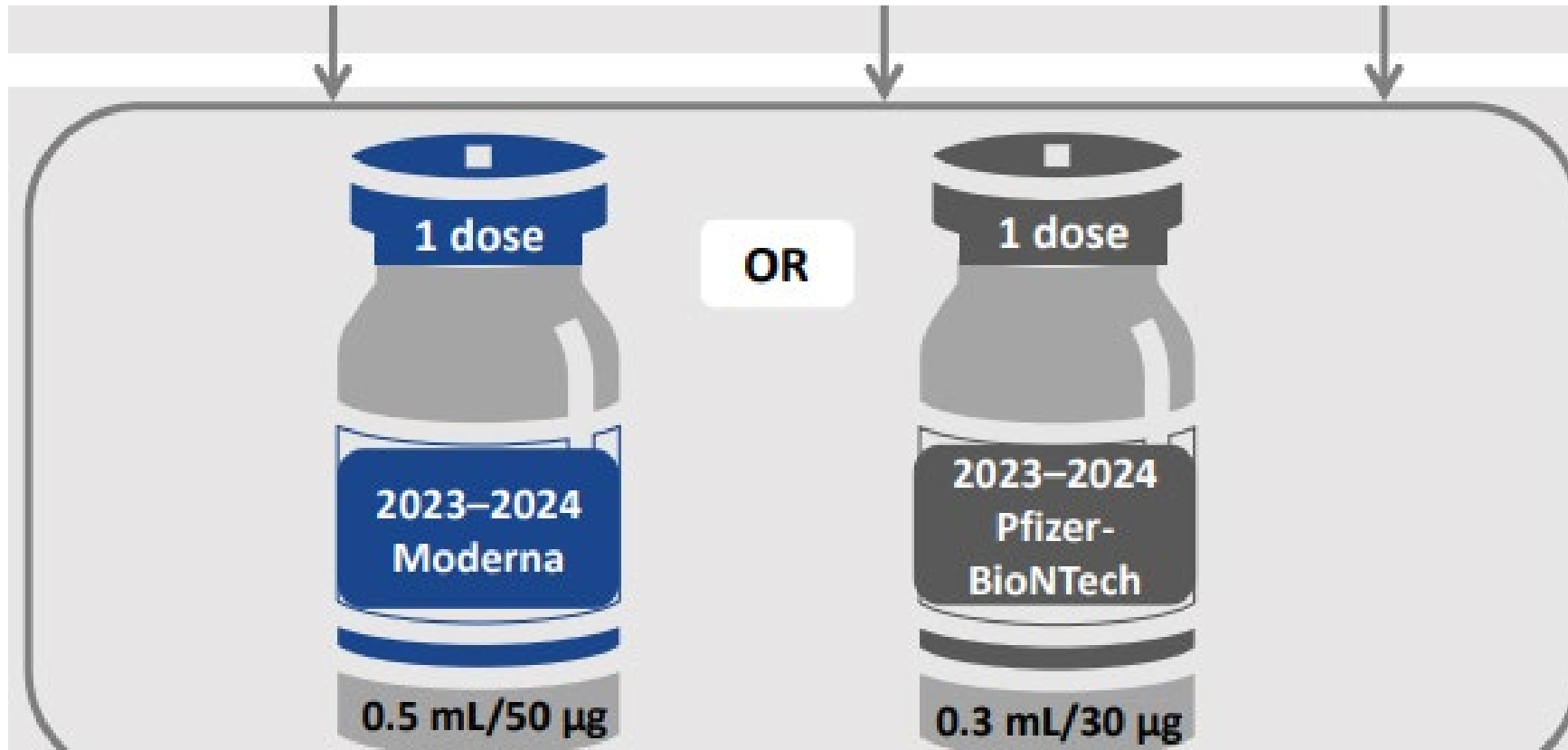
RSV Vaccine Storage and Handling

- RSVpreF (Abrysvo)
 - Lyophilized pellet and diluent
 - Store pellet and diluent at refrigerator temperature
 - 36° F — 46° F
 - 2° C — 8° C
 - Beyond use — 4 hours
 - Store reconstituted product at room temperature
 - 59° F — 86° F
 - 15° C — 30° C
- RSVPreF3 (Arexvy)
 - Lyophilized pellet and diluent
 - Store pellet and diluent at refrigerator temperature
 - 36° F — 46° F
 - 2° C — 8° C
 - Beyond use — 4 hours
 - Store reconstituted product at refrigerator or room temperature
 - 36° F — 77° F
 - 2° C — 25° C



COVID-19 Vaccine

COVID-19 mRNA Vaccines: Formulations for 12 Years and Older



Novavax

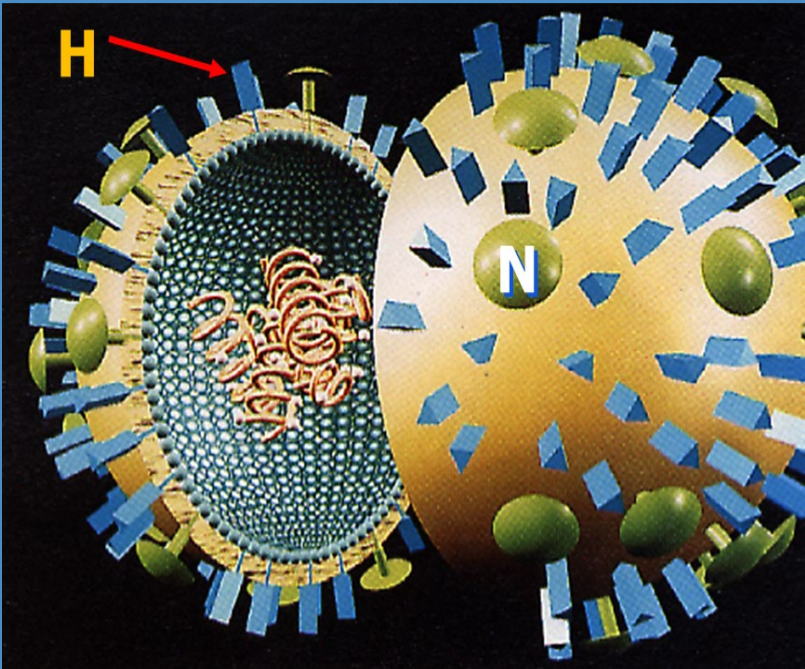
- Still not licensed, but authorized under Emergency Use Authorization (EUA) for 12 years old and older
- Now authorized for patient who've had a primary series and any number of boosters previously

COVID-19 Vaccine: General Timing Recommendations for Adults Who are Not Moderately/Severely Immunocompromised

- Recommendations are simple for adults (19 years old or older)
 - All persons 19 through 64 years old should receive one dose of the 2023-2024 COVID-19 vaccine (contains the XBB strain)
 - › Pfizer COVID-19 vaccine is licensed (Comirnaty)
 - › Moderna COVID-19 is licensed (Spikevax)
 - › Novavax COVID-19 is authorized
 - All persons 65 years old and older should receive two doses of the 2023-2024 COVID-19 vaccine, separated by 4 months

Additional Doses of COVID-19 Vaccine for Persons Who are Moderately or Severely Immunocompromised

- People 19 through 64 years may receive 1 or more additional doses of any updated (2023-2024 Formula) COVID-19 vaccine (i.e., Moderna, Novavax, Pfizer).
- People 65 years old and older should receive 1 additional dose and may receive further additional doses of any updated (2023-2024 Formula) COVID-19 vaccine (i.e., Moderna, Novavax, Pfizer)



Influenza Vaccine

2023-24 ACIP Recommendations: Influenza

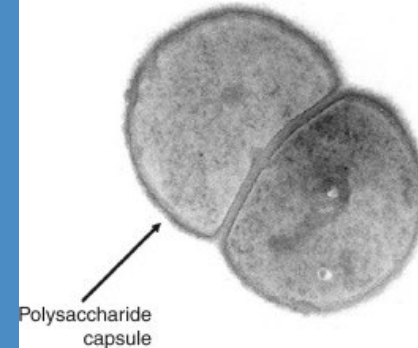
- Annual influenza vaccination is recommended for persons 6 months of age and older without contraindications or precautions.
- Note: Influenza vaccine products vary with different age-indications contraindications, and recommendations.



65 Years Old and Older: Higher Dose and Adjuvanted Vaccines

- Based on Evidence to Recommendations Process, ACIP voted for preferential use of **higher dose or adjuvanted influenza vaccines** for persons **65 years old or older**.
- Includes these vaccines:
 - **Higher dose**: High-dose influenza vaccine (Fluzone High-Dose), Recombinant Influenza Vaccine (Flublok)
 - **Adjuvanted**: Adjuvanted influenza vaccine (Fluad)
 - No preference between these three
- If none of the three are available, vaccinate with **another age-appropriate influenza vaccine**.

Pneumococcal Vaccine Recommendations



In 2021, Two New Pneumococcal Conjugate Vaccines Were Licensed for Use

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

23-valent pneumococcal polysaccharide vaccine (PPSV23)

Pneumovax23[®]

13-valent pneumococcal conjugate vaccine (PCV13)

Prevnar13[®]

15-valent pneumococcal conjugate vaccine (PCV15)

Vaxneuvance[™]

20-valent pneumococcal conjugate vaccine (PCV20)

Prevnar20[®]

Miwako Kobayash, Tamara Pilishvili, Jennifer Farrar, et al. Pneumococcal Vaccine for Adults Aged 19 Years and Older: Recommendations of the Advisory Committee on Immunization Practices, United States, 2023. MMWR Recomm Rep 2023;72(No. RR3):1-40. [Pneumococcal Vaccine for Adults Aged ≥19 Years: Recommendations of the Advisory Committee on Immunization Practices, United States, 2023 \(cdc.gov\)](https://www.cdc.gov/mmwr/rr/rr32a1.htm)

Pneumococcal Vaccination Recommendations for Adults

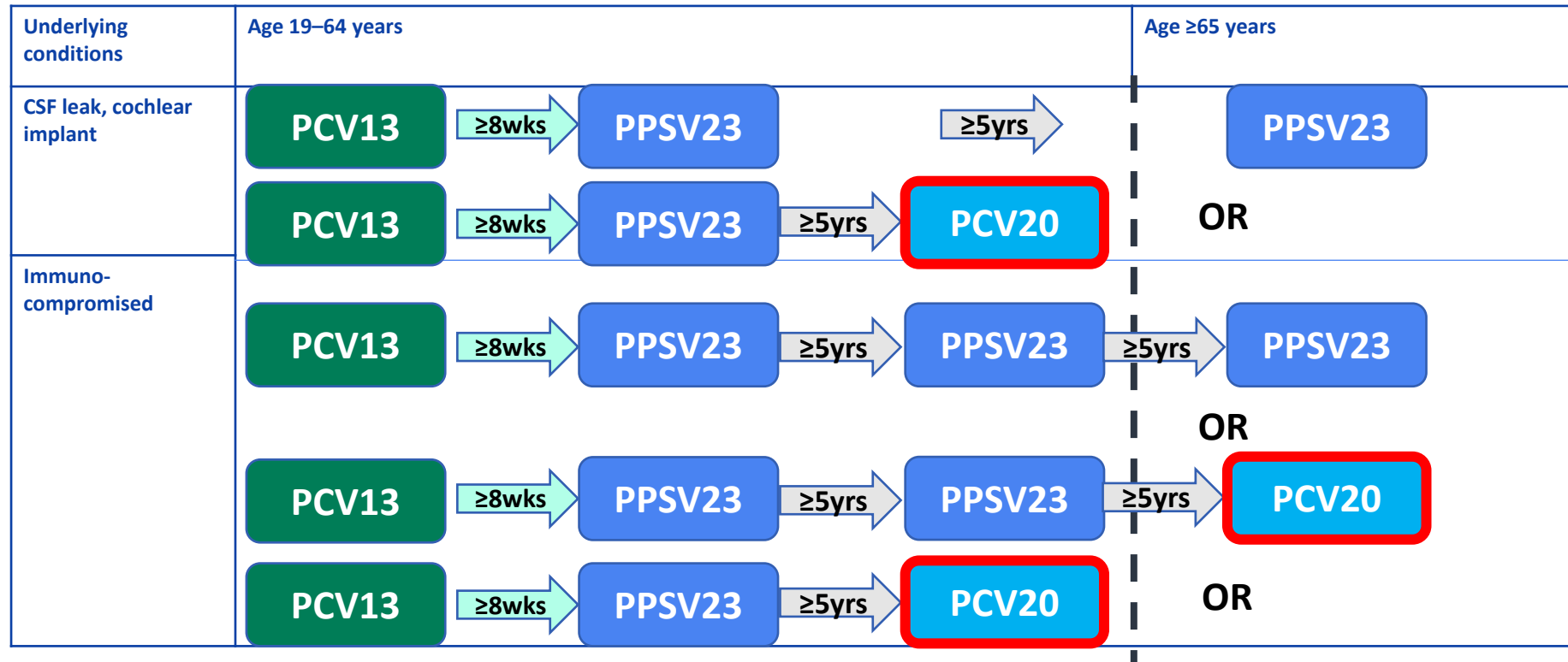
PCV15 (+PPSV23).....or PCV20 recommended (for PCV15/20 naïve persons)

Routine vaccination for ages 65 years and older

Risk-based vaccination for ages 19 through 64 years

- Cerebrospinal fluid leak
- Chronic heart disease
- Chronic kidney disease (excluding maintenance dialysis and nephrotic syndrome, which are included in immunocompromising conditions)
- Chronic liver disease
- Chronic lung disease (including moderate persistent or severe persistent asthma)
- Cochlear implant
- Diabetes mellitus
- Immunocompromising conditions
- Current cigarette smoking
- Alcoholism

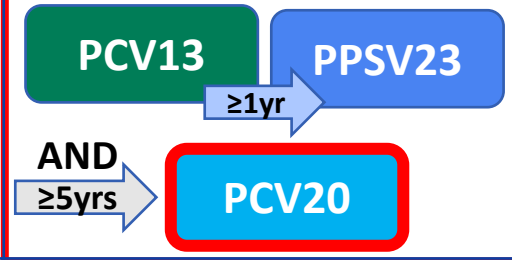


Immunocompromised adults who received PCV13+PPSV23 but have not completed their series



Adults who started the series with PCV13 but have not received PPSV23

- Healthy – if younger than 65 years – wait until age 65 years, then receive one dose of PPSV23 OR one dose of PCV20
- Chronic medical conditions that make one at risk for invasive pneumococcal disease (other than those listed below) – if younger than 65 years, 1 year interval from PCV13 – can receive either PCV20 OR PPSV23
- CSF leak or cochlear implant –either finish series with PPSV23 (number of doses depends on current age) OR one dose of PCV20
- Immunosuppressed (including functional/anatomic asplenia, hemodialysis, chronic renal failure, nephrotic syndrome) – finish series with PPSV23 (number of doses depends on current age) OR one dose of PCV20

Adults aged ≥ 65 yrs. who completed the series with PCV13+PPSV23

Underlying conditions	Age 19–64 years	Age 65 years old and older
None	PCV13 Previously not recommended	
Chronic medical conditions		
CSF leak, cochlear implant		<p>Shared clinical decision-making</p>
Immuno-compromised		

Adults 65 Years Old and Older Who Completed the Series but PPSV23 was Administered Before the 65th Birthday (REGARDLESS of When PCV13 was Administered)

- Choice of:
 - PCV20 5 years after the most recent dose of pneumococcal vaccine
 - PPSV23 5 years after the most recent dose of pneumococcal polysaccharide vaccine and one year after most recent dose of PCV13 or if immunocompromise, cochlear implant, or CSF leak 5 years after most recent dose of PPSV23 and 8 weeks after most recent dose of PCV13

Vaccines and Preventable Diseases

[Vaccines & Preventable Diseases Home](#) > [Vaccines by Disease](#) > [Pneumococcal](#) > [For Healthcare Professionals](#)



Vaccines & Preventable Diseases Home

Vaccines by Disease

Chickenpox (Varicella)	+
Dengue	+
Diphtheria	+
Flu (Influenza)	+
Hepatitis A	+
Hepatitis B	+
Hib	+
Human Papillomavirus (HPV)	+
Measles	+
Meningococcal	+
Mumps	+
Pneumococcal	-

[What Everyone Should Know](#)

[For Healthcare Professionals](#)

PneumoRecs VaxAdvisor Mobile App for Vaccine Providers

The PneumoRecs VaxAdvisor Mobile App was updated on February 9, 2022, to reflect CDC's new adult pneumococcal vaccination recommendations.

The *PneumoRecs VaxAdvisor* mobile app helps vaccination providers quickly and easily determine which pneumococcal vaccines a patient needs and when. The app incorporates recommendations for all ages so internists, family physicians, pediatricians, and pharmacists alike will find the tool beneficial.

Users simply:

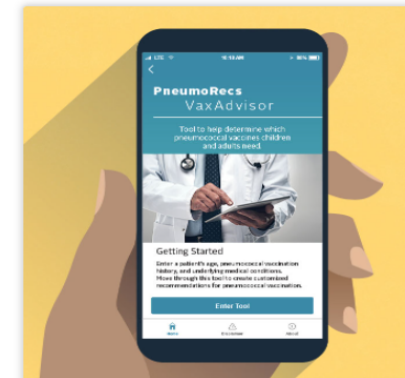
- Enter a patient's age.
- Note if the patient has specific underlying medical conditions.
- Answer questions about the patient's pneumococcal vaccination history.

Then the app provides patient-specific guidance consistent with the immunization schedule recommended by the U.S. Advisory Committee on Immunization Practices (ACIP).

Download the App Today

Download *PneumoRecs VaxAdvisor* for free:

- [iOS devices](#)



PneumoRecs VaxAdvisor is available for download on iOS and Android mobile devices.



Mpox Vaccination

Mpox Vaccination

- Jynneos – non-replicating live vaccine (Modified Vaccinia Ankara)
 - Approved for subcutaneous administration (0.5 mL)
 - Alternative route used during response – 0.1 mL intradermal
 - 2 dose series, 28 days apart

- ACAM 2000 – replication competent vaccinia virus
 - Administered with a lancet intradermally
 - 1 dose
 - Contraindicated in patients with immunosuppression, pregnancy, atopic dermatitis

- Both vaccines in Strategic National Stockpile
- Jynneos recommended on ACIP Immunization Schedule

Current Jynneos Vaccination Guidance

- 2 dose subcutaneous series, separated by 28 days, for persons 18 years old and older
- Recommended for:
 - Persons who are gay, bisexual, and other MSM, transgender or nonbinary people who in the past 6 months have had:
 - › a new diagnosis of at least 1 sexually transmitted disease
 - › more than 1 sex partner
 - › sex at a commercial sex venue
 - › sex in association with a large public event in a geographic area where mpox transmission is occurring
 - Sexual partners of persons with the risks described in above
 - Persons who anticipate experiencing any of the above

Jynneos Contraindications and/or Precautions

- Contraindication: Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component
- Precaution: Moderate acute or severe illness, with or without fever

Jynneos Coadministration

- Providers can consider a 4 week interval between Jynneos and mRNA COVID vaccines in patient populations at risk for myocarditis (particularly adolescent and young adult males).
- However, if the risk of mpox disease or severe disease due to COVID is increased, administration of mpox vaccine or COVID vaccine should not be delayed.

Polio

ACIP Recommendations 2023: Polio Vaccine

- Adults who are known or suspected to be **unvaccinated or incompletely vaccinated against polio should** complete a primary vaccination series with inactivated polio vaccine (IPV).
- Adults who have received a primary series of trivalent **oral polio vaccine (tOPV) or IPV in any combination** and who are at **increased risk** of poliovirus exposure **may receive another dose** of IPV. Available data do not indicate the need for more than a single lifetime booster dose with IPV for adults.

[Use of Inactivated Polio Vaccine Among U.S. Adults: Updated Recommendations of the Advisory Committee on Immunization Practices — United States, 2023 \(cdc.gov\)](#)

(ACIP) Meeting Recommendations



Clinical Consideration: History of Polio Vaccine

- Most adults who were born and raised in the United States can assume they were vaccinated against polio, even if they do not have written documentation of vaccination.



Updates

New Vaccine Discussed at February ACIP Meeting: Chikungunya Virus Vaccine

- **Live attenuated vaccine**
- **Recommended for persons 18 years old or older traveling to a country that has a chikungunya outbreak**
- **Also recommended for laboratory workers with potential for exposure**
- **Also recommended on the basis of shared clinical decision-making for countries without outbreaks but with a risk for chikungunya virus (evidence of human transmission within the last 5 years) if**
 - **Older than 65 years with risk of at least moderate risk of exposure to mosquitoes and underlying medical conditions**
 - **Going to stay more than 6 months**

Resources

RSV Frequently Asked Questions with Answers

The screenshot shows a web browser window displaying the CDC website. The page title is "Frequently Asked Questions About RSV Vaccine for Adults". The CDC logo is at the top left, and the navigation bar includes "Vaccines and Preventable Diseases". A search bar and a dropdown menu for "Vaccines site" are at the top right. The main content area features a sidebar with "Vaccines by Disease" and a list of diseases including Chickenpox, Dengue, Diphtheria, Flu, Hepatitis A, Hepatitis B, Hib, HPV, Measles, Meningococcal, Mumps, and Pneumococcal. The main text explains that two RSV vaccines are approved for people aged 60 and older: Arexvy (GSK) and Abrysvo (Pfizer). It also notes that CDC recommends shared clinical decision-making (SCDM) for RSV vaccination. Below the text is a list of five frequently asked questions, each with a dropdown arrow indicating an answer is available.

Frequently Asked Questions About RSV Vaccine for Adults

[Print](#)

Two Respiratory Syncytial Virus (RSV) vaccines are approved for people ages 60 years and older.

- Arexvy (GSK adjuvanted RSV vaccine)
- Abrysvo (Pfizer RSV vaccine)

CDC recommends that adults ages 60 years and older may receive RSV vaccination, using [shared clinical decision-making \(SCDM\)](#). This means that health care providers should talk to these individuals about whether RSV vaccination is appropriate for them.

Is RSV an important cause of disease among older adults? ▾

What vaccines are approved for prevention of RSV, and is there a difference between them? ▾

What does it mean to use a shared clinical decision-making (SCDM) recommendation for RSV vaccine? ▾

Which adults are most likely to benefit from RSV vaccination? ▾

COVID-19 Vaccine Clinical Considerations

[Interim Clinical Considerations for Use of COVID-19 Vaccines | CDC](https://www.cdc.gov/vaccines/covid-19/clinical-considerations/covid-19-vaccines-us.html)

The screenshot shows a web browser window displaying the CDC page for COVID-19 vaccine clinical considerations. The browser's address bar shows the URL: <https://www.cdc.gov/vaccines/covid-19/clinical-considerations/covid-19-vaccines-us.html>. The page has a left-hand navigation menu with the following items: "Use of COVID-19 Vaccines in the U.S.: Appendices", "FAQs for the Interim Clinical Considerations", "Myocarditis and Pericarditis Considerations", "Clinical Care", "Provider Requirements and Support", "Vaccine Recipient Education", "Health Departments", "Planning & Partnerships", and "6 Things to Know".

The main content area features a yellow highlighted box with the following text: "volume of the vaccine (0.25 mL) is withdrawn from the vial and administered to the recipient. Discard vial and excess volume after extracting a single dose. For additional information, see [FDA Announcement](#) and [Moderna COVID-19 Vaccine \(2023-2024 Formula\) Healthcare Provider Fact Sheet \(fda.gov\)](#)".

Below this is a light blue box titled "Summary of recent changes (last updated March 1, 2024):" containing a bulleted list: "All people ages 65 years and older should receive 1 additional dose of any updated (2023-2024 Formula) COVID-19 vaccine (i.e., Moderna, Novavax, Pfizer-BioNTech). For detailed guidance, see [Table 1](#) and [Table 2](#)." and "Updated information for reporting adverse events to VAERS following administration of a COVID-19 vaccine."

At the bottom of the main content area is a "Reference Materials" section with three links: "[COVID-19 Vaccine Product Information](#) (Updated 11/6/2023)", "[FAQs for the Interim Clinical Considerations](#) (Updated 3/4/2024)", and "[COVID-19 Vaccination Recommendations Infographic](#) (Updated 3/5/2024)".

To the right of the reference materials is a "Get Email Updates" section with the text "Receive email updates about this page." and a link "[What's this?](#)".

The Windows taskbar at the bottom shows the system tray with the time 11:51 AM and date 3/20/2024.

PneumoRecs VaxAdvisor Mobile App for Vaccine Providers | CDC (2023).

The screenshot shows the CDC website's 'Vaccines and Preventable Diseases' section. The page title is 'PneumoRecs VaxAdvisor Mobile App for Vaccine Providers'. A navigation menu on the left lists various diseases, with 'Pneumococcal' selected. The main content area features a blue information box stating that the app was updated on February 9, 2022, to reflect CDC's new adult pneumococcal vaccination recommendations. Below this, a paragraph explains that the app helps providers quickly determine which pneumococcal vaccines a patient needs. A list of users includes internists, family physicians, pediatricians, and pharmacists. A 'Users simply:' section lists three steps: entering the patient's age, noting underlying medical conditions, and answering questions about vaccination history. The text then states that the app provides patient-specific guidance consistent with the ACIP immunization schedule. A 'Download the App Today' section includes a link to download the app for free, specifically for iOS devices. On the right, there is a graphic of a hand holding a smartphone displaying the app's interface, which includes the title 'PneumoRecs VaxAdvisor' and a 'Getting Started' section with an 'Enter Tool' button. Below the graphic, it states that the app is available for download on both iOS and Android mobile devices. The top of the page includes the CDC logo, a search bar, and a 'Vaccines site' dropdown menu.

CDC Centers for Disease Control and Prevention
CDC 24/7: Saving Lives, Protecting People™

[A-Z Index](#)

Search Vaccines site

[Advanced Search](#)

Vaccines and Preventable Diseases

Vaccines & Preventable Diseases Home > Vaccines by Disease > Pneumococcal > For Healthcare Professionals

Vaccines & Preventable Diseases Home

Vaccines by Disease

- Chickenpox (Varicella) +
- Dengue +
- Diphtheria +
- Flu (Influenza) +
- Hepatitis A +
- Hepatitis B +
- Hib +
- Human Papillomavirus (HPV) +
- Measles +
- Meningococcal +
- Mumps +
- Pneumococcal** -

What Everyone Should Know

For Healthcare Professionals

PneumoRecs VaxAdvisor Mobile App for Vaccine Providers

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Users simply:

- Enter a patient's age.
- Note if the patient has specific underlying medical conditions.
- Answer questions about the patient's pneumococcal vaccination history.

Then the app provides patient-specific guidance consistent with the immunization schedule recommended by the U.S. Advisory Committee on Immunization Practices (ACIP).

Download the App Today

Download *PneumoRecs VaxAdvisor* for free:

- [iOS devices](#)

PneumoRecs VaxAdvisor

Tool to help determine which pneumococcal vaccines children and adults need

Getting Started

Enter a patient's age, pneumococcal vaccination history, and underlying medical conditions. Have the app ready to create customized recommendations for the pneumococcal vaccination.

Enter Tool

PneumoRecs VaxAdvisor is available for download on iOS and Android mobile devices.

E-mail Your Immunization Questions to Us

- NIPINFO@cdc.gov



Thank You!

For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 www.cdc.gov

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

