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(Content current as of February 25)

VACCINATE ADULTS!

from the Immunization Action Coalition — www.immunize.org

What's In This Issue

Multi-State Measles Outbreaks Continue to Spread: These Resources Can Help You

The U.S. is experiencing a large multi-state measles outbreak linked to Disney theme parks in California. Three other unrelated measles outbreaks are also occurring in Illinois, Nevada, and Washington. From January 1–February 27, the U.S. measles outbreaks have grown to include 170 people in 17 states and Washington, DC, according to the Centers for Disease Control and Prevention (CDC). According to the CDC, the majority of the people who contracted measles were unvaccinated. Please refer to the following information and resources as we all work together to help stop the spread of measles during this multi-state outbreak. In addition, this issue of Vaccinate Adults features several "Ask the Experts" Q&As about measles and MMR vaccine (see pages 1, 21).

CDC Guidance for Healthcare Providers (HCP)

- Be vigilant about measles.
- Ensure all patients are up to date on measles-mumps-rubella (MMR) vaccine.
- Suspect measles in patients presenting with febrile rash illness and clinically compatible measles symptoms (cough, coryza, and conjunctivitis).
- Ask patients about their recent travel history, as well as a history of exposure to measles in their community.
- Promptly isolate patients with suspected measles to avoid disease transmission and immediately report the suspect measles case to the health department.
- Obtain specimens for testing from patients with suspected measles, including viral specimens for genotyping, which can help determine the source of the virus; contact your local or state health department with questions about submitting specimens for testing.

Resources About Measles for HCP

- Healthcare provider guidance from CDC: www.cdc.gov/measles/hcp/index.html
- Updates on the U.S. measles cases and outbreak: www.cdc.gov/measles/cases-outbreaks.html
- Ask the Experts: Measles, Mumps, and Rubella: www.immunize.org/askexperts/experts_mmr.asp
- Measles images from IAC's Image Library: www.immunize.org/photos/measles-photos.asp

Measles Outbreak… *continued on page 5* ▶

Ask the Experts

The Immunization Action Coalition extends thanks to our experts, medical officer Andrew T. Kroger, MD, MPH, and nurse educator Donna L. Weaver, RN, MN, both with the National Center for Immunization and Respiratory Diseases at the Centers for Disease Control and Prevention (CDC).

MMR vaccine

What are the signs and symptoms healthcare providers should look for in diagnosing measles?

Healthcare providers should suspect measles in patients with a febrile rash illness and the clinically compatible symptoms of cough, coryza (runny nose), and/or conjunctivitis (red, watery eyes). A clinical case of measles is defined as an illness characterized by

- a generalized rash lasting 3 or more days, and
- a temperature of 101°F or higher (38.3°C or higher), and
- cough, coryza, and/or conjunctivitis.

Koplik spots, a rash present on mucous membranes, are considered pathognomonic for measles. Koplik spots occur from 1–2 days before the measles rash appears to 1–2 days afterward. They appear as punctate blue-white spots on the bright red background of the buccal mucosa (inside lining of cheek).

Providers should be especially aware of the possibility of measles in people with fever and rash who have recently traveled abroad, who have had contact with international travelers, or who have visited or had contact with someone who has visited an area affected by the current measles outbreak (such as Disneyland in California).

Providers should immediately isolate and report suspected measles cases to their local health department and obtain specimens for measles testing, including viral specimens for confirmation and genotyping. Providers should also collect blood for serologic testing during the first clinical encounter with a person who has suspected or probable measles.

How long does it take to show signs of measles after being exposed?

There is an average of 10–12 days from exposure to a person infected with measles virus to the appearance of the first symptom, which is usually fever. The measles rash doesn't usually appear until approximately 14 days after exposure, 2–4 days after the fever begins.

Has ACIP made any new recommendations for use of MMR vaccine (Merck) because of the current multi-state outbreak of measles?

No. Existing recommendations for use of MMR are still applicable. The most current recommendations were published in June 2013 and are available at www.cdc.gov/mmwr/pdf/rr/rr6204.pdf.

Ask the Experts… *continued on page 21* ▶

Vaccinate Adults!

online at www.immunize.org/va

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IAC publishes a free email news service *(IAC Express)* and two free periodicals *(Vaccinate Adults* and *Needle Tips)*. To subscribe, go to www.immunize.org/subscribe.

IAC, a 501(c)(3) charitable organization, publishes practical immunization information for health professionals to help increase immunization rates and prevent disease.

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IAC maintains strict editorial independence in its publications.

Vaccine Information Statements in Up to 40 Languages Are Ready for Your Use at www.immunize.org/vis

If you provide vaccination services for people who don't speak or read English, the Immunization Action Coalition (IAC) is the "go-to" place for translations of Vaccine Information Statements (VISs). For more than 15 years, IAC has made VIS translations available on immunize.org. In 2011, IAC entered into a cooperative agreement with the Centers for Disease Control and Prevention (CDC) to establish IAC's role as the official source of VIS translations.

For the 18 languages listed below, IAC has up-to-date VIS translations for all routinely recommended vaccines. You can download all translations in a particular language from the links listed below:

- **Arabic:** www.immunize.org/vis/vis_arabic.asp
- **Armenian:** www.immunize.org/vis/vis_armenian.asp
- **Burmese:** www.immunize.org/vis/vis_burmese.asp
- **Cambodian (Khmer):** www.immunize.org/vis/vis_cambodian.asp
- **Chinese, Simplified:** www.immunize.org/vis/vis_chinese.asp
- **Chinese (Traditional):** www.immunize.org/vis/vis_chinese.asp
- **English:** www.immunize.org/vis/vis_english.asp
- **Farsi:** www.immunize.org/vis/vis_farsi.asp
- **French (European):** www.immunize.org/vis/vis_french.asp
- **Haitian Creole:** www.immunize.org/vis/vis_haitian_creole.asp
- **Hmong:** www.immunize.org/vis/vis_hmong.asp
- **Korean:** www.immunize.org/vis/vis_korean.asp
- **Portuguese (Brazil):** www.immunize.org/vis/vis_portuguese.asp
- **Russian:** www.immunize.org/vis/vis_russian.asp
- **Somali:** www.immunize.org/vis/vis_somali.asp
- **Spanish (Mexican):** www.immunize.org/vis/vis_spanish.asp
- **Spanish RTF (reduced formatting for electronic systems that cannot accept PDFs):** www.immunize.org/vis/vis_spanish.asp
- **Tagalog:** www.immunize.org/vis/vis_tagalog.asp
- **Vietnamese:** www.immunize.org/vis/vis_vietnamese.asp

▸ For VISs in other languages, visit www.immunize.org/vis/?f=9.

To find out when new or revised VIS translations are posted on immunize.org, subscribe to IAC's weekly e-newsletter, *IAC Express*, at www.immunize.org/subscribe.

Հարբուխի դեմ Պատվաստանյութ

Vacuna contra la influenza

인플루엔자 백신

Vaksen kont Influenza

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Thanks to IAC's Partners Who Provide Translations

Many of the VISs available on immunize.org are donated to IAC by generous partners who we count on to provide translation services every time new or updated VISs are released by CDC.

We are deeply grateful to the following organizations and individuals for their time and dedication to providing VIS translations:

Arkansas Department of Health; Asian Pacific Health Care Venture, Los Angeles, CA; California Department of Public Health; Centers for Disease Control and Prevention, National Center for Immunization and Respiratory Diseases; DSMA Ethiopian Orthodox Church, Minneapolis, MN; Family Medicine Health Center, Refugee Screening Clinic, Boise, ID; Hawaii Department of Health; Healthy Roads Media, Falcon Heights, MN; Mustafa Kozanolgu, MD, Toronto, Canada; Massachusetts Department of Health and Human Services; Minnesota Department of Health; New York City Department of Health and Mental Hygiene; St. Peter's Health Partners, Albany, NY; Don Shuwarger, MD, FACOP, MBA, Alamogordo, NM; Swedish Medical Center, Seattle, WA; and Wentworth Douglass Hospital, Dover, NH.

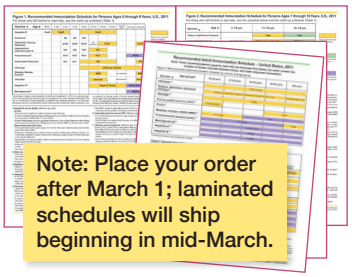
Would you like to donate translations for IAC?

If you are interested in becoming a translation partner of IAC, please visit www.immunize.org/translate.asp to find out details about how it works. Contact us at translations@immunize.org, if you would like additional information.

Subscribe to *IAC Express*, the Immunization Action Coalition's e-news and information service at www.immunize.org/subscribe

2015 Laminated adult and child immunization schedules Order one of each for every exam room

Here are the ACIP/AAP/AAFP-approved immunization schedule for people ages 0 through 18 years (8-sided) and the ACIP/AAFP/ACOG/ACNM-approved schedule for adults (6-sided). Both are laminated and washable for heavy-duty use, complete with essential footnotes, and printed in color for easy reading. The cost is $7.50 for each schedule and only $5.50 each for five or more copies.



Note: Place your order after March 1; laminated schedules will ship beginning in mid-March.

To order, visit www.immunize.org/shop, or use the order form on page 22.
For 20 or more copies, contact us for discount pricing: admininfo@immunize.org

Wallet-sized immunization record cards for all ages: For adults, for children & teens, and for a lifetime!

Now you can give any patient a permanent vaccination record card designed specifically for their age group: adult, child & teen, or lifetime. These brightly colored cards are printed on durable rip, smudge-, and water-proof paper. To view the cards or for more details, go to www.immunize.org/shop and click on the images.

Buy 1 box (250 cards) for $45 (first order of a 250-card box comes with a 30-day, money-back guarantee). Discounts for larger orders: 2 boxes $40 each; 3 boxes $37.50 each; 4 boxes $34.50 each

To order, visit www.immunize.org/shop, or use the order form on page 22.
To receive sample cards, contact us: admininfo@immunize.org

"Immunization Techniques – Best Practices with Infants, Children, and Adults"

The California Department of Public Health, Immunization Branch, updated its award-winning training video, "Immunization Techniques: Best Practices with Infants, Children, and Adults." The 25-minute DVD can be used to train new employees and to refresh the skills of experienced staff on administering injectable, oral, and nasal-spray vaccines to children, teens, and adults. Make sure your healthcare setting has the 2010 edition!

The cost is $17 each for 1–9 copies; $10.25 each for 10–24 copies; $7 each for 25–49 copies; $5.75 each for 50–99 copies.

To order, visit www.immunize.org/shop, or use the order form on page 22.
For 100 or more copies, contact us for discount pricing: admininfo@immunize.org

For healthcare settings in California, contact your local health department immunization program for a free copy.

Vaccine Highlights

Recommendations, schedules, and more

Editor's note: The information in Vaccine Highlights is current as of February 25, 2015.

Next ACIP meetings

The Advisory Committee on Immunization Practices (ACIP) is comprised of 15 national experts who advise CDC on the appropriate use of vaccines. ACIP meets three times a year in Atlanta; meetings are open to the public and available online via live webcast. The next meetings will be held on June 24–25 and October 21–22. For more information, visit www.cdc.gov/vaccines/acip. ACIP periodically issues recommendations on the use of vaccines; they are published and readily available in the *Morbidity and Mortality Weekly Report* (*MMWR*). Clinicians who vaccinate should have a current set for reference. Here are sources:

- Download from IAC's website: www.immunize.org/acip
- Download from CDC's website: www.cdc.gov/vaccines/hcp/acip-recs

In addition, extensive information on ACIP meetings is available at www.cdc.gov/vaccines/acip/meetings/meetings-info.html.

CDC immunization schedules

Each year, CDC's Advisory Committee on Immunization Practices (ACIP) publishes U.S. immunization schedules for children/teens and adults to reflect current recommendations for licensed vaccines.

FOR ADULTS

On February 3, CDC published "Recommended Immunization Schedule for Adults Aged 19 Years or Older–U.S., 2015" online at www.cdc.gov/vaccines/schedules/downloads/adult/adult-combined-schedule.pdf. The February 6 issue of *MMWR* included an article summarizing the changes that appear in the 2015 adult recommendations. The article is available at www.cdc.gov/mmwr/pdf/wk/mm6404.pdf, pages 91–92. CDC publishes several versions of the adult immunization schedules in a variety of formats. They are available at www.cdc.gov/vaccines/schedules/hcp/adult.html.

FOR CHILDREN AND TEENS

On January 26, CDC released the "Recommended Immunization Schedules for Persons Aged 0 Through 18 Years, U.S., 2015" online at www.cdc.gov/vaccines/schedules/downloads/child/0-18yrs-child-combined-schedule.pdf. The February 6 issue of *MMWR* included an article summarizing the changes made in the 2015 recommendations. It is available at www.cdc.gov/mmwr/pdf/wk/mm6404.pdf, pages 93–94. CDC publishes the child/teen immunization schedules in a variety of formats, which are posted at www.cdc.gov/vaccines/schedules/hcp/child-adolescent.html.

Measles news

The U.S. is currently experiencing a large multi-state measles outbreak. From January 1–February 27, CDC reported 170 cases of measles in 17 states and Washington, DC. Most of these cases (125 cases [74%]) are part of a large, ongoing multi-state outbreak linked to Disney theme parks in California; three other unrelated measles outbreaks are also occurring in Illinois, Nevada, and Washington.

On February 13, CDC published "Measles Outbreak—California, December 2014–February 2015" in an *MMWR Early Release* at www.cdc.gov/mmwr/pdf/wk/mm64e0213.pdf.

On January 23, the CDC Health Alert Network (HAN) issued a CDC Health Advisory titled "U.S. Multi-state Measles Outbreak, December 2014–January 2015." Access this health alert at http://emergency.cdc.gov/han/han00376.asp.

Influenza news

On December 3, 2014, the CDC's HAN issued a CDC Health Advisory titled "CDC Health Advisory Regarding the Potential for Circulation of Drifted Influenza A (H3N2) Viruses." Access this health alert at http://emergency.cdc.gov/han/han00374.asp. CDC issued a related news release, "Protection from Flu Vaccination Reduced this Season," available at www.cdc.gov/media/releases/2014/p1204-flu-season.html.

FDA vaccine approval news

On January 23, the Food and Drug Administration (FDA) announced the approval of Bexsero (Novartis), the second vaccine licensed in the U.S. to prevent invasive meningococcal disease caused by *Neisseria meningitidis* serogroup B in people age 10 through 25 years. Access a related news release at www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm431370.htm.

On December 11, 2014, FDA announced the approval of a quadrivalent formulation of Fluzone Intradermal, the inactivated influenza vaccine (Sanofi Pasteur). More details are available on the FDA's website at www.fda.gov/BiologicsBloodVaccines/Vaccines/ApprovedProducts/ucm356091.htm.

On December 10, 2014, FDA announced the approval of Gardasil 9 (Merck), a human papillomavirus (HPV) 9-valent vaccine. Access a related news release at www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm426485.htm.

On October 29, 2014, FDA announced the approval of Trumenba (Pfizer), the first vaccine licensed in the U.S. to prevent invasive meningococcal disease caused by *N. meningitidis* serogroup B in people age 10 through 25 years. Additionally, FDA issued a related press release at www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm420998.htm and "Trumenba (Serogroup B Meningococcal Vaccine) Questions and Answers" at www.fda.gov/biologicsbloodvaccines/vaccines/questionsaboutvaccines/ucm421128.htm.

On October 29, 2014, FDA approved an expanded age indication for Flublok (Protein Sciences) influenza vaccine, to include adults age 50 years and older. The vaccine is now licensed for all adults age 18 years and older. Flublok is the only licensed influenza vaccine made using recombinant technology. More details are available on FDA's website at www.fda.gov/biologicsbloodvaccines/vaccines/approvedproducts/ucm335836.htm.

***Vaccine Highlights…** continued on page 5 ▶*

Immunization questions?

- Email nipinfo@cdc.gov
- Call your state health department (phone numbers at www.immunize.org/coordinators)

Vaccine Highlights…continued from page 4

Pneumococcal news

In January 2015, the Centers for Medicare and Medicaid Services (CMS) issued updated information on Medicare payment coverage for both pneumococcal vaccines, Prevnar 13 (Pfizer) and Pneumovax 23 (Merck), for adults age 65 years and older to align with new ACIP recommendations. The CMS newsletter *MLN Matters* article titled "Modifications to Medicare Part B Coverage of Pneumococcal Vaccinations" is available online at www.cms.gov/Outreach-and-Education/Medicare-Learning-Network-MLN/MLNMattersArticles/Downloads/MM9051.pdf.

Vaccine errors news

On December 4, 2014, the Institute for Safe Medication Practices (ISMP) published an article titled "Confusion Abounds! 2-year Summary of the ISMP National Vaccine Errors Reporting Program (Part 1)." Access the report at www.ismp.org/newsletters/acutecare/showarticle.aspx?id=95.

Current VIS dates

Check the dates on your supply of Vaccine Information Statements (VISs). If any are outdated, get current versions and VISs in more than 30 languages at www.immunize.org/vis.

Adenovirus	6/11/14	Meningococcal	10/14/11
Anthrax	3/10/10	Multi-vaccine	10/22/14
Chickenpox	3/13/08	PCV13	2/27/13
DTaP	5/17/07	PPSV	10/6/09
Hib	2/4/14	Polio	11/8/11
Hepatitis A	10/25/11	Rabies	10/6/09
Hepatitis B	2/2/12	Rotavirus	8/26/13
HPV-Cervarix	5/3/11	Shingles	10/6/09
HPV-Gardasil	5/17/13	Td	2/4/14
Influenza	8/19/14	Tdap	5/9/13
Japanese enceph	1/24/14	Typhoid	5/29/12
MMR	4/20/12	Yellow fever	3/30/11
MMRV	5/21/10		

For a ready-to-print version of this table for posting in your practice, go to www.immunize.org/catg.d/p2029.pdf.

Measles Outbreak…continued from page 1

- Standing Orders for Administering Measles, Mumps & Rubella Vaccine to Adults: www.immunize.org/catg.d/p3079.pdf
- MMR Vaccine Information Statements (in English and 22 languages): www.immunize.org/vis/vis_mmr.asp
- Measles Unprotected People Reports: www.immunize.org/reports/measles.asp
- "Suspect Measles and Act Fast," video from the CDC Expert Commentary series on Medscape: medscape.com/viewarticle/828508
- CDC Resources: www.cdc.gov/measles/resources/index.html

CDC Guidance for Vaccination of Travelers

People 6 months of age and older who will be traveling internationally should be protected against measles. Before any international travel:

- Infants 6 through 11 months of age should receive one dose of MMR vaccine. Infants who get one dose of MMR vaccine before their first birthday should get two more doses (one dose at 12 through 15 months of age and another dose at least 28 days later).
- Children 12 months of age and older should receive two doses of MMR vaccine, separated by at least 28 days.
- Teenagers and adults who do not have evidence of immunity against measles should get two doses of MMR vaccine separated by at least 28 days. (For more information, see www.cdc.gov/measles/hcp/index.html#immunity.)

To find more than 1,000 "Ask the Experts" Q&As answered by CDC experts, visit www.immunize.org/askexperts

To receive "Ask the Experts – Question of the Week" by email, subscribe to *IAC Express* at www.immunize.org/subscribe

Apply for IAC's Influenza Vaccination Honor Roll

Join more than 500 healthcare settings already honored!

This honor roll recognizes healthcare settings that have implemented mandatory vaccination policies for healthcare personnel (HCP).

To find the healthcare settings listed by state, visit www.immunize.org/honor-roll/influenza-mandates/honorees.asp

To read position statements supporting mandatory HCP vaccination from leading healthcare organizations and professional medical societies or to apply, visit www.immunize.org/honor-roll/influenza-mandates

Summary of Recommendations for Adult Immunization *(Age 19 years and older)*

Vaccine name and route	People for whom vaccination is recommended	Schedule for vaccination administration (any vaccine can be given with another)	Contraindications and precautions (mild illness is not a contraindication)
Influenza Inactivated Influenza vaccine (IIV*) *Give IM or ID (intradermally)* **includes recombinant influenza vaccine (RIV)* ——— Live attenuated influenza vaccine (LAIV) *Give intranasally*	For people through age 18 years, consult "Summary of Recommendations for Child/Teen Immunization" at www.immunize.org/catg.d/ p2010.pdf. • Vaccination is recommended for all adults. • LAIV (Flumist) is approved only for healthy nonpregnant people age 2–49yrs. • Adults age 18 through 64yrs may be given any intramuscular IIV product (Fluzone, Fluvirin, Afluria, Flucelvax), or the intradermal IIV product (Fluzone Intradermal), or RIV (FluBlok). • Adults age 18 through 64 yrs may be given intramuscular IIV (Afluria) via jet injector (Stratis) • Adults age 65yrs and older may be given standard-dose IIV, or high-dose IIV (Fluzone High-Dose), or RIV. **Note**: Healthcare personnel who care for severely immunocompromised persons (i.e., those who require care in a protective environment) should receive IIV rather than LAIV. For information on other contraindications and precautions to LAIV, see far right column.	• Give 1 dose every year in the fall or winter. • Begin vaccination services as soon as vaccine is available and continue until the supply is depleted. • Continue to give vaccine to unvaccinated adults throughout the influenza season (including when influenza activity is present in the community) and at other times when the risk of influenza exists. • If 2 or more of the following live virus vaccines are to be given—LAIV, MMR, Var, HZV, and/or yellow fever—they should be given on the same day. If they are not, space them by at least 28d.	**Contraindications** • Previous severe allergic reaction (e.g., anaphylaxis) to this vaccine, to any of its components, including egg protein. Adults with egg allergy of any severity may receive RIV or, adults who experience only hives with exposure to eggs may receive other IIV with additional safety precautions (i.e., observe patient for 30 minutes after receipt of vaccine for signs of a reaction). • For LAIV only: pregnancy; immunosuppression; receipt of specific antivirals (i.e., amantadine, rimantadine, zanamivir, or oseltamivir) within the previous 48hrs. Avoid use of these antiviral drugs for 14d after vaccination. **Precautions** • Moderate or severe acute illness. • History of Guillain-Barré syndrome (GBS) within 6wks following previous influenza vaccination. • For LAIV only: Chronic pulmonary (including asthma), cardiovascular (except hypertension), renal, hepatic, neurologic, hematologic, or metabolic (including diabetes) disorders; immunosuppression (including that caused by medications or HIV).
Td, Tdap (Tetanus, diphtheria, pertussis) *Give IM* Do not use tetanus toxoid (TT) in place of Tdap or Td.	For people through age 18 years, consult "Summary of Recommendations for Child/Teen Immunization" at www.immunize.org/catg.d/ p2010.pdf. • All people who lack written documentation of a primary series consisting of at least 3 doses of tetanus- and diphtheria-toxoid-containing vaccine. • A booster dose of Td or Tdap may be needed for wound management, so consult ACIP recommendations.* **For Tdap only:** • Adults who have not already received Tdap or whose Tdap history is not known. • Healthcare personnel of all ages. • Give Tdap to pregnant women during each pregnancy (preferred during 27—36 weeks' gestation), regardless of the interval since prior Td or Tdap.	• For people who are unvaccinated or behind, complete the primary Td series (spaced at 0, 1 to 2m, 6 to 12m intervals); substitute a one-time dose of Tdap for one of the doses in the series, preferably the first. • Give Td booster every 10yrs after the primary series has been completed. • Tdap should be given regardless of interval since previous Td.	**Contraindications** • Previous severe allergic reaction (e.g., anaphylaxis) to this vaccine or to any of its components. • For Tdap only, history of encephalopathy not attributable to an identifiable cause, within 7d following DTP/DTaP, or Tdap. **Precautions** • Moderate or severe acute illness. • Guillain-Barré syndrome within 6wks following previous dose of tetanus-toxoid-containing vaccine. • History of arthus reaction following a prior dose of tetanus- or diphtheria toxoid-containing vaccine (including MCV4); defer vaccination until at least 10yrs have elapsed since the last tetanus toxoid-containing vaccine. • For pertussis-containing vaccines only, progressive or unstable neurologic disorder, uncontrolled seizures, or progressive encephalopathy until a treatment regimen has been established and the condition has stabilized.

* This document was adapted from the recommendations of the Advisory Committee on Immunization Practices (ACIP). To obtain copies of these recommendations, visit CDC's website at www.cdc.gov/vaccines/hcp/ACIP-recs/index.html or visit the Immunization Action Coalition (IAC) website at www.immunize.org/acip. This table is revised periodically. Visit IAC's website at www.immunize.org/adultrules to make sure you have the most current version.

Summary of Recommendations for Adult Immunization *(Age 19 years and older)*

Vaccine name and route	People for whom vaccination is recommended	Schedule for vaccination administration (any vaccine can be given with another)	Contraindications and precautions (mild illness is not a contraindication)
MMR (Measles, mumps, rubella) *Give SC*	For people through age 18 years, consult "Summary of Recommendations for Child/Teen Immunization" at www.immunize.org/catg.d/ p2010.pdf. • People born in 1957 or later (especially those born outside the U.S.) should receive at least 1 dose of MMR if they have no laboratory evidence of immunity to each of the 3 diseases or documentation of a dose given on or after the first birthday. • People in high-risk groups, such as healthcare personnel (paid, unpaid, or volunteer), students entering college and other post–high school educational institutions, and international travelers, should receive a total of 2 doses. • People born before 1957 are usually considered immune, but evidence of immunity (serology or documented history of 2 doses of MMR) should be considered for healthcare personnel. • Women of childbearing age who do not have acceptable evidence of rubella immunity or vaccination.	• Give 1 or 2 doses (see criteria in 1st and 2nd bullets in box to left). • If dose #2 is recommended, give it no sooner than 4wks after dose #1. • If woman of childbearing-age is found to be rubella susceptible and is not pregnant, give 1 dose of MMR; if she is pregnant, the dose should be given postpartum. This includes women who have already received 1 or 2 doses of rubella-containing vaccine. • If 2 or more of the following live virus vaccines are to be given—LAIV, MMR, Var, HZV, and/or yellow fever—they should be given on the same day. If they are not, space them by at least 28d. May use as post-exposure prophylaxis if given within 3d of exposure.	**Contraindications** • Previous severe allergic reaction (e.g., anaphylaxis) to this vaccine or to any of its components. • Pregnancy or possibility of pregnancy within 4wks. • Severe immunodeficiency (e.g., hematologic and solid tumors; receiving chemotherapy; congenital immunodeficiency; long-term immunosuppressive therapy; or severely symptomatic HIV). **Note:** HIV infection is NOT a contraindication to MMR for those who are not severely immunocompromised (i.e., CD4+ T-lymphocyte counts are greater than or equal to 200 cells/μL) for 6 months.* **Precautions** • Moderate or severe acute illness. • If blood, plasma, and/or immune globulin were given in past 11m, see ACIP's *General Recommendations on Immunization** regarding time to wait before vaccinating. • History of thrombocytopenia or thrombocytopenic purpura. **Note:** If TST (tuberculosis skin test) and MMR are both needed but not given on same day, delay TST for at least 4wks after MMR.
Varicella (chickenpox) (Var) *Give SC*	For people through age 18 years, consult "Summary of Recommendations for Child/Teen Immunization" at www.immunize.org/catg.d/ p2010.pdf. • All adults without evidence of immunity. **Note:** Evidence of immunity is defined as written documentation of 2 doses of varicella vaccine; a history of varicella disease or herpes zoster (shingles) based on healthcare-provider diagnosis; laboratory evidence of immunity or confirmation of disease; and/or birth in the U.S. before 1980, with the exceptions that follow. - Healthcare personnel (HCP) born in the U.S. before 1980 who do not meet any of the criteria above should be tested or given the 2-dose vaccine series. If testing indicates they are not immune, give the 1st dose of varicella vaccine immediately. Give the 2nd dose 4–8wks later. - Pregnant women born in the U.S. before 1980 who do not meet any of the criteria above should either 1) be tested for susceptibility during pregnancy and if found susceptible, given the 1st dose of varicella vaccine postpartum before hospital discharge, or 2) not be tested for susceptibility and given the 1st dose of varicella vaccine postpartum before hospital discharge. Give the 2nd dose 4–8wks later.	• Give 2 doses. • Dose #2 is given 4—8wks after dose #1. • If dose #2 is delayed, do not repeat dose #1. Just give dose #2. • If 2 or more of the following live virus vaccines are to be given—LAIV, MMR, Var, HZV, and/or yellow fever—they should be given on the same day. If they are not, space them by at least 28d. • May use as postexposure prophylaxis if given within 5d of exposure.	**Contraindications** • Previous severe allergic reaction (e.g., anaphylaxis) anaphylactic reaction to this vaccine or to any of its components. • Pregnancy or possibility of pregnancy within 4wks. • People on long-term immunosuppressive therapy or who are immunocompromised because of malignancy and primary or acquired immunodeficiency, including HIV/AIDS (although vaccination may be considered if CD4+ T-lymphocyte counts are greater than or equal to 200 cells/µL. See *MMWR* 2007;56,RR-4). **Precautions** • Moderate or severe acute illness. • If blood, plasma, and/or immune globulin (IG or VZIG) were given in past 11m, see ACIP's *General Recommendations on Immunization** regarding time to wait before vaccinating. • Receipt of specific antivirals (i.e., acyclovir, famciclovir, or valacyclovir) 24hrs before vaccination, if possible; delay resumption of these antiviral drugs for 14d after vaccination.

Summary of Recommendations for Adult Immunization *(Age 19 years and older)*

Vaccine name and route	People for whom vaccination is recommended	Schedule for vaccination administration (any vaccine can be given with another)	Contraindications and precautions (mild illness is not a contraindication)
Hepatitis A (HepA) *Give IM* Brands may be used interchangeably.	For people through age 18 years, consult "Summary of Recommendations for Child/Teen Immunization" at www.immunize.org/catg.d/ p2010.pdf. • All adults who want to be protected from hepatitis A virus (HAV) infection and lack a specific risk factor. • People who travel or work anywhere EXCEPT the U.S., Western Europe, New Zealand, Australia, Canada, and Japan. • People with chronic liver disease; injecting and non-injecting drug users; men who have sex with men; people who receive clotting-factor concentrates; people who work with HAV in lab settings; food handlers when health authorities or private employers determine vaccination to be appropriate. • People who anticipate close personal contact with an international adoptee from a country of high or intermediate endemicity during the first 60 days following the adoptee's arrival in the U.S. • Postexposure: adults age 40yrs or younger with recent (within 2 wks) exposure to HAV, give HepA. For people older than age 40yrs with recent (within 2 wks) exposure to HAV, immune globulin is preferred over HepA vaccine.	• Give 2 doses, spaced 6–18m apart (depending on brand). • If dose #2 is delayed, do not repeat dose #1. Just give dose #2. For Twinrix (hepatitis A and B combination vaccine [GSK]) for patients age 18yrs and older only: give 3 doses on a 0, 1, 6m schedule. There must be at least 4wks between doses #1 and #2, and at least 5m between doses #2 and #3. An alternative schedule can also be used at 0, 7d, 21–30d, and a booster at 12m.	**Contraindication** Previous severe allergic reaction (e.g. anaphylaxis) to this vaccine or to any of its components. **Precautions** Moderate or severe acute illness.
Hepatitis B (HepB) *Give IM* Brands may be used interchangeably.	For people through age 18 years, consult "Summary of Recommendations for Child/Teen Immunization" at www.immunize.org/catg.d/ p2010.pdf. • All adults who want to be protected from hepatitis B virus infection and lack a specific risk factor. • Household contacts and sex partners of HBsAg-positive people; injecting drug users; sexually active people not in a long-term, mutually monogamous relationship; men who have sex with men; people with HIV; people seeking STD evaluation or treatment; hemodialysis patients and those with renal disease that may result in dialysis; diabetics younger than age 60yrs (diabetics age 60yrs and older may be vaccinated at the clinician's discretion [see ACIP recommendations*]); healthcare personnel and public safety workers who are exposed to blood; clients and staff of institutions for the developmentally disabled; inmates of long-term correctional facilities; certain international travelers; and people with chronic liver disease. **Note:** Provide serologic screening for immigrants from endemic areas. If patient is chronically infected, assure appropriate disease management. For sex partners and household contacts of HBsAg-positive people, provide serologic screening and administer initial dose of HepB vaccine at same visit.	Give 3 doses on a 0, 1, 6m schedule. • Alternative timing options for vaccination include 0, 2, 4m; 0, 1, 4m; and 0, 1, 2, 12m (Engerix brand only). • There must be at least 4wks between doses #1 and #2, and at least 8wks between doses #2 and #3. Overall, there must be at least 16wks between doses #1 and #3. • Give adults on hemodialysis or with other immunocompromising conditions 1 dose of 40 µg/mL (Recombivax HB) at 0, 1, 6m or 2 doses of 20 µg/mL (Engerix-B) given simultaneously at 0, 1, 2, 6m. • **Schedule for those who have fallen behind:** If the series is delayed between doses, DO NOT start the series over. Continue from where the schedule was interrupted.	**Contraindication** Previous severe allergic reaction (e.g. anaphylaxis) to this vaccine or to any of its components. **Precaution** Moderate or severe acute illness.

Summary of Recommendations for Adult Immunization *(Age 19 years and older)*

Vaccine name and route	People for whom vaccination is recommended	Schedule for vaccination administration (any vaccine can be given with another)	Contraindications and precautions (mild illness is not a contraindication)
Zoster (shingles) (HZV) *Give SC*	• People age 60yrs and older. **Note:** Do not test people age 60yrs or older for varicella immunity prior to zoster vaccination. Persons born in the U.S. prior to 1980 can be presumed to be immune to varicella for the purpose of zoster vaccination, regardless of their recollection of having had chickenpox.	• Give 1-time dose if unvaccinated, regardless of previous history of herpes zoster (shingles) or chickenpox. • If 2 or more of the following live virus vaccines are to be given—MMR, Var, HZV, and/or yellow fever—they should be given on the same day. If they are not, space them by at least 28d.	**Contraindications** • Previous severe allergic reaction (e.g., anaphylaxis) to any component of zoster vaccine. • Primary cellular or acquired immunodeficiency. • Pregnancy. **Precautions** • Moderate or severe acute illness. • Receipt of specific antivirals (i.e., acyclovir, famciclovir, or valacyclovir) 24hrs before vaccination, if possible; delay resumption of these antiviral drugs for 14d after vaccination.
Hib (*Haemophilus influenzae* type b) *Give IM*	For people through age 18 years, consult "Summary of Recommendations for Child/Teen Immunization" at www.immunize.org/catg.d/ p2010.pdf. • Not routinely recommended for healthy adults. • Those adults at highest risk of serious Hib disease include people who 1) have anatomic or functional asplenia, 2) are undergoing an elective splenectomy, or 3) are recipients of hematopoietic stem cell transplant (HSCT).	• Give 1 dose of any Hib conjugate vaccine to adults in categories 1 or 2 (see 2nd bullet in column to left) if no history of previous Hib vaccine. • For HSCT patients, regardless of Hib vaccination history, give 3 doses, at least 4wks apart, beginning 6–12m after transplant.	**Contraindication** Previous severe allergic reaction (e.g., anaphylaxis) to this vaccine or to any of its components. **Precautions** Moderate or severe acute illness.
Human papillomavirus (HPV) (HPV2, Cervarix) (HPV4, Gardasil) *Give IM*	For people through age 18 years, consult "Summary of Recommendations for Child/Teen Immunization" at www.immunize.org/catg.d/ p2010.pdf. • For unvaccinated females through age 26yrs: Complete a 3-dose series of HPV2 or HPV4. • For unvaccinated males through age 21yrs: Complete a 3-dose series of HPV4. • For unvaccinated males age 22 through 26yrs: Complete a 3-dose series of HPV4 for those who 1) have sex with men or 2) are immunocompromised as a result of infection (including HIV), disease, or medications, or 3) want to be protected from HPV.	• Give 3 doses on a 0, 1–2, 6m schedule. Use either HPV2 or HPV4 for women, and only HPV4 for men. • There must be at least 4wks between doses #1 and #2 and at least 12wks between doses #2 and #3. Overall, there must be at least 24wks between doses #1 and #3, and 16wks between doses #2 and #3. If possible, use the same vaccine product for all three doses.	**Contraindication** Previous severe allergic reaction (e.g., anaphylaxis) to this vaccine or to any of its components. **Precautions** • Moderate or severe acute illness. • Pregnancy.
Inactivated Polio (IPV) *Give IM or SC*	For people through age 18 years, consult "Summary of Recommendations for Child/Teen Immunization" at www.immunize.org/catg.d/ p2010.pdf. • Not routinely recommended for U.S. residents age 18yrs and older. **Note:** Adults living in the U.S. who never received or completed a primary series of polio vaccine need not be vaccinated unless they intend to travel to areas where exposure to wild-type virus is likely. Adults with documented prior vaccination can receive 1 booster dose if traveling to polio endemic areas or to areas where the risk of exposure is high.	• Refer to ACIP recommendations* regarding unique situations, schedules, and dosing information.	**Contraindication** Previous severe allergic reaction (e.g., anaphylaxis) to this vaccine or to any of its components. **Precautions** • Moderate or severe acute illness. • Pregnancy.

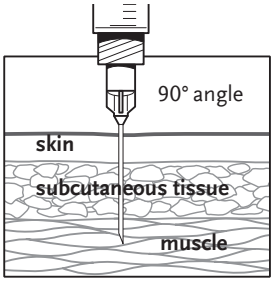
Summary of Recommendations for Adult Immunization *(Age 19 years and older)*

Vaccine name and route	People for whom vaccination is recommended	Schedule for vaccination administration (any vaccine can be given with another)	Contraindications and precautions (mild illness is not a contraindication)
Pneumococcal conjugate (PCV13) *Give IM* _____ **Pneumococcal polysaccharide** (PPSV23) *Give IM or SC*	For people through age 18 years, consult "Summary of Recommendations for Child/Teen Immunization" www.immunize.org/catg.d/ p2010.pdf. *All people age 65yrs or older should receive* • 1-time dose of PCV13 (if previously unvaccinated) and 1 dose of PPSV23. *People younger than age 65 years should receive* • 1-time dose of PCV13 and 1st dose of PPSV23 if they have functional or anatomic asplenia, immunocompromising condition (see below), CSF leaks, or are a candidate for or recipient of a cochlear implant, • 2nd dose of PPSV23 if at highest risk of serious pneumococcal infection, including those who - Have anatomic or functional asplenia, including sickle cell disease. - Have an immunocompromising condition, including HIV infection, leukemia, lymphoma, Hodgkin's disease, multiple myeloma, generalized malignancy, chronic renal failure, or nephrotic syndrome. - Are receiving immunosuppressive chemotherapy (including high-dose corticosteroids). - Have received an organ or bone marrow transplant. • PPSV23 only (not PCV13) if younger than 65 years and they have chronic cardiac or pulmonary disease (including asthma), chronic liver disease, alcoholism, diabetes, smoke cigarettes, or live in special environments or social settings (including American Indian/Alaska Natives age 50 through 64yrs if recommended by local public health authorities).	• When recommended (see column at left), give PCV13 and/or PPSV23 if unvaccinated or if previous vaccination history is unknown. • For healthy people age 65yrs and older, give PCV13 first followed by PPSV23 in 6–12m. • When both PCV13 and PPSV23 are indicated, give PCV13 first followed by PPSV23 in 6–12m. If previously vaccinated with PPSV, give PCV13 at least 12m after PPSV23. For people at highest risk of serious pneumococcal infection, if not previously vaccinated with PPSV23, give PCV13 first, followed by PPSV23 in 8wks. • Give another dose of PPSV23 to people - Age 65yrs and older if 1st dose was given prior to age 65yrs and 5yrs have elapsed since previous dose of PPSV - Age 19–64yrs who are at highest risk of pneumococcal infection or rapid antibody loss (see the 3rd bullet in the box to left for listing of people at highest risk) and 5yrs have elapsed since dose #1.	**Contraindication** Previous severe allergic reaction (e.g., anaphylaxis) to this vaccine, including (for PCV13) to any diphtheria toxoid-containing vaccine, or to any of its components. **Precaution** Moderate or severe acute illness.
Meningococcal conjugate vaccine, quadrivalent (MenACWY) Menactra, Menveo *Give IM* **Meningococcal polysaccharide vaccine** (MPSV4) Menomune *Give SC*	For people through age 18 years, consult "Summary of Recommendations for Child/Teen Immunization" at www.immunize.org/catg.d/ p2010.pdf. • People with anatomic or functional asplenia or persistent complement component deficiency. • People who travel to or reside in countries in which meningococcal disease is hyperendemic or epidemic (e.g., the "meningitis belt" of Sub-Saharan Africa). • Microbiologists routinely exposed to isolates of *N. meningitidis.* • First year college students through age 21yrs who live in residence halls; see 5th bullet in the box to the right for details.	• Give 2 initial doses of MenACWY separated by 2m to adults 55yrs and younger with risk factors listed in 1st bullet in column to left or if vaccinating adults with HIV infection in this age group. • Give 1 initial dose to all other adults with risk factors (see 2nd–4th bullets in column to left). • Give booster doses every 5yrs to adults with continuing risk (see the 1st–3rd bullets in column to left). • MenACWY is preferred over MPSV4 for people age 55yrs and younger. For people age 56yrs and older who anticipate multiple doses (see the 1st—3rd bullets in column to left) or who have received MenACWY previously, use MenACWY. For all others, give 1 dose of MPSV4. • For first year college students age 19–21yrs living in residence halls, give 1 initial dose if unvaccinated and give booster dose if most recent dose was given when younger than 16yrs.	**Contraindication** Previous severe allergic reaction (e.g., anaphylaxis) to this vaccine or to any of its components. **Precaution** Moderate or severe acute illness.

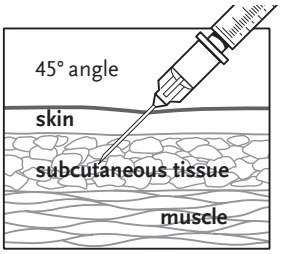
Administering Vaccines to Adults: Dose, Route, Site, and Needle Size

VACCINE	DOSE	ROUTE
Hepatitis A (HepA)	≤18 yrs: 0.5 mL ≥19 yrs: 1.0 mL	IM
Hepatitis B (HepB)	≤19 yrs: 0.5 mL ≥20 yrs: 1.0 mL	IM
HepA-HepB (Twinrix)	≥18 yrs: 1.0 mL	IM
Human papillomavirus (HPV)	0.5 mL	IM
Influenza, live attenuated (LAIV)	0.2 mL (0.1 mL into each nostril)	Intranasal spray
Influenza, inactivated (IIV) **and recombinant** (RIV)	0.5 mL	IM
Influenza (IIV) **Fluzone Intradermal, for ages 18 through 64 years**	0.1 mL	Intradermal
Measles, Mumps, Rubella (MMR)	0.5 mL	SC
Meningococcal conjugate (MCV)	0.5 mL	IM
Meningococcal polysaccharide (MPSV)	0.5 mL	SC
Pneumococcal conjugate (PCV)	0.5 mL	IM
Pneumococcal polysaccharide (PPSV)	0.5 mL	IM or SC
Tetanus, Diphtheria (Td) **with Pertussis** (Tdap)	0.5 mL	IM
Varicella (VAR)	0.5 mL	SC
Zoster (Zos)	0.65 mL	SC

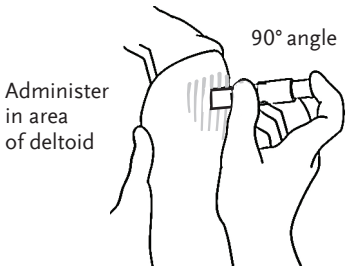
Intramuscular (IM) injection



Subcutaneous (SC) injection



Intradermal (ID) administration of Fluzone ID vaccine



Intranasal (IN) administration of Flumist (LAIV) vaccine

Injection Site and Needle Size

Subcutaneous (SC) injection – Use a 23–25 gauge, 5/8", needle. Inject in fatty tissue over triceps.

Intramuscular (IM) injection – Use a 22–25 gauge needle. Inject in deltoid muscle of arm. Choose the needle length as indicated below:

Gender/Weight	Needle Length
Male or female less than 130 lbs	5/8"*–1"
Female 130–200 lbs	1–1 1/2"
Male 130–260 lbs	
Female 200+ lbs	1 1/2"
Male 260+ lbs	

* A 5/8" needle may be used for patients weighing less than 130 lbs (<60 kg) for IM injection in the deltoid muscle **only** if the subcutaneous tissue is not bunched and the injection is made at a 90-degree angle.

NOTE: Always refer to the package insert included with each biologic for complete vaccine administration information. CDC's Advisory Committee on Immunization Practices (ACIP) recommendations for the particular vaccine should be reviewed as well. Access the ACIP recommendations at www.immunize.org/acip.

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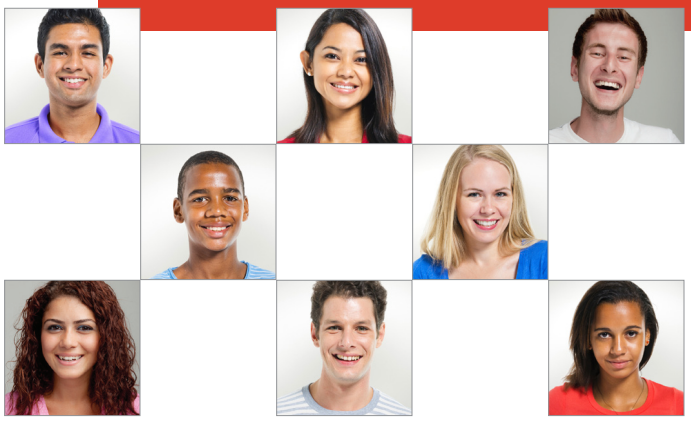
www.immunize.org/catg.d/p3084.pdf • Item #P3084 (1/15)

HPV* Vaccine

A Guide for Young Adults

* human papillomavirus



HPV is a very common virus that can lead to:

- Cancers of the mouth and throat
- Cancer of the cervix
- Cancer of the penis, vagina, vulva, or anus
- Genital warts

HPV vaccine can prevent these!

Do I really need HPV vaccine? Yes!

You should get HPV vaccine because it can prevent some types of cancer and genital warts.

Do I need it if I haven't had sex yet? Yes!

- You don't have to have sex to catch HPV, but sex increases your risk.
- You can get HPV by skin-to-skin intimate contact.
- People can get and spread HPV without knowing it.
- It's best to get vaccinated before you ever have sex.

Should I get HPV vaccine if I've already had sex? Yes!

You still need to get vaccinated even if you have had sex. The vaccine provides a lot of protection.

Why do I need 3 shots?

You need 3 HPV shots to be fully protected.

I didn't get the vaccine at age 11 or 12. Should I get it now? Yes!

HPV vaccination is recommended for people ages 9 through 26. Even though it is ideal to get HPV vaccine as a preteen, it is still highly effective in teens and young adults.

Is HPV vaccine safe? Yes!

- Millions of doses of HPV vaccine have been given without any problem.
- You may get a sore arm.
- Occasionally, a few people faint, so sit for 15 minutes after getting the vaccine.

Make sure you get all 3 HPV shots. Complete your series!

For more information on vaccines for teens and young adults, visit www.vaccineinformation.org/teens or www.vaccineinformation.org/adults

Adapted with permission from the Academic Pediatric Association

When Should I Get HPV Vaccine?

Have your healthcare provider fill in this chart about when you should be vaccinated.

VACCINE DOSE	RECOMMENDED	DATE DOSE GIVEN OR DUE
#1	For people ages 9–26 years	
#2	1–2 months after vaccine dose #1	
#3	At least 6 months after vaccine dose #1	

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Make Sure Your Patients Are Protected from Pneumococcal Disease!

The ACIP recommendations for pneumococcal vaccination are complex, so IAC has developed the following handouts for healthcare professionals to help you implement them in your practice settings.

Pneumococcal Vaccination Recommendations for Children[1] and Adults by Age and/or Risk Fac

Routine Recommendations

for Pneumococcal Conjugate Vaccine (PCV13) and Pneumococcal Polysaccharide Vaccine (PPS

For children age 2 months and older	Administer PCV13 series to all children beginning at age 2 months, followed by doses at 4 months, 6 months, and 12–15 months (booster dose).
For adults age 65 years and older	Administer 1-time dose to PCV13-naïve ad at age 65 years, followed by a dose of PPSV 6–12 months later.

Risk-based Recommendations

People with Underlying Medical Conditions or Other Risk Factors

		PCV13			PPSV23	
Risk Group	**Underlying medical condition or other risk factor**	Administer PCV13 doses needed to complete series to children through age 71 months	Administer 1 dose to PCV13-naïve children age 6 through 18 years	Administer 1 dose to PCV13-naïve adults age 19 through 64 years	Administer 1 dose of PPSV23 at age 2 through 64 years	Administer a second dose of PPSV23 5 years after first dose if age younger than 65 years
Immuno-competent	Chronic heart disease[2]	X			X	
	Chronic lung disease[3]	X			X	
	Diabetes mellitus	X			X	
	Cerebrospinal fluid leak	X	X	X	X	
	Cochlear implant	X	X	X	X	
	Alcoholism				X	
	Chronic liver disease, cirrhosis				X	
	Cigarette smoking (≥19 yrs)				X	
Functional or anatomic asplenia	Sickle cell disease/other hemoglobinopathy	X	X	X	X	X
	Congenital or acquired asplenia	X	X	X	X	X
Immuno-compromised	Congenital or acquired immunodeficiency[4]	X	X	X	X	X
	HIV	X	X	X	X	X
	Chronic renal failure	X	X	X	X	X
	Nephrotic syndrome	X	X	X	X	X
	Leukemia	X	X	X	X	X
	Lymphoma	X	X	X	X	X
	Hodgkin disease	X	X	X	X	X
	Generalized malignancy	X	X	X	X	X
	Iatrogenic immunosuppression[5]	X	X	X	X	X
	Solid organ transplant	X	X	X	X	X
	Multiple myeloma	X	X	X	X	X

1 For PCV13 vaccination of healthy children, see "Recommendations for Pneumococcal Vaccine Use in Children" at www.immunize.org/catg.d/p2016.pdf.
2 Particularly cyanotic congenital heart disease and cardiac failure in children; excluding hypertension in adults.
3 Including asthma in children if treated with high-dose oral corticosteroid therapy; including asthma in adults.
4 Includes B- (humoral) or T-lymphocyte deficiency, complement deficiencies (particularly C1, C2, C3, and C4 deficiencies), and phagocytic disorders (excluding chronic granulomatous disease).
5 Diseases requiring treatment with immunosuppressive drugs, including long-term systemic corticosteroids and radiation therapy.

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www.immunize.org/catg.d/p2019.pdf • Item #P2019 (2/15)

Pneumococcal Vaccines: Q&A CDC Answers Your Questions

For complete information on CDC's recommendations for the use of pneumococcal vaccines, go to **www.immunize.org/acip/acipvax_pneum.asp**

Experts from the National Center for Immunization and Respiratory Diseases at the Centers for Disease Control and Prevention answer your questions about pneumococcal polysaccharide (PPSV23) and pneumococcal conjugate (PCV13) vaccines.

How serious is pneumococcal disease?

Pneumococcal disease is a serious disease that causes much sickness and death.

An estimated 36,850 cases and 4,250 deaths from invasive pneumococcal diseases (IPD-bacteremia and meningitis) occurred in the United States in 2011. In 2013 an estimated 13,500 cases of IPD occurred among adults age 65 years and older. Children younger than age 5 and adults older than 65 have the highest incidence of serious disease.

Case-fatality rates are highest for pneumococcal meningitis and bacteremia, and the highest mortality occurs among the elderly and patients who have underlying medical conditions. Despite appropriate antimicrobial therapy and intensive medical care, the overall case-fatality rate for pneumococcal bacteremia is about 20% among adults. Among elderly patients, the rate may be as high as 60%.

Who is recommended to receive pneumococcal polysaccharide vaccine (PPSV23)?

PPSV23 (Pneumovax, Merck) is recommended for anyone who meets any of the criteria below:

- Age 65 years and older
- Age 2 through 64 years with any of the following conditions

1. cigarette smokers age 19 years and older
2. alcoholism
3. chronic liver disease, cirrhosis
4. chronic cardiovascular disease, excluding hypertension (e.g., congestive heart failure, cardiomyopathies)
5. chronic pulmonary disease (including COPD and emphysema, and for adults age 19 years and older, asthma)
6. diabetes mellitus
7. candidate for or recipient of cochlear implant
8. cerebrospinal fluid (CSF) leak
9. functional or anatomic asplenia (e.g., sickle cell disease, splenectomy)
10. immunocompromising conditions (e.g., HIV infection, leukemia, congenital immunodeficiency, Hodgkin's disease, lymphoma, multiple myeloma, generalized malignancy, immunosuppressive therapy)
11. solid organ transplantation; for bone marrow transplantation, see www.cdc.gov/vaccines/pubs/hemato-cell-transplts.htm
12. chronic renal failure or nephrotic syndrome

Could you briefly summarize the revaccination recommendations for PPSV23?

Children and adults younger than age 65 who are at highest risk for serious pneumococcal infection or likely to have a rapid decline in antibody levels (see categories 9 through 12 in previous answer) should get 2 doses of PPSV23 5 years apart, with a third dose after they turn age 65 (if at least 5 years have passed since the last dose). Patients with no risk factors should get 1 dose at age 65. Thus, depending on risk and age at vaccination, a person age 65 or older may have received 1, 2, or 3 doses of PPSV23.

What are the recommendations for routinely administering PCV13 to children?

Give infants a primary series of pneumococcal conjugate vaccine (PCV13, Prevnar 13, Pfizer) at age 2, 4, and 6 months. Boost at age 12 through 15 months. For catch-up vaccination, give PCV13 to healthy children through age 59 months and give PCV13 to children through age 71 months who have certain underlying medical conditions. For information on underlying medical conditions, see next question and answer.

Which underlying medical conditions indicate that an older child or teen should receive PCV13?

PCV13 vaccination is recommended for unvaccinated children age 2 through 71 months (6 years) who are in categories 4–12 in the numbered list to the left and for PCV13-naïve children age 6 through 18 years who are in categories 7–12.

Which adults are recommended to receive a dose of PCV13 vaccine?

All adults age 65 years and older should receive one dose of PCV13. In addition, adults age 19 through 64 years who have not previously received PCV13 and who have the conditions specified below should receive a PCV13 dose at the next vaccination opportunity.

- Immunocompromising conditions (e.g., congenital or acquired immunodeficiency, HIV, chronic renal failure, nephrotic syndrome, leukemia, lymphoma, Hodgkin's disease, generalized malignancy, iatrogenic immunosuppression, solid organ transplant, and multiple myeloma)
- Functional or anatomic asplenia (e.g., sickle cell disease and other hemoglobinopathies and congenital and acquired asplenia)
- Cerebrospinal fluid (CSF) leak
- Cochlear implants

What dosing intervals should be observed when giving PCV13 and PPSV23 to patients (children and adults) who are recommended to receive both vaccines?

Give PCV13 before PPSV23 if possible. For children, if the child has already received PPSV23, wait 8 weeks before giving PCV13. For persons age 65 years and older who have not previously received pneumococcal vaccine or whose pneumococcal vaccine history is unknown, give PCV13 followed by PPSV23 6–12 months later. For adults 19 through 64 years at high risk of pneumococcal disease give PCV13 followed by PPSV23 at least 8 weeks later. For adults, if the person has already received PPSV23, wait 12 months before giving PCV13.

If patients who are in a recommended risk group for PPSV23 or PCV13 aren't sure if they have already received these vaccines, should healthcare providers vaccinate them?

Yes. If patients do not have a documented vaccination history and their records are not readily obtainable, you should administer the recommended doses. Extra doses will not harm the patient.

CONTINUED ON THE NEXT PAGE ▶

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www.immunize.org/catg.d/p2015.pdf • Item #P2015 (12/14)

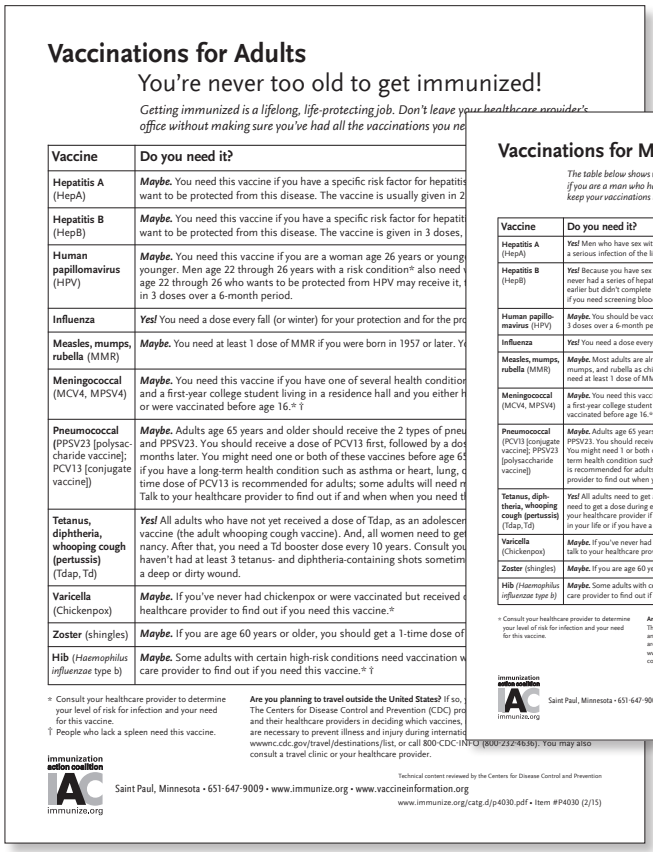
Pneumococcal Vaccines: CDC Answers Your Questions
www.immunize.org/catg.d/p2015.pdf

This one-page chart helps identify which vaccine is needed by risk factor and age.

Pneumococcal Vaccination Recommendations for Children and Adults by Age and/or Risk Factor
www.immunize.org/catg.d/p2019.pdf

Vaccine Recommendations for All Adults and for High-Risk Adults

These documents reflect current ACIP recommendations. Download, copy, and share the entire series widely!



Vaccinations for Adults

You're never too old to get immunized!

Getting immunized is a lifelong, life-protecting job. Don't leave your healthcare provider's office without making sure you've had all the vaccinations you ne

Vaccine	Do you need it?
Hepatitis A (HepA)	***Maybe.*** You need this vaccine if you have a specific risk factor for hepatiti want to be protected from this disease. The vaccine is usually given in 2
Hepatitis B (HepB)	***Maybe.*** You need this vaccine if you have a specific risk factor for hepati want to be protected from this disease. The vaccine is given in 3 doses,
Human papillomavirus (HPV)	***Maybe.*** You need this vaccine if you are a woman age 26 years or young younger. Men age 22 through 26 years with a risk condition* also need age 22 through 26 who wants to be protected from HPV may receive it, in 3 doses over a 6-month period.
Influenza	***Yes!*** You need a dose every fall (or winter) for your protection and for the pr
Measles, mumps, rubella (MMR)	***Maybe.*** You need at least 1 dose of MMR if you were born in 1957 or later. Y
Meningococcal (MCV4, MPSV4)	***Maybe.*** You need this vaccine if you have one of several health conditio and a first-year college student living in a residence hall and you either h or were vaccinated before age 16.* †
Pneumococcal (PPSV23 [polysac-charide vaccine]; PCV13 [conjugate vaccine])	***Maybe.*** Adults age 65 years and older should receive the 2 types of pneu and PPSV23. You should receive a dose of PCV13 first, followed by a dos months later. You might need one or both of these vaccines before age 6 if you have a long-term health condition such as asthma or heart, lung, time dose of PCV13 is recommended for adults; some adults will need Talk to your healthcare provider to find out if and when when you need t
Tetanus, diphtheria, whooping cough (pertussis) (Tdap, Td)	***Yes!*** All adults who have not yet received a dose of Tdap, as an adolescer vaccine (the adult whooping cough vaccine). And, all women need to ge nancy. After that, you need a Td booster dose every 10 years. Consult you haven't had at least 3 tetanus- and diphtheria-containing shots sometim a deep or dirty wound.
Varicella (Chickenpox)	***Maybe.*** If you've never had chickenpox or were vaccinated but received healthcare provider to find out if you need this vaccine.*
Zoster (shingles)	***Maybe.*** If you are age 60 years or older, you should get a 1-time dose of
Hib (*Haemophilus influenzae* type b)	***Maybe.*** Some adults with certain high-risk conditions need vaccination w care provider to find out if you need this vaccine.* †

* Consult your healthcare provider to determine your level of risk for infection and your need for this vaccine.
† People who lack a spleen need this vaccine.

Are you planning to travel outside the United States? If so, The Centers for Disease Control and Prevention (CDC) pro and their healthcare providers in deciding which vaccines, are necessary to prevent illness and injury during internati wwwnc.cdc.gov/travel/destinations/list, or call 800-CDC-INFO (800-232-4636). You may also consult a travel clinic or your healthcare provider.

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www.immunize.org/catg.d/p4030.pdf • Item #P4030 (2/15)

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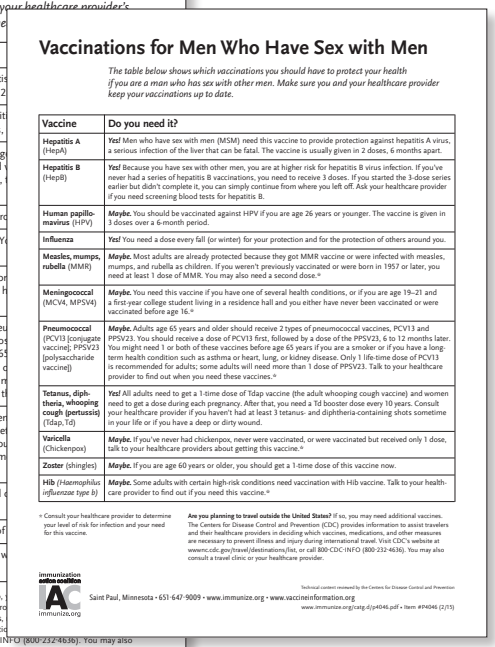

Vaccinations for Men Who Have Sex with Men

The table below shows which vaccinations you should have to protect your health if you are a man who has sex with other men. Make sure you and your healthcare provider keep your vaccinations up to date.

Vaccine	Do you need it?
Hepatitis A (HepA)	***Yes!*** Men who have sex with men (MSM) need this vaccine to provide protection against hepatitis A virus, a serious infection of the liver that can be fatal. The vaccine is usually given in 2 doses, 6 months apart.
Hepatitis B (HepB)	***Yes!*** Because you have sex with other men, you are at higher risk for hepatitis B virus infection. If you've never had a series of hepatitis B vaccinations, you need to receive 3 doses. If you started the 3-dose series earlier but didn't complete it, you can simply continue from where you left off. Ask your healthcare provider if you need screening blood tests for hepatitis B.
Human papillo-mavirus (HPV)	***Maybe.*** You should be vaccinated against HPV if you are age 26 years or younger. The vaccine is given in 3 doses over a 6-month period.
Influenza	***Yes!*** You need a dose every fall (or winter) for your protection and for the protection of others around you.
Measles, mumps, rubella (MMR)	***Maybe.*** Most adults are already protected because they got MMR vaccine or were infected with measles, mumps, and rubella as children. If you weren't previously vaccinated or were born in 1957 or later, you need at least 1 dose of MMR. You may also need a second dose.*
Meningococcal (MCV4, MPSV4)	***Maybe.*** You need this vaccine if you have one of several health conditions, or if you are age 19–21 and a first-year college student living in a residence hall and you either have never been vaccinated or were vaccinated before age 16.*
Pneumococcal (PCV13 [conjugate vaccine]; PPSV23 [polysaccharide vaccine])	***Maybe.*** Adults age 65 years and older should receive 2 types of pneumococcal vaccines, PCV13 and PPSV23. You should receive a dose of PCV13 first, followed by a dose of the PPSV23, 6 to 12 months later. You might need 1 or both of these vaccines before age 65 years if you are a smoker or if you have a long-term health condition such as asthma or heart, lung, or kidney disease. Only 1 life-time dose of PCV13 is recommended for adults; some adults will need more than 1 dose of PPSV23. Talk to your healthcare provider to find out when you need these vaccines.*
Tetanus, diph-theria, whooping cough (pertussis) (Tdap, Td)	***Yes!*** All adults need to get a 1-time dose of Tdap vaccine (the adult whooping cough vaccine) and women need to get a dose during each pregnancy. After that, you need a Td booster dose every 10 years. Consult your healthcare provider if you haven't had at least 3 tetanus- and diphtheria-containing shots sometime in your life or if you have a deep or dirty wound.
Varicella (Chickenpox)	***Maybe.*** If you've never had chickenpox, never were vaccinated, or were vaccinated but received only 1 dose, talk to your healthcare providers about getting this vaccine.*
Zoster (shingles)	***Maybe.*** If you are age 60 years or older, you should get a 1-time dose of this vaccine now.
Hib (*Haemophilus influenzae type b*)	***Maybe.*** Some adults with certain high-risk conditions need vaccination with Hib vaccine. Talk to your health-care provider to find out if you need this vaccine.*

* Consult your healthcare provider to determine your level of risk for infection and your need for this vaccine.

Are you planning to travel outside the United States? If so, you may need additional vaccines. The Centers for Disease Control and Prevention (CDC) provides information to assist travelers and their healthcare providers in deciding which vaccines, medications, and other measures are necessary to prevent illness and injury during international travel. Visit CDC's website at wwwnc.cdc.gov/travel/destinations/list, or call 800-CDC-INFO (800-232-4636). You may also consult a travel clinic or your healthcare provider.

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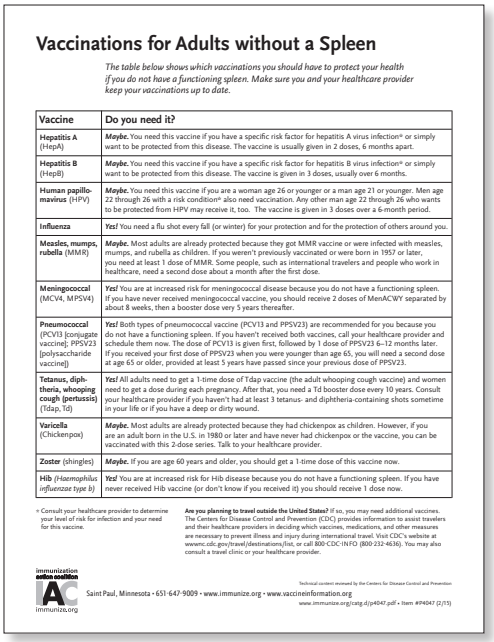

Vaccinations for Adults without a Spleen

The table below shows which vaccinations you should have to protect your health if you do not have a functioning spleen. Make sure you and your healthcare provider keep your vaccinations up to date.

Vaccine	Do you need it?
Hepatitis A (HepA)	***Maybe.*** You need this vaccine if you have a specific risk factor for hepatitis A virus infection* or simply want to be protected from this disease. The vaccine is usually given in 2 doses, 6 months apart.
Hepatitis B (HepB)	***Maybe.*** You need this vaccine if you have a specific risk factor for hepatitis B virus infection* or simply want to be protected from this disease. The vaccine is given in 3 doses, usually over 6 months.
Human papillo-mavirus (HPV)	***Maybe.*** You need this vaccine if you are a woman age 26 or younger or a man age 21 or younger. Men age 22 through 26 with a risk condition* also need vaccination. Any other man age 22 through 26 who wants to be protected from HPV may receive it, too. The vaccine is given in 3 doses over a 6-month period.
Influenza	***Yes!*** You need a flu shot every fall (or winter) for your protection and for the protection of others around you.
Measles, mumps, rubella (MMR)	***Maybe.*** Most adults are already protected because they got MMR vaccine or were infected with measles, mumps, and rubella as children. If you weren't previously vaccinated or were born in 1957 or later, you need at least 1 dose of MMR. Some people, such as international travelers and people who work in healthcare, need a second dose about a month after the first dose.
Meningococcal (MCV4, MPSV4)	***Yes!*** You are at increased risk for meningococcal disease because you do not have a functioning spleen. If you have never received meningococcal vaccine, you should receive 2 doses of MenACWY separated by about 8 weeks, then a booster dose very 5 years thereafter.
Pneumococcal (PCV13 [conjugate vaccine]; PPSV23 [polysaccharide vaccine])	***Yes!*** Both types of pneumococcal vaccine (PCV13 and PPSV23) are recommended for you because you do not have a functioning spleen. If you haven't received both vaccines, call your healthcare provider and schedule them now. The dose of PCV13 is given first, followed by 1 dose of PPSV23 6–12 months later. If you received your first dose of PPSV23 when you were younger than age 65, you will need a second dose at age 65 or older, provided at least 5 years have passed since your previous dose of PPSV23.
Tetanus, diph-theria, whooping cough (pertussis) (Tdap, Td)	***Yes!*** All adults need to get a 1-time dose of Tdap vaccine (the adult whooping cough vaccine) and women need to get a dose during each pregnancy. After that, you need a Td booster dose every 10 years. Consult your healthcare provider if you haven't had at least 3 tetanus- and diphtheria-containing shots sometime in your life or if you have a deep or dirty wound.
Varicella (Chickenpox)	***Maybe.*** Most adults are already protected because they had chickenpox as children. However, if you are an adult born in the U.S. in 1980 or later and have never had chickenpox or the vaccine, you can be vaccinated with this 2-dose series. Talk to your healthcare provider.
Zoster (shingles)	***Maybe.*** If you are age 60 years and older, you should get a 1-time dose of this vaccine now.
Hib (*Haemophilus influenzae type b*)	***Yes!*** You are at increased risk for Hib disease because you do not have a functioning spleen. If you have never received Hib vaccine (or don't know if you received it) you should receive 1 dose now.

* Consult your healthcare provider to determine your level of risk for infection and your need for this vaccine.

Are you planning to travel outside the United States? If so, you may need additional vaccines. The Centers for Disease Control and Prevention (CDC) provides information to assist travelers and their healthcare providers in deciding which vaccines, medications, and other measures are necessary to prevent illness and injury during international travel. Visit CDC's website at wwwnc.cdc.gov/travel/destinations/list, or call 800-CDC-INFO (800-232-4636). You may also consult a travel clinic or your healthcare provider.

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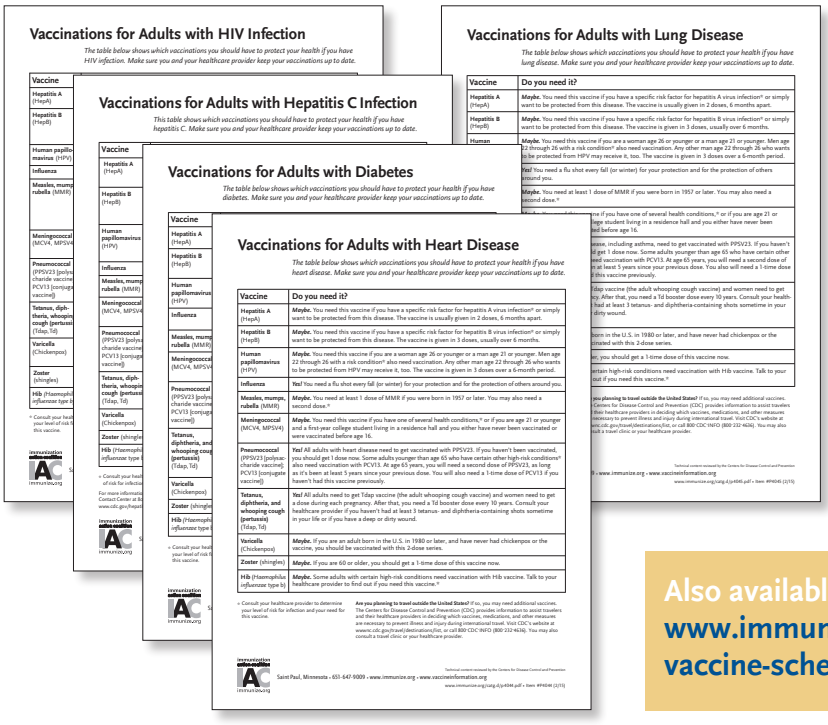

Vaccinations for Adults with HIV Infection

The table below shows which vaccinations you should have to protect your health if you have HIV infection. Make sure you and your healthcare provider keep your vaccinations up to date.

Vaccinations for Adults with Hepatitis C Infection

This table shows which vaccinations you should have to protect your health if you have hepatitis C. Make sure you and your healthcare provider keep your vaccinations up to date.

Vaccinations for Adults with Diabetes

The table below shows which vaccinations you should have to protect your health if you have diabetes. Make sure you and your healthcare provider keep your vaccinations up to date.

Vaccinations for Adults with Heart Disease

The table below shows which vaccinations you should have to protect your health if you have heart disease. Make sure you and your healthcare provider keep your vaccinations up to date.

Vaccine	Do you need it?
Hepatitis A (HepA)	***Maybe.*** You need this vaccine if you have a specific risk factor for hepatitis A virus infection* or simply want to be protected from this disease. The vaccine is usually given in 2 doses, 6 months apart.
Hepatitis B (HepB)	***Maybe.*** You need this vaccine if you have a specific risk factor for hepatitis B virus infection* or simply want to be protected from this disease. The vaccine is given in 3 doses, usually over 6 months.
Human papillomavirus (HPV)	***Maybe.*** You need this vaccine if you are a woman age 26 or younger or a man age 21 or younger. Men age 22 through 26 with a risk condition* also need vaccination. Any other man age 22 through 26 who wants to be protected from HPV may receive it, too. The vaccine is given in 3 doses over a 6-month period.
Influenza	***Yes!*** You need a flu shot every fall (or winter) for your protection and for the protection of others around you.
Measles, mumps, rubella (MMR)	***Maybe.*** You need at least 1 dose of MMR if you were born in 1957 or later. You may also need a second dose.*
Meningococcal (MCV4, MPSV4)	***Maybe.*** You need this vaccine if you have one of several health conditions,* or if you are age 21 or younger and a first-year college student living in a residence hall and you either have never been vaccinated or were vaccinated before age 16.
Pneumococcal (PPSV23 [polysac-charide vaccine]; PCV13 [conjugate vaccine])	***Yes!*** All adults with heart disease need to get vaccinated with PPSV23. If you haven't been vaccinated, you should get 1 dose now. Some adults younger than age 65 who have certain other high-risk conditions* also need vaccination with PCV13. At age 65 years, you will need a second dose of PPSV23, as long as it's been at least 5 years since your previous dose. You will also need a 1-time dose of PCV13 if you haven't had this vaccine previously.
Tetanus, diphtheria, and whooping cough (pertussis) (Tdap, Td)	***Yes!*** All adults need to get Tdap vaccine (the adult whooping cough vaccine) and women need to get a dose during each pregnancy. After that, you need a Td booster dose every 10 years. Consult your healthcare provider if you haven't had at least 3 tetanus- and diphtheria-containing shots sometime in your life or if you have a deep or dirty wound.
Varicella (Chickenpox)	***Maybe.*** If you are an adult born in the U.S. in 1980 or later, and have never had chickenpox or the vaccine, you should be vaccinated with this 2-dose series.
Zoster (shingles)	***Maybe.*** If you are 60 or older, you should get a 1-time dose of this vaccine now.
Hib (Haemophilus influenzae type b)	***Maybe.*** Some adults with certain high-risk conditions need vaccination with Hib vaccine. Talk to your healthcare provider to find out if you need this vaccine.*

* Consult your healthcare provider to determine your level of risk for infection and your need for this vaccine.

Are you planning to travel outside the United States? If so, you may need additional vaccines. The Centers for Disease Control and Prevention (CDC) provides information to assist travelers and their healthcare providers in deciding which vaccines, medications, and other measures are necessary to prevent illness and injury during international travel. Visit CDC's website at www.cdc.gov/travel/destinations/list, or call 800-CDC-INFO (800-232-4636). You may also consult a travel clinic or your healthcare provider.

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Vaccinations for Adults with Lung Disease

The table below shows which vaccinations you should have to protect your health if you have lung disease. Make sure you and your healthcare provider keep your vaccinations up to date.

Vaccinations for Adults – You're Never Too Old to Get Immunized
www.immunize.org/catg.d/p4030.pdf

NEW Vaccinations for Men Who Have Sex with Men
www.immunize.org/catg.d/p4046.pdf

NEW Vaccinations for Adults without a Spleen
www.immunize.org/catg.d/p4047.pdf

Vaccinations for Adults with HIV Infection
www.immunize.org/catg.d/p4041.pdf

Vaccinations for Adults with Hepatitis C Infection
www.immunize.org/catg.d/p4042.pdf

Vaccinations for Adults with Diabetes
www.immunize.org/catg.d/p4043.pdf

Vaccinations for Adults with Heart Disease
www.immunize.org/catg.d/p4044.pdf

Vaccinations for Adults with Lung Disease
www.immunize.org/catg.d/p4045.pdf

Also available in Spanish at www.immunize.org/handouts/vaccine-schedules.asp

Using Standing Orders for Administering Vaccines: What You Should Know

The use of standing orders for vaccination facilitates the delivery of immunization services to patients in clinics, hospitals, and community settings.

Standing orders have been shown to increase vaccination coverage rates.

▼ Go to **www.immunize.org/standing-orders** for the most current versions of sample standing orders

What are standing orders?

Standing orders authorize nurses, pharmacists, and other appropriately trained healthcare personnel, where allowed by state law, to assess a patient's immunization status and administer vaccinations according to a protocol approved by an institution, physician, or other authorized practitioner. The standing orders work by enabling assessment and vaccination of the patient without the need for clinician examination or direct order from the attending provider at the time of the interaction. Standing orders can be established for the administration of one or more specific vaccines to a broad or narrow set of patients in healthcare settings such as clinics, hospitals, pharmacies, and long-term care facilities.

Who recommends standing orders for vaccination?

The Community Preventive Services Task Force (Task Force): The Task Force[1] recommends standing orders for vaccinations based on strong evidence of effectiveness in improving vaccination rates:

1. in adults and children,
2. when used alone or when combined with additional interventions, and
3. across a range of settings and populations.

Read the full Task Force Finding and Rationale Statement at www.thecommunityguide.org/vaccines/standingorders.html

The Centers for Disease Control and Prevention (CDC): CDC's Advisory Committee on Immunization Practices (ACIP) specifically recommends standing orders for influenza and pneumococcal vaccinations and several other vaccines (e.g., hepatitis B, varicella). See *Use of Standing Orders Programs to Increase Adult Vaccination Rates: Recommendations of the ACIP. MMWR* 2000;49 (No. RR-1) at www.cdc.gov/mmwr/preview/mmwrhtml/rr4901a2.htm.

What are the elements of a standing order?

A comprehensive standing order should include the following elements:

1. who is targeted to receive the vaccine;
2. how to determine if a patient needs or should receive a particular vaccination (e.g., indications, contraindications, and precautions);
3. procedures for administering the vaccine (e.g., vaccine name, schedule for vaccination, appropriate needle size, vaccine dosage, route of administration);
4. provision of any federally required information (e.g., Vaccine Information Statement);
5. how to document vaccination in the patient record;
6. a protocol for the management of any medical emergency related to the administration of the vaccine; and
7. how to report possible adverse events occurring after vaccination.

Who is authorized to administer vaccines under standing orders?

Each of the 50 states separately regulates the practice of medicine, nursing, pharmacy, and other health-related practitioners. For further information about who can carry out standing orders in your state, contact your state immunization program or the appropriate state body (e.g., state board of medical/nursing/pharmacy practice).

Who is authorized to sign the standing order?

In general, standing orders are approved by an institution, physician, or authorized practitioner. State law or regulatory agency might authorize other healthcare professionals to sign standing orders.

What should be done with the standing orders after they have been signed?

Signed standing orders should be kept with all other signed medical procedures and protocols that are operational in one's clinic setting. A copy should also be available for clinic staff who operate under those standing orders.

Do standing orders need to be renewed (e.g., yearly)?

Generally, standing orders will include an implementation date as well as an expiration date. Periodic review of standing orders is important, because vaccine recommendations may change over time.

Where can I find sample standing orders?

The Immunization Action Coalition has developed templates of standing orders for vaccines that are routinely recommended to children and adults. They are updated as needed and reviewed for technical accuracy by immunization experts at CDC. The most current versions can be accessed by going to www.immunize.org/standing-orders.

FOOTNOTE

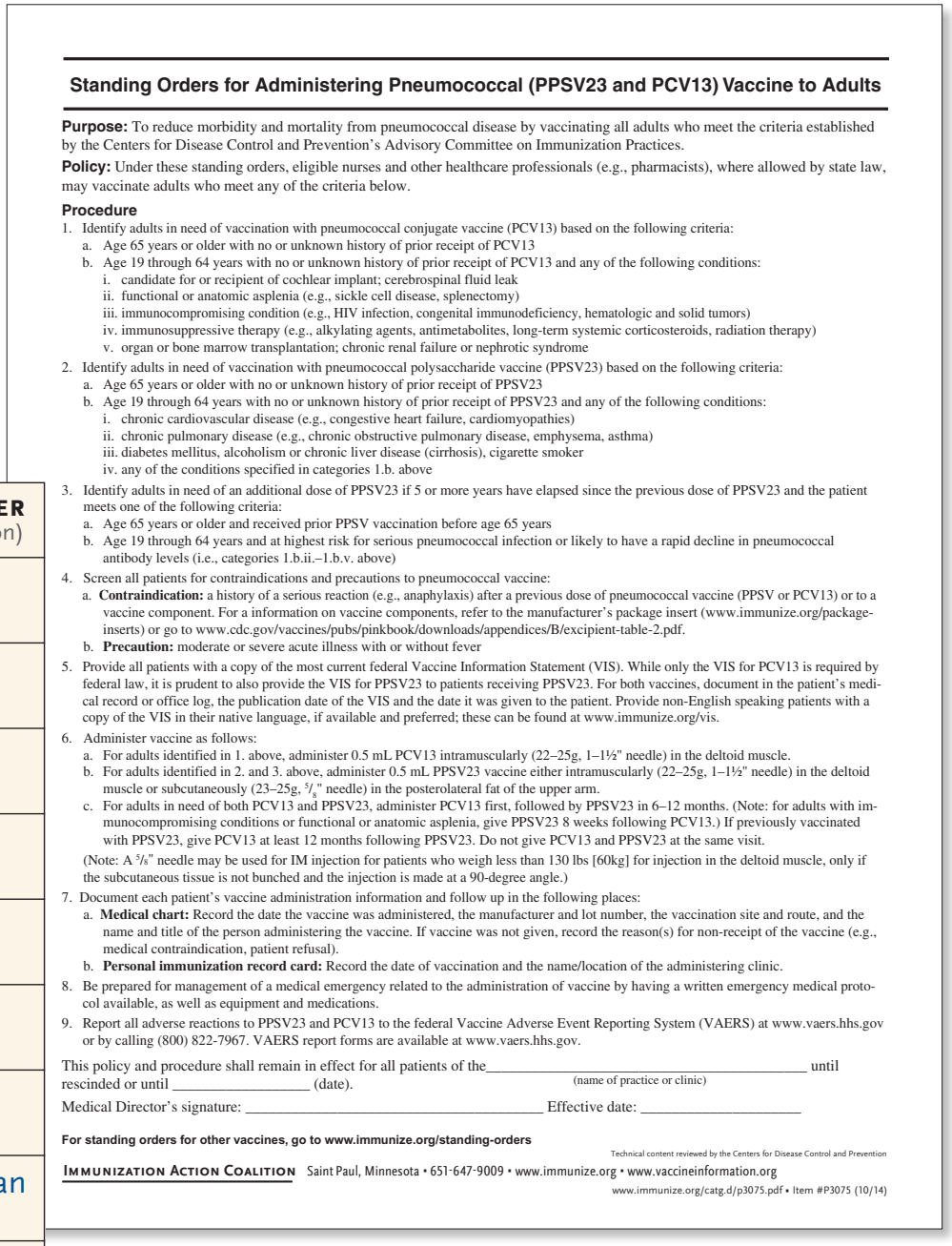
1 The Task Force was established in 1996 by the U.S. Department of Health and Human Services to identify population health interventions that are scientifically proven to save lives, increase lifespans, and improve quality of life. The Task Force produces recommendations (and identifies evidence gaps) to help inform the decision making of federal, state, and local health departments, other government agencies, communities, healthcare providers, employers, schools, and research organizations. For more information, see www.thecommunityguide.org/index.html.

Standing Orders for Administering Vaccines to Adults

Download these standing orders and use them "as is" or modify them to suit your work setting.

Click blue text to view standing orders documents

VACCINES	STANDING ORDER (date of latest revision)
HepA	adult (JUNE 2013)
HepB	adult (JUNE 2013)
HPV	adult (NOV 2012)
Influenza	adult (JAN 2015)
MMR	adult (JUNE 2013)
MCV4, MPSV	adult (JUNE 2013)
PCV, PPSV	adult (OCT 2014)
Tdap	pregnant woman (FEB 2014)
Td/Tdap	adult (APRIL 2013)
Varicella	adult (FEB 2014)
Zoster	adult (FEB 2015)



Standing Orders for Administering Pneumococcal (PPSV23 and PCV13) Vaccine to Adults

Purpose: To reduce morbidity and mortality from pneumococcal disease by vaccinating all adults who meet the criteria established by the Centers for Disease Control and Prevention's Advisory Committee on Immunization Practices.

Policy: Under these standing orders, eligible nurses and other healthcare professionals (e.g., pharmacists), where allowed by state law, may vaccinate adults who meet any of the criteria below.

Procedure

1. Identify adults in need of vaccination with pneumococcal conjugate vaccine (PCV13) based on the following criteria:
   a. Age 65 years or older with no or unknown history of prior receipt of PCV13
   b. Age 19 through 64 years with no or unknown history of prior receipt of PCV13 and any of the following conditions:
      i. candidate for or recipient of cochlear implant; cerebrospinal fluid leak
      ii. functional or anatomic asplenia (e.g., sickle cell disease, splenectomy)
      iii. immunocompromising condition (e.g., HIV infection, congenital immunodeficiency, hematologic and solid tumors)
      iv. immunosuppressive therapy (e.g., alkylating agents, antimetabolites, long-term systemic corticosteroids, radiation therapy)
      v. organ or bone marrow transplantation; chronic renal failure or nephrotic syndrome
2. Identify adults in need of vaccination with pneumococcal polysaccharide vaccine (PPSV23) based on the following criteria:
   a. Age 65 years or older with no or unknown history of prior receipt of PPSV23
   b. Age 19 through 64 years with no or unknown history of prior receipt of PPSV23 and any of the following conditions:
      i. chronic cardiovascular disease (e.g., congestive heart failure, cardiomyopathies)
      ii. chronic pulmonary disease (e.g., chronic obstructive pulmonary disease, emphysema, asthma)
      iii. diabetes mellitus, alcoholism or chronic liver disease (cirrhosis), cigarette smoker
      iv. any of the conditions specified in categories 1.b. above
3. Identify adults in need of an additional dose of PPSV23 if 5 or more years have elapsed since the previous dose of PPSV23 and the patient meets one of the following criteria:
   a. Age 65 years or older and received prior PPSV vaccination before age 65 years
   b. Age 19 through 64 years and at highest risk for serious pneumococcal infection or likely to have a rapid decline in pneumococcal antibody levels (i.e., categories 1.b.ii.–1.b.v. above)
4. Screen all patients for contraindications and precautions to pneumococcal vaccine:
   a. **Contraindication:** a history of a serious reaction (e.g., anaphylaxis) after a previous dose of pneumococcal vaccine (PPSV or PCV13) or to a vaccine component. For a information on vaccine components, refer to the manufacturer's package insert (www.immunize.org/package-inserts) or go to www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/B/excipient-table-2.pdf.
   b. **Precaution:** moderate or severe acute illness with or without fever
5. Provide all patients with a copy of the most current federal Vaccine Information Statement (VIS). While only the VIS for PCV13 is required by federal law, it is prudent to also provide the VIS for PPSV23 to patients receiving PPSV23. For both vaccines, document in the patient's medical record or office log, the publication date of the VIS and the date it was given to the patient. Provide non-English speaking patients with a copy of the VIS in their native language, if available and preferred; these can be found at www.immunize.org/vis.
6. Administer vaccine as follows:
   a. For adults identified in 1. above, administer 0.5 mL PCV13 intramuscularly (22–25g, 1–1½" needle) in the deltoid muscle.
   b. For adults identified in 2. and 3. above, administer 0.5 mL PPSV23 vaccine either intramuscularly (22–25g, 1–1½" needle) in the deltoid muscle or subcutaneously (23–25g, 5/8" needle) in the posterolateral fat of the upper arm.
   c. For adults in need of both PCV13 and PPSV23, administer PCV13 first, followed by PPSV23 in 6–12 months. (Note: for adults with immunocompromising conditions or functional or anatomic asplenia, give PPSV23 8 weeks following PCV13.) If previously vaccinated with PPSV23, give PCV13 at least 12 months following PPSV23. Do not give PCV13 and PPSV23 at the same visit.

   (Note: A 5/8" needle may be used for IM injection for patients who weigh less than 130 lbs [60kg] for injection in the deltoid muscle, only if the subcutaneous tissue is not bunched and the injection is made at a 90-degree angle.)
7. Document each patient's vaccine administration information and follow up in the following places:
   a. **Medical chart:** Record the date the vaccine was administered, the manufacturer and lot number, the vaccination site and route, and the name and title of the person administering the vaccine. If vaccine was not given, record the reason(s) for non-receipt of the vaccine (e.g., medical contraindication, patient refusal).
   b. **Personal immunization record card:** Record the date of vaccination and the name/location of the administering clinic.
8. Be prepared for management of a medical emergency related to the administration of vaccine by having a written emergency medical protocol available, as well as equipment and medications.
9. Report all adverse reactions to PPSV23 and PCV13 to the federal Vaccine Adverse Event Reporting System (VAERS) at www.vaers.hhs.gov or by calling (800) 822-7967. VAERS report forms are available at www.vaers.hhs.gov.

This policy and procedure shall remain in effect for all patients of the_____ until rescinded or until _____ (date).
(name of practice or clinic)

Medical Director's signature: _____ Effective date: _____

For standing orders for other vaccines, go to www.immunize.org/standing-orders

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www.immunize.org/catg.d/p3075.pdf • Item #P3075 (10/14)

Additional sets of standing orders for all routinely recommended vaccines are available at:

www.immunize.org/standing-orders

Vaccines work!

CDC statistics demonstrate dramatic declines in vaccine-preventable diseases when compared with the pre-vaccine era

DISEASE	PRE-VACCINE ERA ESTIMATED ANNUAL MORBIDITY*	MOST RECENT REPORTS OR ESTIMATES† OF U.S. CASES	PERCENT DECREASE
Diphtheria	21,053	0†	100%
H. influenzae (invasive, <5 years of age)	20,000	31‡	>99%
Hepatitis A	117,333	2,890§	98%
Hepatitis B (acute)	66,232	18,800§	72%
Measles	530,217	187†	>99%
Mumps	162,344	584†	>99%
Pertussis	200,752	28,639†	86%
Pneumococcal disease (invasive, <5 years of age)	16,069	1,900‡‡	88%
Polio (paralytic)	16,316	1†	>99%
Rotavirus (hospitalizations, <3 years of age)	62,500**	12,500††	80%
Rubella	47,745	9†	>99%
Congenital Rubella Syndrome	152	1†	99%
Smallpox	29,005	0†	100%
Tetanus	580	26†	96%
Varicella	4,085,120	167,490§§	96%

* CDC. *JAMA* November 14, 2007; 298(18):2155–63.

† CDC. *MMWR* August 15, 2014; 63(32):702–15.

‡ An additional 10 cases of Hib are estimated to have occurred among the 185 reports of Hib (<5 years) with unknown serotype.

§ CDC. Viral Hepatitis Surveillance – United States, 2011.

** CDC. *MMWR*, February 6, 2009; 58(RR-2):1–25.

‡‡ CDC. Active Bacterial Core Surveillance, 2013 data (unpublished).

†† CDC. New Vaccine Surveillance Network, 2013 data (unpublished); U.S. rotavirus disease now has a biennial pattern.

§§ CDC. Varicella Program, 2013 data (unpublished).

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www.immunize.org/catg.d/p4037.pdf ▪ Item #P4037 (12/14)

Healthcare Personnel Vaccination Recommendations

VACCINES AND RECOMMENDATIONS IN BRIEF

Hepatitis B – If previously unvaccinated, give 3-dose series (dose #1 now, #2 in 1 month, #3 approximately 5 months after #2). Give intramuscularly (IM). For HCP who perform tasks that may involve exposure to blood or body fluids, obtain anti-HBs serologic testing 1–2 months after dose #3.

Influenza – Give 1 dose of influenza vaccine annually. Inactivated injectable vaccine is given IM, except when using the intradermal influenza vaccine. Live attenuated influenza vaccine (LAIV) is given intranasally.

MMR – For healthcare personnel (HCP) born in 1957 or later without serologic evidence of immunity or prior vaccination, give 2 doses of MMR, 4 weeks apart. For HCP born prior to 1957, see below. Give subcutaneously (SC).

Varicella (chickenpox) – For HCP who have no serologic proof of immunity, prior vaccination, or diagnosis or verification of a history of varicella or herpes zoster (shingles) by a healthcare provider, give 2 doses of varicella vaccine, 4 weeks apart. Give SC.

Tetanus, diphtheria, pertussis – Give 1 dose of Tdap as soon as feasible to all HCP who have not received Tdap previously and to pregnant HCP with each pregnancy (see below). Give Td boosters every 10 years thereafter. Give IM.

Meningococcal – Give 1 dose to microbiologists who are routinely exposed to isolates of *Neisseria meningitidis* and boost every 5 years if risk continues. Give MCV4 IM; if necessary to use MPSV4, give SC.

Hepatitis A, typhoid, and polio vaccines are not routinely recommended for HCP who may have on-the-job exposure to fecal material.

Hepatitis B

Unvaccinated healthcare personnel (HCP) and/or those who cannot document previous vaccination should receive a 3-dose series of hepatitis B vaccine at 0, 1, and 6 months. HCP who perform tasks that may involve exposure to blood or body fluids should be tested for hepatitis B surface antibody (anti-HBs) 1–2 months after dose #3 to document immunity.

- If anti-HBs is at least 10 mIU/mL (positive), the vaccinee is immune. No further serologic testing or vaccination is recommended.
- If anti-HBs is less than 10 mIU/mL (negative), the vaccinee is not protected from hepatitis B virus (HBV) infection, and should receive 3 additional doses of HepB vaccine on the routine schedule, followed by anti-HBs testing 1–2 months later. A vaccinee whose anti-HBs remains less than 10 mIU/mL after 6 doses is considered a "non-responder."

For non-responders: HCP who are non-responders should be considered susceptible to HBV and should be counseled regarding precautions to prevent HBV infection and the need to obtain HBIG prophylaxis for any known or probable parenteral exposure to hepatitis B surface antigen (HBsAg)-positive blood or blood with unknown HBsAg status. It is also possible that non-responders are people who are HBsAg positive. HBsAg testing is recommended. HCP found to be HBsAg positive should be counseled and medically evaluated.

For HCP with documentation of a complete 3-dose HepB vaccine series but no documentation of anti-HBs of at least 10 mIU/mL (e.g., those vaccinated in childhood): HCP who are at risk for occupational blood or body fluid exposure might undergo anti-HBs testing upon hire or matriculation. See references 2 and 3 for details.

Influenza

All HCP, including physicians, nurses, paramedics, emergency medical technicians, employees of nursing homes and chronic care facilities, students in these professions, and volunteers, should receive annual vaccination against influenza. Live attenuated influenza vaccine (LAIV) may be given only to non-pregnant healthy HCP age 49 years and younger. Inactivated injectable influenza vaccine (IIV) is preferred over LAIV for HCP who are in close contact with severely immunosuppressed patients (e.g., stem cell transplant recipients) when they require protective isolation.

Measles, Mumps, Rubella (MMR)

HCP who work in medical facilities should be immune to measles, mumps, and rubella.

- HCP born in 1957 or later can be considered immune to measles, mumps, or rubella only if they have documentation of (a) laboratory confirmation of disease or immunity or (b) appropriate vaccination against measles, mumps, and rubella (i.e., 2 doses of live measles and mumps vaccines given on or after the first birthday and separated by 28 days or more, and at least 1 dose of live rubella vaccine). HCP with 2 documented doses of MMR are not recommended to be serologically tested for immunity; but if they are tested and results are negative or equivocal for measles, mumps, and/or rubella, these HCP should be considered to have presumptive evidence of immunity to measles, mumps, and/or rubella and are not in need of additional MMR doses.
- Although birth before 1957 generally is considered acceptable evidence of measles, mumps, and rubella immunity, 2 doses of MMR vaccine should be considered for unvaccinated HCP born before 1957 who do not have laboratory evidence of disease or immunity to measles and/or mumps. One dose of MMR vaccine should be considered for HCP with no laboratory evidence of disease or immunity to rubella. For these same HCP who do not have evidence of immunity, 2 doses of MMR vaccine are recommended during an outbreak of measles or mumps and 1 dose during an outbreak of rubella.

Varicella

It is recommended that all HCP be immune to varicella. Evidence of immunity in HCP includes documentation of 2 doses of varicella vaccine given at least 28 days apart, laboratory evidence of immunity, laboratory confirmation of disease, or diagnosis or verification of a history of varicella or herpes zoster (shingles) by a healthcare provider.

Tetanus/Diphtheria/Pertussis (Td/Tdap)

All HCPs who have not or are unsure if they have previously received a dose of Tdap should receive a dose of Tdap as soon as feasible, without regard to the interval since the previous dose of Td. Pregnant HCP should be revaccinated during each pregnancy. All HCPs should then receive Td boosters every 10 years thereafter.

Meningococcal

Vaccination with MCV4 is recommended for microbiologists who are routinely exposed to isolates of *N. meningitidis*.

REFERENCES

1 CDC. Immunization of Health-Care Personnel: Recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR*, 2011; 60(RR-7).

2 CDC. CDC Guidance for Evaluating Health-Care Personnel for Hepatitis B Virus Protection and for Administering Postexposure Management, *MMWR*, 2013; 62(10):1–19.

3 IAC. Pre-exposure Management for Healthcare Personnel with a Documented Hepatitis B Vaccine Series Who Have Not Had Post-vaccination Serologic Testing. Accessed at www.immunize.org/catg.d/p2108.pdf.

For additional specific ACIP recommendations, visit CDC's website at www.cdc.gov/vaccines/hcp/acip-recs/index.html or visit IAC's website at www.immunize.org/acip.

Technical content reviewed by the Centers for Disease Control and Prevention

Screening Checklist for Contraindications and Precautions to Vaccines

Patient name: _____ Date of birth: ____/____/____ (mo.) (day) (yr.)

Screening Checklist for Contraindications to Vaccines for Adults

For patients: The following questions will help us determine which vaccines you may be given today. If you answer "yes" to any question, it does not necessarily mean you should not be vaccinated. It just means additional questions must be asked. If a question is not clear, please ask your healthcare provider to explain it.

	Yes	No	Don't Know
1. Are you sick today?	☐	☐	☐
2. Do you have allergies to medications, food, a vaccine component, or latex?	☐	☐	☐
3. Have you ever had a serious reaction after receiving a vaccination?	☐	☐	☐
4. Do you have a long-term health problem with heart disease, lung disease, asthma, kidney disease, metabolic disease (e.g., diabetes), anemia, or other blood disorder?	☐	☐	☐
5. Do you have cancer, leukemia, HIV/AIDS, or any other immune system problem?	☐	☐	☐
6. In the past 3 months, have you taken medications that weaken your immune system, such as cortisone, prednisone, other steroids, or anticancer drugs, or have you had radiation treatments?	☐	☐	☐
7. Have you had a seizure or a brain or other nervous system problem?	☐	☐	☐
8. During the past year, have you received a transfusion of blood or blood products, or been given immune (gamma) globulin or an antiviral drug?	☐	☐	☐
9. For women: Are you pregnant or is there a chance you could become pregnant during the next month?	☐	☐	☐
10. Have you received any vaccinations in the past 4 weeks?	☐	☐	☐

Form completed by: _____ Date: _____

Form reviewed by: _____ Date: _____

Did you bring your immunization record card with you? **yes** ☐ **no** ☐

It is important for you to have a personal record of your vaccinations. If you don't have a personal record, ask your healthcare provider to give you one. Keep this record in a safe place and bring it with you every time you seek medical care. Make sure your healthcare provider records all your vaccinations on it.

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www.immunize.org/catg.d/p4065.pdf • Item #P4065 (1/15)

This checklist covers precautions and contraindications to vaccination.

Ask your patients to complete the checklist on page 1. Page 2 is not for patients, it is reference material for you.

bout the Screening Checklist for Contraindications To Vaccines for Adults

uded a certain question on the screening checklist? If so, read the information consult the references listed at the bottom of this page.

5. Do you have cancer, leukemia, HIV/AIDS, or any other immune system problem? *[LAIV, MMR, VAR, ZOS]*

Live virus vaccines (e.g., LAIV, measles-mumps-rubella [MMR], varicella [VAR], zoster [ZOS]) are usually contraindicated in immunocompromised people. However, there are exceptions. For example, MMR vaccine is recommended and varicella vaccine should be considered for adults with CD4+ T-lymphocyte counts of greater than or equal to 200 cells/μL. Immunosuppressed people should not receive LAIV. For details, consult the ACIP recommendations (1, 4, 5).

6. In the past 3 months, have you taken medications that weaken your immune system, such as cortisone, prednisone, other steroids, or anticancer drugs, or have you had radiation treatments? *[LAIV, MMR, VAR, ZOS]*

Live virus vaccines (e.g., LAIV, MMR, VAR, ZOS) should be postponed until after chemotherapy or long-term high-dose steroid therapy has ended. For details and length of time to postpone, consult the ACIP statement (1, 3). To find specific vaccination schedules for stem cell transplant (bone marrow transplant) patients, see reference 6. LAIV can be given only to healthy non-pregnant people younger than age 50 years.

7. Have you had a seizure or a brain or other nervous system problem? *[influenza, Td/Tdap]*

Tdap is contraindicated in people who have a history of encephalopathy within 7 days following DTP/DTaP given before age 7 years. An unstable progressive neurologic problem is a precaution to the use of Tdap. For people with stable neurologic disorders (including seizures) unrelated to vaccination, or for people with a family history of seizure, vaccinate as usual. A history of Guillain-Barré syndrome (GBS) is a consideration with the following: 1) Td/Tdap: if GBS has occurred within 6 weeks of a tetanus-containing vaccine and decision is made to continue vaccination, give Tdap instead of Td if no history of prior Tdap; 2) Influenza vaccine (IIV/LAIV): if GBS has occurred within 6 weeks of a prior influenza vaccine, vaccinate with IIV if at high risk for severe influenza complications.

8. During the past year, have you received a transfusion of blood or blood products, or been given immune (gamma) globulin or an antiviral drug? *[LAIV, MMR, VAR]*

Certain live virus vaccines (e.g., LAIV, MMR, VAR, ZOS) may need to be deferred, depending on several variables. Consult the most current ACIP recommendations for current information on intervals between antiviral drugs, immune globulin or blood product administration and live virus vaccines. (1)

9. For women: Are you pregnant or is there a chance you could become pregnant during the next month? *[MMR, LAIV, VAR, ZOS]*

Live virus vaccines (e.g., MMR, VAR, ZOS, LAIV) are contraindicated one month before and during pregnancy because of the theoretical risk of virus transmission to the fetus. Sexually active women in their childbearing years who receive live virus vaccines should be instructed to practice careful contraception for one month following receipt of the vaccine. On theoretical grounds, inactivated poliovirus vaccine should not be given during pregnancy; however, it may be given if risk of exposure is imminent and immediate protection is needed (e.g., travel to endemic areas). Use of Td or Tdap is not contraindicated in pregnancy. At the provider's discretion, either vaccine may be administered during the 2nd or 3rd trimester. (1, 3, 4, 5, 7, 8)

10. Have you received any vaccinations in the past 4 weeks? *[LAIV, MMR, VAR, yellow fever]*

People who were given either LAIV or an injectable live virus vaccine (e.g., MMR, VAR, ZOS, yellow fever) should wait 28 days before receiving another vaccination of this type. Inactivated vaccines may be given at any spacing interval if they are not administered simultaneously.

References:

1. CDC. General recommendations on immunization, at www.cdc.gov/vaccines/pubs/acip-list.htm
2. Table of Vaccine Components: www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/B/excipient-table-2.pdf.
3. CDC. Prevention and control of seasonal influenza with vaccines: Recommendations of the ACIP—2014–2015 Influenza Season at www.cdc.gov/mmwr/pdf/wk/mm6332.pdf, pages 691–7.
4. CDC. Measles, mumps, and rubella—vaccine use and strategies for elimination of measles, rubella, and congenital rubella syndrome and control of mumps. *MMWR* 1998; 47 (RR-8).
5. CDC. Prevention of varicella: Recommendations of the Advisory Committee on Immunization Practices. *MMWR* 2007; 56 (RR-4).
6. Tomblyn M, Einsele H, et al. Guidelines for preventing infectious complications among hematopoietic stem cell transplant recipients: a global perspective. *Biol Blood Marrow Transplant* 15:1143–1238; 2009 at www.cdc.gov/vaccines/pubs/hematocell-transplts.htm.
7. CDC. Notice to readers: Revised ACIP recommendation for avoiding pregnancy after receiving a rubella-containing vaccine. *MMWR* 2001; 50 (49).
8. CDC. Prevention of pertussis, tetanus, and diphtheria among pregnant and postpartum women and their infants: Recommendations of the ACIP. *MMWR* 2008; 57 (RR-4).

For a ready-to-copy 8½ x 11" version of this 2-page piece, visit

www.immunize.org/catg.d/p4065.pdf

Screening Checklists for Influenza Vaccination Contraindications

These checklists will help you quickly identify contraindications.

Be sure to screen every time you vaccinate!

Patient name: _____ Date of birth: ____/____/____ (mo.) (day) (yr.)

Screening Checklist for Contraindications to Inactivated Injectable Influenza Vaccination

For patients (both children and adults) to be vaccinated: The following questions will help us determine if there is any reason we should not give you or your child inactivated injectable influenza vaccination today. If you answer "yes" to any question, it does not necessarily mean you (or your child) should not be vaccinated. It just means additional questions must be asked. If a question is not clear, please ask your healthcare provider to explain it.

	Yes	No	Don't Know
1. Is the person to be vaccinated sick today?	☐	☐	☐
2. Does the person to be vaccinated have an allergy to eggs or to a component of the vaccine?	☐	☐	☐
3. Has the person to be vaccinated ever had a serious reaction to influenza vaccine in the past?			
4. Has the person to be vaccinated ever had Guillain-Barré syndrome?			

Form completed by: _____

Form reviewed by: _____

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Patient name: _____ Date of birth: ____/____/____ (mo.) (day) (yr.)

Screening Checklist for Contraindications to Live Attenuated Intranasal Influenza Vaccination

For use with people age 2 through 49 years: The following questions will help us determine if there is any reason we should not give you or your child live attenuated intranasal influenza vaccine (FluMist) today. If you answer "yes" to any question, it does not necessarily mean you (or your child) should not be vaccinated. It just means additional questions must be asked. If a question is not clear, please ask your healthcare provider to explain it.

	Yes	No	Don't Know
1. Is the person to be vaccinated sick today?	☐	☐	☐
2. Does the person to be vaccinated have an allergy to eggs or to a component of the influenza vaccine?	☐	☐	☐
3. Has the person to be vaccinated ever had a serious reaction to influenza vaccine in the past?	☐	☐	☐
4. Is the person to be vaccinated younger than age 2 years or older than age 49 years?	☐	☐	☐
5. Does the person to be vaccinated have a long-term health problem with heart disease, lung disease (including asthma), kidney disease, neurologic disease, liver disease, metabolic disease (e.g., diabetes), or anemia or another blood disorder?	☐	☐	☐
6. If the person to be vaccinated is a child age 2 through 4 years, in the past 12 months, has a healthcare provider told you the child had wheezing or asthma?	☐	☐	☐
7. Does the person to be vaccinated have cancer, leukemia, HIV/AIDS, or any other immune system problem; or, in the past 3 months, have they taken medications that weaken the immune system, such as cortisone, prednisone, other steroids, or anticancer drugs; or have they had radiation treatments?	☐	☐	☐
8. Is the person to be vaccinated receiving influenza antiviral medications?	☐	☐	☐
9. Is the child or teen (2 years through 17 years of age) to be vaccinated receiving aspirin therapy or aspirin-containing therapy?	☐	☐	☐
10. Is the person to be vaccinated pregnant or could she become pregnant within the next month?	☐	☐	☐
11. Has the person to be vaccinated ever had Guillain-Barré syndrome?	☐	☐	☐
12. Does the person to be vaccinated live with or expect to have close contact with a person whose immune system is severely compromised and who must be in protective isolation (e.g., an isolation room of a bone marrow transplant unit)?	☐	☐	☐
13. Has the person to be vaccinated received any other vaccinations in the past 4 weeks?	☐	☐	☐

Form completed by: _____ Date: _____

Form reviewed by: _____ Date: _____

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www.immunize.org/catg.d/p4067.pdf • Item #P4067 (12/14)

Screening checklist for injectable influenza vaccine:

- www.immunize.org/catg.d/p4066.pdf

Screening checklist for intranasal influenza vaccine:

- www.immunize.org/catg.d/p4067.pdf

We have young adult patients in our practice at high risk for measles, including those going back to college, going to Disneyland, or preparing for international travel, who don't remember ever receiving MMR vaccine or having had measles disease. How should we manage these patients?

You have two options. You can test for immunity or you can just give 2 doses of MMR at least 4 weeks apart. There is no harm in giving MMR vaccine to a person who may already be immune to one or more of the vaccine viruses. If you or the patient opt for testing, and the tests indicate the patient is not immune to one or more of the vaccine components, give your patient 2 doses of MMR at least 4 weeks apart. If any test results are indeterminate or equivocal, consider your patient nonimmune. ACIP does not recommend serologic testing after vaccination because commercial tests may not be sensitive enough to reliably detect vaccine-induced immunity.

What are the contraindications and precautions for MMR vaccine?

Contraindications are the following:

- History of a severe (anaphylactic) reaction to neomycin (or other vaccine component) or following previous dose of MMR
- Pregnancy
- Severe immunosuppression from either disease or therapy

Precautions are the following:

- Receipt of an antibody-containing blood product in the previous 11 months
- Moderate or severe acute illness with or without fever
- History of thrombocytopenia or thrombocytopenic purpura

Important details about the contraindications and precautions for MMR vaccine are in the current MMR ACIP statement, available at www.cdc.gov/mmwr/pdf/rr/rr6204.pdf.

I have patients who remember receiving MMR vaccine but have no written record, or whose parents report the patient has been vaccinated. Should I accept this as evidence of vaccination?

No. Self-reported doses and history of vaccination provided by a parent or other caregiver are not considered to be valid. You should only accept a written, dated record as evidence of MMR vaccination.

Can I give MMR to a breastfeeding mother?

Yes. Breastfeeding does not interfere with the response to MMR vaccine. Vaccination of a woman who is breastfeeding poses no risk to the infant being breastfed. Although it is believed that rubella vaccine virus, in rare instances, may be transmitted via breast milk, the infection in the infant is asymptomatic.

What is the recommended length of time a woman should wait after receiving MMR vaccine before becoming pregnant?

Although the MMR package insert recommends a 3-month deferral of pregnancy after MMR vaccination, ACIP recommends deferral of pregnancy for four weeks. For details on this issue see ACIP recommendations (*MMWR* 2013; 62[4]: 1–34) at www.cdc.gov/mmwr/pdf/rr/rr6204.pdf.

What is the recommendation for MMR vaccine for healthcare personnel (HCP)?

ACIP recommends that all HCP born during or after 1957 have adequate presumptive evidence of immunity to measles, mumps, and rubella, defined as documentation of two doses of measles and mumps vaccine and at least one dose of rubella vaccine, laboratory evidence of immunity, or laboratory confirmation of disease. ACIP also recommends consideration of MMR vaccination of all unvaccinated HCP who were born before 1957 and who lack laboratory evidence of measles, mumps, and/or rubella immunity or laboratory confirmation of disease.

During an outbreak of measles or mumps, healthcare facilities should recommend 2 doses of MMR separated by at least 4 weeks for unvaccinated HCP, regardless of birth year, who lack laboratory evidence of measles or mumps immunity or laboratory confirmation of disease. During outbreaks of rubella, healthcare facilities should recommend 1 dose of MMR for unvaccinated personnel, regardless of birth year, who lack laboratory evidence of rubella immunity or laboratory confirmation of infection or disease.

Would you consider HCP with 2 documented doses of MMR vaccine to be immune even if their serology for 1 or more of the antigens comes back negative?

Yes. HCP with 2 documented doses of MMR vaccine are considered to be immune regardless of the results of a subsequent serologic test for measles, mumps, or rubella. Documented age-appropriate vaccination supersedes the results of subsequent serologic testing. HCP who do not have documentation of MMR vaccination and whose serologic test is interpreted as "indeterminate" or "equivocal" should be considered not immune and should receive 2 doses of MMR. ACIP does not recommend serologic testing after vaccination.

If a healthcare professional had a positive test for measles antibody more than 10 years ago, is it necessary to retest them now?

No. Once measles immunity is documented, there is no need for further vaccination or testing. "Once immune, always immune" is true for varicella, mumps, and rubella, as well as for measles, regardless of the results of subsequent testing. ACIP does not recommend repeat antibody testing once evidence of immunity (such as appropriate vaccination or IgG seropositivity) has been established.

Is there any evidence that MMR causes autism?

No. This issue has been studied extensively in recent years, including a thorough review by the Institute of Medicine (IOM), an impartial group of the world's leading experts that advises Congress on science issues. After reviewing more than 200 studies in 2004 and more than 1,000 studies in 2011, the consensus report strongly stated that the evidence did not show a link between vaccines and autism. To access the IOM committee minutes, as well as the executive summaries and full reports, visit www.immunize.org/iom.

In 2014, researchers from the RAND Corporation published an update to the 2011 IOM report. In a systematic review of the evidence published on vaccine safety to date, they found the evidence was strong that MMR vaccine is not associated with autism. For more information, see "Evidence Shows Vaccines Unrelated to Autism" at www.immunize.org/catg.d/p4028.pdf and "MMR Vaccine Does Not Cause Autism" at www.immunize.org/catg.d/p4026.pdf.

Pneumococcal vaccines

We have a healthy 78-year-old female patient who received PCV13 (Prevnar13, Pfizer), then received PPSV23 (Pneumovax 23, Merck) approximately 5 weeks later. She had not received PPSV23 previously. Is the PPSV23 dose valid, or does it need to be repeated?

What to do when doses of PCV13 and PPSV23 are given without the recommended minimum interval between them isn't spelled out in the new ACIP pneumococcal recommendations. The CDC subject matter experts have provided the following guidance: in such a case, the dose given second does not need to be repeated. This is an exception to the usual procedure for a minimum interval violation (as described in ACIP's *General Recommendations on Immunization*). For your reference, the recommended interval between the dose of PCV13 and PPSV23 is 6–12 months and the acceptable minimum interval is 8 weeks.

Why is it recommended to give PCV13 before PPSV23 to adults age 65 years and older? Wouldn't PPSV23 protect them against ten additional strains of the pneumococcal virus?

PCV13 is recommended to be given first because of the immune response to the vaccine when given in this sequence. An evaluation of immune response after a second pneumococcal vaccination administered 1 year after an initial dose showed that subjects who received PPSV23 as the initial dose had lower antibody responses after subsequent administration of PCV13 than those who had received PCV13 as the initial dose followed by a dose of PPSV23.

Vaccinate Adults correction policy

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