Long-Term Care Updates

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Vaccine recommendations: what's new?

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Introduction

Vaccinations markedly decrease the burden of certain infectious diseases and are responsible for preventing nearly 2.5 million deaths annually.[1-2] The Centers for Disease Control and Prevention (CDC) update recommendations for vaccination use every year based on guidance from the Advisory Committee on Immunization Practices (ACIP). ACIP is comprised of public health and medical experts that meet at least three times a year to discuss the safety and efficacy of vaccinations. There is generally a discussion of disease severity and impact. ACIP assesses vaccinations for people of different ages when determining practicality of recommending certain vaccinations.[3]

ACIP revisions are submitted to and evaluated by the CDC.[3] Recommendations are published in CDC's Morbidity and Mortality Weekly Report (MMWR) annually. This year, the published recommendations were released in the updated vaccine schedule in February.[4]

The updated vaccination schedule includes recommendations that impact the geriatric population and patients residing in long term care facilities. This includes changes to pneumococcal, shingles and hepatitis B vaccination schedules.

Pneumococcal

What is pneumococcal disease?

Pneumococcal infections are caused by the bacterium *Streptococcus pneumoniae.* This bacterium can cause pneumonia, otitis media, sinusitis, meningitis, and bacteremia upon infection.[5] Pneumococcal vaccines help prevent illnesses caused by the bacterium *Streptococcus pneumoniae.* Vaccinations also aid in lowering severity of disease.[6]

Currently, there are three conjugate and one polysaccharide pneumococcal vaccinations available in the United States. These vaccines not only differ in how they are made, but also the serotypes they cover as shown in Table 1 on the next page.[8] Pneumococcal conjugate vaccines are made by linking a polysaccharide antigen to a protein molecule which produces lasting immunity to the polysaccharide antigen. PCV13, PCV15, and PCV20 are the three subtypes of available pneumococcal conjugate vaccines. Pneumococcal polysaccharide vaccines contain a polysaccharide antigen only. PPSV23 is the only available pneumococcal polysaccharide vaccine.[7]

Table 1. Comparison of serotypes in pneumococcal vaccines[8]

PCV13 (Prevnar 13)	PCV15 (Vaxneuvance)	PCV20 (Prevnar 20)	PPSV23 (Pneumovax 23)
1	1	1	1
–	–	–	2
3	3	3	3
4	4	4	4
5	5	5	5
6A	6A	6A	6A
6B	6B	6B	6B
7F	7F	7F	7F
–	–	8	8
–	–	–	9N
9V	9V	9V	9V
–	–	10A	10A
–	–	11A	11A
–	–	12A	12A
14	14	14	14
–	–	15B	15B
–	–	–	17F
18C	18C	18C	18C
19A	19A	19A	19A
19F	19F	19F	19F
–	–	–	20
–	–	22F	22F
23F	23F	23F	23F
–	33F	33F	33F

Recommendations:

PCV13 is given as a routine vaccination to children under the age of 2. It is recommended that all adults 65 years or older receive a pneumococcal conjugate vaccine (PCV15 or PCV20) if they have never received a conjugate vaccine or if vaccine history is unknown. If PCV15 is used, it should be followed by a dose of PPSV23 one year later. If a patient has an immunocompromising condition, cochlear implant(s), or a history of cerebrospinal fluid leak and has received a PCV15, a shorter interval of 8 weeks before PPSV23 is given can be considered. The minimum interval between PCV15 and PPSV23 is 8 weeks. If PCV20 is used, a dose of PPSV23 is not needed one year later.[9]

CDC also recommends that patients ages 19-64 with certain medical conditions or risk factors receive the pneumococcal vaccination. These conditions are summarized in Table 2. It is recommended to give one dose of PCV15 or PCV20 to these individuals. If PCV15 is given, PPSV23 should be given one year later. If a patient has received PPSV23, a dose of PCV15 or PCV20 should be given a year later.[9]

The potential additional health benefits of providing PCV15 or PCV20 to adults who have received PCV13 only or both PCV13 and PPSV23 have yet not been studied.[9]

Table 2. Medical conditions or risk factors for receiving pneumococcal vaccine(s)[9]

Condition or risk factor
· Alcoholism · Cerebrospinal fluid leak · Chronic heart disease (CHF and cardiomyopathies) · Chronic liver disease · Chronic lung disease (COPD, emphysema, and asthma) · Chronic renal failure · Cigarette smoking · Cochlear implant(s) · Congenital/acquired asplenia · B or T-lymphocyte deficiency · Complement deficiency (especially C1, C2, C3, or C4 deficiency) · Phagocytic disorder (minus chronic granulomatous disease) · Diabetes mellitus · Malignancy · HIV · Hodgkin's disease · Iatrogenic immunosuppression (long-term systemic corticosteroids and radiation therapy) · Leukemia · Lymphoma · Multiple myeloma · Nephrotic syndrome · Sickle cell disease/hemoglobinopathies · Solid organ transplant

Shingles

What is Shingles?

Shingles, also known as *herpes zoster*, is an infection that is caused by the reactivation of a latent virus, varicella-zoster. It is the same virus that causes chickenpox. After an individual recovers from chickenpox, the virus can lay dormant within the body for years. Reactivation of the virus causes the infection known as shingles. Common signs and symptoms include blister-like sores which can be itchy and painful. These blisters typically appear unilaterally on the face, neck, shoulder, or rib region.[10] Individuals may experience postherpetic neuralgia that lasts months to years after resolution of an active shingles infection.[11]

Recommendations:

The recombinant zoster vaccine (RZV) was approved by the FDA in 2017 for the prevention of *herpes zoster* in individuals aged 50 years and older.[12] The vaccination is comprised of two doses of 0.5 mL each administered intramuscularly two to six months apart.

Previously, RZV was recommended for the prevention of herpes zoster in immunocompetent adults aged ≥50 years.[13] However, there has been unmet need with RVZ in immunocompromised adults. It has been recognized that those who are immunocompromised may be susceptible to a higher incidence of infection and experience more complications to *herpes zoster*. In the late fall of 2021, ACIP updated its recommendation for RZV as a preventative measure in individuals ≥18 years with immunodeficiency or immunosuppression due to a known cause.[6] Current recommendations for shingles vaccination are shown in Table 3. There is currently no recommendation by the CDC for shingles vaccination in pregnancy.[14]

Table 3. Recommendations for shingles vaccination[14]

Criteria	Dosing regimen	Comments
Age ≥ 50 years OR Age ≥18 years at increased risk due to immunodeficiency or immunosuppression*	RZV (2 doses) 0.5mL IM, 2-6 months apart	*<u>*Immunocompromising conditions include*</u>: Chronic heart disease Chronic lung disease Cirrhosis Diabetes mellitus Cerebrospinal fluid leak Cochlear implant Current cigarette smoking Alcohol use disorder Sickle cell disease History of invasive pneumonia

<u>Hepatitis B</u>

What is Hepatitis B?

Hepatitis is described as the inflammation of the liver. Inflammation of the liver may occur due to numerous factors, including a viral etiology. It is estimated that 296 million individuals are living with hepatitis B and approximately 1.5 million new infections occur annually worldwide.[15] This virus may initially present as an acute infection over a period of weeks to months. The acute phase may be symptomatic or asymptomatic and some individuals are able to recover without treatment. Symptoms may include lack of appetite, fatigue, muscle or joint pain, dark urine, or jaundice.[16] An acute hepatitis B infection can progress into a chronic condition that renders health complications such as cirrhosis or hepatic cancer.

Recommendations:

Hepatitis B can be prevented by receiving a full series of hepatitis B vaccinations. There are four different hepatitis vaccinations available in the United States. Depending on age and product, an individual may receive a two, three, or four dose series with one of the four vaccinations. Infants are typically vaccinated at birth and complete the hepatitis B series by 18 months of age. Recently, hepatitis B recommendations have expanded from a risk-based approach to a more universal approach. This change includes a recommendation for all adults 19 to 59 years and adults 60 years or older with risk factors for hepatitis B. Adults age 60 or older without known risk factor for hepatitis B may receive vaccination, as well.[17]

Heplisav-B is a recombinant, adjuvanted vaccine indicated for the prevention of hepatitis B. It is a two-dose series of 0.5 mL intramuscularly with at least four weeks between doses.[18] Engerix-B and Recombivax HB are also recombinant vaccines.[19,20] Twinrix is unique in that it is indicated for active immunization against disease caused by hepatitis A virus and infection by hepatitis B.[21] Table 4 outlines the recommendations for the different hepatitis B vaccines.

Table 4. Recommendations for hepatitis B vaccination in adults[18-21]

Vaccine	Age Group / Condition	Dosage	*Risk Factors
Engerix-B	≤19 yrs (3 doses)	0.5 mL	*Sexual Exposure* Sexually active with multiple partners Sexually active with a partner who has a positive HBsAg Patient seeking treatment for STDs Men who have sex with other men *Exposure to blood* Recent or current injection drug use Household contact with those who test positive for HBsAg Health care personnel with risk for exposure to blood or bodily fluids Those receiving dialysis Those with diabetes *Others* Traveling to countries with high prevalence People with hepatitis C infection People with chronic liver disease People with HIV infection
	≥20 yrs (3 doses)	1 mL	
	Persons receiving dialysis (4 doses)	2 mL	
Recombivax HB	≤19 yrs (3 doses)	0.5 mL	
	11 - 15 yrs (2 or 3 doses)	2 dose series: 1 mL 3 dose series: 0.5 mL	
	≥20 yrs (3 doses)	1 mL	
	Persons receiving dialysis (3 doses)	1 mL	
Heplisav-B	≥18 yrs (2 doses)	0.5 mL	
Twinrix	≥18 yrs (3 or 4 doses)	1 mL	

Conclusion

The schedule for the use of vaccines in standard practice is updated annually to reflect the most current guidance. The 2022 immunization schedule for adults aged ≥19 years of age includes changes and updates to the pneumococcal, shingles and hepatitis B vaccinations.[3] Because vaccine specific changes may occur throughout the year, it is suggested to check respective ACIP vaccine recommendations to ensure best practices. Pharmacists can provide a valuable role in promoting, supporting, and administering vaccinations. Screening patients for vaccines, making recommendations, and counseling are among the important contributions pharmacists make to positively impact public health.[22]

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