Although disease-prevention benefits of vaccinations are well established, barriers result in a low prevalence of adult immunization.\(^1\) The US National Vaccine Advisory Committee (NVAC) updated vaccine recommendations in 2013 and cited barriers to adult vaccination: lack of patient and professional knowledge about the need for vaccination; lack of priority for preventive services; concerns regarding costs, insurance coverage, and reimbursement; and care by multiple professionals, thus complicating coordination of care. Vaccination opportunities at the time of healthcare professional visits improve compliance.

The NVAC advises that healthcare professionals not only educate themselves and their patients about current vaccine recommendations but also that they include an immunization needs assessment in every clinical encounter. In 2020, a national vaccine plan was developed, coordinating goals and priorities for immunization. With the advent of the coronavirus pandemic and the role of vaccine to prevent COVID-19, these goals and strategies are even more important to lay the framework for a robust immunization effort in the general population.\(^2\)

**Hepatitis A and B vaccines.** Hepatitis A and hepatitis B are associated with significant morbidity and mortality. Chronic hepatitis, related to hepatitis B, can lead to increased risk of cirrhosis and hepatoma. Multiple vaccines are available. The Advisory Committee on Immunization Practices (ACIP) recommends routine hepatitis A vaccination for unvaccinated adults with risk factors, including illicit-drug users, persons with chronic liver disease, and travelers to countries with intermediate or high rates of hepatitis A. Hepatitis B vaccination is recommended for adults with more than one sex partner in the previous 6 months, healthcare personnel, patients with end-stage renal disease, and adults seen in sexually transmitted infection and HIV testing and treatment facilities. There is universal hepatitis B vaccine for all infants and children since the 1990s in both the United States and Canada. Use of hepatitis A is opportunistic, based on risk. Currently there is no evidence for a booster dose in healthy people because immune memory is long-lasting.
Human papillomavirus vaccine. The human papillomavirus virus (HPV) is associated with cervical, vulvar, and vaginal cancers in women; penile cancer in men; and anal and oropharyngeal cancer in men and women. Three HPV vaccines are currently approved in the United States and Canada for routine vaccination: bivalent, quadrivalent (HPV4), and 9-valent (HPV9). These vaccines protect against HPV types 16 and 18 that account for 70% of cervical cancers. The 9-valent targets five additional strains that account for an additional 15% of cervical cancers. Types 6 and 11 in HPV4 and HPV9 target genital warts. Vaccination is now recommended for women and men aged up to 26 years, including men who have sex with men and immunocompromised patients. In Canada, the National Advisory Committee on Immunizations (NACI) recommends HPV vaccination for at-risk women and men aged older than 26 years, with no upper age limit, although Health Canada has approved the vaccine only up to age 45 years.

The recommendation is slightly different in the United States because the US Centers for Disease Control and Prevention (CDC) recommends vaccine for men and women aged up to 26 years. For those aged older than 26 years, the CDC does not recommend catch-up HPV vaccination for all adults but does recommend shared clinical decision-making regarding HPV vaccination for adults aged 27 through 45 years. HPV vaccines are not licensed for use in adults aged older than 45 years. Clinicians practicing in the United States do encounter unvaccinated women aged older than 26 years who request immunization, may be deemed to be at risk or high risk, and may choose the protection of being vaccinated. In these cases, it is reasonable to offer the vaccine. The product monograph in the United States for the HPV9 vaccine includes the indication for prevention of oropharyngeal and other head and neck cancers caused by the types 16, 18, 31, 33, 45, 52, and 58 in both men and women.

Influenza vaccine. Annual influenza vaccine is recommended for all persons aged older than 6 months but is especially important for healthcare workers and adults who are older or immunocompromised or who have chronic medical conditions. The vaccine components change regularly to reflect circulating strains of the influenza virus. Several vaccines are available, including inactivated quadrivalent and trivalent, inactivated trivalent high dose, and live attenuated quadrivalent. Ideally, in the northern hemisphere, adults should be vaccinated by October of each year, but unvaccinated adults should continue to be vaccinated throughout the flu season, most typically through March. Recombinant influenza vaccine does not contain any egg protein and can be safely administered to persons with an egg allergy. The high-dose vaccine, offered to those aged 65 years and older, has four-fold the amount of antigen and has been associated with lower hospitalization rates compared with the standard-dose vaccine.

Pneumococcal vaccine. Streptococcus pneumonia remains a leading infectious cause of serious illness in adults and is responsible for 500,000 cases of pneumococcal pneumonia annually. The 23-valent pneumococcal polysaccharide vaccine (PPV23) is recommended by ACIP for all adults aged older than 65 years and younger immunocompromised adults. In 2011, a new 13-valent pneumococcal conjugate vaccine (PCV13) was approved by FDA for adults aged 50 years and older. In 2014, ACIP recommended routine vaccination of all adults aged older than 65 years and adults aged younger than 65 years at risk for invasive pneumococcal disease. However, in 2019, ACIP stated PCV13 vaccination is no longer routinely recommended for all adults aged 65 years and older. Instead, shared clinical decision-making for PCV13 use is recommended for persons aged 65 years and older who are not at high risk. Shared clinical decision-making considerations may include risk for exposure to PCV13 serotypes and the risk for pneumococcal disease as a result of underlying medical conditions.
**Herpes zoster vaccines.** The incidence of herpes zoster (shingles) increases with age, and the incidence of postherpetic neuralgia, interference with daily activities, and hospitalizations increases with age as well. To prevent herpes zoster, FDA and NACI has approved two vaccines for use in people aged older than 50 years. These are a live attenuated virus vaccine (LZV; Zostavax), which has been on the market since 2011, and the newer recombinant vaccine (RZV; Shingrix) that came to market in 2017. Zostavax is no longer available in the United States but is available in Canada. ACIP advises that adults aged older than 50 years should be immunized with RZV regardless of shingles history and regardless of whether they were previously immunized with the LZV vaccine. The study of RZV conducted in older adults revealed excellent efficacy of more than 97% in all age groups. For this reason, this vaccine is the vaccine of choice. The NACI, with the Canadian recommendations, states that both vaccines are acceptable; however, RZV has longer-lasting efficacy, is more cost-effective, and does not have the same contraindications as LZV, being live virus.

**Tetanus and Tdap vaccines.** A one-time dose of tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis vaccine (Tdap) booster is recommended for adults who have not previously received Tdap. This should be followed by a booster of Td or Tdap every 10 years. In 2001, FDA expanded the age indication for Tdap to include those aged older than 65 years. Tdap may be given regardless of the interval since the last tetanus or diphtheria-toxoid vaccine. A single dose of Tdap is recommended for healthcare professionals with direct patient-care contact who have not received the vaccine as an adult and for persons aged older than 65 years who have or anticipate close contact with an infant aged younger than 1 year to reduce transmission of pertussis (eg, adults who have recently become grandparents).

**Pearl.** The most important factor determining acceptance of immunization by patients is professional recommendation. Therefore, making appropriate immunization recommendations during the clinical visit is an important responsibility of all healthcare professionals.

**References**


**Disclosures**

Dr. Brown reports Speaker for GSK, Merck, Pfizer; Creating vaccine modules for MDBriefcase, STA, The Rounds, Meducom.

This *Practice Pearl*, developed by the author, provides practical information on current controversial topics of clinical interest. It is not an official position of The North American Menopause Society (NAMS). Clinicians must always take into consideration the individual patient along with any new data published since the publication of this *Pearl*. The *Practice Pearl* series is coordinated by the NAMS *Practice Pearl* Task Force, led by Dr. Ekta Kapoor, and approved by the NAMS Board of Trustees.

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