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Immunization update: Latest recommendations from the CDC

Provisional recommendations for the varicella zoster vaccine, plus pertussis, hepatitis B, HPV, and rotavirus

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How effective is the new varicella zoster virus vaccine and when should adults receive it?

Who should recieve the new Tdap vaccine?

The answers to these and other immunization-related questions are addressed by the Centers for Disease Control and Prevention (CDC) in a number of recently-issued immunization recommendations. Here, by vaccine, is a quick review of these recommendations. (Several were reviewed in a previous Practice Alert.[1]) **TABLE 1** contains a summary of recent new recommendations. The CDC Web site (www.cdc.gov) is also a valuable and readily available resource for all vaccine-related questions and will have the latest child and adult vaccine schedules.

Varicella zoster (provisional)

The Advisory Committee on Immunization Practices (ACIP) has recommended that adults who are 60 years of age and older receive a single dose of live attenuated varicella zoster virus vaccine (Zostavax), even if they report a past episode of herpes zoster. This vaccine prevents herpes zoster and postherpetic neuralgia; it is 65% effective at ages 60 to 69 years, 41% effective at ages 70 to 79, but only 18% effective at age 80 and above. Complete prescribing information can be found on the manufacturer's Web site (www.merck.com/product/usa/pi_circulars/z/zostavax/zostavax_pi.pdf).

Contraindications to the vaccine include a prior anaphylactic reaction to gelatin or neomycin, immune deficiency states, immune suppressive therapy (including high-dose corticosteroids), active tuberculosis, and pregnancy. Other contraindications include daily use of topical or inhaled corticosteroids, low-dose oral corticosteroids, and moderate to severe illness.

Varicella vaccine in kids

Two doses of varicella vaccine are now recommended for all children, at ages 12 to 15 months and 4 to 6 years. A combination vaccine (ProQuad) containing mumps, measles, rubella, and varicella (MMRV) is now available for ages 12 months through 12 years and should reduce the total number of injections children will need.

A catch-up second dose of varicella vaccine is recommended for children, adolescents, and adults who have received only 1 dose. The vaccine is contraindicated during pregnancy, and pregnant women should be assessed for varicella immunity and provided 2 doses of vaccine postpartum if they are nonimmune. The interval between the first and second does of varicella vaccine should be

IN THIS ARTICLE

TABLE 1

Recent immunization recommendations

INFANTS AND CHILDREN

- Universal routine hepatitis A vaccine between age 1–2 years with 2 doses 6 months apart
- Universal routine rotavirus vaccine 2, 4, and 6 months
- Two-dose varicella series

ADOLESCENTS

- Tdap at age 11–12
- Tdap at age 13–18 if the last Td was administered >5 years previously and no previous DTaP was administered
- HPV vaccine at age 11–12, 3 doses, women only
- Catch-up varicella

ADULTS

- Tdap to replace the next scheduled Td booster, one time only
- Tdap as single dose for adults caring for children age <6 months
- Tdap for health care workers
- HPV vaccine for women to age 26, 3 doses
- Varicella vaccine catch-up (those born after 1980 and no proof of immunity)
- Varicella zoster vaccine for those age 60 years and above

PREGNANCY

- Screen for varicella immunity in those without proof of immunity. Immunize postpartum those nonimmune
- Tdap either during preconception period or immediately postpartum, if no Tdap was previously received.

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Avoid storing Tdap near DTaP as these products are easily confused

at least 3 months in those under age 13 years, and 4 to 8 weeks in those older.

Those who have immunity to varicella and do not need vaccination include those born in the US before 1980; those with previous varicella infection or herpes zoster, diagnosed by a healthcare provider; or anyone with laboratory evidence of immunity.

With the addition of all the new varicella vaccine products, it is important not to confuse them. Varicella zoster vaccine is licensed only for adults age 60 and above; combination MMRV vaccine is licensed for ages 12 months through 12 years but should not be used in children with HIV infection. Single-antigen varicella vaccine can be used in HIV-infected children if their CD4 T-lymphocyte count is less than 15%. For more complete information on the use of varicella vaccine in HIV-infected children, see the CDC's Web site at www.cdc.gov/mmwr/PDF/rr/rr4806.pdf.

Pertussis

A new tool is now available to assist in controlling pertussis: the tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis vaccine (Tdap). Two products are available: one licensed for use among patients ages 11 to 64 (Adacel) and one for patients between the ages of 10 and 18 (Boostrix).

Recommendations for the prevention of tetanus, diphtheria, and pertussis using Tdap were published by the CDC in December 2005.[2] A single dose of Tdap is now recommended for preadolescents (ages 11 to 12) and for all adults (ages 19 to 64) who have not received Tdap previously, to replace the next scheduled dose of Td. Adults who have, or expect to have, close contact with infants should receive a Tdap dose before the next scheduled Td, if they have not received Tdap previously. A 2-year interval from the last Td is suggested but a shorter interval is acceptable.

Pregnant women should receive the vaccine preconception or postpartum but the CDC does not recommend administering the vaccine during pregnancy. All health care workers who have exposure to patients should receive Tdap as soon as feasible. Once again, less than a 2-year interval from the last Td is acceptable.

Contraindications to Tdap include allergy to any vaccine component and encephalopathy (coma or prolonged seizures) within 7 days of receiving a pertussis-containing vaccine. The vaccine should be used with caution in anyone who has suffered Guillain-Barré syndrome less than 6 weeks after receiving a vaccine containing tetanus toxoid. The vaccine should be deferred with moderate to severe illness and should not be administered less than 10 years from the last Td if an Arthus reaction has occurred following a Td vaccine.

TABLE 2 contains information on tetanus prophylaxis in wound management.[2] If a vaccine containing tetanus toxoid is recommended, Tdap is preferred if the patient has not received one previously.

TABLE 2

Tetanus prophylaxis in wound management (ages 19–64 years)

HISTORY OF ADSORBED TETANUS TOXOID	CLEAN, MINOR WOUND		ALL OTHER WOUNDS*	
	TDAP OR TD†	TIG	TDAP OR TD†	TIG
Unknown or <3	Yes	No	Yes	Yes
≥3	No‡	No	No**	No

*Such as, but not limited to, wounds contaminated with dirt, feces, soil, and saliva; puncture wounds; avulsions; and wounds resulting from missiles, crushing, burns, and frosbite.

† Tdap is preferred to TD for adults who have never received Tdap. Td is preferred to tetanus toxoid (TT) for adults who received Tdap previously or when Tdap is not available. If TT and tetanus immunoglobulin (TIG) are both used, tetanus toxoid adsorbed rather than tetanus toxoid for booster use only (fluid vaccine) should be used.

‡ Yes, if ≥10 yeas since the last tetanus toxoid-containing vaccine dose.

** Yes, if ≥5 years since the last tetanus toxoid-containing vaccine dose.

Source: CDC, *MMWR Recomm Rep* 2005.[2]

One word of caution: Avoid storing Tdap near DTaP, which is licensed for children through age 6. These products are easily confused.

Hepatitis A

Hepatitis A vaccine is now recommended for all children between the ages of 1 to 2 years, using 2 doses given 6 months apart. This recommendation was reviewed in a previous Practice Alert.[1]

Hepatitis B virus

The CDC continues to recommend risk-based immunization against hepatitis B virus (HBV) in adults.[3] The new recommendations state that:

- Universal HBV vaccine should be provided for all adults (who have not previously received it) at health care settings with high-risk populations, including STD clinics, HIV testing and treatment facilities, drug abuse treatment settings, health care facilities providing care to IV drug users and men who have sex with men, and correctional facilities.
- At other health care facilities, all patients should be informed about the risks of hepatitis B infection and who should be vaccinated, and HBV vaccine should be provided to all those at risk and all those requesting the vaccine.

Rotavirus gastroenteritis

To combat this significant cause of morbidity and mortality among infants and children, the CDC now recommends that a new live, oral vaccine that contains 5 reassortant rotaviruses (RotaTeq) be given as a routine childhood vaccine.[4] The vaccine should be administered during infancy at age 2, 4, and 6 months. The first dose should be between weeks 6 and 12, the next 2 spaced 4 to 10 weeks apart. All 3 doses should be received before the age of 32 weeks.

Rotavirus vaccine is 74% effective in preventing all rotavirus gastroenteritis and 98% effective in preventing severe rotavirus gastroenteritis.[4] It is contraindicated in those who have had a severe allergic reaction to the vaccine and should be used with caution in children with altered immunocompetence, acute gastroenteritis, and moderate-to-severe illness. Even though it's a modified live virus, it can be used in infants even if someone in the household is pregnant or immune-deficient.

Human papilloma virus

The quadrivalent human papilloma virus (HPV) vaccine was licensed by the US Food and Drug Administration (FDA) in June 2006; the CDC released its recommendations for its use in March 2007.[5] The vaccine should be administered

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To learn more about the quadrivalent human papilloma virus (HPV) vaccine, see the March 2007 issue of *JFP*

TABLE 3

Cancers associated with HPV—US, 2003

CANCER	CASES	% ATTRIBUTABLE TO ONCOGENIC HPV
Cervix*	11,820	100
Anus†	4187	90
Vulva†	3507	40
Vagina†	1070	40
Penis†	1059	40
Oral cavity/pharynx†	29,627	≤12

*A total of 70% of these cancers are attributable to HPV types 16 or 18.

† Majority of these cancers are attributable to HPV type 16.

Sources: US Cancer Statistics Working Group. *United States Cancer Statistics: 2003. Incidence and Mortality.* Altanta, Ga: US Department of Health and Human Services, CDC, and the National Cancer Institute; 2006; Parkin M. The global health burden of infection-associated cancers in the year 2002. *Int J Cancer* 2006; 118:3030–3044.

FAST TRACK

Since the vaccine doesn't protect from all HPV subtypes, Pap smear testing is still needed

routinely to all girls aged 11 to 12 and can be started as early as age 9. The vaccine should also be given to women ages 13 to 26 who have not previously received the vaccine.

HPV is responsible for over 6 million new infections per year, although only a small proportion of these infections involve types that pose high risk for cervical cancer.[5,6] The virus is associated with cervical cancer, genital warts, anal cancer, and possibly oral and pharyngeal cancer. **TABLE 3** shows the number of each type of cancer that occurs in the US each year and the proportion attributed to HPV. There are over 11,000 new cases of cervical cancer and 3700 deaths from the disease each year.[7,8]

The HPV vaccine is produced in yeast using recombinant DNA technology and contains virus-like products of 4 HPV subtypes (6, 11, 16, and 18) that are responsible for between 60% and 80% of cervical cancers in the US. It prevents persistent HPV infection, genital warts, and cervical, vaginal and vulvar precancerous lesions due to the 4 subtypes contained. Since the vaccine does not completely protect from cervical cancer, Pap smear testing is still recommended after vaccination.

The vaccine is administered intramuscularly in 3 doses at months 0, 2, and 6. The minimum interval between doses 1 and 2 is 4 weeks and between doses 2 and 3, 12 weeks. It is contraindicated in those with allergies to yeast and other vaccine components. It can be coadministered with other vaccines but should be deferred for moderate to severe illness. The most common side effects are pain, swelling, and redness at the injection site; fever occurs at a rate slightly above placebo. The vaccine has not been tested for safety for use in pregnancy, but inadvertent administration during pregnancy has not led to any documented adverse effects. ■

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