Adult ACIP Updates for Zoster, Hepatitis B, and Pneumococcal Vaccines

Sarah Schillie, MD, MPH, MBA
CAPT, U.S. Public Health Service

National Adult and Influenza Immunization Summit
Atlanta, GA
November 2, 2022

Disclosures

- Dr. Schillie has no financial relationship(s) with ineligible companies whose primary business is producing, marketing, selling, reselling, or distributing healthcare products used by or on patients
- Content will not include any discussion of the unlabeled use of a product or a product under investigational use
- CDC did not accept financial or in-kind support from any ineligible company for this continuing education activity
- The findings and conclusions in this presentation are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention
ACIP Zoster Recommendations: Immunocompromised Adults

- Persons with altered immunocompetence are at higher risk of zoster and related complications
- ACIP recommends 2 doses of recombinant zoster vaccine (RZV) for the prevention of herpes zoster and related complications in adults aged 19 years and older who are or will be immunodeficient or immunosuppressed because of disease or therapy

(Recommendations for adults aged 50 years and older to receive recombinant zoster vaccine are unchanged)
Safety and Efficacy of Recombinant Zoster Vaccine in Immunocompromised Adults

- Vaccine safety similar in immunocompromised and immunocompetent individuals
  - Serious adverse events related to vaccination: 0-1.6%
  - Grade 3 adverse reactions:
    - Local: 10.7-14.2%
    - Systemic: 9.9-22.3%
  - No increase in graft versus host disease in HCT recipients (one study)

- Vaccine effectiveness in immunocompromised persons:
  - Zoster: 68.2-90.5%
  - Post-herpetic neuralgia: 89%

Clinical Guidance

- When possible, patients should be vaccinated before becoming immunocompromised
  - Otherwise, providers should consider timing vaccination when the immune response is likely to be most robust (i.e., during periods of lower immunocompromise and stable disease)

- The second recombinant zoster vaccine dose should typically be administered 2-6 months after the first
  - For persons who are or will be immunocompromised and who would benefit from a shorter vaccination schedule, the second dose can be administered 1-2 months after the first
Clinical Guidance

- Persons with a history of herpes zoster (who are eligible for recombinant zoster vaccine) should receive zoster vaccine
  - Herpes zoster can recur

- People who previously received live zoster vaccine should receive recombinant zoster vaccine
  - Live zoster vaccine effectiveness wanes over time

Pregnancy and Breastfeeding

- There is currently no ACIP recommendation for zoster vaccine in pregnancy; consider delaying zoster vaccination until after pregnancy
  - No recommendation for pregnancy testing before vaccination

- Consider vaccination without regard to breastfeeding status if zoster vaccine is otherwise indicated
  - No known risk to mothers who are breastfeeding or their infants
Evidence of Immunity to Varicella (for Immunocompromised Persons)

- Evidence of immunity includes:
  - Documentation of two doses of varicella vaccine, or
  - Laboratory evidence of immunity or laboratory confirmation of disease, or
  - Diagnosis or verification of a history of varicella or herpes zoster by a healthcare provider

- Persons born in the United States prior to 1980 are considered immune to varicella
  - However, this criterion does not apply to immunocompromised persons who must meet one of the above criteria

- Note: Varicella vaccines contain live virus and are contraindicated for most immunocompromised persons

Immunocompromised Persons Who Lack Evidence of Immunity

- For immunocompromised adults with no documented history of varicella, varicella vaccination, or shingles:
  - Refer to the ACIP varicella vaccine recommendations for further guidance, including post-exposure prophylaxis
  - Consider a variety of factors, including a patient’s age (e.g., birth prior to 1980), recall (e.g., of prior varicella, varicella vaccination, or herpes zoster), documentation, and serology to determine whether to vaccinate with zoster vaccine
  - There are limited data on the use of zoster vaccine in persons without a history of varicella, with or without a history of varicella vaccination
Hepatitis B Vaccine

ACIP Hepatitis B Recommendations: Adults

- Unvaccinated adults 19–59 years of age
- Unvaccinated adults aged 60 years and older at risk for hepatitis B virus infection
- Providers should offer hepatitis B vaccination to patients aged 60 years and older, rather than wait for a patient to request vaccination
  - Shifting the responsibility of consideration of hepatitis B vaccination from the patient to the provider

(Recommendations for infants and all other persons aged less than 19 years recommended to receive hepatitis B vaccine are unchanged)

Risk Factors for Hepatitis B Virus Infection

- Sex partners of HBV-infected persons
- Sexually-active persons not in a long-term, mutually monogamous relationship
- Persons seeking evaluation for treatment of STI
- Men who have sex with men
- Persons who use injection drugs
- Household contacts of persons with HBV
- Persons with diabetes
- Persons at risk for occupational exposure to HBV
- Residents and staff of facilities for developmentally disabled persons
- Dialysis patients, including those on predialysis
- Persons with HCV infection
- Persons with chronic liver disease
- Travelers to countries where HBV is endemic
- Persons with HIV
- Persons who are incarcerated

CDC, National Notifiable Diseases Surveillance System
2018 Hepatitis B Vaccine Coverage (≥3 doses) among Adults Aged ≥19 Years

Lu et al. MMWR Surveill Summ 2021;70:1–26. Surveillance of Vaccination Coverage Among Adult Populations — United States, 2018

Adult Hepatitis B Vaccines

<table>
<thead>
<tr>
<th>Composition</th>
<th>Engerix-B</th>
<th>Recombivax HB</th>
<th>Heplisav-B</th>
<th>PreHevbio</th>
<th>Twinrix*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recombinant HBsAg</td>
<td>Recombinant HBsAg</td>
<td>Novel Adjuvanted Recombinant HBsAg</td>
<td>3 Antigen Recombinant HBsAg</td>
<td>HepA/HepB Combination Vaccine</td>
<td></td>
</tr>
<tr>
<td>Schedule</td>
<td>3 doses, 0, 1, 6 mo</td>
<td>3 doses, 0, 1, 6 mo</td>
<td>2 doses, 0, 1 mo</td>
<td>3 doses, 0, 1, 6 mo</td>
<td>3 doses, 0, 1, 6 mo</td>
</tr>
<tr>
<td>Route</td>
<td>IM</td>
<td>IM</td>
<td>IM</td>
<td>IM</td>
<td>IM</td>
</tr>
</tbody>
</table>

*Contains Engerix-B for the HepB component
**Pregnancy**

- Until safety data are available for PreHevbrio and Heplisav-B, providers should vaccinate pregnant people needing hepatitis B vaccine with either:
  - Engerix-B
  - Recombivax HB
  - Twinrix

---

**Prevaccination Testing**

- Testing for immunity or infection prior to vaccination not necessary for most persons
- Testing for hepatitis B virus infection is recommended for some persons
  - Prevaccination testing might reduce costs by avoiding vaccinating immune persons

---

Weng M et al. Universal Hepatitis B Vaccination in Adults Aged 19–59 Years: Updated Recommendations of the Advisory Committee on Immunization Practices — United States, 2022. MMWR Morb Mortal Wkly Rep 2022;71:477–483. DOI: [http://dx.doi.org/10.15585/mmwr.mm7113a1](http://dx.doi.org/10.15585/mmwr.mm7113a1)
Prevaccination Testing

- Most persons who have completed a hepatitis B vaccination series in the past* or who have a history of hepatitis B virus infection should not receive additional hepatitis B vaccine doses
  - Although additional vaccine doses are not harmful

*Exceptions exist (e.g., hemodialysis patients, healthcare personnel)


Persons Recommended for Testing for Hepatitis B Virus Infection

- Household, sex, and needle-sharing contacts of HBsAg-positive persons
- HIV-positive persons
- Persons with elevated liver enzymes of unknown etiology
- Hemodialysis patients
- Men who have sex with men
- Injection drug users
- Persons born in countries of high and intermediate hepatitis B virus (HBV) endemicity (HBsAg prevalence ≥2%)
- U.S.-born persons not vaccinated as infants whose parents were born in countries with high HBV endemicity (≥8%)
- Persons needing immunosuppressive therapy, including chemotherapy, immunosuppression related to organ transplantation, and immunosuppression for rheumatologic or gastroenterologic disorders
- Donors of blood, plasma, organs, tissues, or semen

**Prevaccination Testing**

- Administer vaccine immediately after collection of blood for testing (same visit)
- Lack of access to testing should not be a barrier to vaccination
  - Testing is not a requirement for vaccination
- In settings where testing is not feasible, vaccination of persons recommended to receive the vaccine should continue
- Serologic testing consists of testing for:
  - Hepatitis B surface antigen (HBsAg)
  - Antibody to hepatitis B core antigen (anti-HBc)
  - Antibody to hepatitis B surface antigen (anti-HBs)


**Proposed Recommendations for Hepatitis B Screening**

- Universal, one-time hepatitis B screening for adults aged 18 years and older
- Expansion of the list of persons recommended to receive risk-based hepatitis B screening to include:
  - Persons with current or history of sexually transmitted infection
  - Currently or formerly incarcerated persons
  - Persons with HCV infection
- Availability of hepatitis B testing for anyone who requests is, regardless of disclosure of risk
  - May be reluctant to disclose stigmatizing risks
- Periodic testing for all susceptible persons with ongoing risk for exposure(s) will continue per current recommendations

Weng M et al. Universal Hepatitis B Vaccination in Adults Aged 19–59 Years: Updated Recommendations of the Advisory Committee on Immunization Practices — United States, 2022. MMWR Morb Mortal Wkly Rep 2022;71:477–483. DOI: [http://dx.doi.org/10.15585/mmwr.mm7113a1](http://dx.doi.org/10.15585/mmwr.mm7113a1)
Pneumococcal Virus

- **1983**: 23-valent polysaccharide vaccine licensed (PPSV23)
- **2010**: 13-valent polysaccharide conjugate vaccine licensed (PCV13)
- **2021**: 20-valent polysaccharide conjugate vaccine licensed (PCV20) – PREVNAR20 (adults only)
- **2021**: 15-valent polysaccharide conjugate vaccine licensed (PCV15) – VAXNEUVANCE
Two Recently Licensed Pneumococcal Conjugate Vaccines

- 23-valent polysaccharide vaccine licensed (PPSV23) – Pneumovax23®
- 13-valent polysaccharide conjugate vaccine licensed (PCV13) – Prevnar13®
- 15-valent polysaccharide conjugate vaccine licensed (PCV15) – Vaxneuvance™
- 20-valent polysaccharide conjugate vaccine licensed (PCV20) – Prevnar20™ (adults only)

Pneumococcal Conjugate vs. Polysaccharide Vaccines

<table>
<thead>
<tr>
<th></th>
<th>PCV</th>
<th>PPSV23</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic vaccine composition</td>
<td>Capsular polysaccharides conjugated to carrier protein</td>
<td>Capsular polysaccharide antigens</td>
</tr>
<tr>
<td>Mechanism of action</td>
<td>T-cell dependent</td>
<td>T-cell independent</td>
</tr>
<tr>
<td>Memory B cell production</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Reduce pneumococcal carriage</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

Adapted from slide prepared by M. Kobayashi
ACIP Pneumococcal Recommendations: Adults With No Previous Pneumococcal Vaccination

- Adults aged 65 years and older who have not previously received any pneumococcal vaccine or whose previous vaccination history is unknown should receive a pneumococcal conjugate vaccine (either PCV20 or PCV15)
  - If PCV15 is used, this should be followed by a dose of PPSV23
- Adults aged 19 through 64 years with certain underlying medical conditions or other risk factors who have not previously received any pneumococcal vaccine or whose previous vaccination history is unknown should receive a pneumococcal conjugate vaccine (either PCV20 or PCV15)
  - If PCV15 is used, this should be followed by a dose of PPSV23


Underlying Medical Conditions or Other Risk Factors

- Alcoholism
- Chronic heart/liver/lung disease
- Chronic renal failure
- Cigarette smoking
- Cochlear implant
- Congenital or acquired asplenia
- CSF leak
- Diabetes mellitus
- Generalized malignancy
- Human immunodeficiency virus
- Hodgkin disease
- Immunodeficiency
- Iatrogenic immunosuppression
- Leukemia, lymphoma, multiple myeloma
- Nephrotic syndrome
- Sickle cell disease or other hemoglobinopathies
- Solid organ transplant
**Spacing**

- When PCV15 is used, the recommended interval between administration of PCV15 and PPSV23 is ≥1 year
- To minimize the risk for invasive pneumococcal disease caused by serotypes unique to PPSV23, a minimum interval of 8 weeks can be considered for adults with:
  - An immunocompromising condition
  - Cochlear implant
  - Cerebrospinal fluid leak


---

**Adults with Previous PPSV23 Only**

- May receive one dose of PCV20 or PCV15 ≥1 year after their last PPSV23 dose
- When PCV15 is used, no need to be followed by another dose of PPSV23
- **October 2022 ACIP updates**: Adults who have only received PPSV23 will be recommended to receive a dose of either PCV20 or PCV15 ≥1 year after their last PPSV23 dose

Adults with Previous PCV13

- Previously recommended to complete the series with PPSV23
- **October 2022 ACIP updates:**
  - Adults who have not completed the recommended series: PCV20 an option to PPSV23 to complete the series
  - Adults aged 65 years and older who completed the series with both PCV13 and PPSV23: Shared clinical decision-making for a dose of PCV20

These, and additional updates to clarify the current recommendations, are expected to be published in an MMWR report in the future and presented during an upcoming call

Acknowledgements

- **CDC, Division of Viral Diseases**
  - Kathleen Dooling, MD, MPH
  - CDR Tara Anderson, DVM, MPH, PhD
- **CDC, Division of Viral Hepatitis**
  - CDR Laura Cooley, MD, MPHTM
  - LCDR Mark Weng, MD, MSc
  - Erin Conners, PhD, MPH
- **CDC, Division of Bacterial Diseases**
  - Miwako Kobayashi, MD, MPH