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Adult Immunization Update

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Immunization guidelines for adults are routinely updated, and primary care clinicians should be aware of the most current immunization recommendations. Within the past 2 years, 2 new vaccines were approved by the US Food and Drug Administration (FDA) for adults. These include Shingrix, a herpes zoster vaccine containing a specific protein subunit of the virus (recombinant glycoprotein E) with a novel adjuvant (an added substance that enhances or prolongs the immunologic response), and Heplisav-B, a single-antigen recombinant hepatitis B vaccine with a novel adjuvant. The eTable in the Supplement details the Advisory Committee on Immunization Practices (ACIP) 2019 immunization schedule for adults by age group.[1]

Supplemental content

Routine annual influenza vaccine is recommended for all persons aged 6 months or older without contraindication, such as severe allergy to a prior dose or to a component of the vaccine.[2] The appropriateness of the influenza vaccine for patients who developed Guillain-Barré syndrome within 6 weeks of influenza vaccination should be decided on a case-by-case basis. Trivalent formulations of the influenza vaccine protect against H1N1 and H3N2 influenza A strains and 1 influenza B strain. Quadrivalent vaccines protect against a second influenza B strain. For persons aged 65 years or older, the Fluzone high dose (4 times the standard dose antigen) and the Fluad adjuvanted trivalent formulations have been found to be more effective than standard dose trivalent formulations.[3]

The quadrivalent intranasal vaccine was not recommended from 2015-2018 due to suboptimal efficacy against H1N1 strains. This vaccine was reformulated for the 2018-2019 influenza season and was recommended for healthy adults up to the age of 50 years. The intranasal vaccine avoids an injection, which may be preferable for young, healthy children. The ACIP does not recommend one formulation over another. Severe egg allergy, including anaphylaxis, is no longer a contraindication to any influenza vaccine. However, for persons aged 18 years or older who are allergic to eggs and decline the vaccine, Flublok, a quadrivalent recombinant formulation with no egg protein, is an alternative.

The ACIP currently recommends the tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis (Tdap) vaccine for adults once in their lifetime. There is no minimum time interval between doses of tetanus toxoid, reduced diphtheria toxoid (Td) and Tdap. Pregnant women should receive Tdap during 27-36 weeks' gestation of each pregnancy, which provides passive immunization to each infant. On January 4, 2019, the FDA approved repeat dosing (≥8 years after the first vaccine) of Tdap (Adacel) in persons aged 10 to 64 years due to the phenomenon of waning immunity following Tdap vaccination. However, the ACIP has not yet made recommendations for repeat dosing in adults.

One-third of adults will develop herpes zoster in their lifetime. Shingrix, a new recombinant herpes zoster vaccine approved by the FDA on October 20, 2017, is more efficacious than the older live-attenuated Zostavax (efficacy of >90% vs 51%, respectively). The ACIP recommends Shingrix over Zostavax for all immunocompetent persons, for those with chronic medical conditions (eg, chronic kidney disease, diabetes, chronic lung disease), and for persons aged 50 years or older receiving low-dose immunosuppressive therapy (at 0 months and at 2-6 months), including those who previously received Zostavax (at ≥2 months after dose) or had a prior episode of shingles.[4] A recent study showed Shingrix reduced the incidence of herpes zoster in adults who had undergone autologous hematologic stem cell transplantation.[5] Testing for varicella zoster antibody prior to vaccination is not recommended.

Gardasil 9 is the only available human papillomavirus (HPV) vaccine and offers protection against 9 serotypes of HPV. The HPV vaccination is recommended for females and males aged 11 to 12 years.[6] At the June 2019 meeting, the ACIP voted to make recommendations for males and females the same and now recommends vaccination through aged 26 years for all persons who were not previously vaccinated. On October 5, 2018, the FDA expanded Gardasil 9 approval to males and females aged 9 to 45 years and the ACIP recently voted to recommend HPV vaccination for persons aged 27 to 45 years through shared decision-making between the patient and the physician.

In 2014, the ACIP recommended 1 dose of pneumococcal 13-valent conjugate vaccine (PCV13; Prevnar 13) for those aged 65 years or older. However, childhood vaccinations against PCV13 have reduced PCV13-type disease and in June 2019 the ACIP voted to recommend PCV13 based on shared clinical decision-making in those aged 65 years or older who are not immunocompromised. Younger adults at increased risk of invasive pneumococcal disease should continue receiving a single dose of PCV13, including people with an immunocompromising condition (such as HIV, congenital or acquired immunodeficiency, chronic kidney failure or nephrotic syndrome, malignancy, iatrogenic immunosuppression, or transplant recipient), cerebrospinal fluid leak, or cochlear implant.

Pneumococcal 13-valent conjugate vaccine should be administered before the pneumococcal polysaccharide vaccine (PPSV23 [protects against 23 types of pneumococcal bacteria]; Pneumovax 23) whenever possible because higher antibody responses are achieved against serotypes common to both vaccines when given in this order. All persons aged 65 years or older should continue to receive a dose of PPSV23.

For high-risk persons, PPSV23 can be given 8 weeks or longer after PCV13, but the interval should be 12 months or longer for immunocompetent adults aged 65 years or older. If PPSV23 is administered first, wait 12 months before administering PCV13.[7] The ACIP has clarified that a maximum of 3 doses of PPSV23 are recommended for high-risk persons, which includes immunocompromised persons and those with functional or anatomic asplenia.

The first booster dose is given 5 years or longer after the initial dose and 1 more dose is given if the second dose occurred before the person reached aged 65 years.

In 2018, the ACIP added homelessness to the list of indications for routine hepatitis A vaccine due to multiple outbreaks in this population.[8] In 2017, the recombinant hepatitis B vaccine (HBV), Heplisav-B, was approved by the FDA for adults aged 18 years or older.[9] It is a combination of HBV surface antigen (HBsAg; 20 µg) and Dynavax's proprietary TLR9 agonist (a synthetic cytidine-phosphate-guanosine oligonucleotide, CpG 1018 adjuvant) and was designed to stimulate a directed immune response to HBsAg. It is administered as a 2-dose series at 0 month and at 1 month. Currently, the ACIP does not endorse one hepatitis B vaccine over another; however, Heplisav-B requires only 2 doses and evidence suggests it is more immunogenic.

There are 2 meningococcal vaccines categorized by the serogroups they protect against. Menactra and Menveo are interchangeable conjugated serogroup A, C, W, Y meningococcal vaccines (MenACWY) and Bexsero and Trumenba are noninterchangeable serogroup B meningococcal vaccines (MenB) approved by the FDA for persons aged 10 to 25 years.[10] A MenACWY vaccine is routinely recommended for all adolescents aged 11 to 12 years with a booster at aged 16 years, military recruits, first-year college students residing in residence halls, travelers to endemic areas, and those with HIV infection. The MenACWY and MenB vaccines are both recommended for microbiologists who are exposed to isolates of *Neisseria meningitidis* or who work with *N meningitidis*, people with terminal complement component deficiencies (including use of eculizumab, which is associated with an 1000-2000 times increased incidence of meningococcal disease), and for persons with functional or anatomic asplenia.[10]

Immunocompromised persons should receive a 2-dose primary series of MenACWY separated by 8 weeks or longer. Those at ongoing risk (ie, people with asplenia, terminal complement component deficiencies, microbiologists who are exposed to isolates of *N meningitidis* or who work with *N meningitidis*, and at-risk individuals with HIV) should receive MenACWY booster doses every 5 years. In addition, adolescents and young adults aged 16 to 23 years may choose to receive the MenB vaccine. The risk of serogroup B meningococcal disease among college students was 3.5-times higher than among noncollege students. The ACIP voted in June 2019 to recommend a MenB booster 1 year after the initial series and subsequently every 2 to 3 years for microbiologists, and for those with complement deficiency or asplenia. Both MenACWY and MenB vaccines help control outbreaks.

Immunizations continue to prevent significant morbidity and mortality, and clinicians remain the most important influence on patients' decisions to receive vaccines.

ARTICLE INFORMATION

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