IMMUNIZATION TOOL KIT

Adult, Military and Childhood Immunizations



Seventh Edition 2011

Developed and Distributed by

VHC
Vaccine Healthcare Centers Network

Vaccine Healthcare Centers Network

Immunization Tool Kit
Adult, Military, and Childhood Immunizations
Seventh Edition

The information in this Immunization Tool Kit (ITK) is based on national guidelines, peer-reviewed published medical literature, and clinical guidelines. These guidelines are based on data and lessons learned through Adverse Events Following Immunizations (AEFI) case management and causality assessments within the Vaccine Healthcare Centers Network (www.VHCinfo.org; www.who.int/vaccines-documents/DocsPDF05/815.pdf). However, the ITK is a reference and should always be used with

- manufacturers' package inserts (approved by the Food and Drug Administration),
- Centers for Disease Control and Prevention Vaccine Information Sheets (VIS),
- proper screening for individual patient health risk factors and medical problems, and
- healthcare providers' orders.

Screening for individual vaccine benefits and risks is the responsibility of a credentialed healthcare provider. If standing orders are used, the screening process (e.g., standardized health risk assessment questionnaire) is responsible for ensuring identification of individuals who require expanded evaluation and potentially direct, face-to-face provider evaluation before immunization. In some cases, a person will need referral to a consultant or healthcare provider. This provider will evaluate the risks and benefits related to the immunization and medical exemption status. In some cases, such as severe large local reactions, modified strategies for how to administer the vaccine may be indicated and require a written order from the healthcare provider.

The Vaccine Healthcare Centers (VHC) Network clinical staff is available for expert consultations for both healthcare workers and service members/beneficiaries when there are questions about vaccine effectiveness, safety, and acceptability. In addition, the VHC supports a Vaccine Adverse Events Reporting System (VAERS) registry for long-term clinical case management and medical exemption tracking.

ACCESS to CLINICAL CONSULTATION SERVICES:

- 24/7 DOD Clinical Vaccine Call Center: 1-866-210-6469
- Secure internet based consultation services via Ask VHC: https://ASKVHC.wramc.amedd.army.mil
- VHC Info: www.VHCinfo.org or Call at 301-319-2904; DSN 295-2904
- Direct access to Other VHC Regional Sites: See page xi

Project Design and Development (1999-2011)
COL Renata J. M. Engler, MD
Director, Vaccine Healthcare Centers Network

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Every attempt was made by the project clinical working group to assure accuracy of content. Changes in immunization healthcare guidelines and vaccine-related alerts occur frequently. It is important for users of this resource to understand that full review of the vaccine package insert and relevant alerts at www.vaccines.mil is required by clinical staff responsible for vaccine administration. Competency training should not be limited to the use of this resource in the delivery of immunization healthcare.

For additional copies of the Tool Kit go to:
www.vhcinfo.org

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About the Vaccine Healthcare Centers Network

The Walter Reed National Vaccine Health Care Center (WRNVHC) is the lead agent for the Network of regional Vaccine Healthcare Centers (VHC). The VHC Network supports Department of Defense (DoD) immunization programs through expert clinical, investigational, educational and consultative services for individual service members, beneficiaries, and healthcare workers, as well as other government-associated stakeholders. The original effort was a pioneering collaboration between the CDC/National Vaccine Program Office and the DoD in support of the DoD immunization and readiness mission. The VHC Network became a division of the Military Vaccine Office (MILVAX) on 1 October 2007. Additional information about this program is available online through a congressionally sponsored Government Accountability Office (GAO) review published at www.gao.gov (GAO-07-787R, "Military Health: DoD's Vaccine Healthcare Centers Network," dated June 29, 2007; GAO Code 290549).

The VHC Network provides global outreach supporting specialized expertise in immunization healthcare (with a focus on adult, travel, and biodefense vaccines) that is dedicated to enhanced vaccine effectiveness, safety and acceptability. The Network supports adverse events evaluations and reporting through the Vaccine Adverse Events Reporting System (VAERS-http://vaers.hhs.gov/). It also provides enhanced individual case management and causality assessments for medical exemptions and adverse events. In addition, the staff of the VHC Network is dedicated to the development of new adverse events case definitions, clinical guidelines for diagnostics, treatments and follow-up care, immunization healthcare research, and continuous quality improvement through improved competency training and consultation resources.

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PEDIATRIC IMMUNIZATIONS

STORAGE AND HANDLING INSTRUCTIONS

Message From the Director:

Welcome to the Seventh Edition of the Immunization Tool Kit (ITK). The ITK provides a practical reference that facilitates and enhances the delivery of quality immunization healthcare to Department of Defense (DoD) beneficiaries and employees. As both active and passive vaccines increase in number and complexity, competency training and sustainment with adherence to best practices presents a significant challenge. Standards for quality care are detailed in the most recent joint regulations for "Medical Services Immunizations and Chemoprophylaxis" (published September 29, 2006 at www.vaccines.mil/documents/969r40_562.pdf) and in national guidelines published by the National Vaccine Advisory Committee in March 2000 ("Adult Immunization Programs in Nontraditional Settings: Quality Standards and Guidance for Program Evaluation" at http://www.cdc.gov/mmwr/preview/mmwrhtml/rr4901a1.htm).

The Military Health System (MHS) is dedicated to providing excellence in healthcare services and the content of this tool kit represents one of several educational resources developed by the Vaccine Healthcare Centers Network in collaboration with MILVAX and the new Immunization University Program (www.vaccines.mil) to enhance vaccine efficacy, safety, and acceptability. The role of the VHC is to serve healthcare workers who serve DOD personnel as well as service members, their families or advocates, and other beneficiaries with special issues related to vaccines, medical exemptions, adverse events evaluation, reporting and care management.

For more information regarding VHC Network services and a downloadable format of the Tool Kit, please visit our website: www.VHCinfo.org. We want to highlight for our users the excellent one-stop Quick Reference Chart that provides easy access to policy, CDC guidelines documents and service-specific messages by vaccine at www.vaccines.mil/default.aspx?cnt=resource/quickReferenceChartHome.

If you have specific clinical concerns or are interested in participating in our medical exemption/adverse events registry, call our 24/7 Clinical Call Center at 1-866-210-6469 or send your questions or requests for help to the secure web-based consultation service at https://askvhc.wramc.amedd.army.mil. For information about vaccine research protocols, call 301-319-2904 (DSN 295-2904). We appreciate your feedback and suggestions for quality improvements in this resource.

We look forward to serving you!

Renata J. M. Engler, MD
COL, MC

Foreword From the Director

The Vaccine Healthcare Centers Network (VHC) compiled the material in this Immunization Tool Kit (ITK) in conformity with its mission to support continuous quality improvement of immunization healthcare delivery throughout the DoD. The ITK is intended to be a pocket-sized, readily available source of essential information on vaccines and immunization recommendations for all levels of healthcare workers. It is not a comprehensive reference for initial competency training.

Vaccines are prescription drugs. The guidelines and directions for safe administration of this special group of drugs are detailed in the manufacturers' package inserts (approved by the Food and Drug Administration or FDA) with supplemental information from national consensus guidelines detailed in the Recommendations of the Advisory Committee on Immunization Practices (ACIP) published in the Morbidity and Mortality Weekly Reports (MMWR). MMWR can be found online at www.cdc.gov/mmwr/ (requests for complete set: 800-232-2522). It is important to remember for quality care of individual service members and beneficiaries that this information applies to populations. It does not eliminate the need to evaluate individual medical history and clinical status (ill or well).

Also "safe and effective" does not mean that there are NO adverse events or rare serious reactions. Myopericarditis after smallpox vaccine is one example of a new adverse event that has been defined as probably causally linked to the vaccine. In response, the VHC Network creates clinical guidelines for diagnosis, care, and follow up to assure that the newest information is provided to healthcare workers and vaccinees. In addition, direct consultation with the VHC Network and enrollment in the adverse events registry of affected patients ensures access to information that may not be found in the standard resources.

The VHC gratefully acknowledges the invaluable feedback and focus group critiques provided by reviewers from all the services and the staff and students of the Walter Reed Immunization-Allergy Specialty Course.

Vaccine Healthcare Centers Network

What is the VHC Network?

The National Vaccine Healthcare Centers Network is the lead agent for the (VHC) Network. The Vaccine Healthcare Centers Network locations include: Walter Reed Military Medical Center (one region - two sites: Bethesda, MD and Ft. Belvoir, VA); Ft. Bragg Regional Vaccine Healthcare Center, Fort Bragg, NC; and Wilford Hall Regional Vaccine Healthcare Center, Lackland Air Force Base, TX; Richard E. Shope Regional Vaccine Healthcare Center, Portsmouth, VA.

Vision:

A collaborative network that provides support for comprehensive state-of-the-art immunization healthcare.

Mission:

Enhance vaccine safety, efficacy, and acceptability within the Military Health System through programs and services that provide expert clinical consultation, care, safety surveillance, education and research.

Headquarters Address:

Vaccine Healthcare Centers
Network Headquarters
2460 Linden Lane
Building 161, Suite 10
Silver Spring, MD 20910
Phone: (301) 295-7151
Fax: (301) 295-7165

Website: www.vhcinfo.org
24/7 Clinical Call Center: 1-866-210-6469
Secure and confidential website for vaccine-related questions or problems:
https://askvhc.wramc.amedd.army.mil

Vaccine Healthcare Center Regional Office Locations

Walter Reed Regional Vaccine Healthcare Center - One Region - Two Sites (Bethesda/Ft. Belvoir):

Walter Reed National Military Medical Center
Vaccine Healthcare Centers Network
8901 Wisconsin Avenue
Bldg. 19, 4th Floor
Bethesda, MD 20889
Phone: (301) 319-2904; DSN 295-2904
Fax: (301) 319-8299

Ft. Belvoir Community Hospital
Vaccine Healthcare Center
9300 DeWitt Loop, Room M1.233
Meadows Pavilion
Ft. Belvoir, VA 22060
Phone: (571) 231-1406; DSN: 289-1519

Fort Bragg Regional Vaccine Healthcare Center

Bldg. 1-2539, Hamilton Street
Fort Bragg, NC 28310
Phone: (910) 432-4015; DSN: 239-4015
Fax: (910) 432-4054

Wilford Hall Regional Vaccine Healthcare Center

2201 Pepperrell Street, Bldg. 3550, Suite 1, Room 703
Lackland AFB, TX 78236-5344
Phone: (210) 292-0482; DSN: 554-0482
Fax: (210) 292-0493

Naval Medical Center Portsmouth
Richard E. Shope Regional Vaccine Healthcare Center

620 John Paul Jones Circle, Bldg. 1, Room C-107
Portsmouth, VA 23708-2197
Phone: (757) 953-9150; DSN: 377-9150
Fax: (757) 953-5887

Additional Resources for Providers

Military Vaccine Agency (MILVAX)

www.vaccines.mil, www.smallpox.mil, www.anthrax.mil

The official website for military vaccines. This site provides access to current immunization program information for DoD and the Military Services. Because DoD immunization programs are built on the foundation of national standards of immunization practice, this site provides links to other government and non-government sites dedicated to vaccines, immunization practices, and vaccine safety.

Joint Instruction on Immunization and Chemoprophylaxis:

Dated 29 September 2006

http://www.vaccines.mil/documents/969r40_562.pdf

National Vaccine Injury Compensation Program (NVICP)

http://www.hrsa.gov/vaccinecompensation

A federal program that provides compensation for people who have been injured through rare but serious adverse events linked to certain vaccines. For further information, contact the VICP at:
5600 Fishers Lane
Rockville, MD 20857
1-800-338-2382

Centers for Disease Control and Prevention (CDC)
National Center for Immunization and Respiratory Diseases

www.cdc.gov/vaccines

Pink Book: www.cdc.gov/vaccines/pubs/pinkbook/default.htm
National Immunization Hotline
1-800-232-4636 (English); 1-888-232-6348 (TTY)

Deployment Health

www.pdhealth.mil

PDHealth.mil was developed by the Deployment Health Clinical Center as a resource for clinicians, veterans, and their families.

Immune Readiness Courseware

www.vhcinfo.org

Free online continuing education immunization training modules covering a variety of topics. Earn credits to support competency documentation requirements

Immunization Action Coalition

www.immunize.org 651-647-9009
Download ACIP statements, MMWRs, and other vaccine news
Sign up for *IAC Express* (FREE e-mail newsletter on immunizations)
View the Directory of National Immunization Resources online

ImmunoFacts: The Immunization Gateway, Your Vaccine Fact Finder
www.immunofacts.com
U.S. and Canadian Vaccine Recommendations
State and International Vaccine Information
Practice and Safety Issues
Government Databases
Industry Links
Publications and Handouts
Other Resources

Military Health System: Health Affairs Policies and Guidelines
www.health.mil/hapolicies.aspx
This site lists all military service policies in one location. Of particular interest are the policies on Tubersol (http://www.health.mil/libraries/HA_Policies_and_Guidelines/08-012.pdf) and Thimerosal (http://www.health.mil/Content/docs/pdfs/policies/2008/08-013.pdf).

Naval Medical Logistics
www.nmlc.med.navy.mil

National Network for Immunization Information
www.immunizationinfo.org
This partnership of professional medical organizations provides the public, health professionals, policy makers, and the media with up-to-date, scientifically valid information related to immunizations to help them understand the issues and to make informed decisions. NNII offers a resource kit for clinicians: "Communicating with Patients about Immunization." For more information, call 409-772-0199.

Vaccine Adverse Event Reporting System (VAERS)
http://vaers.hhs.gov
Call toll-free VAERS information line at 1-800-822-7967.

Countermeasures Injury Compensation Program (CICP)
www.hrsa.gov/gethealthcare/conditions/countermeasurescomp/index.html
The Public Readiness and Emergency Preparedness (PREP) Act provides compensation to people for serious injuries or deaths from pandemic, epidemic, or security countermeasures. The Countermeasures Injury Compensation Program (CICP) manages this compensation program. Vaccines such as anthrax, smallpox, and the 2009 novel H1N1 are eligible countermeasures under this program. The filing deadline to request compensation benefits is one year from the date the vaccine or other covered countermeasure was administered.

Know The Facts About Immunization

- Immunizations are one of the most important ways people can protect themselves against serious, preventable infectious diseases.

- Immunizations are safe for the majority of the population because of advances in medical research and ongoing review by doctors, researchers, and public health officials.

- Immunizations are recommended for infants, young children, adolescents, adults, the elderly, and those with chronic health problems (who are particularly vulnerable to infectious diseases).

- While rare risks can accompany any immunization (like any other drug), people are far more likely to be seriously harmed by vaccine-preventable diseases than by the recommended immunizations that prevent them.

- Medical advances have resulted in the availability of an increasing number of progressively more effective and safer vaccines. Now, people can be protected against a greater number of serious diseases than ever before.

- Immunization benefits not just the individual, but also the community. Communicable infectious diseases spread among people who have not been immunized and among the small percentage of people for whom an immunization may not have been fully effective. When you get immunized, you help others as well as yourself!

- Immunizations work by strengthening the body's own immune defenses in specific ways.

- While breastfeeding and taking vitamins have general health benefits, they do not replace the specific benefits of vaccines in preventing infectious diseases.

- Without immunizations, the diseases from which we are now protected could easily return to infect, disable, and even kill, many people of all ages.

Source:
Adapted with permission from The National Network for Immunization Information: www.immunizationinfo.org

Risk Communication Approach to Explain Immunization

1. Listen, evaluate, and define concerns
2. Recognize and validate concerns (acknowledge patient's perspective)
3. Provide context for immunization recommendation (what are the disease risks)
4. Identify and address misinformation (avoiding confrontational or adversarial approach and/or attitude)
5. Provide balanced information: what we know, what we do not know
6. Recognize the importance of the patient's/advocate's/parent's partnership in clinical decision
7. Educate about potential consequences in the context of risk-benefit issues
8. Make a clear recommendation that addresses concerns and allows for a second opinion if needed

Adapted with revisions from Halperin, S., MD. Addressing doubts about immunization.Canadian Immunization Awareness Program. Canadian Public Health Association: www.immunize.cpha.ca

If a patient requests a **second opinion**, provide him or her with a local specialty consultation referral or contact the Vaccine Healthcare Centers Network:

- at a Regional Vaccine Healthcare Center (see www.vhcinfo.org)
- at the Clinical Call Center (24/7 support) 1-866-210-6469
- by phone for a referral to a VHC clinical consultant: 1-301-319-2904, DSN: 295-2904
- by web to a VHC clinical consultant: https://askvhc.wramc.amedd.army.mil

Standards for Military Immunization

Standard 1: Immunization Availability

a. Immunizations are available with minimum disruption of deployment or training schedules.
b. Immunizations are available at convenient times, without unnecessary barriers. Immunization services are available on a walk-in basis, as staffing permits. Physical examinations and temperature measurements before immunization are not routinely required if they would delay or impede the timely receipt of immunizations. As clinically appropriate, beneficiaries receive simultaneously the vaccine doses required.
c. Immunization services are responsive to the needs of beneficiaries.
d. Providers incorporate immunization screening and services as a routine part of clinical care for all beneficiaries. Standing orders with quality-assurance procedures are implemented, rather than depending on individual written orders or referral from a primary care provider.

Standard 2: Information and Education Before Immunization

a. Current versions of DOD information brochures or CDC VISs are provided before immunization and conspicuously available in waiting areas of immunization clinics.
b. Immunization personnel know how to readily obtain answers to patients' immunization questions. Personnel are available to accurately address questions and concerns posed by the vaccinee.
c. Before immunization, the vaccinee (individually or collectively) is given information about benefits and risks associated with immunization. For complicated topics (for example, anthrax, smallpox), detailed educational programs and brochures are provided. This information is culturally appropriate and at an appropriate level.

Standard 3: Vaccine Storage and Handling

a. Staff members adhere to cold-chain management principles, including both transportation and storage. A temperature monitoring process is used.
b. Vaccine inventories exceeding $25,000 are connected to temperature recording devices and alarm systems.

Standard 4: Indications and Contraindications to Immunization

a. Each patient is asked about allergies, health status, and previous adverse events before immunization. Each patient is provided an opportunity to ask questions about potential contraindications. Patients are referred for appropriate medical evaluation as needed.
b. During screening, the patient receives a comprehensive screening for all vaccine needs.
c. Immunization personnel understand the patient's personal situation before immunization. If a contraindication to immunization exists, this information is documented in the health record and immunization tracking system. Women are screened with regard to pregnancy.

Standard 5: Immunization Record Keeping

a. Immunizations are recorded accurately in a DOD-approved electronic tracking system according to Service-specific policy. Immunization records are updated at the time of immunization.
b. The immunization clinic or military unit has one or more mechanisms for notifying patients when the next dose of an immunization series is needed (that is, a reminder system).
c. The immunization clinic or military unit has one or more mechanisms for notifying patients when they are overdue for immunization (that is, a recall system).
d. Electronic ITSs are the preferred immunization record for DOD and USCG personnel. All Services record military immunization data into an electronic database that communicates with a centralized DOD registry. Reminder and recall systems may be automated or manual and may include mailed, e-mailed, or telephone messages.

Standard 6: Training

a. Persons who administer vaccines must be appropriately trained.
b. Medical personnel administer vaccines after training to a standard acceptable to the MTF commander, command surgeon, or other appropriate medical authority. Training will include vaccine storage and handling, vaccine characteristics, patient interviewing techniques, distinguishing valid and invalid contraindications, injection technique, documentation, managing and reporting of adverse events, and anaphylaxis.
c. Persons who administer vaccines complete at least 8 hours of annual continuing education and training on current immunization recommendations, schedules, and techniques. Training resources include resident courses, the self-paced Project Immune Readiness (www.vhcinfo.org), and video training from CDC.
d. Persons who administer vaccines have ready access to information resources regarding current recommendations for childhood, general adult, travel, and military-specific immunizations.

Standard 7: Adverse Events After Immunization

a. Epinephrine (such as auto-injectable epinephrine), properly stored, is readily available, along with other supplies determined locally.
b. Staff members have ready access to reporting options for the VAERS.
c. A quality improvement process assures adverse events are reported to VAERS promptly.
d. Persons who administer vaccines are close to a telephone or radio, so emergency medical personnel can be summoned. Medical providers document adverse events in the health record at the time of the event or as soon as possible thereafter.

Standard 8: Vaccine Advocacy to Protect the Military Family

a. The medical facility knows the extent of influenza and pneumococcal immunization coverage among its high-risk patients and has a plan to optimize that level.
b. The medical facility implements a plan to optimize immunization rates among cardiac, pulmonary, diabetic, asplenic, and other patient groups at elevated risk of complications from vaccine-preventable infectious diseases.
c. The medical facility conducts a quality improvement program to optimize its performance in immunizing children, adolescents, and adults against the preventable infections that most threaten them.
d. Commanders use immunization databases to identify and resolve the vulnerabilities of their units.
e. Commanders have plans to help their beneficiaries optimize their personal protection against preventable infectious diseases and meet national goals for optimal delivery of influenza and pneumococcal vaccines. All healthcare providers (not just those in immunization clinics) routinely determine the immunization status of their patients, offer vaccines to those for whom they are indicated, and maintain complete immunization records.

Quality and clinical standards derived from:

1. National Vaccine Advisory Committee (NVAC): http://www.cdc.gov/mmwr/PDF/RR/RR4901.PDF http://www.cdc.gov/mmwr/preview/mmwrhtml/rr4901a1.htm
2. Standards for Immunization Practice. National Coalition for Adult Immunization
3. Quality Standards for Immunization. Guidelines from the Infectious Diseases Society of America
4. JCAHO Standards for Accreditation

Training tool supporting immunization education: "Project Immune Readiness." Available at www.vhcinfo.org. CME and CE credit available. Civilian access to this education is available at www.vhcpir.org.

Missed Opportunities for Immunizations

Opportunities missed by providers to immunize can significantly contribute to undervaccination. Missed opportunities usually arise when the provider:

- Presumes that his or her immunization practices do not need improvement.

- Does not attempt to obtain immunization information from prior providers.

- Has no access to client immunization records; for example, the parent or client forgets to bring the immunization card to the visit. The clinic or physician's office does not maintain adequate, accessible, and up-to-date immunization records on all patients, or the patient presents at the emergency department where his or her immunization record is not on file.

- Does not review or incorrectly assesses client immunization status; for example, the provider does not check the patient's records or think to ask the patient (or his or her parent) whether he or she is up to date on his or her immunizations, or the provider does not obtain immunization history from the patient's prior providers. This kind of missed opportunity has special implications for the elderly who are often discharged from hospitals without any assessment of their immunization status or risk of vaccine-preventable diseases. Hospital care is a marker for identifying many patients who are destined to be re-admitted with pneumococcal infections and influenza-associated respiratory conditions.

- Does not understand indications; for example, the provider does not administer all recommended vaccines during a single visit.

- Has no actively implemented system in place for reminding clients of upcoming immunization needs and recalling clients who have missed immunization visits.

- Misinterprets contraindications; for example, the provider does not immunize a child with a mild illness, even though that illness does not constitute a true contraindication to immunization.

- Refers clients to public health clinics and other sources of free or low-cost immunizations. For some people, especially those outside of metropolitan areas, such referrals pose problems of availability and access to immunizations.

Missed Visits

Missed visits also account for a large percentage of children, adolescents, and adults who fail to receive age-appropriate vaccinations. A missed visit is a function of both provider-related (e.g., failure to schedule visits) and consumer-related (e.g., failure to keep appointments) factors. Some contributing factors to missed visits include lack of flexibility in scheduling and limited services (e.g., few providers, limited hours of operation). For example, a family that calls to schedule an appointment and finds that they must wait several weeks may be likely to forget the appointment when it comes around or refuse to schedule because it is so far in the future.

Source: Adapted with revisions from the Teaching Immunization Practices (TIP) for Association for Prevention Teaching and Research: www.ATPM.org

Safe Handling and Storage of Vaccines

Proper handling and storage of vaccines is critical to the effectiveness and safety of immunizations. Adequate training of personnel and regular review of storage and handling procedures using a standardized checklist is essential. Both CDC and JCAHO emphasize proper handling and storage to ensure vaccine effectiveness and safety. A vaccine handling and storage checklist is available from the Immunization Action Coalition: **www.immunize.org/catg.d/p3035.pdf**

Resources

Vaccine Management.

- Recommendations for Handling and Storage of Selected Biologicals: http://www.cdc.gov/vaccines/pubs/vac-mgt-book.htm
- USAMMA cold-chain management: http://www.usamma.army.mil/vaccines/CCM/cold_chain_management.cfm

"Vaccine Storage & Handling" online tutorial: http://www.vhcinfo.org
Click on the Project Immune Readiness button and complete registration
(2.75 hours CE/CME)

Vaccines and Their True and Untrue Contraindications and Precautions

Adapted and Updated from MMWR 2011;55(RR02):1-60*

Vaccine	Contraindications & Precautions	Untrue Contraindications (Vaccine can be administered)
General for all vaccines. Inactivated vaccines: Anthrax, DTaP, DT, HepA, HepB, Hib, HPV, IPV, JEV, MCV4. MPSV4, PCV, PPSV, Rabies, Td, TT, Tdap, ViCPS, TIV	Contraindications (Need further evaluation) · Prior serious allergic reaction · Serious allergic reaction to a vaccine component · (Tdap only) encephalopathy within 7 days of pertussis-containing vaccine without other known cause Precautions (Need further evaluation) · Moderate or severe acute illness, with or without fever · (For DTaP only) any of the following events after prior DTaP vaccination: T greater than 40.5°C within 48 hours; continuous crying for more than 3 hours within 48 hours; pale or limp episode or collapse within 48 hours; unstable, underlying neurologic problems (defer until stable)	· Mild acute illness · Prior vaccine reaction: mild-moderate, local, mild systemic · Convalescent illness phase · Premature birth (Exception: HepB in certain circumstances) · Recent infection exposure · Immune deficiency - although response to vaccine may be suboptimal · Pregnancy - not an absolute contraindication for non-live vaccines with exceptions such as anthrax vaccine unless the benefit-risk ratio favors immunization compared to the risk of disease · Breastfeeding · TB skin testing · Concurrent antimicrobial therapy** · Immune deficiency in household contact · Non-vaccine allergies, allergies in relatives or allergen extract immunotherapy
Live virus: Adenovirus, LAIV, MMR, MMRV, Rotavirus, VAR, YF-VAX, Zoster	Contraindications (Evaluate further) · Prior serious allergic reaction · Serious allergic reaction to a vaccine component Precautions (Need further evaluation) · Moderate or severe acute illness · Immune-globulin containing products within up to 11 months before vaccination (see card 1-9, 1-10), except for adenovirus, zoster, YF-VAX, and LAIV · Vaccinee has close contact at risk from vaccine strain of virus · Immune deficiency (primary or secondary); immune-suppressing treatments · Pregnancy · Thrombocytopenia (MMR) · (For LAIV only) any of the following: people with chronic medical conditions, children or adolescents on chronic aspirin therapy, people with history of Guillain-Barré syndrome · (For rotavirus only) history of gastrointestinal problem or current GI illness, intussusception, SCID, spina bifida, bladder exstrophy	· MMR: asymptomatic HIV infection · Varicella: avoidance of salicylates for 6 weeks following vaccine recommended by manufacturer but not a contraindication if needed · TB skin testing *** · Low dose oral or inhaled corticosteroid therapy

Vaccines and Their True and Untrue Contraindications and Precautions

Adapted and Updated from MMWR 2011;55(RR02):1-60*

Vaccine	Contraindications & Precautions	Untrue Contraindications (Vaccine can be administered)
Live bacteria: BCG, Typhoid Ty21a (Oral)	Contraindications/Precautions · Same as for live virus (except for use of IgG-containing products) · Vaccinee has close contact at risk from vaccine strain of bacteria · Concurrent antibiotic use (Ty21a) · Acute gastrointestinal illness (Ty21a) · Immune deficiency (use ViCPS instead of Ty21a) · Certain skin conditions (BCG)	· For Ty21a: use of antimalarial medication (except proguanil if used within 10 days of final dose)
Smallpox/Vaccinia in non-outbreak scenario In outbreak situation vaccinate all exposed to virus - there are no contraindications in this case	Contraindications (Need further evaluation) · Same as for live virus · Current atopic dermatitis or eczema, or history of either Precautions (Need further evaluation) · Same as for live virus · Skin conditions or topical anti-inflammatory therapy · Household contact with atopic dermatitis or immune deficiency · Physician-diagnosed heart disease, or significant heart disease risk factors · See Smallpox Vaccine page for more details.	· Low dose oral or inhaled corticosteroid therapy

* Modified according to the clinical experience of the Department of Allergy-Immunology, Walter Reed Army Medical Center.
** Antibacterial medications may interfere with Ty21a (oral typhoid vaccine) and certain antiviral medications may interfere with varicella-containing vaccines and LAIV.
*** Apply tuberculin skin test (TST also known as PPD) at same visit as live virus vaccines; or, delay TST for more than 4 weeks if a live virus vaccine is given first; or, apply TST first, and give the live virus vaccine when TST is read.

FACTOID: Contraindications are based on many factors such as allergies to vaccine components and previous reaction history.

Antibody-containing products and duration of interference with varicella or MMR vaccine immune response.

Adapted from MMWR 2011 / 60(RR02);1-60

Indication	Dose (Per kg)	Dose (mg IgG/kg)	Route	Time interval before measles- or varicella-containing vaccine
Monoclonal antibody to respiratory syncytial virus F protein (Synagis [MedImmune])*	15 mg		IM	0 months
Tetanus (TIG) prophylaxis	250 units	10	IM	3 months
Hepatitis A (IG) • Contact prophylaxis • International travel	 0.02 mL 0.06 mL	 3.3 10	IM	3 months
Hepatitis B prophylaxis (HBIG)	0.06 mL	10	IM	3 months
Rabies immune globulin (HRIG)	20 international units/kg	22	IM	4 months
Measles prophylaxis (IG) • Nonimmunocompromised contact • Immunocompromised contact	 0.25 mL 0.50 mL	 40 80	 IM IM	 5 months 6 months
Vaccinia immune globulin IV	100-500 mg	100-500	IV	6 months
RBCs, washed	10 mL	negligible	IV	0 months
RBCs, adenine-saline added	10 mL	10	IV	3 months
Packed RBCs (Hct 65%)*	10 mL	60	IV	6 months
Whole blood (Hct 35%-50%)**	10 mL	80-100	IV	6 months

Antibody-containing products and duration of interference with varicella or MMR vaccine immune response.

Adapted from MMWR 2011 / 60(RR02);1-60

Indication	Dose (Per kg)	Dose (mg IgG/kg)	Route	Time interval before measles- or varicella-containing vaccine
Plasma/platelet products	10 mg	160	IV	7 months
CMV (IGIV)	150 mg (max)		IV	6 months
Replacement therapy for immune deficiencies (IGIV) **	300-400 mg		IV	8 months
ITP (IGIV)	400 mg 1000 mg		IV	8 months 10 months
Postexposure varicella prophylaxis (IGIV)^	400 mg		IV	8 months
Kawasaki disease (IGIV)	2 g		IV	11 months

Unvaccinated people may not be fully protected against measles during the entire suggested time interval, and additional doses of immune globulin and/or measles vaccine might be indicated after measles exposure. The concentration of measles antibody in a particular immune globulin preparation can vary by its manufacturer's lot. Rates of antibody clearance after receipt of an immune globulin preparation also might vary. Recommended intervals are taken from an estimated half-life of 30 days for passively acquired antibody and an observed interference with the immune response to measles vaccine for 5 months after a dose of 80 mg IgG/kg.

* Contains antibody only to respiratory syncytial virus.
** Assumes a serum IgG concentration of 16 mg/mL.
*** Measles and varicella vaccination are recommended for most HIV-infected children (mild and/or asymptomatic) who do not have evidence of severe immune suppression, but it is contraindicated for patients who have congenital disorders of the immune system.
^ This investigational product VariZIG, similar to licensed VZIG, is purified human immune globulin preparation made from plasma containing high levels of anti-varicella antibodies. When indicated, healthcare providers should make every effort to obtain and administer VariZIG. Administration of IGIV should be considered as an alternative.

Vaccine Products Licensed for Use in the United States

Product Name	Trade Name	Manufacturer	Type	Usual Dose (volume)
Adenovirus	Adenovirus Type 4 and Type 7 Vaccine, Live, Oral	Barr Labs, Inc	L	2 capsules
Anthrax, adsorbed	Biothrax	Emergent Biosolutions	I	0.5 mL
DT	No Trade Name	sanofi pasteur	I	0.5 mL
DTaP	Tripedia	sanofi pasteur	I	0.5 mL
DTaP	Infanrix	GlaxoSmithKline	I	0.5 mL
DTaP	Daptacel	sanofi pasteur	I	0.5 mL
DTaP + Hep B + IPV	Pediarix	GlaxoSmithKline	I	0.5 mL
DTaP + IPV	Kinrix	GlaxoSmithKline	I	0.5 mL
DTaP + IPV + Hib	Pentacel	sanofi pasteur	I	0.5 mL
Hib (PRP-OMP)	PedvaxHIB	Merck	I	0.5 mL
Hib (PRP-T)	ActHIB	sanofi pasteur	I	0.5 mL
Hib + Hep B	Comvax	Merck	I	0.5 mL
Hep A	Havrix	GlaxoSmithKline	I	0.5 mL/1 mL
Hep A	Vaqta	Merck	I	0.5 mL/1 mL
Hep A + Hep B	Twinrix	GlaxoSmithKline	I	1 mL
Hep B	Recombivax HB	Merck	I	0.5 mL/1 mL
Hep B	Engerix-B	GlaxoSmithKline	I	0.5 mL/1 mL
HPV	Cervarix	GlaxoSmithKline	I	0.5 mL
HPV	Gardasil	Merck	I	0.5 mL
Influenza (TIV)	Afluria	CSL Limited	I	0.25 mL/0.5 mL
Influenza (TIV)	Agriflu	Novartis	I	0.5 mL
Influenza (TIV)	Fluarix	GlaxoSmithKline	I	0.5 mL
Influenza (TIV)	Fluvirin	Novartis Vaccines	I	0.25 mL/0.5 mL
Influenza (TIV)	Fluzone	sanofi pasteur	I	0.25 mL/0.5 mL
Influenza (TIV)	Fluzone High-Dose	sanofi pasteur	I	0.5 mL
Influenza (TIV)	FluLaval	GlaxoSmithKline	I	0.5 mL

I = Inactivated LA = Live attenuated L = Live

Vaccine Products Licensed for Use in the United States

Product Name	Trade Name	Manufacturer	Type	Usual Dose (volume)
Influenza (LAIV)	FluMist	MedImmune	LA	0.2 mL
Japanese Encephalitis	Ixiaro	Intercell Biomedical	I	1 mL
MMR	M-M-R II	Merck	LA	0.5 mL
MMRV	ProQuad	Merck	LA	0,5 mL
MCV	Menactra	sanofi pasteur	I	0.5 mL
MCV	Menveo	Novartis Vaccines	I	0.5 mL
MPSV	Menomune	sanofi pasteur	I	0.5 mL
PCV	Prevnar 13	Wyeth	I	0.5 mL
PPV	Pneumovax 23	Merck	I	0.5 mL
IPV (Polio)	IPOL	sanofi pasteur	I	0.5 mL
Rabies	Imovax	sanofi pasteur	I	1 mL
Rabies	RabAvert	Novartis Vaccines	I	1 mL
Rotavirus	Rotarix	GlaxoSmithKline	LA	1 mL
Rotavirus	RotaTeq	Merck	LA	2 mL
Smallpox	ACAM2000	Acambis	L	15 jabs
Td	Decavac	sanofi pasteur	I	0.5 mL
Tdap	Adacel	sanofi pasteur	I	0.5 mL
Tdap	Boostrix	GlaxoSmithKline	I	0.5 mL
TT	No Trade Name	sanofi pasteur	I	0.5 mL
Typhoid Oral (Ty21a)	Vivotif	Berna	LA	4 capsules
Typhoid Vi	Typhim Vi	sanofi pasteur	I	0.5 mL
Varicella	Varivax	Merck	LA	0.5 mL
Yellow Fever	YF-Vax	sanofi pasteur	LA	0.5 mL
Zoster	Zostavax	Merck	LA	0.65 mL

I = Inactivated LA = Live attenuated L = Live

This list is not exhaustive; refer to ImmunoFacts: www.immunofacts.com

Adapted from: U.S. Food and Drug Administration (www.fda.gov/cber/vaccine/licvacc.htm)

You can view a list of vaccine manufacturers, websites, and phone numbers at http://www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/C/manufact-qc.pdf.

How to Administer Intramuscular (IM) Injections

Administer these vaccines by the intramuscular (IM) route: Diphtheria-tetanus (DT, Td) with pertussis (DTaP, Tdap); *Haemophilus influenzae* type b (Hib); hepatitis A (HepA); hepatitis B (HepB); human papillomavirus (HPV); inactivated influenza (TIV); meningococcal conjugate (MCV); and pneumococcal conjugate (PCV). Administer inactivated polio (IPV) and pneumococcal polysaccharide (PPSV) either IM or SC.

Patient age	Injection site	Needle size
Newborn (0–28 days)	Anterolateral thigh muscle	⅝"* (22–25 gauge)
Infant (1–12 months)	Anterolateral thigh muscle	1" (22–25 gauge)
Toddler (1–2 years)	Anterolateral thigh muscle	1–1¼" (22–25 gauge)
	Alternate site: Deltoid muscle of arm if muscle mass is adequate	⅝–1"* (22–25 gauge)
Children (3–18 years)	Deltoid muscle	⅝–1"* (22–25 gauge)
	Alternate site: Anterolateral thigh muscle	1–1¼" (22–25 gauge)
Adults 19 years and older	Deltoid muscle of arm	1–1½"† (22–25 gauge)
	Alternate site: Anterolateral thigh muscle	1–1¼" (22–25 gauge)

*A ⅝" needle may be used only if the skin is stretched tight, the subcutaneous tissue is not bunched, and injection is made at a 90° angle.

†A ⅝" needle is sufficient in adults weighing <130 lbs (<60 kg); a 1" needle is sufficient in adults weighing 130–152 lbs (60–70 kg); a 1–1½" needle is recommended in women weighing 152–200 lbs (70–90 kg) and men weighing 152–260 lbs (70–118 kg); a 1½" needle is recommended in women weighing >200 lbs (>90 kg) or men weighing >260 lbs (>118 kg).

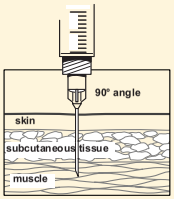
Needle insertion

Use a needle long enough to reach deep into the muscle.

Insert needle at a 90° angle to the skin with a quick thrust.

(Before administering an injection, it is not necessary to aspirate, i.e., to pull back on the syringe plunger after needle insertion.[1])

Multiple injections given in the same extremity should be separated by a minimum of 1", if possible.



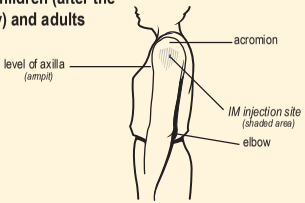
[1]CDC. "ACIP General Recommendations on Immunization" at www.immunize.org/acip

IM site for infants and toddlers

Precaution: hemophilia, thrombocytopenia, and anticoagulation therapy

Insert needle at a 90° angle into the anterolateral thigh muscle.

IM site for children (after the 3rd birthday) and adults



Insert needle at a 90° angle into thickest portion of deltoid muscle — above the level of the axilla and below the acromion.

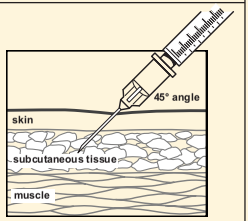
Adapted by the Immunization Action Coalition, courtesy of the Minnesota Department of Health

How to Administer Subcutaneous (SC) Injections

Administer these vaccines by the subcutaneous (SC) route: MMR, varicella, meningococcal polysaccharide (MPSV), and zoster (shingles [Zos]). Administer inactivated polio (IPV) and pneumococcal polysaccharide (PPSV) vaccines either SC or IM.

Patient age	Injection site	Needle size	Needle insertion
Birth to 12 mos.	Fatty tissue over the anterolateral thigh muscle	⅝" needle, 23–25 gauge	Pinch up on subcutaneous (SC) tissue to prevent injection into muscle. Insert needle at 45° angle to the skin. (Before administering an injection, it is not necessary to aspirate, i.e., to pull back on the syringe plunger after needle insertion.*) Multiple injections given in the same extremity should be separated by a minimum of 1".
12 mos. and older	Fatty tissue over anterolateral thigh or fatty tissue over triceps	⅝" needle, 23–25 gauge	

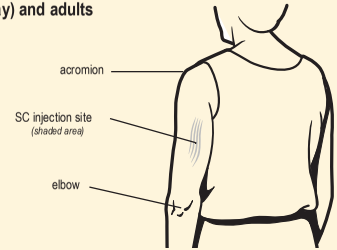
*CDC. "ACIP General Recommendations on Immunization" at www.immunize.org/acip



SC site for infants

Insert needle at a 45° angle into fatty tissue of the anterolateral thigh. Make sure you pinch up on SC tissue to prevent injection into the muscle.

SC site for children (after the 1st birthday) and adults



Insert needle at a 45° angle into the fatty tissue over the triceps muscle. Make sure you pinch up on the SC tissue to prevent injection into the muscle.

Adapted by the Immunization Action Coalition, courtesy of the Minnesota Department of Health

SAMPLE VACCINE SCREENING QUESTIONAIRE

		No	Yes	Unsure
1	Are you in pain today? If yes, what is your pain level on a 0-10 scale: ____			
2	Is English your primary language? If not, what is: _____			
3	Do you have problems that make it hard for you to understand medical instructions?			
4	Do you have religious beliefs or customs which may affect your medical care?			
5	Do you have trouble with any of the following? ☐Hearing ☐Speaking ☐Seeing ☐Reading ☐Other:_____			
6	Are you sick today or have a fever, chills, or cough?			
7	Do you have allergies to: ☐Egg ☐Thimerosal ☐Neomycin ☐Gelatin ☐Rubber/latex ☐Drugs: _____ ☐Preservative/Food: _____			
8	Have you ever had a serious reaction after receiving a vaccine? **Please list**:			
9	Have you ever had a neurological disease such as seizures, Multiple Sclerosis (MS), Guillian-Barre-Syndrome (GBS) or **Other:**			
10	Do you, or any person who lives with you or acts as your caregiver, have cancer, leukemia, AIDS, transplantation, or any other immune system problem?			

SAMPLE VACCINE SCREENING QUESTIONAIRE

		No	Yes	Unsure
11	Have you, or any person who lives with you, taken cortisone, prednisone, other steroids, anticancer drugs, or x-ray treatments in the past 3 months?			
12	Were you transfused with blood, blood products, or given immune (gamma) globulin in the past year?			
13	Have you received vaccinations in the past 30 days? **Please list:**			
14	**FOR WOMEN Only**: Are you now or could you be pregnant in the next month?			
15	**FOR TRAVELERS Only:** Are you planning to travel? **Please list** Countries, departure date, and length of stay:			

Comments: Educational Material Provided

Patient Identification Stamp:

Date:	**Patient/Parent/Interpreter: (signature)**
	Provider Signature: include(print/stamp)

ANAPHYLAXIS: Signs and Symptoms

in the context of administering medications, immunizations, or allergen immunotherapy

Generalized urticaria	Chest tightness or cough
Angioedema	Wheezing
Pruritus	Dyspnea
Hoarseness	Dizziness
Laryngeal edema	Stridor
Tachycardia	Syncope
Cramps, nausea	Sense of impending doom
Disorientation	Shock

ANAPHYLAXIS: DIFFERENTIAL DIAGNOSIS

Anaphylaxis: a generalized allergic reaction affecting one or more organ systems (e.g., skin, respiratory, gastrointestinal, cardiovascular), but not including a local reaction.

Syndromes that may present similar signs or symptoms include:

Vasovagal reaction - usually secondary to anxiety or painful situations (but is NOT under voluntary control) and frequently in physically fit individuals with a history of fainting easily. The patient appears pale and may complain of nausea before syncope (fainting), but does not become pruritic (itchy), flushed (redness in face, neck), or cyanotic (blue discoloration). There may be a significant fall in blood pressure and/or slowed heart rate. Patients usually experience profuse diaphoresis (sweating). These patients usually improve spontaneously without medication. Rarely, a low heart rate causes blood pressure to fall, which may result in fainting. If fainting does occur, monitor the patient until symptoms resolve. If a patient is at risk for this type of reaction, administer shot in such a way as to reduce the risk of injury related to a fall (e.g., place patient in a reclining position with feet elevated).

Hyperventilation – may also cause breathlessness and collapse. Peripheral tingling sensations are experienced without any other associated signs or symptoms. Blood pressure and pulse are maintained, unless associated with a vasovagal reaction.

Hypoglycemic reaction – usually secondary to a fall in blood sugar and may be related to not having had breakfast and prolonged standing or activity prior to the immunization. Symptoms may be mild or severe and may range from mild weakness or dizziness to symptoms that can be mistaken for a vasovagal reaction or a stroke (nervousness, sweating, intense hunger, trembling, weakness, palpitations, trouble speaking). Asking patients if they have eaten (particularly if they have diabetes or it is later in the morning) and if they have problems with this type of reaction may allow for prevention of a reaction after immunization by encouraging a snack or sugar containing drink. In large immunization programs, it may be advisable to have some emergency snacks or drinks available.

Differential Diagnosis*

	ANAPHYLAXIS	VASOVAGAL REACTION
Respiratory	Shortness of breath	Hyperventilation (rapid breathing)
	Hoarse, lump in throat, difficulty swallowing	
	Wheezing, chest tightness	
	Oxygen saturation: normal or ↓	Oxygen saturation: normal or ↑
	Nasal congestion, rhinorrhea	
Cardiovascular	Tachycardia	Normal or bradycardia
	Normotensive or Hypotensive Systolic ↑ or ↓ Diastolic ↓	Normotensive or hypotensive
Skin	Flushing	Pallor
	Urticaria (hives), angioedema	Cool, clammy diaphoresis
CNS	Feeling of impending doom	Anxious, tense, fearful
GI	Nausea/vomiting	Nausea/vomiting
	Abdominal cramps/ diarrhea	

*It is not always easy to discriminate between vasovagal and anaphylaxis reactions. Flushing (limited to the head and neck) and panic disorders, in the absence of other signs and symptoms, also may be confused with anaphylaxis.

Principles of Anaphylaxis Management

CLINICAL PRESENTATION OF ANAPHYLAXIS: Anaphylaxis may develop gradually over minutes or hours after exposure to a trigger. The first signs may be a sensation of warmth or flushing, followed by development of generalized pruritus (itching), urticaria (hives), and angioedema (deep tissue swelling often of the face) or nasal congestion and/or rhinorrhea (runny nose) with conjunctival injection (red, prominent blood vessels in the whites of the eyes frequently associated with watery discharge). Voice change and/or respiratory stridor may indicate pharyngeal edema. Wheezing, a sign of bronchospasm, may progress to severe respiratory distress. All this may be complicated by the development of shock or vascular collapse. The reaction may have an accelerated time course often described as "severe rapidly progressive anaphylaxis." Respiratory and/or cardiovascular arrest may occur within minutes. The reaction may improve and then recur with even greater severity many hours after the initial symptoms.

Anaphylaxis may present in many ways and with varying levels of severity. With severe rapidly progressive anaphylaxis, speed of epinephrine administration is critical for survival.

Subjective symptoms of anaphylaxis only (may or may not be true anaphylaxis):
- Consider symptoms to be anaphylaxis until proven otherwise in a high-risk situation (e.g., allergen immunotherapy or parenteral medication administration, such as a vaccine).

Cutaneous anaphylaxis (itching, hives, angioedema and/or flushing only with no respiratory or cardiovascular compromise):
- Treat with epinephrine, although recovery may occur spontaneously or with symptomatic treatment (antihistamine alone).
- Do not delay treatment with epinephrine because more severe anaphylaxis may occur.

Systemic anaphylaxis (symptoms and/or signs of respiratory, cardiovascular, and/or gastrointestinal involvement):
- Immediately administer IM epinephrine into the vastus lateralis muscle (anterolateral thigh), even through clothing.
- Use deltoid muscle as alternative site if thigh is inaccessible.

Severe rapidly progressive anaphylaxis:
- Administer IM epinephrine immediately into the vastus lateralis muscle, even through clothing.
- Simultaneously with epinephrine injection, start IV line and begin oxygen therapy.
- Repeat epinephrine dose every 5 minutes or more frequently if healthcare provider deems appropriate.

Beta-blocker therapy is associated with a poor response to epinephrine in the setting of anaphylaxis. Glucagon therapy may be life-saving in this setting and should be considered.

Principles of Anaphylaxis Management *(Continued)*

Immediate intervention following diagnosis of anaphylaxis

Rapidly assess airway, breathing, circulation, and mental status

- Avoid patient movement, if possible. Walking may increase rate of anaphylaxis progression.
- Place patient in a supine position and elevate legs, if clinical condition allows. With symptoms of asthma or laryngeal edema, place patient in position that facilitates breathing (not supine).

- For adults: recommended dose is 0.2 to 0.5 mg (1:1000) IM to be repeated every 5 to 10 minutes in the absence of clinical improvement. The adult epinephrine IM auto-injector will deliver 0.3 mg of epinephrine.
- For children: Administer epinephrine 0.01 mg/kg body weight IM to a maximum of 0.3 mg OR, if available, use autoinjectable epinephrine (0.15 mg)*
- **Repeat every 5 minutes.** However, if symptoms and signs are consistent with rapidly progressive anaphylaxis, then administer the healthcare provider may liberalize the interval to permit more frequent injections. Under these circumstances close cardiac monitoring is essential. During this time, an IV should be started and other necessary treatment begun.

* Autoinjectable epinephrine is convenient and suited to rapid injection while other preparations for treatment are underway. Caution: Hold autoinjector in place for 10 seconds after injection to avoid injecting the epinephrine into the air. There is a time delay in firing.

- If the patient is in anaphylactic shock: **Intravenous epinephrine can be used using 1:10,000 dilution for optimum safety. Infuse at 1 mcg/min** initially, then 2 to 10 mcg/min, unless higher doses are indicated in an ACLS* setting. May use 1:100,000 dilution for titration of dose to clinical response by diluting 0.1 mL of 1:1,000 in 10 mL of normal saline (=1:100,000 dilution)
- Repeat as necessary in anaphylaxis not responding to epinephrine injections and volume resuscitation. **Continuous hemodynamic monitoring is essential.** If unresponsive to treatment, consider complicating factors, such as beta-blocker therapy, and the need for glucagon.

- For **severe rapidly progressive anaphylaxis with no IV access**, consider administration of epinephrine via the pharyngeal mucosa, by nebulization, or by the intraosseous route.

Guidelines for CPR & Emergency Cardiovascular Care (ECC):

- 2010 American Heart Association (AHA) Guidelines (http://circ.ahajournals.org/cgi/content/full/122/18_suppl_3/S640)
- AHA ACLS information (http://circ.ahajournals.org/cgi/content/full/122/18_suppl_3/S729)
- AHA PALS information (http://circ.ahajournals.org/cgi/content/full/122/18_suppl_3/S862)
- AHA: Special Considerations: Anaphylaxis (http://circ.ahajournals.org/cgi/content/full/122/18_suppl_3/S829)

Principles of Anaphylaxis Management *(Continued)*

Assess patient status continuously and assure that adequate support personnel, including resuscitation team, are available if patient has any cardiac or respiratory compromise.

Important Components of Anaphylaxis Care

- **Oxygen**: 6 to 8 L/min (to keep saturation greater than 90%). If patient has chronic obstructive lung disease, 2 to 4 L/min to avoid respiratory arrest.
- **Fluids**: Administer normal saline intravenously for fluid replacement and venous access. If patient is severely hypotensive, rapidly infuse volume expanders (colloid-containing solutions).

- **Bronchodilator therapy** for asthma: Nebulized albuterol 0.5 mL of 0.5% solution in 2.5 mL of saline, or levalbuterol (Xopenex) 0.63 to 1.25 mg unit dose, and repeat as necessary.
- **Systemic corticosteroids**, such as methylprednisolone 1 to 2 mg/kg per 24 hours for adults and 0.5 mg/kg per 24 hours for children, are usually not helpful acutely but might prevent prolonged reactions or relapses. Use to prevent delayed or biphasic anaphylaxis in patients with cardiopulmonary compromise.
- **H1 blocker:** Administer diphenhydramine 25 to 50 mg or more in divided doses orally or intravenously, with maximum daily dose of 400 mg for adults and 300 mg (5 mg/kg) for children. Non-sedating antihistamines may be preferred.
- **H2 blockers**: Dilute ranitidine 50 mg for adults and 12.5 to 50 mg (1 mg/kg) for children in 5% dextrose to a total volume of 20 mL and inject intravenously over 5 minutes. Alternately, administer cimetidine 4 mg/kg to adults, but no pediatric dosage in anaphylaxis has been established.
- **Refractory hypotension and beta-blocker**: Administer glucagon 1 to 5 mg (20 to 30 mcg/kg [maximum 1 mg] for children) intravenously over 5 minutes, followed by an infusion of 5 to 15 mcg/min. Observe aspiration precautions because glucagon may cause nausea and emesis.

Principles of Anaphylaxis Management *(Continued)*

Additional Therapeutic Interventions

Reduce allergen absorption: A venous tourniquet above the reaction site might decrease absorption of an injected allergen or venom (evidence to support this is limited).

- Use extreme caution to avoid injury caused by reduced blood flow from the tourniquet or sudden rapid antigen release when the tourniquet is removed.
- Administration of local epinephrine to delay absorption is a controversial recommendation.

Hypotension refractory to volume replacement, epinephrine, H1 and H2 blockers, and glucagon injections:

- Administer dopamine 400 mg in 500 mL of 5% dextrose in water intravenously at 2 to 20 mcg/kg/minute, titrated to maintain adequate blood pressure. Monitor hemodynamic status.
- **High-dose epinephrine IV in adults**: 1 to 3 mg (1:10,000 dilution) slowly over 3 minutes, 3 to 5 mg over 3 minutes, and then 4 to 10 mcg/min infusion.
- **High-dose epinephrine IV in children**: 0.01 mg/kg (0.1 mL/kg of a 1:10,000 solution) repeated every 3 to 5 minutes for ongoing arrest. Consider higher subsequent doses (0.1 to 0.2 mg/kg, 0.1 mL/kg of a 1:1,000 solution) for unresponsive asystole or pulseless electrical activity.

Advanced cardiac life support interventions and guidelines apply if cardiovascular compromise worsens or results in cardiopulmonary arrest.

- Maintain prolonged resuscitation efforts. Efforts are more likely to be successful in anaphylaxis, because the subject is often a young person with a healthy cardiovascular system.
- Administer atropine and begin transcutaneous pacing if asystole or pulseless electrical activity is present.

Vasovagal reaction with hypotension: Nonallergic reaction characterized by slow pulse, nausea, pallor, sweating, clammy skin, and hypotension.

- Place patient in a supine position with elevation of the lower extremities and monitor vital signs.
- Atropine for bradycardia with hypotension: 0.3 to 0.5 mg (0.02 mg/kg) SC every 10 minutes (maximum 2 mg for adults and 1 mg for children) or per ACLS guidelines.

Adapted and modified by RJM Engler, MD from Kemp, SF, Lockey, RF. Anaphylaxis: A review of causes and mechanisms. Journal of Allergy and Clinical Immunology. 2002; 110: 341-8. Detailed Standard Operating Procedure with training guidelines available from AskAllergy@na.amedd.army.mil

Adverse Events After Vaccination

(Information for Patients)

Do vaccines have side effects?

Vaccines are prescription drugs. Like all drugs, vaccines can cause side effects. Some side effects after vaccination are common but usually not serious. These side effects are often expected to occur and although usually mild, some people and may interfere with work or play for a few days. Other side effects are less common or unexpected and may have more serious or long-lasting effects. More serious or long-lasting side effects, also known as vaccine adverse events or adverse events after immunization (AEFI), occur less commonly but should be evaluated and documented for medical exemption assessment.

Is there anything that I can do to prevent side effects after vaccination?

While most vaccine side effects are minor, you can help to prevent some of the more serious side effects if you:

- LEARN about the vaccine.
- ASK
  - if there are any reasons why you should not receive the vaccine.
  - what possible side effects need medical care and when to call the healthcare provider if they occur.

You can request more information from the Vaccine Healthcare Centers (VHC) Network by calling the Vaccine Clinical Call Center at 1-866-210-6469 (available 24 hours/day, 7 days/week), or online: **https://askvhc.wramc.amedd.army.mil**

How can I learn about the vaccines that I am going to get?

Ask your healthcare provider for vaccine-specific fact sheets. These fact sheets explain the disease and describe common and rare side effects, as well as the benefits of the vaccine. The fact sheets also describe reasons (contraindications) why certain people should not get a vaccine.

Fact sheets from the Centers for Disease Control and Prevention (CDC) are called Vaccine Information Statements (VIS). You can find copies in English at **www.cdc.gov/vaccines/pubs/vis/downloads/default.htm** or in a variety of languages at **www.immunize.org/vis/index.htm**). The Department of Defense (DoD) has similar brochures for vaccines such as anthrax and smallpox. Clinics may provide additional information. Read the information carefully and save it in your personal records. If you think you should not get a vaccine, or that it might lead to a serious side effect, discuss this with your healthcare provider or contact the VHC Network *before* you are vaccinated.

What are expected side effects after vaccination?

The most common side effects are local (occur where the vaccine is injected).
Local side effects include itching, burning, redness, minor swelling, and/or discomfort. Other common side effects may include headache, body aches, chills, fatigue, and muscle and/or joint aches. These short-term expected side effects do not pose a risk to your health and do not require reporting to the Vaccine Adverse Events Reporting System (VAERS) discussed on page 1-25. You can reduce aches, pains, and fever with Tylenol®, ibuprofen, or aspirin-like medications, unless you should avoid these drugs.

What should I do if I have unexpected or more serious side effects, or if my side effects do not go away?

Report any chest pain, numbness (tingling or burning), ulcers (sores), blisters, or skin rashes to your healthcare provider *RIGHT AWAY*. If these symptoms, or any other side effects such as muscle and/or joint aches, last for more than a few days or become severe, contact your healthcare provider *RIGHT AWAY*.

When you see your healthcare provider:

* LIST what vaccines you received.
* DESCRIBE (or LIST) your symptoms and when they started or got worse
* SEPARATE new symptoms from old health problems that may have gotten worse.

The vaccination may not be the cause of your symptoms. For example, a health problem unrelated to the vaccine, such as diabetes, lung disease, or infection might be causing symptoms that need medical treatment. On the other hand, if your symptoms are due to a vaccine, do not assume that serious or persistent side effects will go away if you just wait. You know your body – if you think that something is wrong, ask your healthcare provider to evaluate you. Medical treatment can make you more comfortable and may prevent more serious illness.

What if I ask my healthcare provider about a side effect and am still concerned, or if I want to talk with a vaccine expert?

If you continue to have concerns or need additional help after an evaluation has been completed, you may:

· REQUEST referral to a specialist for the medical problem (such as an allergist for an allergic reaction or a dermatologist for a persistent rash).

· CONTACT or ASK your healthcare provider to contact the Vaccine Healthcare Centers (VHC) Network for vaccine safety expert consultation at **www.vhcinfo.org**, 1-301-319-2904, DSN: 295-2904, or online: **https://askvhc.wramc.amedd.army.mil**

· CONTACT the DoD Clinical Call Center directly toll-free at 1-866-210-6469

What is the Vaccine Healthcare Centers (VHC) Network?

The Department of Defense Healthcare System is committed to quality vaccination services and care. It established the VHC Network in 2001 to promote vaccination safety and to provide expert consultation for patients and providers, especially for side effects that are unexpected, prolonged, or serious. VHC experts care about your concerns and want to make sure that you get the proper treatment. The VHC Network provides clinical support services, education, research, and quality improvement programs that enhance vaccine safety, efficacy, and acceptability.

How can I make sure that my side effect is reported to people who monitor vaccine safety?

Severe side effects are also called adverse events. The CDC and Food and Drug Administration jointly manage the Vaccine Adverse Events Reporting System (VAERS). The main purpose of VAERS is to identify important new safety concerns and to ensure that the benefits of vaccines continue to be far greater than the risks. The VHC staff helps patients and healthcare workers to complete detailed VAERS reports.

A detailed and accurate report of serious side effects after vaccination is important in monitoring vaccine safety. Even so, it may be impossible to prove or disprove that a vaccination caused any individual problem. Rare side effects may not have been recognized before a vaccine was licensed, because these side effects may occur only a few times for every million persons vaccinated. For more information about VAERS, go to: **vaers.hhs.gov** or call **1-800-822-7967.**

Your detailed reporting of adverse events helps to make the program better.

What if I am worried about getting the next dose in a vaccination series?

If you are due to receive another dose of a vaccine to which you had a previous reaction, tell your healthcare provider as soon as possible. Keep a written copy of your past medical evaluations and bring it to your healthcare provider's office. If, for some reason, you cannot be evaluated before the next vaccination is due, any healthcare provider can grant a temporary exemption for up to one year or until the final determination has been made about your case. If you disagree with the exemption decision, you have the right to request a referral to a medical specialist.

What are vaccine exemptions?

There are two kinds of vaccine exemptions (reasons for not receiving a vaccine or delaying the next dose): administrative and medical. Descriptions of these exemptions are available at: **www.vaccines.mil** and **www.vhcinfo.org**.

Reasons for exemptions include a:

- CONDITION (such as pregnancy or an acute illness) that might interfere with how the vaccine works.
- CONTRAINDICATION, which is a medical condition that increases the risk of a serious adverse event after vaccination.

What happens if I receive a vaccine and then find out that I had a contraindication to that vaccine?

Tell your healthcare provider about the contraindication as soon as possible to see whether you need treatment. In most cases like this, the vaccinated person does well and has no serious problems. The contraindication should be evaluated and documented. A medical exemption should be recorded in your official record after the evaluation is completed. Before each vaccination you receive, during medical screening for contraindications, make sure you provide information about your other medical conditions, and any past history of adverse events with vaccines, drugs, or foods.

Caring for Adverse Events After Vaccination *(Continued)*

For clinical consultation support for you, your family, or your healthcare provider CALL **1-866-210-6469** or online: **https://askvhc.wramc.amedd.army.mil**.

For more information about vaccine safety and adverse event guidelines: Go to **www.vhcinfo.org**, **www.vaccines.mil**, **www.cdc.gov/vaccines**, and **vaers.hhs.gov**.

What is the National Vaccine Injury Compensation Program?

The VICP is a Federal "no-fault" system that compensates individuals or families of individuals who have been injured by vaccines covered under this program. Compensation is available for both children and adults who receive certain covered vaccines, whether the vaccine is administered in the private or public sector.

What vaccines are covered under VICP?

Currently, **diphtheria, tetanus, pertussis** (DTP, DTaP, DT, TT, Td, or Tdap), **measles, mumps, rubella** (MMR, MMRV, or any components), **polio** (OPV or IPV), **hepatitis A, hepatitis B, *Haemophilus influenzae* type b** (Hib), **varicella** (chicken pox), **rotavirus, influenza**, **meningococcal** (MCV4 and MPSV4), **human papillomavirus** (HPV), and **pneumococcal conjugate** vaccines are covered. Eight years' retroactive coverage is provided for any vaccine or vaccine-related adverse event added for coverage under the VICP. This retroactive coverage includes both currently covered vaccines and childhood vaccines that are newly added. Anthrax and smallpox vaccines, as well as many travel vaccines, are not covered under the program because they are not in the routine schedule of childhood vaccines.

Who may file a VICP claim?

Any child or a parent, legal guardian, or trustee of an injured child or an incapacitated person may file a claim. A claim may be made for any injury or death thought to be a result of a covered vaccine. These injuries may include, but are not limited to: **anaphylaxis, paralytic polio, and encephalopathy**. Adults can apply for coverage if they received a covered vaccine. In addition, claims must be filed within a certain time frame. For specific filing information and deadlines please go to the VICP website at:
http://www.hrsa.gov/vaccinecompensation/

What is the National Vaccine Injury Compensation Program? *(Continued)*

Where can I learn more about VICP?

To learn about the time frame in which to file a claim, how eligibility for compensation is determined, what documentation is required, and other VICP information, go to: **www.hrsa.gov/vaccinecompensation**, or call the National Vaccine Injury Compensation Program at 1-800-338-2382 to obtain an information packet detailing how to file a claim, criteria for eligibility, and the documentation required. Or, for further information, write to:

National Vaccine Injury Compensation Program
Parklawn Building
5600 Fishers Lane
Rockville, MD 20857

Medical Exemption from Further Vaccination:

Date: _____

Vaccine(s) to be Exempted: _____

Medical Exemption	Definitions of Classifications	SELECT
	Medical Indication for Delay of or Avoidance from Future Immunization with a Specific Vaccine	
MA	**Medical, Assumed**: prior immunization reasonably inferred from individual's past experiences (for example, basic medical training), but documentation missing. Code used to avoid superfluous immunization. Code can be reversed upon further review.	
MI	**Medical, Immune**: evidence of serologic immunity.	
MR	**Medical, Reactive**: adverse reactions associated with vaccine where clinical benefit-risk ratio does NOT support continued immunization with specific vaccine.	
MS	**Medical, Supply**: Exempt due to lack of vaccine supply.	
MT	**Medical, Temporary** (e.g., pregnancy, hospitalization, convalescent leave); can also be used where clinical scenario suggests benefit from delay in vaccination but does NOT require permanent vaccine avoidance **Duration**: specified period.	
MP	**Medical, Permanent** (e.g., HIV infection; other chronic disease complicating vaccine tolerance or efficacy); **Duration: Indefinite** unless medical status changes and allows for safe continued vaccination (physician evaluation and order required).	
MD	**Medical, Declined** (e.g., religious waivers, declination of optional vaccinations). Does not apply to anthrax vaccine for Active Duty.	

CURRENT MEDICAL DIAGNOSES: (See health record for detailed evaluation and history)

1. Vaccine-Related Adverse Event: _____
2. _____
3. _____
4. _____
5. _____

VAERS (Vaccine Adverse Event Reporting System) filed: (circle) YES NO

- **Source** (circle): Medical Patient Family Member **Name** (if available): _____
  Date filed: _____ **Comments**: _____

Vaccine Exemption Recommendation: _____ for ____ months (re-evaluate exemption by _____).
Prior exemptions: _____
Comments: _____

Report medical exceptions to Vaccine Healthcare Center (VHC) Network:
askanthrax@na.amedd.army.mil or via **www.vhcinfo.org** or call **301-319-2904, DSN 295-2904**
or Fax **301-319-8299** (Other Fax: _____) for confidential delivery to VHC.

_____
Credentialed Provider Signature, Last 4 of SSN, Contact Information, e-mail

Identification Stamp:

Administrative Exemption from Further Vaccination:

A copy of this document should go into the medical record of the service member so that the immunization clinics have documentation of the administrative vaccine exemption status.

Please note that these categories are generic and can be used for any vaccine waiver. Granting of an Administrative Exemption is a non-medical function, usually controlled by the military unit to which a service member belongs. Entry into the appropriate DEERS-linked database vehicle will reflect currency and will reduce the percentages of non-compliance for a given unit.

Vaccine(s) to be Exempted: _____

Administrative	Definitions of Classifications	SELECT
Exemption	**Administrative Exemption/Waiver from Future Specific Vaccination**	
AD	**Administrative, Deceased**	
AL	**Administrative, Emergency Leave**: (maximum 30-60 days)	
AM	**Administrative, Missing**: (e.g., MIA, POW)	
AP	**Administrative, PCS**: (e.g., permanent change of station)	
AR	**Administrative, Refusal**: (e.g., UCMJ actions)	
AS	**Administrative, Separation**: (e.g., within 60 days of discharge or separation, within 180 days of retirement)	
AT	**Administrative, Temporary**: (e.g., AWOL, legal action pending)	
NR	**Not Required**: Not required	

COMMENTS:_____

UNIT Verification and/or STAMP of Responsible Official: *Please include contact information.*

_____

Signature & Printed Last Name of Official Authorizing Exemption with last 4 of SSN

Identification Stamp: Date: _____

Adult & Military Immunizations

Vaccine Healthcare Centers Network

Based on the Recommendations of the Advisory Committee on Immunization Practices (ACIP), Centers for Disease Control and Prevention (CDC).

Refer to manufacturer's package insert (available at www.vaccines.mil/default.aspx?cnt=resource/quickReferenceChartHome) and ACIP guidelines for specific vaccine recommendations and precautions as only absolute contraindications are listed herein. Links to VIS (Vaccine Information Sheet, created by CDC) are provided where applicable under each vaccine.

Recommended Adult Immunization Schedule

UNITED STATES - 2011

Note: These recommendations *must* be read with the footnotes that follow containing number of doses, intervals between doses, and other important information.

Updated Annually

Figure 1. Recommended adult immunization schedule, by vaccine and age group

VACCINE ▼ / AGE GROUP ▶	19–26 years	27–49 years	50–59 years	60–64 years	≥65 years
Influenza[1,*]	1 dose annually				
Tetanus, diphtheria, pertussis (Td/Tdap)[2,*]	Substitute 1-time dose of Tdap for Td booster; then boost with Td every 10 yrs				Td booster every 10 yrs
Varicella[3,*]	2 doses				
Human papillomavirus (HPV)[4,*]	3 doses (females)				
Zoster[5]				1 dose	
Measles, mumps, rubella (MMR)[6,*]	1 or 2 doses		1 dose		
Pneumococcal (polysaccharide)[7,8]	1 or 2 doses				1 dose
Meningococcal[9,*]	1 or more doses				
Hepatitis A[10,*]	2 doses				
Hepatitis B[11,*]	3 doses				

*Covered by the Vaccine Injury Compensation Program.

For all persons in this category who meet the age requirements and who lack evidence of immunity (e.g., lack documentation of vaccination or have no evidence of previous infection)

Recommended if some other risk factor is present (e.g., based on medical, occupational, lifestyle, or other indications)

No recommendation

evidence of immunity is available at http://www.cdc.gov/vaccines/recs/provisional/default.htm.

7. Pneumococcal polysaccharide (PPSV) vaccination

Vaccinate all persons with the following indications:

Medical: Chronic lung disease (including asthma); chronic cardiovascular diseases; diabetes mellitus; chronic liver diseases; cirrhosis; chronic alcoholism; functional or anatomic asplenia (e.g., sickle cell disease or splenectomy [if elective splenectomy is planned, vaccinate at least 2 weeks before surgery]); immunocompromising conditions (including chronic renal failure or nephrotic syndrome); and cochlear implants and cerebrospinal fluid leaks. Vaccinate as close to HIV diagnosis as possible.

Other: Residents of nursing homes or long-term care facilities and persons who smoke cigarettes. Routine use of PPSV is not recommended for American Indians/Alaska Natives or persons aged less than 65 years unless they have underlying medical conditions that are PPSV indications. However, public health authorities may consider recommending PPSV for American Indians/Alaska Natives and persons aged 50 through 64 years who are living in areas where the risk for invasive pneumococcal disease is increased

8. Revaccination with PPSV

One-time revaccination after 5 years is recommended for persons aged 19 through 64 years with chronic renal failure or nephrotic syndrome; functional or anatomic asplenia (e.g., sickle cell disease or splenectomy); and for persons with immunocompromising conditions. For persons aged 65 years and older, one-time revaccination is recommended if they were vaccinated 5 or more years previously and were aged less than 65 years at the time of primary vaccination.

9. Meningococcal vaccination

Meningococcal vaccine should be administered to persons with the following indications:

Medical: A 2-dose series of meningococcal conjugate vaccine is recommended for adults with anatomic or functional asplenia, or persistent complement component deficiencies. Adults with HIV infection who are vaccinated should also receive a routine 2-dose series. The 2 doses should be administered at 0 and 2 months.

Other: A single dose of meningococcal vaccine is recommended for unvaccinated first-year college students living in dormitories; microbiologists routinely exposed to isolates of *Neisseria*

(Twinrix) is used, administer 3 doses at 0, 1, and 6 months; alternatively, a 4-dose schedule may be used, administered on days 0, 7, and 21–30, followed by a booster dose at month 12.

Updated Annually

11. Hepatitis B vaccination

Vaccinate persons with any of the following indications and any person seeking protection from hepatitis B virus (HBV) infection:

Behavioral: Sexually active persons who are not in a long-term, mutually monogamous relationship (e.g., persons with more than one sex partner during the previous 6 months); persons seeking evaluation or treatment for a sexually transmitted disease (STD); current or recent injection-drug users; and men who have sex with men.

Occupational: Healthcare personnel and public-safety workers who are exposed to blood or other potentially infectious body fluids.

Medical: Persons with end-stage renal disease, including patients receiving hemodialysis; persons with HIV infection; and persons with chronic liver disease.

Other: Household contacts and sex partners of persons with chronic HBV infection; clients and staff members of institutions for persons with developmental disabilities; and international travelers to countries with high or intermediate prevalence of chronic HBV infection (a list of countries is available at http://wwwn.cdc.gov/travel/contentdiseases.aspx).

Hepatitis B vaccination is recommended for all adults in the following settings: STD treatment facilities; HIV testing and treatment facilities; facilities providing drug-abuse treatmentand prevention services; healthcare settings targeting services to injection-drug users or men who have sex with men; correctional facilities; end-stage renal disease programs andfacilities for chronic hemodialysis patients; and institutions and nonresidential day-care facilities for persons with developmental disabilities.

Administer missing doses to complete a 3-dose series of hepatitis B vaccine to those persons not vaccinated or not completely vaccinated. The second dose should be administered 1 month after the first dose; the third dose should be given at least 2 months after the second dose (and at least 4 months after the first dose). If the combined hepatitis A and hepatitis B vaccine (Twinrix) is used, administer 3 doses at 0, 1, and 6 months; alternatively, a 4-dose Twinrix schedule, administered on days 0, 7, and 21 to 30, followed by a booster dose at month 12 may be used.

Adult patients receiving hemodialysis or with other

Footnotes

1. Influenza vaccination

Annual vaccination against influenza is recommended for all persons aged 6 months and older, including all adults. Healthy, nonpregnant adults aged less than 50 years without high-risk medical conditions can receive either intranasally administered live, attenuated influenza vaccine (FluMist), or inactivated vaccine. Other persons should receive the inactivated vaccine. Adults aged 65 years and older can receive the standard influenza vaccine or the high-dose (Fluzone) influenza vaccine. Additional information about influenza vaccination is available at http://www.cdc.gov/vaccines/vpd-vac/flu/default.htm.

2. Tetanus, diphtheria, and acellular pertussis (Td/Tdap) vaccination

Administer a one-time dose of Tdap to adults aged less than 65 years who have not received Tdap previously or for whom vaccine status is unknown to replace one of the 10-year Td boosters, and as soon as feasible to all 1) postpartum women, 2) close contacts of infants younger than age 12 months (e.g., grandparents and child-care providers), and 3) healthcare personnel with direct patient contact. Adults aged 65 years and older who have not previously received Tdap and who have close contact with an infant aged less than 12 months also should be vaccinated. Other adults aged 65 years and older may receive Tdap. Tdap can be administered regardless of interval since the most recent tetanus or diphtheria-containing vaccine.

Adults with uncertain or incomplete history of completing a 3-dose primary vaccination series with Td-containing vaccines should begin or complete a primary vaccination series. For unvaccinated adults, administer the first 2 doses at least 4 weeks apart and the third dose 6–12 months after the second. If incompletely vaccinated (i.e., less than 3 doses), administer remaining doses. Substitute a one-time dose of Tdap for one of the doses of Td, either in the primary series or for the routine booster, whichever comes first.

If a woman is pregnant and received the most recent Td vaccination 10 or more years previously, administer Td during the second or third trimester. If the woman received the most recent Td vaccination less than 10 years previously, administer Tdap during the immediate postpartum period. At the clinician's discretion, Td may be deferred during pregnancy and Tdap substituted in the immediate postpartum period, or Tdap may be administered instead of Td to a pregnant woman after an informed discussion with the woman.

The ACIP statement for recommendations for administering Td as prophylaxis in wound management is available at http://www.cdc.gov/vaccines/pubs/acip-list.htm.

3. Varicella vaccination

All adults without evidence of immunity to varicella should receive 2 doses of single-antigen varicella vaccine if not previously vaccinated or a second dose if they have received only 1 dose, unless they have a medical contraindication. Special consideration should be given to those who 1) have close contact with persons at high risk for severe disease (e.g., healthcare personnel and family contacts of persons with immunocompromising conditions) or 2) are at high risk for exposure or transmission (e.g., teachers; child-care employees; residents and staff members of institutional settings, including correctional institutions; college students; military personnel; adolescents and adults living in households with children; nonpregnant women of childbearing age; and international travelers).

Evidence of immunity to varicella in adults includes any of the following: 1) documentation of 2 doses of varicella vaccine at least 4 weeks apart; 2) U.S.-born before 1980 (although for healthcare personnel and pregnant women, birth before 1980 should not be considered evidence of immunity); 3) history of varicella based on diagnosis or verification of varicella by a healthcare provider (for a patient reporting a history of or having an atypical case, a mild case, or both, healthcare providers should seek either an epidemiologic link with a typical varicella case or to a laboratory-confirmed case or evidence of laboratory confirmation, if it was performed at the time of acute disease); 4) history of herpes zoster based on diagnosis or verification of herpes zoster by a healthcare provider; or 5) laboratory evidence of immunity or laboratory confirmation of disease.

Pregnant women should be assessed for evidence of varicella immunity. Women who do not have evidence of immunity should receive the first dose of varicella vaccine upon completion or termination of pregnancy and before discharge from the healthcare facility. The second dose should be administered 4–8 weeks after the first dose.

4. Human papillomavirus (HPV) vaccination

HPV vaccination with either quadrivalent (HPV4) vaccine or bivalent vaccine (HPV2) is recommended for females at age 11 or 12 years and catch-up vaccination for females aged 13 through 26 years.

Ideally, vaccine should be administered before potential exposure to HPV through sexual activity; however, females who are sexually active should still be vaccinated consistent with age-based recommendations. Sexually active females who have not been infected with any of the four HPV vaccine types (types 6, 11, 16, and 18, all of which HPV4 prevents) or more of the two HPV vaccine types (types 16 and 18, both of which HPV2 prevents) receive the full benefit of the vaccination. Vaccination is less beneficial for females who have already been infected with one or more of the HPV vaccine types. HPV4 or HPV2 can be administered to persons with a history of genital warts, abnormal Papanicolaou test, or positive HPV DNA test, because these conditions are not evidence of previous infection with all vaccine HPV types.

HPV4 may be administered to males aged 9 through 26 years to reduce their likelihood of genital warts. HPV4 would be most effective when administered before exposure to HPV through sexual contact.

A complete series for either HPV4 or HPV2 consists of 3 doses. The second dose should be administered 1–2 months after the first dose; the third dose should be administered 6 months after the first dose.

Although HPV vaccination is not specifically recommended for persons with the medical indications described in Figure 2, "Vaccines that might be indicated for adults based on medical and other indications," it may be administered to these persons because the HPV vaccine is not a live-virus vaccine. However, the immune response and vaccine efficacy might be less for persons with the medical indications described in Figure 2 than in persons who do not have the medical indications described or who are immunocompetent.

5. Herpes zoster vaccination

A single dose of zoster vaccine is recommended for adults aged 60 years and older regardless of whether they report a previous episode of herpes zoster. Persons with chronic medical conditions may be vaccinated unless their condition constitutes a contraindication.

6. Measles, mumps, rubella (MMR) vaccination

Adults born before 1957 generally are considered immune to measles and mumps. All adults born in 1957 or later should have documentation of 1 or more doses of MMR vaccine unless they have a medical contraindication to the vaccine, laboratory evidence of immunity to each of the three diseases, or documentation of provider-diagnosed measles or mumps disease. For rubella, documentation of provider-diagnosed disease is not considered acceptable evidence of immunity.

Measles component: A second dose of MMR vaccine, administered a minimum of 28 days after the first dose, is recommended for adults who 1) have been recently exposed to measles or are in an outbreak setting; 2) are students in postsecondary educational institutions; 3) work in a healthcare facility; or 4) plan to travel internationally. Persons who received inactivated (killed) measles vaccine or measles vaccine of unknown type during 1963–1967 should be revaccinated with 2 doses of MMR vaccine.

Mumps component: A second dose of MMR vaccine, administered a minimum of 28 days after the first dose, is recommended for adults who 1) live in a community experiencing a mumps outbreak and are in an affected age group; 2) are students in postsecondary educational institutions; 3) work in a healthcare facility; or 4) plan to travel internationally. Persons vaccinated before 1979 with either killed mumps vaccine or mumps vaccine of unknown type who are at high risk for mumps infection (e.g. persons who are working in a healthcare facility) should be revaccinated with 2 doses of MMR vaccine.

Rubella component: For women of childbearing age, regardless of birth year, rubella immunity should be determined. If there is no evidence of immunity, women who are not pregnant should be vaccinated. Pregnant women who do not have evidence of immunity should receive MMR vaccine upon completion or termination of pregnancy and before discharge from the healthcare facility.

Healthcare personnel born before 1957: For unvaccinated healthcare personnel born before 1957 who lack laboratory evidence of measles, mumps, and/or rubella immunity or laboratory confirmation of disease, healthcare facilities should 1) consider routinely vaccinating personnel with 2 doses of MMR vaccine at the appropriate interval (for measles and mumps) and 1 dose of MMR vaccine (for rubella), and 2) recommend 2 doses of MMR vaccine at the appropriate interval during an outbreak of measles or mumps, and 1 dose during an outbreak of rubella. Complete information about

Footnotes Continued

evidence of immunity is available at http://www.cdc.gov/vaccines/recs/provisional/default.htm.

7. Pneumococcal polysaccharide (PPSV) vaccination

Vaccinate all persons with the following indications:

Medical: Chronic lung disease (including asthma); chronic cardiovascular diseases; diabetes mellitus; chronic liver diseases; cirrhosis; chronic alcoholism; functional or anatomic asplenia (e.g., sickle cell disease or splenectomy [if elective splenectomy is planned, vaccinate at least 2 weeks before surgery]); immunocompromising conditions (including chronic renal failure or nephrotic syndrome); and cochlear implants and cerebrospinal fluid leaks. Vaccinate as close to HIV diagnosis as possible.

Other: Residents of nursing homes or long-term care facilities and persons who smoke cigarettes. Routine use of PPSV is not recommended for American Indians/Alaska Natives or persons aged less than 65 years unless they have underlying medical conditions that are PPSV indications. However, public health authorities may consider recommending PPSV for American Indians/Alaska Natives and persons aged 50 through 64 years who are living in areas where the risk for invasive pneumococcal disease is increased

8. Revaccination with PPSV

One-time revaccination after 5 years is recommended for persons aged 19 through 64 years with chronic renal failure or nephrotic syndrome; functional or anatomic asplenia (e.g., sickle cell disease or splenectomy); and for persons with immunocompromising conditions. For persons aged 65 years and older, one-time revaccination is recommended if they were vaccinated 5 or more years previously and were aged less than 65 years at the time of primary vaccination.

9. Meningococcal vaccination

Meningococcal vaccine should be administered to persons with the following indications:

Medical: A 2-dose series of meningococcal conjugate vaccine is recommended for adults with anatomic or functional asplenia, or persistent complement component deficiencies. Adults with HIV infection who are vaccinated should also receive a routine 2-dose series. The 2 doses should be administered at 0 and 2 months.

Other: A single dose of meningococcal vaccine is recommended for unvaccinated first-year college students living in dormitories; microbiologists routinely exposed to isolates of *Neisseria meningitidis*; military recruits; and persons who travel to or live in countries in which meningococcal disease is hyperendemic or epidemic (e.g., the "meningitis belt" of sub-Saharan Africa during the dry season [December through June]), particularly if their contact with local populations will be prolonged. Vaccination is required by the government of Saudi Arabia for all travelers to Mecca during the annual Hajj.

Meningococcal conjugate vaccine, quadrivalent (MCV4) is preferred for adults with any of the preceding indications who are aged 55 years and younger; meningococcal polysaccharide vaccine (MPSV4) is preferred for adults aged 56 years and older. Revaccination with MCV4 every 5 years is recommended for adults previously vaccinated with MCV4 or MPSV4 who remain at increased risk for infection (e.g., adults with anatomic or functional asplenia, or persistent complement component deficiencies).

10. Hepatitis A vaccination

Vaccinate persons with any of the following indications and any person seeking protection from hepatitis A virus (HAV) infection:

Behavioral: Men who have sex with men and persons who use injection drugs.

Occupational: Persons working with HAV-infected primates or with HAV in a research laboratory setting.

Medical: Persons with chronic liver disease and persons who receive clotting factor concentrates.

Other: Persons traveling to or working in countries that have high or intermediate endemicity of hepatitis A (a list of countries is available at http://wwwn.cdc.gov/travel/contentdiseases.aspx).

Unvaccinated persons who anticipate close personal contact (e.g., household or regular babysitting) with an international adoptee during the first 60 days after arrival in the United States from a country with high or intermediate endemicity should be vaccinated. The first dose of the 2-dose hepatitis A vaccine series should be administered as soon as adoption is planned, ideally 2 or more weeks before the arrival of the adoptee.

Single-antigen vaccine formulations should be administered in a 2-dose schedule at either 0 and 6–12 months (Havrix), or 0 and 6–18 months (Vaqta). If the combined hepatitis A and hepatitis B vaccine (Twinrix) is used, administer 3 doses at 0, 1, and 6 months; alternatively, a 4-dose schedule may be used, administered on days 0, 7, and 21–30, followed by a booster dose at month 12.

11. Hepatitis B vaccination

Vaccinate persons with any of the following indications and any person seeking protection from hepatitis B virus (HBV) infection:

Behavioral: Sexually active persons who are not in a long-term, mutually monogamous relationship (e.g., persons with more than one sex partner during the previous 6 months); persons seeking evaluation or treatment for a sexually transmitted disease (STD); current or recent injection-drug users; and men who have sex with men.

Occupational: Healthcare personnel and public-safety workers who are exposed to blood or other potentially infectious body fluids.

Medical: Persons with end-stage renal disease, including patients receiving hemodialysis; persons with HIV infection; and persons with chronic liver disease.

Other: Household contacts and sex partners of persons with chronic HBV infection; clients and staff members of institutions for persons with developmental disabilities; and international travelers to countries with high or intermediate prevalence of chronic HBV infection (a list of countries is available at http://wwwn.cdc.gov/travel/contentdiseases.aspx).

Hepatitis B vaccination is recommended for all adults in the following settings: STD treatment facilities; HIV testing and treatment facilities; facilities providing drug-abuse treatmentand prevention services; healthcare settings targeting services to injection-drug users or men who have sex with men; correctional facilities; end-stage renal disease programs andfacilities for chronic hemodialysis patients; and institutions and nonresidential day-care facilities for persons with developmental disabilities.

Administer missing doses to complete a 3-dose series of hepatitis B vaccine to those persons not vaccinated or not completely vaccinated. The second dose should be administered 1 month after the first dose; the third dose should be given at least 2 months after the second dose (and at least 4 months after the first dose). If the combined hepatitis A and hepatitis B vaccine (Twinrix) is used, administer 3 doses at 0, 1, and 6 months; alternatively, a 4-dose Twinrix schedule, administered on days 0, 7, and 21 to 30, followed by a booster dose at month 12 may be used.

Adult patients receiving hemodialysis or with other immunocompromising conditions should receive 1 dose of 40 µg/mL (Recombivax HB) administered on a 3-dose schedule or 2 doses of 20 µg/mL (Engerix-B) administered simultaneously on a 4-dose schedule at 0, 1, 2, and 6 months.

12. Selected conditions for which Haemophilus influenzae type b (Hib) vaccine may be used

1 dose of Hib vaccine should be considered for persons who have sickle cell disease, leukemia, or HIV infection, or who have had a splenectomy, if they have not previously received Hib vaccine.

13. Immunocompromising conditions

Inactivated vaccines generally are acceptable (e.g., pneumococcal, meningococcal, influenza [inactivated influenza vaccine]) and live vaccines generally are avoided in persons with immune deficiencies or immunocompromising conditions. Information on specific conditions is available at http://www.cdc.gov/vaccines/pubs/acip-list.htm.

Immunizations for Military Personnel (see individual vaccines in this tool kit for schedules)

Immunizing Agent	Army	Navy	Air Force	Marine Corps	Coast Guard
Anthrax	S	S	S	S	S
Hepatitis A	All	All	All	All	All
Hepatitis B	Acc,Occ,S,T	Acc,Occ,S,T	Acc,Occ,S,T	Acc,Occ,S,T	All
Influenza	All	All	All	All	All
Japanese encephalitis	S,T	S,T	S,T	S,T	S,T
Measles	All	All	All	All	All
Meningococcal	Acc,S,T	Acc,S,T	Acc,S,T	Acc,S,T	Acc,S,T
Mumps	All	All	All	All	All
Poliovirus	All	All	All	All	All
Rabies	Occ,S	Occ,S	Occ,S	Occ,S	Occ,S
Rubella	All	All	All	All	All
Smallpox (vaccinia)	S	S	S	S	S
Tetanus-diphtheria (preferably with pertussis)	All	All	All	All	All
Typhoid	S,T	S,T	S,T	S,T	S,T
Varicella	Acc,Occ,S	Acc,Occ,S	Acc,Occ,S	Acc,Occ,S	Acc,Occ,S
Yellow fever	S,T	S,T	S,T	All	Acc,S,T

Acc: Accessions in initial entry training, academies, and other officer training. See text for discussion of two clusters of immunization.
AD: Active Duty personnel
All: All personnel, including accessions and all Active and Reserve Component personnel
Occ: High-Risk Occupational Groups
S: Specified by DoD, USCG, Service or Combatant Command policy for identified subpopulations (for example, early deployers, special operations, alert forces). See text for expanded discussion.
T: Traveling or deploying to high-risk areas based on threat assessment or host country requirement

NOTE: Adenovirus vaccine will be required of all new recruits beginning Summer of 2011

Adenovirus Vaccine

Vaccine Description	• Brand: Adenovirus Type 4 and Type 7 Vaccine, Live, Oral (essentially same vaccine used 1971-1999) • Live vaccine, has not been attenuated • See package insert
Dose & Route	• Dose: 2 separate oral tablets (1 white & 1 light peach in color) • Route: Oral • Do not crush or chew tablets, must swallow them whole • See package insert
Indications	• Military populations 17 through 50 years of age; will be given to all new recruits
Administration Schedule	A single dose of two separate tablets swallowed whole
Booster	None
Contraindications	• Serious allergic reaction to prior dose or vaccine component • Pregnancy (also need to avoid pregnancy for at least 6 weeks) • Inability to swallow whole tablets • Moderate or severe acute illness; Postpone administration to persons with vomiting and/or diarrhea
Precautions	•The safety and effectiveness of this vaccine in persons with immune suppression has not be evaluated • Because live virus is shed within the stool for up to 28 days following vaccination, vaccinees should use precaution when around: • Children less than 7 years of age • Persons who are immune suppressed • Pregnant women
Special Considerations	• Instruct vaccinee to use proper personal hygiene, such as frequent hand washing especially following bowel movements
VIS: http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-adenovirus.pdf Pregnancy Registry: 1-866-790-4549 also notify VHC Networks for long-term support and follow-up	

FACTOID: Acute respiratory disease (ARD) is most often associated with adenovirus types 4 and 7. ARD was first recognized among military recruits during World War II.

Source: http://www.cdc.gov/ncidod/dvd/revb/respiratory/eadfeat.htm

Anthrax Vaccine

<table>
<tr><td>Vaccine
Description</td><td colspan="2">• Brand: Biothrax®
• Inactivated vaccine
• Anthrax vaccine (also known as ANT or AVA) is adsorbed to aluminum hydroxide as adjuvant; vial stopper contains dry natural rubber (latex)
• See package insert</td></tr>
<tr><td>Dose & Route</td><td colspan="2">• Dose: 0.5 mL Route: IM into the DELTOID muscle.
• See package insert</td></tr>
<tr><td>Indications</td><td colspan="2">• Age 18 to 65 years according to current military guidelines
• People with occupational risk
• As adjunct treatment after exposure to anthrax bacillus
• Interruption of the vaccination schedule does not require restarting the entire anthrax vaccine series nor addition of extra doses
• Off-label administration requires physician order and clearance from MILVAX-VHC</td></tr>
<tr><td rowspan="7">Administration
Schedule

Note: Delays do NOT interfere with vaccine response and may increase immune response, particularly for dose #2 [Pittman et al. Vaccine. 2000 Sep 15;19:213-6]</td><td colspan="2">Given in a series of 5 doses at 0, 4 weeks, 6 months, 12 months, and 18 months with an annual booster to sustain immunity</td></tr>
<tr><td>Dose</td><td>Dose Recommended Interval</td></tr>
<tr><td>#1</td><td>0 (initial dose)</td></tr>
<tr><td>#2</td><td>4 weeks after dose #1</td></tr>
<tr><td>#3</td><td>5 months after dose #2</td></tr>
<tr><td>#4</td><td>6 months after dose #3</td></tr>
<tr><td>#5</td><td>6 months after dose #4</td></tr>
<tr><td>Booster</td><td></td><td>Annually (every 12 months)</td></tr>
<tr><td>Contraindications</td><td colspan="2">• Serious allergic reaction to prior dose or vaccine component
• Prior serious adverse event (e.g., new onset disabling muscle and/or joint pains, headache, fatigue), particularly if reproducible and/or worsening with more than one dose of vaccine
• Anyone who has recovered from cutaneous anthrax should not get the vaccine
• Pregnant women should not be routinely vaccinated pre-exposure
• Breastfeeding is not a contraindication
• Refer to VHC Network for recommendations related to medical exemptions</td></tr>
</table>

Anthrax Vaccine *(Continued)*

Precautions	• Prior adverse events or hypersensitivity reactions • Pregnancy unless the potential benefits of vaccination clearly outweigh the potential risks to the fetus • Prior anthrax disease may increase the potential for severe local adverse reactions • Vaccination during chemotherapy, high dose corticosteroid therapy of greater than 2-week duration, or radiation therapy may result in a suboptimal response. Deferral of vaccination for 3 months after completion of such therapy may be considered • Concurrent moderate or severe illness with or without fever - postpone until recovery
Special Considerations	• **Do not restart the primary series for any reason.** Resume the primary series with administration of the next dose in the series. Administer subsequent doses of vaccine at intervals based on the date the last dose was given, not when it was originally scheduled. • If an annual booster has not been administered on time, administer the booster dose at the earliest possible date, adjusting the subsequent booster schedule accordingly. Once the primary series is complete, it is never repeated. • For severe large local reactions (greater than 10 cm or extending below a joint), contact the VHC for consultation regarding optimum treatment and medical exemptions • See Storage and Handling Section
VIS: http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-anthrax.pdf Bioterrorism: http://emergency.cdc.gov/agent/anthrax/ http://www.anthrax.mil	

FACTOID: Anthrax infection can occur in three forms: cutaneous (skin), inhalation, and gastrointestinal.

Source: http://www.cdc.gov/nczved/divisions/dfbmd/diseases/anthrax/#what

Hepatitis A Vaccine

Vaccine Description	• Brands: Vaqta® and Havrix® • Inactivated whole virus • Adjuvant: aluminum hydroxide • Vial stopper and/or the syringe plunger stopper may contain dry natural latex rubber (check package insert) • See package insert for other contents	
Route	• IM (Precaution: hemophilia, thrombocytopenia, and anticoagulation therapy)	
Vaccine	**Age**	**Dose**
Vaqta®	1-18 years	25 units (0.5 mL)
	19 years and older	50 units (1 mL)
Havrix®	1-18 years	720 EL.U. (0.5 mL)
	19 years and older	1440 EL.U. (1 mL)
Indications	• Children 1 year of age and older • Travelers to high- or intermediate-risk countries • Men who have sex with men • Illicit drug users • People with clotting-factor disorders • People at occupational risk for exposure • People with chronic liver disease, including people with hepatitis B or C • All military personnel • People who anticipate close personal contact with an international adoptee from countries with high or intermediate level of hepatitis during the first 50 days following arrival in the US (pending at this time)	
Administration Schedule	**Dose**	**Recommended Interval**
	#1	0
	#2	6 to 18 months later
Routine Schedule Booster	None	

Hepatitis A Vaccine *(Continued)*

<table>
<tr><td rowspan="2">Twinrix® (Hepatitis A and B combination) for people 18 years and older: Dose: 1 mL Route: IM

If mixing schedule of Twinrix® with individual doses of HepA and HepB, see info paper for number of doses needed (www.vaccines.mil/documents/1031MIP-Twinrix.pdf)</td><td>Routine schedule: 3 doses at 0, 1m, 6m</td><td>Minimal interval between the 2nd and 3rd dose of Twinrix is 5 months. Separate the first and last dose of Twinrix by at least 6 months.</td></tr>
<tr><td>Accelerated schedule: 3 doses at 0, 7d, 21-30d with a booster at 12m</td><td></td></tr>
<tr><td>Contraindications</td><td colspan="2">• Serious allergic reaction to prior dose or vaccine component
• Moderate or severe acute illness</td></tr>
<tr><td>Special Considerations</td><td colspan="2">• Start vaccine series at least 2-4 weeks before traveling
• If first dose is given less than 4 weeks before travel, consider giving IG as well as vaccine
• If dose #2 is delayed, do not repeat dose #1. Just give dose #2.
• See Storage and Handling Section</td></tr>
<tr><td colspan="3">VIS: http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-hep-a.pdf
Pregnancy registry for Twinrix®: 1-888-452-9622 (GlaxoSmithKline)
also notify VHC Networks for long-term support and follow-up</td></tr>
</table>

FACTOID: Hepatitis A is an acute liver disease caused by the hepatitis A virus (HAV), lasting from a few weeks to several months.

Source: http://www.cdc.gov/hepatitis/

Hepatitis B Vaccine

Vaccine Description	• Brands: Recombivax HB® and Engerix-B® • Inactive viral antigen • Contains thimerosal and aluminum hydroxide; The tip cap and the rubber plunger of the needleless prefilled syringes contain dry natural latex rubber • See package insert	
Route	• IM (Precaution: hemophilia, thrombocytopenia, and anticoagulation therapy)	
Vaccine	**Age**	**Dose**
Recombivax HB® * This is a special dose only for this age group and is given on a different schedule covered in the peds section	0-19 years	5 mcg (0.5 mL)
	11-15 years	10 mcg (1 mL)*
	20 years or older	10 mcg (1 mL)
	Adult on dialysis or immune compromised (dialysis formulation)	40 mcg (1 mL)
Engerix-B®	0-19 years	10 mcg (0.5 mL)
	20 years or older	20 mcg (1 mL)
	Adult on dialysis or immune compromised (adult formulation)	40 mcg (2 mL)
Indications	• All children and adolescents • All military personnel • Household members and sexual partners of HBV carriers (test and if susceptible, vaccinate) • Intravenous drug users • Any person with more than one sex partner in 6 months • Men who have sex with men • People with recently diagnosed sexually transmitted diseases (STDs) • Patients receiving hemodialysis and patients with renal disease that may result in dialysis • Recipients of certain blood products • Healthcare workers with frequent blood contact • Staff of institutions for people with developmental disabilities • Long-term prison inmates • Certain international travelers (determine risk by checking CDC or Army Knowledge Online resources) • People who want to decrease their risk for hepatitis B	

Hepatitis B Vaccine *(Continued)*

<table>
<tr><td>Administration Schedule</td><td colspan="2"></td></tr>
<tr><td>Routine</td><td colspan="2">• 3 doses: 0, 1, 6 months</td></tr>
<tr><td>Dialysis or immune compromised</td><td colspan="2">• Using Recombivax HB® dialysis formulation give 3 doses at 0, 1, and 6 months
• Using Engerix-B® adult formulation give 4 doses at 0, 1, 2, and 6 months
• Note: May need additional doses based on response with immunization expert consultation</td></tr>
<tr><td>Routine Booster</td><td colspan="2">None</td></tr>
<tr><td rowspan="2">Twinrix® (Hepatitis A and B combination) for people 18 years and older: Dose: 1 mL Route: IM

If mixing schedule of Twinrix® with individual doses of HepA and HepB, see info paper for number of doses needed (www.vaccines.mil/documents/1100MIP-Hep-vaccine-product_combinations.pdf)</td><td>Routine schedule: 3 doses at 0, 1m, 6m</td><td>Minimal interval between the 2nd and 3rd dose of Twinrix is 5 months. Separate the first and last dose of Twinrix by at least 6 months</td></tr>
<tr><td>Accelerated schedule: 3 doses at 0, 7d, 21-30d with a booster at 12m</td><td></td></tr>
<tr><td>Contraindications</td><td colspan="2">• Serious allergic reaction, hypersensitivity or adverse reaction to prior dose (Twinrix®, HepA, or HepB) or vaccine component, including yeast and neomycin
• Moderate or severe acute illness
• Any serious reaction possibly linked to vaccine unless evaluation indicates need to continue
• Pregnancy and breastfeeding are NOT contraindications</td></tr>
<tr><td>Special Considerations</td><td colspan="2">• Separate first and third doses by no fewer than 4 months
• If the series is delayed between doses, DO NOT start the series over
• For vaccine non-responders, consult VHC Network for options
• See Storage and Handling Section</td></tr>
<tr><td colspan="3">VIS: http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-hep-b.pdf
Pregnancy registry for Twinrix®: 1-888-825-5249 (GlaxoSmithKline); also notify VHC Networks for long-term support and follow-up</td></tr>
</table>

Haemophilus influenzae type b (HIB) Vaccine

Vaccine Description	• Brands: PedvaxHIB®, ActHIB® • Inactivated protein conjugate vaccine • Vaccine or diluent vial stopper may contain dry natural latex rubber (see package insert)
Dose & Route	• Dose: 0.5 mL • Route: IM (Precaution: hemophilia, thrombocytopenia, and anticoagulation therapy) • See package insert

Indications	• Children 2 months to 5 years of age
	• People over 5 years of age who are at risk, including people with:
	  • anatomical or functional asplenia
	  • cancer treated with chemotherapy (give at least 2 weeks before or 3 months after completion)
	  • immune suppression
	  • post bone marrow or stem cell transplant (1 year post transplant)

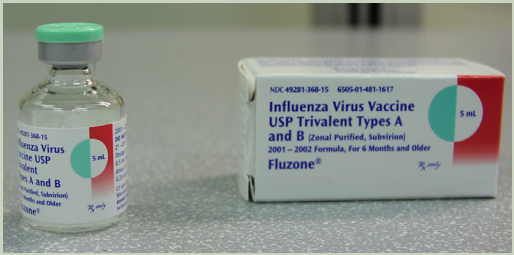
Administration Schedule	• For people older than 5 years of age, one dose of Hib vaccine is usually enough. A healthcare provider will decide if an adolescent or adult needs a second dose.
Contraindications	• Serious allergic reaction to prior dose or vaccine component • Moderate or severe acute illness
Special Considerations	• Vaccine should be used within 24 hours of reconstitution • Refer pregnant women to a healthcare provider for evaluation • See Storage and Handling Section
VIS: http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-hib.pdf	

Human Papillomavirus (HPV) Vaccine

Vaccine Description	• Brands: Gardasil® and Cervarix® • Inactivated viral vaccine • Contains aluminum and yeast • See package insert	
Dose & Route	• Dose: 0.5 mL • Route: IM (Precaution: hemophilia, thrombocytopenia, and anticoagulation therapy)	
Indications	• Gardasil®(HPV-4): Males and females 9-26 years of age (routinely given at 11-12 year old visit) • Cervarix®(HPV2): Girls and women 9-25 years of age (routinely given at 11-12 year old visit); not approved for use in males	
Administration Schedule	**Dose**	**Recommended Interval**
	#1	
	#2	1-2 months after dose 1
	#3	6 months after dose 1
Booster	None	
Contraindications	• Serious allergic reaction to prior dose or vaccine component • Moderate or severe acute illness • Pregnancy - due to lack of safety studies • Males may not receive Cervarix	
Special Considerations	• Syncope has been reported following vaccination; observation for 15 minutes after administration is recommended (see package insert) • 3 cases of bronchospasm 1 to 15 days after HPV vaccine given not reported in placebo group • If a female reaches 26 years of age before series is completed, remaining doses may be given	
VIS: http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-hpv-gardasil.pdf; http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-hpv-cervarix.pdf Pregnancy registry: 1-800-986-8999 (for Gardasil®); 1-888-452-9622 (for Cervarix®); also notify the VHC Network for long-term support and follow-up		

Inactivated Influenza Vaccine

Vaccine Description	• Brands: Afluria®, Agriflu®, Fluarix®, FluLaval®, Fluvirin®, Fluzone®, Fluzone High-Dose®, and Fluzone Intradermal® • Inactivated virus/viral components • Contains egg protein, thimerosal*; The tip cap and the rubber plunger of the needleless prefilled syringes may contain dry natural latex rubber (see package insert) *Thimerosal content varies. Preservative-free formulations are available.	
Dose & Route	• IM Dose: 0.5 mL annually in the fall (0.25 mL for children 6 to 35 months) • Intradermal Dose: 0.1 mL • Route: IM (Precaution: hemophilia, thrombocytopenia, and anticoagulation therapy) or intradermal (specific formulation only)	
Indications ***Note:** Some formulations of inactivated influenza vaccine are not indicated for use in children - See package inserts for more information	• Influenza vaccine is recommended for everyone 6 months of age and older • People 65 years of older may receive either a traditional influenza vaccine or Fluzone High-Dose. At this time CDC has not expressed a preference for any specific influenza vaccine.	
Administration Schedule by route	**Dose**	**Recommended Interval**
Adults IM	0.5 mL	Annually in the fall
Adults Intradermal (ages 18-64 only)	0.1 mL	Annually in the fall
Contraindications	• Serious allergic reaction to prior dose, vaccine component, or eggs • Moderate or severe acute illness • Serious adverse event or history of Guillain-Barré syndrome (GBS) within 6 weeks of a previous dose of influenza vaccine	
Special Considerations	• People with history of mild egg allergy may receive vaccine under healthcare provider advisement or supervision • See Storage and Handling Section	
VIS: http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-flu.pdf		



FACTOID: Influenza (the flu) is a contagious respiratory illness caused by influenza viruses. It can cause mild to severe illness, and at times can lead to death.

Source: http://www.cdc.gov/flu/about/disease/index.htm

Live Attenuated Influenza Vaccine

Vaccine Description	• Brand: FluMist® • Live trivalent nasally administered vaccine (LAIV) • Contains egg protein. See package insert.	
Dose & Route	• Dose: 0.2 mL • Route: intranasal • See package insert	
Indications	• Indicated for active immunization against influenza A & B viruses in healthy children and adolescents (age 2 years to 17 years) and healthy adults (age 18 years to 49 years) • Not indicated for people younger than age 2 years or older than age 49 years	
Administration Schedule	**Dose**	**Recommended Interval**
Adults through age 49 years	0.2 mL	Annually in the fall
Contraindications	Do not administer to people: • who are younger than 2 or older than 49 years of age • who have had a serious allergic reaction to prior dose or vaccine component, including eggs • with moderate or severe acute illness • who have a history of Guillain-Barrè syndrome • with known or suspected immune deficiency diseases, such as combined immunodeficiency, agammaglobulinemia, and thymic abnormalities • with conditions such as immunodeficiency virus infection, malignancy, leukemia, or lymphoma • who may be immune suppressed or have compromised immune status caused by treatment with systemic corticosteroids, alkylating drugs, antimetabolites, radiation, or other immune suppressing therapies • who are pregnant • who have asthma, reactive airway disease, or other chronic pulmonary disease OR other chronic conditions that place them at high risk for complications from influenza illness (e.g., heart disease, diabetes, renal disease, sickle cell anemia)	

Live Attenuated Influenza Vaccine *(Continued)*

Special Considerations	• It is advisable that people who care for others who are severely immune compromised and require a protective environment should receive inactivated influenza vaccine instead of LAIV • Defer administration if nasal congestion might prevent LAIV from reaching nasopharyngeal mucosa. • LAIV may be given at the same time as other live vaccines, including MMR or varicella. But if two live vaccines are not given on the same day, they should be given at least 4 weeks apart. • See Storage and Handling Section
VIS: http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-flulive.pdf	

Japanese Encephalitis Vaccine

Vaccine Description	• Brands: Ixiaro® • Inactivated • Contains mouse serum protein, formaldehyde, gelatin, and bovine serum protein, formaldehyde, aluminum hydroxide, protamine sulfate • See package insert
Dose and Route	• Dose: 0.5 mL • Route: IM (IM Precaution: hemophilia, thrombocytopenia, and anticoagulation therapy) • See package insert
Indications	• Travelers 17 years of age and older spending a month or longer in endemic areas (especially rural) during transmission season (determine risk by checking CDC or Army Knowledge Online resources) • Laboratory workers exposed to JE virus NOTE: If protection is needed for those younger than 17 years of age please obtain guidance from the Information Paper on the VHC website (www.vhcinfo.org)
Administration Schedule	2 doses at 0 and 28 days NOTE: Last dose should be given at least 7 days (Ixiaro®) before international travel to ensure adequate immunity and access to medical care in case of a delayed adverse event
Booster	After > 1 year
Contraindications	• Serious allergic reaction to prior dose or vaccine component • Moderate or severe acute illness • Pregnancy • Breastfeeding: discuss with physician • Younger than 17 years of age

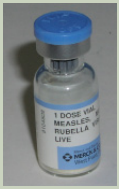
Japanese Encephalitis Vaccine *(Continued)*

Special Considerations	• The supply of JE-Vax® expired 31 May, 2011. There is no JE virus vaccine approved in the United States for children 16 years of age and younger. For 'off-label' or host nation referral options for pediatric JE vaccination, please refer to the Information Paper on the VHC website (www.vhcinfo.org) • See Storage and Handling Section
VIS: http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-je-ixiaro.pdf	

Measles, Mumps, and Rubella (MMR) Vaccine

Vaccine Description	• Brand: M-M-R II® • Live attenuated virus • Contains albumin, sorbitol, neomycin, gelatin	
Dose & Route	• Dose: 0.5 mL Route: SC • See package insert	
Indications	• Adults born in 1957 or later and who are older than 18 years of age • College students • International travelers • Healthcare personnel • All women of childbearing age who do not have evidence of immunity or vaccination • All children and adolescents 1 year and older	
Administration Schedule	**Dose**	**Recommended Interval**
	#1	
	#2 (if recommended*)	Minimum 4 weeks after #1

* All children and adolescents 1 year of age and older and the following adults will need a second dose of MMR vaccine:
- Service members
- College students
- International travelers
- Healthcare personnel



Continued on Next Page

Measles, Mumps, and Rubella (MMR) Vaccine *(Continued)*

Contraindications * ACIP recommends avoiding pregnancy for 4 weeks; Package insert states 3 months.	• Serious allergic reaction to prior dose or vaccine component • Moderate or severe acute illness • Untreated active TB • Pregnancy or possibility of pregnancy within 4 weeks (use contraception).* Document counseling on service-appropriate form. • People who are immune compromised (cancer, leukemia, lymphoma). Note: HIV positivity NOT a contraindication, except for severely immune compromised people (MMWR: http://www.cdc.gov/mmwr/preview/mmwrhtml/rr6002a1.htm) • Immune suppression (e.g., from high-dose steroids, chemotherapy, radiation therapy) • Blood products or immune globulin administered during past 11 months (consult ACIP recommendations - refer to card 1-9)
Special Considerations	• OK to apply tuberculin skin test (TST or PPD) at same visit as MMR. Delay TST for more than 4 wks if MMR given first OR apply TST first, then give MMR when PPD is read. • If another live injected vaccine and MMR are both needed and not administered on the same day, space them at least 4 weeks apart • Allergy to "eggs" is no longer a valid contraindication to MMR per ACIP • See Storage and Handling Section
VIS: http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-mmr.pdf	

FACTOID: Worldwide, 20 million cases of measles still occur each year, and the disease is a significant cause of vaccine-preventable deaths among children.

Source: http://www.cdc.gov/Features/MeaslesUpdate/

Meningococcal Vaccine

Vaccine Description	• Brands: Menomune®, Menactra®, and Menveo® • Inactivated, bacterial polysaccharide (Menomune®) • Inactivated, bacterial polysaccharide conjugate (Menactra® and Menveo®) • Contains thimerosal (only multidose Menomune®) and latex (stopper only for Menomune® and Menactra®) • See package insert
Dose & Route	• Dose: 0.5 mL • Route: SC (Menomune®) and IM (Menactra® and Menveo®) - (Precaution: hemophilia, thrombocytopenia, and anticoagulation therapy) • See package insert
Indications **NOTE:** Menactra® or Menveo® are preferred, but Menactra® is licenced for 9 months - 55 years and Menveo® is licensed for people 2-55 years of age; other age groups should be given Menomune®	• U.S. military basic trainees and deploying personnel • Children at the 11-12 year of age visit or at subsequent visit • People who might be infected during an outbreak of certain types of meningococcal disease • Anyone traveling to, or living in, a part of the world where meningococcal disease is common, such as sub-Saharan Africa • Anyone who has a non-functioning spleen or whose spleen has been removed (asplenia) • Anyone who has terminal complement component deficiency (an immune system disorder) • People at occupational risk • College freshmen, especially those who live in dormitories • People with HIV infection
Administration Schedule	• Single dose for most people • Two doses, 2 months apart for people with HIV infection, asplenia, and complement component deficiency

Booster (Menomune®)	• Menomune®:
	  • After 5 years if 1st dose given at 7 years of age or older and at prolonged increased risk
	  • After 3 years if 1st dose given at 2 through 6 years of age and at prolonged increased risk
	See next page for booster information for Menactra® and Menveo®

Meningococcal Vaccine *(Continued)*

Booster (Menactra® and Menveo®)	• Menactra® and Menveo®:
	  • Need booster at 16 years of age if primary dose given between 11-12 years of age
	  • Need booster at 16-18 years of age if primary dose given between 13-15 years of age
	  • Every 5 years if complement component deficiency or asplenia
	  • After 5 years if 1st dose given at 7 years of age or older and at prolonged increased risk
	  • After 3 years if 1st dose given at 2 through 6 years of age and at prolonged increased risk

Contraindications	• Serious allergic reaction to prior dose or vaccine component • Moderate or severe illness • Menactra® is licensed for use in people 9 months through 55 years of age and Menveo® is licensed for use in people 2-55 years of age (See package insert) • Menomune® is not licensed for children younger than 3 months of age. Children 3 months to 2 years should receive this vaccine only under special circumstances. These children need 2 doses, 3 months apart. (See package insert) • History of Guillain-Barré syndrome (Menactra®)
Special Considerations	• There have been reports of Guillain-Barrè syndrome (GBS) after Menactra® but population-based increase of disease related to vaccine has not been documented • Menactra® and Menveo® have not been widely studied in pregnant or lactating women and should be given only if clearly indicated; Administer Menomune® if clearly indicated • See Storage and Handling Section
VIS: http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-mening.pdf Pregnancy registry for Menactra®: 1-800-822-2463 (sanofi pasteur); Pregnancy registry for Menveo®: 1-877-311-8972 (Novartis); also notify VHC Networks for long-term support and follow-up	

Pneumococcal Polysaccharide Vaccine (PPV23)

Vaccine Description	• Brand: Pneumovax 23® • Inactivated bacterial polysaccharide • Contains phenol • See package insert	
Dose & Route	• Dose: 0.5 mL Route: SC or IM (Precaution: hemophilia, thrombocytopenia, and anticoagulation therapy) • See package insert	
Indications	• If needed based on local disease incidence: Basic trainees and other accessions • Adults 65 years of age and older • Adults who have chronic illness or other risk factors, including chronic cardiac, pulmonary (including asthma), or liver disease, alcoholism, diabetes, CSF leaks, and cigarette smoking, transplant recipients • People with an immunocompromising condition, including HIV infection, leukemia, lymphoma, Hodgkin's disease, multiple myeloma, generalized malignancy, chronic renal failure, or nephrotic syndrome • People receiving immunosuppressive therapy, including high-lose corticosteroids • People in environments or settings with increased risk for infection • People without a functional spleen or anatomic asplenia • People who have or who will be receiving cochlear implants	
Administration Schedule	• One-time dose	
Booster	One-time revaccination	• 5 years after dose #1 for those age 65 years and older if first dose was given prior to age 65 • 5 years after dose #1 for high risk people younger than 65 years of age

Pneumococcal Polysaccharide Vaccine (PPV23) *(Continued)*

Contraindications/ Precautions	• Serious allergic reaction to prior dose or vaccine component • Severe cardiovascular or pulmonary disease where a hypersensitive reaction poses a significant risk (screen for current health status, prior vaccination history, and prior reactions) • Moderate or severe acute illness
Special Considerations	• Administer vaccine before cancer chemotherapy, immunosuppressive therapies, or splenectomy for best effect (See timing in package insert) • Safety of PPV23 vaccine for pregnant women has not been studied. Can be given to pregnant women with medical indications for vaccination after provider evaluation. • Vaccinate candidates for pneumococcal vaccine before pregnancy • See Storage and Handling Section
VIS: http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-ppv.pdf	

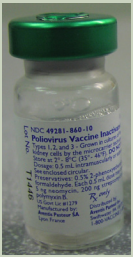
Poliovirus Vaccine

<table>
<tr><td>Vaccine Description</td><td colspan="2">• Inactivated virus (IPV)
• Live attenuated virus vaccine (OPV) no longer available in the US
• Contains neomycin, streptomycin, polymyxin B, formaldehyde, calf serum proteins, and 2-phenoxyethanol; needle cover contains dry natural latex rubber</td></tr>
<tr><td>Dose & Route</td><td colspan="2">• Dose: 0.5 mL
• Route: SC or IM (Precaution: hemophilia, thrombocytopenia, and anticoagulation therapy)
• See package insert</td></tr>
<tr><td>Indications</td><td colspan="2">• All military personnel
• Routine vaccination of U.S. residents older than 18 years of age not routinely recommended
• Consider vaccination of some adults at increased risk of exposure to poliovirus:
- selected laboratory workers
- selected healthcare workers
- travelers to endemic areas
• Previously vaccinated adults can receive one booster dose if traveling to polio-endemic areas</td></tr>
<tr><td>Administration Schedule*</td><td>Dose</td><td>Recommended Interval</td></tr>
<tr><td rowspan="3">*only for previously unvaccinated persons

Note: doses should be separated by a minimum of 1 month</td><td>#1</td><td>0</td></tr>
<tr><td>#2</td><td>1 to 2 months after dose #1</td></tr>
<tr><td>#3</td><td>6 to 12 months after dose #2</td></tr>
<tr><td>Booster (if needed based on risk)</td><td colspan="2">• Previously complete series: administer one IPV dose
• Incomplete series: administer remaining required IPV doses. Do not restart series</td></tr>
</table>

Poliovirus Vaccine *(Continued)*

Contraindications	• Serious allergic reaction to prior dose or vaccine component (IPV) • Moderate or severe acute illness
Special Considerations	• Vaccine-associated paralytic poliomyelitis (VAPP) associated with OPV, so OPV no longer used in U.S. • See Storage and Handling Section
VIS: http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-IPV.pdf	



FACTOID: Polio disease invades the nervous system, and can cause total paralysis in a matter of hours. Polio vaccine provides protection against this disease.

Source: http://www.polioeradication.org/disease.asp

Rabies Vaccine

Vaccine Description	• Brands: RabAvert® and Imovax® • Inactivated virus vaccine • Some products may contain bovine and chicken proteins, human albumin, neomycin, and amphotericin B (but no other preservatives); see package inserts for additional detail
Dose & Route	• Dose: 1 mL • Route: IM (Precaution: hemophilia, thrombocytopenia, and anticoagulation therapy) • See package insert
Indications	• High-risk groups (veterinarians, animal handlers, certain laboratory workers) • People spending time (e.g., one month) in foreign countries where canine rabies is endemic • People at high risk of exposure in countries where locally available rabies vaccines may carry a high risk of adverse reactions • People who have been exposed to rabies
Pre-exposure Vaccine Schedule	• 3 doses at 0, 7, and 21-28 days • Booster dose: 1 mL IM every 2 to 5 years when antibody titer falls below acceptable level (depends on exposure risk category - see ACIP recommendations)
Postexposure Vaccine Schedule	**Previously vaccinated:** 2 doses at 0 and 3 days **No prior rabies vaccine:** 4 doses at 0, 3, 7, and 14 days and rabies immune globulin (RIG) with first dose (see next page); if immunocompromised give a fifth dose on day 28
Contraindications/ Precautions * Consult with health provider for pre-exposure use	**Pre-exposure:** • Serious allergic reaction to previous dose or vaccine component* • Immune-suppressive illness or therapy, including high-dose systemic corticosteroids* • Pregnancy: if clearly needed per ACIP* • Moderate of severe acute illness **Postexposure:** • There are no known specific contraindications to rabies vaccine in the event of an exposure (see next page)
Special Considerations	• See Storage and Handling Section
VIS: http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-rabies.pdf	

Rabies Vaccine

ACIP Recommendations (2010)

There are no known specific contraindications to rabies vaccine in the event of an exposure. If the person has an allergy to the vaccine or vaccine component, consult with the healthcare provider prior to administering the vaccine and ensure necessary emergency equipment to respond to potential allergic reactions.

Vaccination Status	Treatment	Regimen**
Not previously vaccinated	Wound cleansing	• Begin all postexposure treatment with immediate thorough cleansing of all wounds with soap and water. If available, irrigate wounds with a virucidal agent such as a povidone-iodine solution.
	RIG	• Administer 20 international units per kg body weight. If anatomically feasible, infiltrate the full dose around the wound(s). Administer IM any remaining volume at an anatomical site distant from vaccine administration. Do NOT administer RIG in the same syringe as rabies vaccine. Because RIG might partially suppress active production of antibody, give no more than the recommended dose.
	Rabies Vaccine	• Administer 1 mL of rabies vaccine IM (deltoid area†) on days 0 ,3, 7, and 14; if immunocompromised give a fifth dose on day 28
Previously vaccinated¶	Wound cleansing	• Begin all postexposure treatment with immediate thorough cleansing of all wounds with soap and water. If available, irrigate the wounds with a virucidal agent such as a povidone-iodine solution.
	RIG	• Do NOT administer RIG; it is not needed because the person has some immunity from prior rabies vaccine
	Rabies Vaccine	• Administer 1 mL of rabies vaccine IM (deltoid area†) on days 0 and 3

RIG=rabies immune globulin

**These regimens are applicable for all age groups, including children.

† The deltoid area is the only acceptable site of vaccination for adults and older children. For younger children, the outer aspect of the thigh may be used. Vaccine should never be administered in the gluteal area.

¶Any person with a history of pre-exposure vaccination with rabies vaccine; prior postexposure prophylaxis with rabies vaccine or previous vaccination with any other type of rabies vaccine and a documented history of antibody response to the prior vaccination

Smallpox (Vaccinia) Vaccine
Walter Reed Lessons Learned

<table>
<tr><td>Vaccine Description</td><td colspan="2">• Brand: ACAM2000™ - 100 dose vial
• Live vaccinia virus
• See package insert for contents</td></tr>
<tr><td>Dose and Route</td><td colspan="2">• For primary and re-vaccination: 15 punctures using bifurcated needle
• Primary vaccinee: never received smallpox vaccine
• Re-vaccinee: prior dose or doses of vaccine, usually associated with birth before 1972 or military service before 1982 to 1984 or 2nd dose for prior NO TAKE vaccine</td></tr>
<tr><td>Indications</td><td colspan="2">Pre-Event (No Smallpox Disease Outbreak)
• Laboratory workers who handle cultures or animals contaminated or infected with vaccinia or other related viruses (e.g., monkeypox, cowpox, variola)
• Emergency response personnel and healthcare workers involved in potential care of smallpox patients
• Military personnel with operational or other job-related indications
• People at risk of exposure to smallpox virus
• People administering smallpox vaccine

Emergency Use (Smallpox Outbreak)
Anyone directly exposed to smallpox virus, give one dose as soon as possible after exposure. Most effective within 3 to 5 days of exposure.</td></tr>
<tr><td>Administration Schedule</td><td>Dose
15 punctures</td><td>Recommended Interval
• Pre-event: 10 years with the exception of specific laboratory workers involved in orthopox virus research (3 years instead)
• Outbreak: 3 years</td></tr>
</table>

Smallpox (Vaccinia) Vaccine *(Continued)*

Contraindications **Medical Exemptions** Temporary or Permanent May require consultation with medical specialist • Dermatology • Allergy-Immunology • Neurology • Cardiology • Others relevant to patient's disease	**Pre-Event** • Pregnancy or breastfeeding • Moderate or severe illness, with or without fever • Serious allergic reaction to prior dose or vaccine component – see package insert and refer to allergist for evaluation and exemption status • Atopic dermatitis or eczema, current or history of this problem (refer to dermatologist or allergist-immunologist to determine if exemption is necessary) • Immune system disorder (e.g., HIV, congenital immune deficiency, illness, medications, or chronic infection) • Heart or blood vessel disease – see **www.smallpox.mil** for changes in forms - see Adverse Event Info • **Close contact person with risk factors for vaccine virus complications** UNLESS alternative care and/or lodging arrangements can be made or home situation allows for avoidance of contact risk • Steroid eye drops or eye ointment use • Recent eye surgery (within 8 weeks) • Child younger than 1 year old in the home • Active skin condition with breaks in the skin (e.g., acne, severe burn, etc.) • High-dose steroid for more than 2 weeks, less than 1 month ago
Contraindications	**Postexposure** • There are NO absolute contraindications following post-smallpox exposure

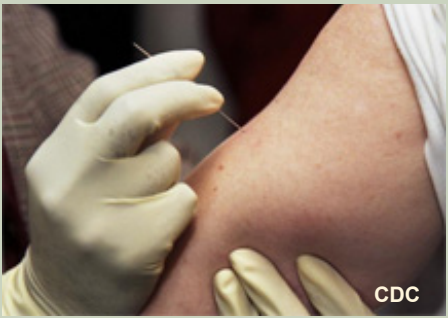
Smallpox (Vaccinia) Vaccine *(Continued)*

Precautions and Issues Temporary medical exemption may be needed May require consultation and treatment before vaccination	**Pre-Event** • Topical immunosuppressive therapy • Systemic lupus and other connective tissue disease, particularly if on immunosuppressive therapy • Other acute or chronic diseases may require medical consultation • Do not administer with varicella vaccine
Education and Screening	Do NOT administer vaccine without patient education and medical screening for contraindications and/or precautions, including consideration of close contact risk factors. Also caution women to avoid pregnancy for 4 weeks after smallpox vaccination. **Resources: www.vhcinfo.org www.vaccines.mil** and **www.smallpox.mil -** See educational Toolkit.
Vaccinator Education & Competency Assessment	• Assure that training and competency assessment has been completed by vaccinator. Education available at: **www.vaccines.mil, www.smallpox.mil,** and as part of Project Immune Readiness (**www.projectimmunereadiness.amedd.army.mil/** or www.vhcpir.org [For NON-MILITARY & NON-GOVERNMENT personnel]). • Practice vaccine administration technique with saline before actual vaccine administration • Validate vaccinator's take rate (Goal: greater than 95% TAKE rate)

After Vaccination, Patient-Specific Education Special Precautions Care and Follow-up *Caution:* *Several cases of autoinoculation reported caused by uncovered site during sleep or contact sports, and spread from uncovered site during bathing with washcloth in contact with site and then other parts of the body.* *Suggest wrapping site with plastic wrap during shower, then replace moist bandage with a dry bandage or allow site to air dry.* *In addition, when not alone maintain covering for at least 30 days (with complete healing of vaccination site) or longer if site still has scab or skin changes*	• Avoid or minimize person-to-person contact with high-risk people who are otherwise medically exempt from smallpox immunization, including: ∗ People with current or a history of atopic dermatitis or eczema ∗ People who are immunocompromised • Wash your hands regularly, especially before caring for a child younger than 1 year old. Avoid direct contact between child and vaccination site. • Be aware that virus may be present until site heals and skin returns to normal color, which can take more than 30 days • Do not touch the vaccination site • If you touch the site by accident, wash your hands immediately and then clean clothing or towels/wash cloths • Wash your hands before and after dressing changes • Do not let others (including pets) touch your vaccination site or materials that touched the site Keep site dry. Cover with waterproof bandage or plastic wrap when bathing. Avoid rubbing the site. Launder items that have touched the site with hot soapy water, take care to avoid risk to others from contact with contaminated laundry.

Smallpox (Vaccinia) Vaccine *(Continued)*

Location of vaccine administration *Follow package insert instructions carefully when reconstituting vaccine	• Usually over the deltoid upper arm; some prefer non-dominant arm (left if right handed or vice versa) • Place low enough to allow for non-adhesive circumferential bandaging for those with hypersensitivity to standard bandage tape • Although deltoid site preferred (encouraged), please check with a credentialed provider for appropriate alternative sites, if necessary • Avoid locations that are hard to care for or associated with sweating or clothing irritation • Do NOT vaccinate directly on old scar • Avoid tattoo areas if possible
Patient Preparation Note: With 2-person vaccination teams, this procedure may be performed by assistant who is completing the paper work while vaccinator is performing the procedure	• Ask the patient if they have received the educational materials, have any other questions, or have new information relevant to vaccination • Position patient for comfort during procedure; avoid contact with vial • Unless obviously dirty, skin preparation is not needed. If alcohol is used, the skin must dry completely to prevent inactivating the vaccine virus. • Mark a 1 cm area with 4 dots spaced at 1 cm in perpendicular diameter using a skin marking pen. Administer vaccine in the middle of this area.



Smallpox (Vaccinia) Vaccine *(Continued)*

Method for Proper Administration	**Steps for proper administration (WRAMC 2002)**
Caution: Vaccine vial should be handled carefully to avoid contamination while opening and handling • Use blue cool pack from refrigerator NOT freezer • Use cooling NOT freezing tray with holder for vial *Administer vaccination low enough to allow for coban-like wrap if tape reaction occurs at site*	• Wear gloves, particularly if not vaccinated or have broken skin on hands (not an absolute requirement) • Position vial securely in a vial holder to avoid accidental tipping or skin contact • Open sterile 4X4 gauze package so that sterile surface of package wrapper and gauze are conveniently located near vial • Open vial and place stopper on its side on the sterile gauze; position to avoid accidental contact (e.g., with sleeve, hand) • Open needle package, or have assistant open • Dip bifurcated needle into vial, checking to make sure that fluid is held by surface tension between posts of needle. (Do NOT hold over head to inspect) • Hold patient's upper arm with one hand under the arm pit area for maximum comfort • Position the wrist of the hand holding the needle on the vaccine arm just below the marked area of administration so that the needle tips are perpendicular over skin area to be vaccinated • Administer appropriate number of jabs counting (e.g., 1-2-3-4-5 three times) • Discard needle in biohazard materials container • Inspect vaccination area for evidence of adequate administration technique (see next card) • If indicated, repeat administration steps • Bandage after procedure is completed

Smallpox (Vaccinia) Vaccine *(Continued)*

Data Recording Patient Specific	• SF 601 Immunization Record • PHS 731/CDC 731 Yellow Immunization Record • DoD Smallpox Vaccination Administration Form • DD Form 2766 • Automated medical registry per service-specific guidelines/immunization tracking system
Quality Assurance Step 1	Before bandaging, inspect the vaccination site and make sure there is evidence of skin surface penetration: • Trace blood or clear abrasion/breaks in skin surface • Some evidence of blood under the skin (petechiae) • Frank bleeding (may reflect too forceful technique) Note: If no evidence of skin penetration (e.g., patient felt dull sensation only), repeat procedure with NEW needle and same vaccine dose (15 jabs)
Quality Assurance Step 2	Maintain a Site-Specific Smallpox Vaccination Log • Maintain log of smallpox vials, date opened, date discarded or moved to another location, site-specific vial tracking number (sequential) - keep for up to 7 years • Patient-specific tracking: record name, date of administration, locally assigned site-patient specific smallpox vaccination number, site vial number • Number of doses from each vial for accountability • Track contamination or inactivation issues raised • Vaccinator competence assessment & tracking • TAKES should be greater than 95%
Tips on Bandaging Avoiding autoinoculation and spread to contacts	Use non-stick, breathable bandages unless injection site has drainage. Vary bandage size to reduce tape irritation. Use latex-free products. Encourage patient to keep site covered with non-stick bandage until scab falls off and skin returns to normal, which may take more than 30 days. Keep site dry. Patient teaching is critical. Hand out the MILVAX trifolds, *What You Need to Know About Smallpox Vaccine* and *Someone in Your Household Just Got Vaccinated Against Smallpox*. In addition, you must distribute the ACAM2000™ Medication Guide.

Smallpox (Vaccinia) Vaccine *(Continued)*

Vaccine TAKE Evaluation MAJOR REACTION VS. "NO TAKE" Reading LATER than Day 6-8 *If classic pustule, vesicle, or scab formation, or evidence of clear induration with prior scab site healing, consider a MAJOR REACTION*	Assess site for major reaction/take 6 to 8 days after vaccination • Repeat vaccination in a primary vaccinee if no pustular lesion or definite palpable induration • Palpate with gloved finger for induration to help differentiate between an **EQUIVOCAL or NO RESPONSE** • Individual born before 1972, or employed as a health care worker before 1977, or who travelled internationally before 1983, or who has a Jennerian scar and who does not have a major reaction is presumed to have been previously vaccinated and does not require a second vaccination attempt • Re-vaccinees may have had peak skin reaction on day 4 to 5, rather than on day 6 to 8 (ask vaccinee what site looked like a few days ago). Also may occur later in some people. • Obtain second opinion in reading if unclear or consider for re-vaccination • If **"NO TAKE"**: Repeat vaccination procedure in primary vaccinee only once with 15 jabs • **SECOND "NO TAKE"**: If after a second attempt there is still no evidence of a cutaneous reaction the individual is considered adequately protected against smallpox (immune) for all military-related assignments , including deployment. No further diagnostic evaluation is required.
Additional Notes	Most recent screening forms available: www.smallpox.mil - Resource Center, Forms
For more information: Military Vaccines: **www.smallpox.mil** DoD/CDC Vaccine Healthcare Center Network: **www.VHCinfo.org** CDC: **www.bt.cdc.gov/agent/smallpox/** Pregnancy registry: 1-877-554-4625 (CDC); also notify VHC Networks for long-term support and follow-up	

Developed December 2002 - April 2003 by RJM Engler, MD and the Walter Reed Smallpox Process Action Team

Updated in August 2007 to include ACAM2000™

Tetanus and Diphtheria (Td) Toxoid Vaccine

Vaccine Description	• Brands: Generic Td and Decavac® • Inactivated vaccine • Td contains aluminum, formaldehyde, and thimerosal; The stopper, needle cover, and plunger may contain dry natural latex rubber; See package insert • **See next card for information on Tdap**	
Dose & Route	• Dose: 0.5 mL • Route: IM (Precaution: hemophilia, thrombocytopenia, and anticoagulation therapy)	
Indications	• Td is recommended for all adolescents and adults • See package insert	
Administration Schedule	**Dose**	**Recommended Interval**
Primary Schedule*	Td #1	
*only for previously unvaccinated patients 7 years of age and older	Td #2	4 weeks after dose #1
	Td #3	6 to 12 months after dose #2
Booster	Td	Every 10 years
Contraindications	• Serious allergic reaction to prior dose or vaccine component • Moderate or severe acute illness	
Special Considerations	• **DO NOT** restart the series, no matter how long since previous dose • History of Arthus reaction following a tetanus or diphtheria toxoid-containing vaccine (do not give TT, Td, or Tdap until at least ten years have elapsed since last dose) • Neurological reaction, including Guillain-Barré syndrome (GBS), within 6 weeks of receiving a tetanus-containing vaccine (provider must weigh benefits and risks) • See Storage and Handling Section	
VIS: http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-td-tdap.pdf		

Tetanus and Diphtheria Toxoids and Acellular Pertussis (Tdap) Vaccine

Vaccine Description	• Brands: Boostrix® (ages 10 and older) and Adacel® (ages 11 through 64) • Inactivated vaccine • The tip cap and the rubber plunger of the needle-less prefilled syringes of Boostrix® contain dry natural latex rubber; Adacel is latex free; see package insert for other contents of each vaccine
Dose & Route	• Dose: 0.5 mL Route: IM (Precaution: hemophilia, thrombocytopenia, and anticoagulation therapy)

Indications	• A single booster dose of Tdap is recommended for use in people 10 through 64+ years. Note: Give Boostrix® to adults 65 and older if they will have contact with infants <12 months of age
	• If the primary series of Td has not been given or completed, Tdap can be used for one of the missing doses, preferably the first dose
	• ACIP recommendations (off-label):
	  • use Tdap when indicated regardless of interval since last tetanus-containing vaccine
	  • use Tdap in undervaccinated children 7-10 years of age
	  • use Tdap in pregnant adults and adolescents during third or late second trimester if unknown or incomplete tetanus series or if due for tetanus booster
	• See package insert

Administration Schedule	• Single dose
Contraindications	• Serious allergic reaction to prior dose or vaccine component • Moderate or severe acute illness • Encephalopathy within 7 days of a pertussis-containing vaccine and not due to another identifiable cause • Not routinely recommended during pregnancy, but provider may recommend it in some cases • Unstable central nervous system disorder • Adults who have had a previous dose of Tdap • See package insert for further information

Continued on Next Page

Tetanus and Diphtheria Toxoids and Acellular Pertussis (Tdap) Vaccine *(continued)*

Special Considerations	• Neurological reaction, including Guillain-Barré syndrome (GBS), within 6 weeks of receiving a tetanus-containing vaccine (provider must weigh benefits and risks) • While the ACIP does not recommend a minimal interval between Tdap and previous tetanus- or diphtheria-containing vaccines, a two year minimum may be prudent based on a credentialed healthcare provider's benefit/risk analysis • See Storage and Handling Section
VIS: http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-td-tdap.pdf Pregnancy registry: Adacel® 1-800-822-2463 (sanofi pasteur) or Boostrix® 1-888-825-5249 (GlaxoSmithKline); also notify VHC Networks for long-term support and follow-up	

FACTOID: Tetanus disease leads to death in about 1 in 10 cases.

Source: http://www.cdc.gov/vaccines/vpd-vac/tetanus/default.htm

Tetanus Toxoid (TT) Vaccine

Vaccine Description	• Brands: Generic TT with two types:
	  • Adsorbed vaccine, which contains aluminum adjuvant
	  • Fluid tetanus toxoid, which can be used to immunize patients hypersensitive to aluminum adjuvant
	• Inactivated vaccine
	• The stopper to the vial contains dry natural latex rubber; See package insert for other contents	

Dose & Route	• Dose: 0.5 mL • Route: IM (Precaution: hemophilia, thrombocytopenia, and anticoagulation therapy) • See package insert	
Indications*	• All adolescents and adults who cannot receive Td or Tdap **Tetanus and diphtheria toxoids for adult use (Td) is the preferred immunizing agent for most adults and older children.*	
Administration Schedule	**Dose**	**Recommended Interval**
Primary Schedule*	TT #1	
	TT #2	4 weeks after dose #1
	TT #3	6 to 12 months after dose #2
Booster	Every 10 years	
Contraindications	• Serious allergic reaction to prior dose or vaccine component • Moderate or severe acute illness	
Special Considerations	• Do not restart series, no matter how long since previous dose • History of Arthus reaction following a tetanus or diphtheria toxoid-containing vaccine (do not give TT, Td, or Tdap until at least ten years have elapsed since last dose) • Neurological reaction, including Guillain-Barré syndrome (GBS), within 6 weeks of receiving a tetanus-containing vaccine (provider must weigh benefits and risks) • See Storage and Handling Section	

Typhoid Vaccine

<table>
<tr><td>Vaccine Description</td><td colspan="2">• Brands and types:
• Vivotif®: Oral live-attenuated - Ty21a (only for people older than 6 years); Contains lactose
• Typhim Vi® : capsular polysaccharide - ViCPS (2 years of age and older); Contains phenol
• See package insert; neither product contains latex</td></tr>
<tr><td>Dose & Route</td><td colspan="2">• Ty21a dose: 4 capsules Route: Oral
• ViCPS dose: 0.5 mL Route: IM - (Precaution: hemophilia, thrombocytopenia, and anticoagulation therapy)
• See package insert</td></tr>
<tr><td>Indications</td><td colspan="2">• Travelers to areas where there is a recognized risk of exposure (see CDC website or Army Knowledge online website to check for risk)
• People with intimate exposure to carrier
• Microbiology laboratorians who work frequently with S. typhi
• Alert military forces (mobility)</td></tr>
<tr><td rowspan="3">Administrative Schedule</td><td>Dose</td><td>Recommended Interval</td></tr>
<tr><td>Oral Ty21a: 4 capsules</td><td>1 capsule every 48 hours before meals. Take only with cool or luke warm fluids</td></tr>
<tr><td>ViCPS: 1 dose</td><td></td></tr>
<tr><td rowspan="2">Booster under conditions of repeated or continued high exposure</td><td>Oral Ty21a</td><td>Every 5 years</td></tr>
<tr><td>ViCPS</td><td>Every 2 years</td></tr>
</table>

Continued on Next Page

Typhoid Vaccine *(Continued)*

Contraindications	• Serious allergic reaction to prior dose or vaccine component • Moderate or severe acute illness • Give ViCPS if person has gastrointestinal illness but is not moderately or severely ill • Do not administer Ty21a to people who are immune compromised • Pregnancy: Do not administer Ty21a; refer to provider to determine if ViCPS should be given
Special Considerations	• Avoid oral antibiotics use with Ty21a (can kill vaccine bacteria) • Give ViCPS if person is taking an antimalarial medication that contains proquanil • Caution travelers that typhoid vaccination is not a substitute for careful selection of food and drink • See Storage and Handling Section
VIS: http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-typhoid.pdf	

Varicella Vaccine

<table>
<tr><td>Vaccine Description</td><td colspan="2">• Brand: Varivax®
• Live attenuated virus
• Contains gelatin, neomycin; See package insert
• May also be given as MMRV - See card in pediatric section</td></tr>
<tr><td>Dose & Route</td><td colspan="2">• Dose: 0.5 mL Route: SC
• See package insert</td></tr>
<tr><td>Indications</td><td colspan="2">• Vaccinate all susceptible adults and adolescents, particularly those likely to expose people at high risk for severe illness
• Healthcare workers
• Family members of people who are immune compromised</td></tr>
<tr><td rowspan="3">Administration Schedule</td><td>Dose</td><td>Recommended Interval</td></tr>
<tr><td>#1</td><td>0</td></tr>
<tr><td>#2</td><td>4 to 8 weeks later</td></tr>
<tr><td>Contraindications</td><td colspan="2">• Serious allergic reaction to prior dose or vaccine component
• Pregnancy, or possibility of pregnancy within one month
• Moderate or severe acute illness
• Immune suppression from disease or therapies
• Blood dyscrasia, leukemia, lymphoma, or other malignant neoplasm affecting the bone marrow or lymphatic system
• Active, untreated tuberculosis</td></tr>
</table>

Continued on Next Page

Varicella Vaccine *(Continued)*

Special Considerations	• Recent receipt of blood product (see table on card 1-9 for intervals between vaccines and various products) • Adolescents and adults with CD4+ T-lymphocyte counts of 200 cells/microliter or more can also receive varicella vaccine (2 doses, at least 3 months apart). • If varicella vaccine and another live vaccine are both needed and not administered on the same day, space them at least 4 weeks apart • Recommended that smallpox vaccine and varicella vaccine not be given at the same time because varicella vaccine can cause lesions that can be confused with smallpox adverse reactions • Manufacturer recommends caution should be exercised if administered to a nursing woman • Manufacturer recommends that salicylates be avoided for 6 wks after receiving varicella vaccine because of a theoretical risk of Reye syndrome. • If second dose is delayed, do not repeat dose #1, just give dose #2 • OK to apply tuberculin skin test (TST or PPD) at same visit as varicella vaccine. Delay TST for more than 4 wks if varicella vaccine given first OR apply TST first, then give varicella vaccine when TST is read. • Note: Discard if not used within 30 minutes after reconstitution • See Storage and Handling Section
VIS: http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-varicella.pdf Pregnancy registry: 1-800-986-8999 (Merck); also notify VHC Networks for long-term support and follow-up	

Yellow Fever

Vaccine Description	• Brand: YF-VAX® • Live attenuated virus vaccine • Contains egg protein and gelatin; Stopper contains dry, natural latex rubber; See package insert for other content information
Dose & Route	• Dose: 0.5 mL Route: SC • See package insert
Indications	• People living or traveling in endemic areas (consult CDC website or Army Knowledge Online website for travel vaccine needs) • Laboratory personnel who might be exposed to virus • Alerted military forces (mobility)
Administration Schedule	• One dose
Booster	• Every 10 years
Contraindications	• Serious allergic reaction to prior dose or vaccine component and people hypersensitive to eggs or gelatin • Moderate or severe acute illness • Infants younger than 6 months of age (given to infants 6-8 months of age only if travel and exposure cannot be avoided; consult provider) • People with immune-suppressed condition or altered immune state • People who do not have a functional thymus gland are at risk for meningitis and death following YF-VAX®
Special Considerations	• People 60 years of age and older are at increased risk for systemic adverse events following YF-VAX® • Pregnancy: no evidence of adverse effects, but avoid when possible. If travel unavoidable, healthcare provider may recommend vaccination • Women who are breastfeeding • If YF-VAX® vaccine and another live vaccine are both needed and not administered on the same day, space them at least 30 days apart • Must be used within one hour of reconstitution • See Storage and Handling Section
VIS: http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-yf.pdf	

Zoster (Shingles)

Vaccine Description	• Brand: Zostavax® • Live attenuated virus vaccine • Contains neomycin, bovine serum, and gelatin • See package insert	
Dose & Route	• Dose: 0.65 mL Route: SC • See package insert	
Indications	• People 50 years of age and older (per FDA approval)	
Administration Schedule	**Dose**	**Recommended Interval**
	One dose	
Contraindications	• Serious allergic reaction to vaccine component • Moderate or severe acute illness • People with immune-suppressed condition or altered immune state • Untreated, active tuberculosis • Pregnancy or planning pregnancy within 4 weeks	
Special Considerations	• If zoster vaccine and another live vaccine are both needed and not administered on the same day, space them at least 4 weeks apart • Zoster vaccine should not be given to people who have already received varicella vaccine • Antiviral medications that are active against herpes virus may interfere with zoster vaccine (discontinue 24 hours before and refrain from use for at least 14 days) • Must be used within 30 minutes of reconstitution • See Storage and Handling Section	
VIS: http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-shingles.pdf Pregnancy registry: 1-800-986-8999 (Merck); also notify VHC Networks for long-term support and follow-up		

Pediatric Immunizations

Vaccine Healthcare Centers Network

Based on the Recommendations of the Advisory Committee on Immunization Practices (ACIP), Centers for Disease Control and Prevention (CDC).

Refer to manufacturer's package insert (available at www.vaccines.mil/default.aspx?cnt=resource/quickReferenceChartHome) and ACIP guidelines for specific vaccine recommendations and precautions as only absolute contraindications are listed herein. Links to VIS (Vaccine Information Sheet, created by CDC) are provided where applicable under each vaccine.


CDC

Recommended Immunization Schedule for Persons Aged 0 Through 6 Years—United States • 2011

For those who fall behind or start late, see the catch-up schedule

Vaccine ▼ Age ►	Birth	1 month	2 months	4 months	6 months	12 months	15 months	18 months	19–23 months	2–3 years	4–6 years
Hepatitis B[1]	HepB	HepB			HepB						
Rotavirus[2]			RV	RV	RV[2]						
Diphtheria, Tetanus, Pertussis[3]			DTaP	DTaP	DTaP	see footnote[3]	DTaP				DTaP
Haemophilus influenzae type b[4]			Hib	Hib	Hib[4]	Hib					
Pneumococcal[5]			PCV	PCV	PCV	PCV				PPSV	
Inactivated Poliovirus[6]			IPV	IPV	IPV						IPV
Influenza[7]					Influenza (Yearly)						
Measles, Mumps, Rubella[8]						MMR	see footnote[8]				MMR
Varicella[9]						Varicella	see footnote[9]				Varicella
Hepatitis A[10]						HepA (2 doses)				HepA Series	
Meningococcal[11]										MCV4	

Range of recommended ages for all children

Range of recommended ages for certain high-risk groups

This schedule includes recommendations in effect as of December 21, 2010. Any dose not administered at the recommended age should be administered at a subsequent visit, when indicated and feasible. The use of a combination vaccine generally is preferred over separate injections of its equivalent component vaccines. Considerations should include provider assessment, patient preference, and the potential for adverse events. Providers should consult the relevant Advisory Committee on Immunization Practices statement for detailed recommendations: **http://www.cdc.gov/vaccines/pubs/acip-list.htm**. Clinically significant adverse events that follow immunization should be reported to the Vaccine Adverse Event Reporting System (VAERS) at **http://www.vaers.hhs.gov** or by telephone, **800-822-7967**.

Footnotes

1. Hepatitis B vaccine (HepB). (Minimum age: birth)
At birth:
• Administer monovalent HepB to all newborns before hospital discharge.
• If mother is hepatitis B surface antigen (HBsAg)-positive, administer HepB and 0.5 mL of hepatitis B immune globulin (HBIG) within 12 hours of birth.
• If mother's HBsAg status is unknown, administer HepB within 12 hours of birth. Determine mother's HBsAg status as soon as possible and, if HBsAg-positive, administer HBIG (no later than age 1 week).
Doses following the birth dose:
• The second dose should be administered at age 1 or 2 months. Monovalent HepB should be used for doses administered before age 6 weeks.
• Infants born to HBsAg-positive mothers should be tested for HBsAg and antibody to HBsAg 1 to 2 months after completion of at least 3 doses of the HepB series, at age 9 through 18 months (generally at the next well-child visit).
• Administration of 4 doses of HepB to infants is permissible when a combination vaccine containing HepB is administered after the birth dose.
• Infants who did not receive a birth dose should receive 3 doses of HepB on a schedule of 0, 1, and 6 months.
• The final (3rd or 4th) dose in the HepB series should be administered no earlier than age 24 weeks.

2. Rotavirus vaccine (RV). (Minimum age: 6 weeks)
• Administer the first dose at age 6 through 14 weeks (maximum age: 14 weeks 6 days). Vaccination should not be initiated for infants aged 15 weeks 0 days or older.
• The maximum age for the final dose in the series is 8 months 0 days.
• If Rotarix is administered at ages 2 and 4 months, a dose at 6 months is not indicated.

3. Diphtheria and tetanus toxoids and acellular pertussis vaccine (DTaP). (Minimum age: 6 weeks)
• The fourth dose may be administered as early as age 12 months, provided at least 6 months have elapsed since the third dose.

4. *Haemophilus influenzae* type b conjugate vaccine (Hib). (Minimum age: 6 weeks)
• If PRP-OMP (PedvaxHIB or Comvax [HepB-Hib]) is administered at ages 2 and 4 months, a dose at age 6 months is not indicated.
• Hiberix should not be used for doses at ages 2, 4, or 6 months for the primary series but can be used as the final dose in children aged 12 months through 4 years.

5. Pneumococcal vaccine. (Minimum age: 6 weeks for pneumococcal conjugate vaccine [PCV]; 2 years for pneumococcal polysaccharide vaccine [PPSV])
• PCV is recommended for all children aged younger than 5 years. Administer 1 dose of PCV to all healthy children aged 24 through 59 months who are not completely vaccinated for their age.
• A PCV series begun with 7-valent PCV (PCV7) should be completed with 13-valent PCV (PCV13).
• A single supplemental dose of PCV13 is recommended for all children aged 14 through 59 months who have received an age-appropriate series of PCV7.
• A single supplemental dose of PCV13 is recommended for all children aged 60 through 71 months with underlying medical conditions who have received an age-appropriate series of PCV7.
• The supplemental dose of PCV13 should be administered at least 8 weeks after the previous dose of PCV7. See *MMWR* 2010:59(No. RR-11).
• Administer PPSV at least 8 weeks after last dose of PCV to children aged 2 years or older with certain underlying medical conditions, including a cochlear implant.

6. Inactivated poliovirus vaccine (IPV). (Minimum age: 6 weeks)
• If 4 or more doses are administered prior to age 4 years an additional dose should be administered at age 4 through 6 years.
• The final dose in the series should be administered on or after the fourth birthday and at least 6 months following the previous dose.

7. Influenza vaccine (seasonal). (Minimum age: 6 months for trivalent inactivated influenza vaccine [TIV]; 2 years for live, attenuated influenza vaccine [LAIV])
• For healthy children aged 2 years and older (i.e., those who do not have underlying medical conditions that predispose them to influenza complications), either LAIV or TIV may be used, except LAIV should not be given to children aged 2 through 4 years who have had wheezing in the past 12 months.
• Administer 2 doses (separated by at least 4 weeks) to children aged 6 months through 8 years who are receiving seasonal influenza vaccine for the first time or who were vaccinated for the first time during the previous influenza season but only received 1 dose.
• Children aged 6 months through 8 years who received no doses of monovalent 2009 H1N1 vaccine should receive 2 doses of 2010–2011 seasonal influenza vaccine. See *MMWR* 2010;59(No. RR-8):33–34.

8. Measles, mumps, and rubella vaccine (MMR). (Minimum age: 12 months)
• The second dose may be administered before age 4 years, provided at least 4 weeks have elapsed since the first dose.

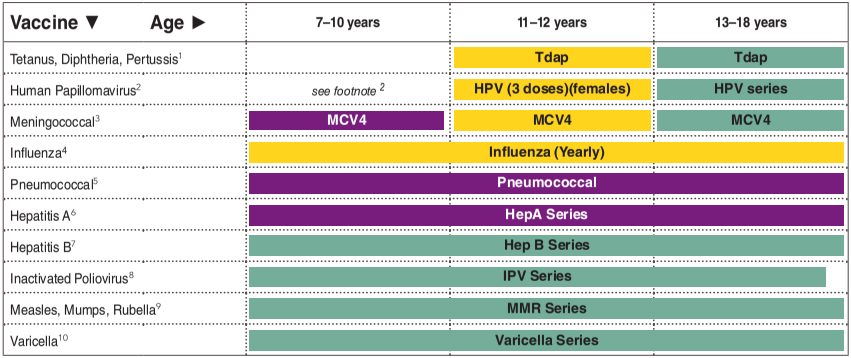
9. Varicella vaccine. (Minimum age: 12 months)
• The second dose may be administered before age 4 years, provided at least 3 months have elapsed since the first dose.
• For children aged 12 months through 12 years the recommended minimum interval between doses is 3 months. However, if the second dose was administered at least 4 weeks after the first dose, it can be accepted as valid.

10. Hepatitis A vaccine (HepA). (Minimum age: 12 months)
• Administer 2 doses at least 6 months apart.
• HepA is recommended for children aged older than 23 months who live in areas where vaccination programs target older children, who are at increased risk for infection, or for whom immunity against hepatitis A is desired.

11. Meningococcal conjugate vaccine, quadrivalent (MCV4). (Minimum age: 2 years)
• Administer 2 doses of MCV4 at least 8 weeks apart to children aged 2 through 10 years with persistent complement component deficiency and anatomic or functional asplenia, and 1 dose every 5 years thereafter.
• Persons with human immunodeficiency virus (HIV) infection who are vaccinated with MCV4 should receive 2 doses at least 8 weeks apart.
• Administer 1 dose of MCV4 to children aged 2 through 10 years who travel to countries with highly endemic or epidemic disease and during outbreaks caused by a vaccine serogroup.
• Administer MCV4 to children at continued risk for meningococcal disease who were previously vaccinated with MCV4 or meningococcal polysaccharide vaccine after 3 years if the first dose was administered at age 2 through 6 years.

Recommended Immunization Schedule for Persons Aged 7 Through 18 Years—United States • 2011

For those who fall behind or start late, see the schedule below and the catch-up schedule



This schedule includes recommendations in effect as of December 21, 2010. Any dose not administered at the recommended age should be administered at a subsequent visit, when indicated and feasible. The use of a combination vaccine generally is preferred over separate injections of its equivalent component vaccines. Considerations should include provider assessment, patient preference, and the potential for adverse events. Providers should consult the relevant Advisory Committee on Immunization Practices statement for detailed recommendations: **http://www.cdc.gov/vaccines/pubs/acip-list.htm**. Clinically significant adverse events that follow immunization should be reported to the Vaccine Adverse Event Reporting System (VAERS) at **http://www.vaers.hhs.gov** or by telephone, **800-822-7967.**

Footnotes

1. Tetanus and diphtheria toxoids and acellular pertussis vaccine (Tdap). (Minimum age: 10 years for Boostrix and 11 years for Adacel)
• Persons aged 11 through 18 years who have not received Tdap should receive a dose followed by Td booster doses every 10 years thereafter.
• Persons aged 7 through 10 years who are not fully immunized against pertussis (including those never vaccinated or with unknown pertussis vaccination status) should receive a single dose of Tdap. Refer to the catch-up schedule if additional doses of tetanus and diphtheria toxoid–containing vaccine are needed.
• Tdap can be administered regardless of the interval since the last tetanus and diphtheria toxoid–containing vaccine.

2. Human papillomavirus vaccine (HPV). (Minimum age: 9 years)
• Quadrivalent HPV vaccine (HPV4) or bivalent HPV vaccine (HPV2) is recommended for the prevention of cervical precancers and cancers in females.
• HPV4 is recommended for prevention of cervical precancers, cancers, and genital warts in females.
• HPV4 may be administered in a 3-dose series to males aged 9 through 18 years to reduce their likelihood of genital warts.
• Administer the second dose 1 to 2 months after the first dose and the third dose 6 months after the first dose (at least 24 weeks after the first dose).

3. Meningococcal conjugate vaccine, quadrivalent (MCV4). (Minimum age: 2 years)
• Administer MCV4 at age 11 through 12 years with a booster dose at age 16 years.
• Administer 1 dose at age 13 through 18 years if not previously vaccinated.
• Persons who received their first dose at age 13 through 15 years should receive a booster dose at age 16 through 18 years.
• Administer 1 dose to previously unvaccinated college freshmen living in a dormitory.
• Administer 2 doses at least 8 weeks apart to children aged 2 through 10 years with persistent complement component deficiency and anatomic or functional asplenia, and 1 dose every 5 years thereafter.
• Persons with HIV infection who are vaccinated with MCV4 should receive 2 doses at least 8 weeks apart.
• Administer 1 dose of MCV4 to children aged 2 through 10 years who travel to countries with highly endemic or epidemic disease and during outbreaks caused by a vaccine serogroup.
• Administer MCV4 to children at continued risk for meningococcal disease who were previously vaccinated with MCV4 or meningococcal polysaccharide vaccine after 3 years (if first dose administered at age 2 through 6 years) or after 5 years (if first dose administered at age 7 years or older).

4. Influenza vaccine (seasonal).
• For healthy nonpregnant persons aged 7 through 18 years (i.e., those who do not have underlying medical conditions that predispose them to influenza complications), either LAIV or TIV may be used.
• Administer 2 doses (separated by at least 4 weeks) to children aged 6 months through 8 years who are receiving seasonal influenza vaccine for the first time or who were vaccinated for the first time during the previous influenza season but only received 1 dose.
• Children 6 months through 8 years of age who received no doses of monovalent 2009 H1N1 vaccine should receive 2 doses of 2010-2011 seasonal influenza vaccine. See *MMWR* 2010;59(No. RR-8):33–34.

5. Pneumococcal vaccines.
• A single dose of 13-valent pneumococcal conjugate vaccine (PCV13) may be administered to children aged 6 through 18 years who have functional or anatomic asplenia, HIV infection or other immunocompromising condition, cochlear implant or CSF leak. See *MMWR* 2010;59(No. RR-11).
• The dose of PCV13 should be administered at least 8 weeks after the previous dose of PCV7.
• Administer pneumococcal polysaccharide vaccine at least 8 weeks after the last dose of PCV to children aged 2 years or older with certain underlying medical conditions, including a cochlear implant. A single revaccination should be administered after 5 years to children with functional or anatomic asplenia or an immunocompromising condition.

6. Hepatitis A vaccine (HepA).
• Administer 2 doses at least 6 months apart.
• HepA is recommended for children aged older than 23 months who live in areas where vaccination programs target older children, or who are at increased risk for infection, or for whom immunity against hepatitis A is desired.

7. Hepatitis B vaccine (HepB).
• Administer the 3-dose series to those not previously vaccinated. For those with incomplete vaccination, follow the catch-up schedule.
• A 2-dose series (separated by at least 4 months) of adult formulation Recombivax HB is licensed for children aged 11 through 15 years.

8. Inactivated poliovirus vaccine (IPV).
• The final dose in the series should be administered on or after the fourth birthday and at least 6 months following the previous dose.
• If both OPV and IPV were administered as part of a series, a total of 4 doses should be administered, regardless of the child's current age.

9. Measles, mumps, and rubella vaccine (MMR).
• The minimum interval between the 2 doses of MMR is 4 weeks.

10. Varicella vaccine.
• For persons aged 7 through 18 years without evidence of immunity (see *MMWR* 2007;56[No. RR-4]), administer 2 doses if not previously vaccinated or the second dose if only 1 dose has been administered.
• For persons aged 7 through 12 years, the recommended minimum interval between doses is 3 months. However, if the second dose was administered at least 4 weeks after the first dose, it can be accepted as valid.
• For persons aged 13 years and older, the minimum interval between doses is 4 weeks.

The table below provides catch-up schedules and minimum intervals between doses for children whose vaccinations have been delayed. A vaccine series does not need to be restarted, regardless of the time that has elapsed between doses. Use the section appropriate for the child's age

Vaccine	Minimum Age for Dose 1	Minimum Interval Between Doses			
		Dose 1 to Dose 2	Dose 2 to Dose 3	Dose 3 to Dose 4	Dose 4 to Dose 5
PERSONS AGED 4 MONTHS THROUGH 6 YEARS					
Hepatitis B[1]	Birth	4 weeks	8 weeks (and at least 16 weeks after first dose)		
Rotavirus[2]	6 wks	4 weeks	4 weeks[2]		
Diphtheria, Tetanus, Pertussis[3]	6 wks	4 weeks	4 weeks	6 months	6 months[3]
Haemophilus influenzae type b[4]	6 wks	4 weeks if first dose administered at younger than age 12 months **8 weeks (as final dose)** if first dose administered at age 12–14 months **No further doses needed** if first dose administered at age 15 months or older	4 weeks[4] if current age is younger than 12 months **8 weeks (as final dose)[4]** if current age is 12 months or older and first dose administered at younger than age 12 months and second dose administered at younger than 15 months **No further doses needed** if previous dose administered at age 15 months or older	**8 weeks (as final dose)** This dose only necessary for children aged 12 months through 59 months who received 3 doses before age 12 months	
Pneumococcal[5]	6 wks	4 weeks if first dose administered at younger than age 12 months **8 weeks (as final dose for healthy children)** if first dose administered at age 12 months or older or current age 24 through 59 months **No further doses needed** for healthy children if first dose administered at age 24 months or older	4 weeks if current age is younger than 12 months **8 weeks (as final dose for healthy children)** if current age is 12 months or older **No further doses needed** for healthy children if previous dose administered at age 24 months or older	**8 weeks (as final dose)** This dose only necessary for children aged 12 months through 59 months who received 3 doses before age 12 months or for children at high risk who received 3 doses at any age	
Inactivated Poliovirus[6]	6 wks	4 weeks	4 weeks	6 months[6]	
Measles, Mumps, Rubella[7]	12 mos	4 weeks			
Varicella[8]	12 mos	3 months			
Hepatitis A[9]	12 mos	6 months			
PERSONS AGED 7 THROUGH 18 YEARS					
Tetanus, Diphtheria/ Tetanus, Diphtheria, Pertussis[10]	7 yrs[10]	4 weeks	4 weeks if first dose administered at younger than age 12 months 6 months if first dose administered at 12 months or older	6 months if first dose administered at younger than age 12 months	
Human Papillomavirus[11]	9 yrs	Routine dosing intervals are recommended (females)[11]			
Hepatitis A[9]	12 mos	6 months			
Hepatitis B[1]	Birth	4 weeks	8 weeks (and at least 16 weeks after first dose)		
Inactivated Poliovirus[6]	6 wks	4 weeks	4 weeks[6]	6 months[6]	
Measles, Mumps, Rubella[7]	12 mos	4 weeks			
Varicella[8]	12 mos	3 months if person is younger than age 13 years 4 weeks if person is aged 13 years or older			

1. **Hepatitis B vaccine (HepB).**
   - Administer the 3-dose series to those not previously vaccinated.
   - The minimum age for the third dose of HepB is 24 weeks.
   - A 2-dose series (separated by at least 4 months) of adult formulation Recombivax HB is licensed for children aged 11 through 15 years.
2. **Rotavirus vaccine (RV).**
   - The maximum age for the first dose is 14 weeks 6 days. Vaccination should not be initiated for infants aged 15 weeks 0 days or older.
   - The maximum age for the final dose in the series is 8 months 0 days.
   - If Rotarix was administered for the first and second doses, a third dose is not indicated.
3. **Diphtheria and tetanus toxoids and acellular pertussis vaccine (DTaP).**
   - The fifth dose is not necessary if the fourth dose was administered at age 4 years or older.
4. ***Haemophilus influenzae* type b conjugate vaccine (Hib).**
   - 1 dose of Hib vaccine should be considered for unvaccinated persons aged 5 years or older who have sickle cell disease, leukemia, or HIV infection, or who have had a splenectomy.
   - If the first 2 doses were PRP-OMP (PedvaxHIB or Comvax), and administered at age 11 months or younger, the third (and final) dose should be administered at age 12 through 15 months and at least 8 weeks after the second dose.
   - If the first dose was administered at age 7 through 11 months, administer the second dose at least 4 weeks later and a final dose at age 12 through 15 months.
5. **Pneumococcal vaccine.**
   - Administer 1 dose of 13-valent pneumococcal conjugate vaccine (PCV13) to all healthy children aged 24 through 59 months with any incomplete PCV schedule (PCV7 or PCV13).
   - For children aged 24 through 71 months with underlying medical conditions, administer 1 dose of PCV13 if 3 doses of PCV were received previously or administer 2 doses of PCV13 at least 8 weeks apart if fewer than 3 doses of PCV were received previously.
   - A single dose of PCV13 is recommended for certain children with underlying medical conditions through 18 years of age. See age-specific schedules for details.
   - Administer pneumococcal polysaccharide vaccine (PPSV) to children aged 2 years or older with certain underlying medical conditions, including a cochlear implant, at least 8 weeks after the last dose of PCV. A single revaccination should be administered after 5 years to children with functional or anatomic asplenia or an immunocompromising condition. See *MMWR* 2010;59(No. RR-11).
6. **Inactivated poliovirus vaccine (IPV).**
   - The final dose in the series should be administered on or after the fourth birthday and at least 6 months following the previous dose.
   - A fourth dose is not necessary if the third dose was administered at age 4 years or older and at least 6 months following the previous dose.
   - In the first 6 months of life, minimum age and minimum intervals are only recommended if the person is at risk for imminent exposure to circulating poliovirus (i.e., travel to a polio-endemic region or during an outbreak).
7. **Measles, mumps, and rubella vaccine (MMR).**
   - Administer the second dose routinely at age 4 through 6 years. The minimum interval between the 2 doses of MMR is 4 weeks.
8. **Varicella vaccine.**
   - Administer the second dose routinely at age 4 through 6 years.
   - If the second dose was administered at least 4 weeks after the first dose, it can be accepted as valid.
9. **Hepatitis A vaccine (HepA).**
   - HepA is recommended for children aged older than age 23 months who live in areas where vaccination programs target older children, or who are at increased risk for infection, or for whom immunity against hepatitis A is desired.
10. **Tetanus and diphtheria toxoids (Td) and tetanus and diphtheria toxoids and acellular pertussis vaccine (Tdap).**
    - Doses of DTaP are counted as part of the Td/Tdap series.
    - Tdap should be substituted for a single dose of Td in the catch-up series for children aged 7 through 10 years or as a booster for children aged 11 through 18 years; use Td for other doses.
11. **Human papillomavirus vaccine (HPV).**
    - Administer the series to females at age 13 through 18 years if not previously vaccinated or have not completed the vaccine series.
    - Quadrivalent HPV vaccine (HPV4) may be administered in a 3-dose series to males aged 9 through 18 years to reduce their likelihood of genital warts.
    - Use recommended routine dosing intervals for series catch-up (i.e., the second and third doses should be administered at 1 to 2 and 6 months after the first dose). The minimum interval between the first and second doses is 4 weeks. The minimum interval between the second and third doses is 12 weeks, and the third dose should be administered at least 24 weeks after the first dose.

Recommended and Minimum Ages and Intervals Between Vaccine Doses

Vaccine and dose number	Recommended age for this dose	Minimum age for this dose	Recommended interval to next dose	Minimum interval to next dose
HepB-1§	Birth	Birth	1--4 months	4 weeks
HepB-2	1--2 months	4 weeks	2--17 months	8 weeks
HepB-3¶	6--18 months	24 weeks	---	---
DTaP-1§	2 months	6 weeks	2 months	4 weeks
DTaP-2	4 months	10 weeks	2 months	4 weeks
DTaP-3	6 months	14 weeks	6--12 months	6 months**,††
DTaP-4	15--18 months	12 months	3 years	6 months**
DTaP-5	4--6 years	4 years	---	---
Hib-1§,§§	2 months	6 weeks	2 months	4 weeks
Hib-2	4 months	10 weeks	2 months	4 weeks
Hib-3¶¶	6 months	14 weeks	6--9 months	8 weeks
Hib-4	12--15 months	12 months	---	---
IPV-1§	2 months	6 weeks	2 months	4 weeks
IPV-2	4 months	10 weeks	2--14 months	4 weeks
IPV-3	6--18 months	14 weeks	3--5 years	6 months
IPV-4***	4--6 years	4 years	---	---
PCV-1§§	2 months	6 weeks	8 weeks	4 weeks
PCV-2	4 months	10 weeks	8 weeks	4 weeks
PCV-3	6 months	14 weeks	6 months	8 weeks
PCV-4	12--15 months	12 months	---	---
MMR-1†††	12--15 months	12 months	3--5 years	4 weeks
MMR-2†††	4--6 years	13 months	---	---
Varicella-1†††	12--15 months	12 months	3--5 years	12 weeks§§§
Varicella-2†††	4--6 years	15 months	---	---
HepA-1	12--23 months	12 months	6--18 months**	6 months**
HepA-2	≥18 months	18 months	---	---
Influenza, inactivated¶¶¶	≥6 months	6 months****	1 month	4 weeks
LAIV (intranasal)¶¶¶	2--49 years	2 years	1 month	4 weeks
MCV4-1††††	11--12 years	2 years	5 years	8 weeks
MCV4-2	16 years	11 years (+8 weeks)	---	---
MPSV4-1††††	---	2 years	5 years	5 years
MPSV4-2	---	7 years	---	---
Td	11--12 years	7 years	10 years	5 years

Recommended and Minimum Ages and Intervals Between Vaccine Doses *(continued)*

Tdap§§§§	≥11 years	7 years	---	---
PPSV-1	---	2 years	5 years	5 years
PPSV-2¶¶¶¶	---	7 years	---	---
HPV-1*****	11--12 years	9 years	2 months	4 weeks
HPV-2	11--12 years (+2 months)	9 years (+4 weeks)	4 months	12 weeks††††††
HPV-3††††††	11--12 years (+6 months)	9 years (+24 weeks)	---	---
Rotavirus-1§§§§§	2 months	6 weeks	2 months	4 weeks
Rotavirus-2	4 months	10 weeks	2 months	4 weeks
Rotavirus-3¶¶¶¶¶	6 months	14 weeks	---	---
Herpes zoster*******	≥60 years	60 years	---	---

* Combination vaccines are available. Use of licensed combination vaccines is generally preferred to separate injections of their equivalent component vaccines. When administering combination vaccines, the minimum age for administration is the oldest age for any of the individual components; the minimum interval between doses is equal to the greatest interval of any of the individual components.

† Information on travel vaccines, including typhoid, Japanese encephalitis, and yellow fever, is available at http://www.cdc.gov/travel. Information on other vaccines that are licensed in the United States but not distributed, including anthrax and smallpox, is available at http://www.bt.cdc.gov.

§ Combination vaccines containing the hepatitis B component are available (see Table 2). These vaccines should not be administered to infants aged <6 weeks because of the other components (i.e., Hib, DTaP, HepA, and IPV).

¶ HepB-3 should be administered at least 8 weeks after HepB-2 and at least 16 weeks after HepB-1 and should not be administered before age 24 weeks.

** Calendar months.

†† The minimum recommended interval between DTaP-3 and DTaP-4 is 6 months. However, DTaP-4 need not be repeated if administered at least 4 months after DTaP-3.

§§ For Hib and PCV, children receiving the first dose of vaccine at age ≥7 months require fewer doses to complete the series.

¶¶ If PRP-OMP (Pedvax-Hib, Merck Vaccine Division) was administered at ages 2 and 4 months, a dose at age 6 months is not necessary.

*** A fourth dose is not needed if the third dose was administered at ≥4 years and at least 6 months after the previous dose.

††† Combination MMRV vaccine can be used for children aged 12 months--12 years. See text for details.

§§§ The minimum interval from Varicella-1 to Varicella-2 for persons beginning the series at age ≥13 years is 4 weeks.

¶¶¶ One dose of influenza vaccine per season is recommended for most persons. Children aged <9 years who are receiving influenza vaccine for the first time or who received only 1 dose the previous season (if it was their first vaccination season) should receive 2 doses this season.

**** The minimum age for inactivated influenza vaccine varies by vaccine manufacturer. See package insert for vaccine-specific minimum ages.

†††† Revaccination with meningococcal vaccine is recommended for previously vaccinated persons who remain at high risk for meningococcal disease. (**Source:** CDC. Updated recommendations from the Advisory Committee on Immunization Practices (ACIP) for revaccination of persons at prolonged increased risk for meningococcal disease. MMWR 2009;58:[1042--3]).

§§§§ Only 1 dose of Tdap is recommended. Subsequent doses should be given as Td. For one brand of Tdap, the minimum age is 11 years. For management of a tetanus-prone wound in persons who have received a primary series of tetanus-toxoid--containing vaccine, the minimum interval after a previous dose of any tetanus-containing vaccine is 5 years.

¶¶¶¶ A second dose of PPSV 5 years after the first dose is is recommended for persons aged ≤65 years at highest risk for serious pneumococcal infection and those who are likely to have a rapid decline in pneumococcal antibody concentration. (**Source:** CDC. Prevention of pneumococcal disease: recommendations of the Advisory Committee on Immunization Practices [ACIP]. MMWR 1997;46[No. RR-8]).

***** Bivalent HPV vaccine is approved for females aged 10--25 years. Quadrivalent HPV vaccine is approved for males and females aged 9--26 years.

†††††† The minimum age for HPV-3 is based on the baseline minimum age for the first dose (i.e., 108 months) and the minimum interval of 24 weeks between the first and third dose. Dose 3 need not be repeated if it is administered at least 16 weeks after the first dose.

§§§§§ The first dose of rotavirus must be administered at age 6 weeks through 14 weeks and 6 days. The vaccine series should not be started for infants aged ≥15 weeks, 0 days. Rotavirus should not be administered to children older than 8 months, 0 days of age regardless of the number of doses received between 6 weeks and 8 months, 0 days of age.

¶¶¶¶¶ If 2 doses of Rotarix (GlaxoSmithKline) are administered as age appropriate, a third dose is not necessary.

****** Herpes zoster vaccine is recommended as a single dose for persons aged ≥60 years.

Source: http://www.cdc.gov/mmwr/preview/mmwrhtml/rr6002a1.htm

Summary of Recommendations for Child/Teen Immunization *(Ages birth through 18 years)*

Vaccine name and route	Schedule for routine vaccination and other guidelines (any vaccine can be given with another)	Schedule for catch-up vaccination and related issues	Contraindications and precautions (mild illness is not a contraindication)
Hepatitis B (HepB) *Give IM*	• Vaccinate all children age 0 through 18yrs. • Vaccinate all newborns with monovalent vaccine prior to hospital discharge. Give dose #2 at age 1–2m and the final dose at age 6–18m (the last dose in the infant series should not be given earlier than age 24wks). After the birth dose, the series may be completed using 2 doses of single-antigen vaccine or up to 3 doses of Comvax (ages 2m, 4m, 12–15m) or Pediarix (ages 2m, 4m, 6m), which may result in giving a total of 4 doses of hepatitis B vaccine. • **If mother is HBsAg-positive:** give the newborn HBIG + dose #1 within 12hrs of birth; complete series at age 6m or, if using Comvax, at age 12–15m. • **If mother's HBsAg status is unknown:** give the newborn dose #1 within 12hrs of birth. If preterm, also give HBIG within 12hrs. If mother is subsequently found to be HBsAg positive, give infant HBIG within 7d of birth and follow the schedule for infants born to HBsAg-positive mothers.	• Do not restart series, no matter how long since previous dose. • 3-dose series can be started at any age. • Minimum intervals between doses: 4wks between #1 and #2, 8wks between #2 and #3, and at least 16wks between #1 and #3 (e.g., 0-, 2-, 4m; 0-, 1-, 4m). **Special Notes on Hepatitis B Vaccine (HepB)** **Dosing of HepB:** Monovalent vaccine brands are interchangeable. For people age 0 through 19yrs, give 0.5 mL of either Engerix-B or Recombivax HB. **Alternative dosing schedule for unvaccinated adolescents age 11 through 15yrs:** Give 2 doses Recombivax HB 1.0 mL (adult formulation) spaced 4–6m apart. (Engerix-B is not licensed for a 2-dose schedule.) **For preterm infants:** Consult ACIP hepatitis B recommendations (*MMWR* 2005; 54 [RR-16]).*	**Contraindication** Previous anaphylaxis to this vaccine or to any of its components. **Precaution** Moderate or severe acute illness.
DTaP, DT (Diphtheria, tetanus, acellular pertussis) *Give IM*	• Give to children at ages 2m, 4m, 6m, 15–18m, 4–6yrs. • May give dose #1 as early as age 6wks. • May give #4 as early as age 12m if 6m have elapsed since #3. • Do not give DTaP/DT to children age 7yrs and older. • If possible, use the same DTaP product for all doses.	• #2 and #3 may be given 4wks after previous dose. • #4 may be given 6m after #3. • If #4 is given before 4th birthday, wait at least 6m for #5 (age 4–6yrs). • If #4 is given after 4th birthday, #5 is not needed.	**Contraindications** • Previous anaphylaxis to this vaccine or to any of its components. • For DTaP/Tdap only: encephalopathy within 7d after DTP/DTaP. **Precautions** • Moderate or severe acute illness. • History of Arthus reaction following a prior dose of tetanus- and/or diphtheria-toxoid-containing vaccine, including MCV4. • Guillain-Barré syndrome (GBS) within 6wks after previous dose of tetanus-toxoid-containing vaccine. • For DTaP only: Any of these events following a previous dose of DTP/DTaP: 1) temperature of 105°F (40.5°C) or higher within 48hrs; 2) continuous crying for 3hrs or more within 48hrs; 3) collapse or shock-like state within 48hrs; 4) convulsion with or without fever within 3d. • For DTaP/Tdap only: Unstable neurologic disorder. • For Td in teens: Progressive neurologic disorder. **Note:** Tdap may be given to pregnant women at the provider's discretion.
Td, Tdap (Tetanus, diphtheria, acellular pertussis) *Give IM*	• Give 1-time Tdap dose to adolescents age 11–12yrs if 5yrs have elapsed since last dose DTaP; then boost every 10yrs with Td. • Give 1-time dose of Tdap to all adolescents who have not received previous Tdap. Special efforts should be made to give Tdap to people age 11yrs and older who are 1) in contact with infants younger than age 12m and 2) healthcare workers with direct patient contact. • In pregnancy, when indicated, give Td or Tdap in 2nd or 3rd trimester. If not administered during pregnancy, give Tdap in immediate postpartum period. • Tdap can be given regardless of interval since previous Td.	• Children as young as age 7yrs and teens who are unvaccinated or behind schedule should complete a primary Td series (spaced at 0, 1–2m, and 6–12m intervals); substitute a 1-time Tdap for any dose in the series, preferably as dose #1.	
Polio (IPV) *Give SC or IM*	• Give to children at ages 2m, 4m, 6–18m, 4–6yrs. • May give dose #1 as early as age 6wks. • Not routinely recommended for U.S. residents age 18yrs and older (except certain travelers).	• The final dose should be given on or after the 4th birthday and at least 6m from the previous dose. • If dose #3 is given after 4th birthday, dose #4 is not needed if dose #3 is given at least 6m after dose #2.	**Contraindication** Previous anaphylaxis to this vaccine or to any of its components. **Precautions** • Moderate or severe acute illness. • Pregnancy.

*This document was adapted from the recommendations of the Advisory Committee on Immunization Practices (ACIP). To obtain copies of the recommendations, call the CDC-INFO Contact Center at (800) 232-4636; visit CDC's website at www.cdc.gov/vaccines/pubs/ACIP-list.htm; 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/childrules to make sure you have the most current version.

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www.immunize.org/catg.d/p2010.pdf • Item #P2010 (1/11)

Summary of Recommendations for Child/Teen Immunization *(Ages birth through 18 years)*

Vaccine name and route	Schedule for routine vaccination and other guidelines (any vaccine can be given with another)	Schedule for catch-up vaccination and related issues	Contraindications and precautions (mild illness is not a contraindication)
Seasonal Influenza Trivalent inactivated influenza vaccine (TIV) *Give IM* — Live attenuated influenza vaccine (LAIV) *Give intranasally*	• Vaccinate all children and teens age 6m through 18yrs. • LAIV may be given to healthy, non-pregnant people age 2–49yrs. • Give 2 doses to first-time vaccinees age 6m through 8yrs, spaced 4wks apart. • For TIV, give 0.25 mL dose to children age 6–35m and 0.5 mL dose if age 3yrs and older. • If LAIV and either MMR, Var, and/or yellow fever vaccine are not given on the same day, space them at least 28d apart.		**Contraindications** • Previous anaphylaxis to this vaccine, to any of its components, or to eggs. • For LAIV only: age younger than 2yrs; pregnancy; chronic pulmonary (including asthma), cardiovascular (except hypertension), renal, hepatic, neurological/neuromuscular, hematologic, or metabolic (including diabetes) disorders; immunosuppression (including that caused by medications or HIV); for children and teens ages 6m through 18yrs, current long-term aspirin therapy; for children age 2 through 4yrs, wheezing or asthma within the past 12m, per healthcare provider statement. **Precautions** • Moderate or severe acute illness. • History of Guillain-Barré syndrome (GBS) within 6wks of a previous influenza vaccination. • For LAIV only: - Close contact with an immunosuppressed person when the person requires protective isolation. - Receipt of specific antivirals (i.e., amantadine, rimantadine, zanamivir, or oseltamivir) 48hrs before vaccination. Avoid use of these antiviral drugs for 14d after vaccination.
Varicella (Var) (Chickenpox) *Give SC*	• Give dose #1 at age 12–15m. • Give dose #2 at age 4–6yrs. Dose #2 of Var or MMRV may be given earlier if at least 3m since dose #1. • Give a 2nd dose to all older children and adolescents with history of only 1 dose. • MMRV may be used in children age 12m through 12yrs (see note below). Note: For the first dose of MMR and varicella given at age 12–47mos, either MMR and Var or MMRV may be used. Unless the parent or caregiver expresses a preference for MMRV, CDC recommends that MMR and Var should be given for the first dose in this age group.	• If younger than age 13yrs, space dose #1 and #2 at least 3m apart. If age 13yrs or older, space at least 4wks apart. • May use as postexposure prophylaxis if given within 5d. • If Var and either MMR, LAIV, and/or yellow fever vaccine are not given on the same day, space them at least 28d apart.	**Contraindications** • Previous anaphylaxis to this vaccine or to any of its components. • Pregnancy or possibility of pregnancy within 4wks. • Children on high-dose immunosuppressive therapy or who are immunocompromised because of malignancy and primary or acquired cellular immunodeficiency, including HIV/AIDS (although vaccination may be considered if CD4+ T-lymphocyte percentages are either 15% or greater in children ages 1 through 8yrs or 200 cells/μL or greater in children age 9yrs and older). **Precautions** • Moderate or severe acute illness. • If blood, plasma, and/or immune globulin (IG or VZIG) were given in past 11m, see ACIP statement *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. • For MMRV only, personal or family (i.e., sibling or parent) history of seizures. **Note:** For patients with humoral immunodeficiency or leukemia, see ACIP recommendations*.
MMR (Measles, mumps, rubella) *Give SC*	• Give dose #1 at age 12–15m. • Give dose #2 at age 4–6yrs. Dose #2 may be given earlier if at least 4wks since dose #1. For MMRV: dose #2 may be given earlier if at least 3m since dose #1. • Give a 2nd dose to all older children and teens with history of only 1 dose. • MMRV may be used in children age 12m through 12yrs (see note above).	• If MMR and either Var, LAIV, and/or yellow fever vaccine are not given on the same day, space them at least 28d apart. • When using MMR for both doses, minimum interval is 4wks. • When using MMRV for both doses, minimum interval is 3m. • Within 72hrs of measles exposure, give 1 dose of MMR as postexposure prophylaxis to susceptible healthy children age 12m and older.	**Contraindications** • Previous 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 children who are not severely immunocompromised (consult ACIP MMR recommendations [*MMWR* 1998;47 [RR-8] for details*). **Precautions** • Moderate or severe acute illness. • If blood, plasma, or immune globulin given in past 11m, see ACIP statement *General Recommendations on Immunization** regarding time to wait before vaccinating. • History of thrombocytopenia or thrombocytopenic purpura. • For MMRV only, personal or family (i.e., sibling or parent) history of seizures. **Note:** MMR is not contraindicated if a TST (tuberculosis skin test) was recently applied. If TST and MMR are not given on same day, delay TST for at least 4wks after MMR.

Summary of Recommendations for Child/Teen Immunization *(Ages birth through 18 years)*

Vaccine name and route	Schedule for routine vaccination and other guidelines (any vaccine can be given with another)	Schedule for catch-up vaccination and related issues	Contraindications and precautions (mild illness is not a contraindication)
Hib (*Haemophilus influenzae* type b) *Give IM*	• ActHib (PRP-T): give at age 2m, 4m, 6m, 12–15m (booster dose). • PedvaxHIB or Comvax (containing PRP-OMP): give at age 2m, 4m, 12–15m (booster dose). • Dose #1 of Hib vaccine should not be given earlier than age 6wks. • The last dose (booster dose) is given no earlier than age 12m and a minimum of 8wks after the previous dose. • Hib vaccines are interchangeable; however, if different brands of Hib vaccines are administered for dose #1 and dose #2, a total of 3 doses are necessary to complete the primary series in infants. • Any Hib vaccine may be used for the booster dose. • Hib is not routinely given to children age 5yrs and older. • Hiberix is approved ONLY for the booster dose at age 15m through 4yrs.	**All Hib vaccines:** • If #1 was given at 12–14m, give booster in 8wks. • Give only 1 dose to unvaccinated children ages 15 through 59m. **ActHib:** • #2 and #3 may be given 4wks after previous dose. • If #1 was given at age 7–11m, only 3 doses are needed; #2 is given 4–8wks after #1, then boost at age 12–15m (wait at least 8wks after dose #2). **PedvaxHIB and Comvax:** • #2 may be given 4wks after dose #1.	**Contraindications** • Previous anaphylaxis to this vaccine or to any of its components. • Age younger than 6wks. **Precaution** Moderate or severe acute illness.
Pneumococcal conjugate (PCV13) *Give IM*	As soon as feasible, replace existing stock of PCV7 with PCV13. • Give at ages 2m, 4m, 6m, 12–15m. • Dose #1 may be given as early as age 6wks. • When children are behind on PCV schedule, minimum interval for doses given to children younger than age 12m is 4wks; for doses given at 12m and older, it is 8wks. • Give 1 dose to unvaccinated healthy children age 24–59m. • For high-risk** children ages 24–71m: Give 2 doses at least 8wks apart if they previously received fewer than 3 doses; give 1 dose at least 8wks after the most recent dose if they previously received 3 doses. • PCV13 is not routinely given to healthy children age 5yrs and older. ****High-risk:** Those with sickle cell disease; anatomic or functional asplenia; chronic cardiac, pulmonary, or renal disease; diabetes; cerebrospinal fluid leaks; HIV infection; immunosuppression; diseases associated with immunosuppressive and/or radiation therapy; or who have or will have a cochlear implant.	• For minimum intervals, see 3rd bullet at left. • For age 7–11m: If history of 0 doses, give 2 doses 4wks apart, with a 3rd dose at age 12–15m; if history of 1 or 2 doses, give 1 dose with a 2nd dose at age 12–15m. • For age 12–23m: If unvaccinated or history of 1 dose before age 12m, give 2 doses 8wks apart; if history of 1 dose at or after age 12m or 2 or 3 doses before age 12m, give 1 dose at least 8wks after most recent dose. • For age 24–59m and healthy: If unvaccinated or any incomplete schedule or if 4 doses of PCV7 or any other age-appropriate complete PCV7 schedule, give 1 dose at least 8wks after the most recent dose. • For age 24–71m and at high risk**: If unvaccinated or any incomplete schedule of 1 or 2 doses, give 2 doses, 1 at least 8wks after the most recent dose and another dose at least 8wks later; if any incomplete series of 3 doses, or if 4 doses of PCV7 or any other age-appropriate complete PCV7 schedule, give 1 dose at least 8wks after the most recent dose. • For children ages 6 through 18yrs with functional or anatomic asplenia (including sickle cell disease), HIV infection or other immunocompromising condition, cochlear implant, or CSF leak, consider giving 1 dose of PCV13 regardless of previous history of PCV7 or PPSV.	**Contraindication** Previous anaphylaxis to a PCV vaccine, to any of its components, or to any diphtheria toxoid-containing vaccine. **Precaution** Moderate or severe acute illness.
Pneumococcal polysaccharide (PPSV) *Give IM or SC*	• Give 1 dose at least 8wks after final dose of PCV to high-risk children age 2yrs and older. • For children who have an immunocompromising condition or have sickle cell disease or functional or anatomic asplenia, give a 2nd dose of PPSV 5yrs after previous PPSV (consult ACIP PPSV recommendations at www.cdc.gov/vaccines/pubs/ACIP-list.htm*).		**Contraindication** Previous anaphylaxis to this vaccine or to any of its components. **Precaution** Moderate or severe acute illness.

Summary of Recommendations for Child/Teen Immunization *(Ages birth through 18 years)*

Vaccine name and route	Schedule for routine vaccination and other guidelines (any vaccine can be given with another)	Schedule for catch-up vaccination and related issues	Contraindications and precautions (mild illness is not a contraindication)
Rotavirus (RV) *Give orally*	• Rotarix (RV1): give at age 2m, 4m. • RotaTeq (RV5): give at age 2m, 4m, 6m. • May give dose #1 as early as age 6wks. • Give final dose no later than age 8m 0 days.	• Do not begin series in infants older than age 14wks 6 days. • Intervals between doses may be as short as 4wks. • If prior vaccination included use of different or unknown brand(s), a total of 3 doses should be given.	**Contraindications** • Previous anaphylaxis to this vaccine or to any of its components. If allergy to latex, use RV5. • Diagnosis of severe combined immunodeficiency (SCID). **Precautions** • Moderate or severe acute illness. • Altered immunocompetence. • Moderate to severe acute gastroenteritis or chronic pre-existing gastrointestinal disease. • History of intussusception.
Hepatitis A (HepA) *Give IM*	• Give 2 doses spaced 6m apart to all children at age 1yr (12–23m). • Vaccinate all previously unvaccinated children and adolescents age 2yrs and older who - Want to be protected from HAV infection. - Live in areas where vaccination programs target older children. - Travel anywhere except U.S., W. Europe, N. Zealand, Australia, Canada, or Japan. - Have chronic liver disease, clotting factor disorder, or are adolescent males who have sex with other males. - Are users of illicit drugs (injectable or non-injectable). - 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.	• Minimum interval between doses is 6m. • Children who are not fully vaccinated by age 2yrs can be vaccinated at subsequent visits. • Consider routine vaccination of children age 2yrs and older in areas with no existing program. • Give 1 dose as postexposure prophylaxis to incompletely vaccinated children age 12m and older who have recently (during the past 2wks) been exposed to hepatitis A virus.	**Contraindication** Previous anaphylaxis to this vaccine or to any of its components. **Precautions** • Moderate or severe acute illness. • Pregnancy.
Meningococcal conjugate, quadrivalent (MCV4) Menactra (ages 2–55yrs) Menveo (ages 11–55yrs) *Give IM* —— **Meningococcal polysaccharide** (MPSV4) *Give SC*	• Give MCV4 #1 routinely at age 11 through 12yrs and a booster dose at age 16yrs. • Give MCV4 to all unvaccinated teens ages 13 through 18yrs; if vaccinated at age 13–15yrs, give booster dose at age 16–18yrs. • Vaccinate all college freshmen living in dorms who have not been vaccinated. • Vaccinate all children age 2yrs and older who have any of the following risk factors: - Anatomic or functional asplenia, or persistent complement component deficiency; give 2 doses, separated by 8wks. - Travel to or reside in countries in which meningococcal disease is hyperendemic or epidemic (e.g., the "meningitis belt" of Sub-Saharan Africa). Note: Use MPSV4 ONLY if there is a permanent contraindication or precaution to MCV4.	• If previously vaccinated with MPSV4 or MCV4 and risk of meningococcal disease persists, revaccinate with Menactra in 3yrs (if first dose given at age 2 through 6yrs) or revaccinate with either brand of MCV4 in 5yrs (if previous dose given at age 7yrs or older). Then, give additional booster doses every 5yrs if risk continues. • For children with HIV infection, give 2 initial doses, separated by 8wks.	**Contraindication** Previous anaphylaxis to any meningococcal vaccine or to any of its components, including diphtheria toxoid (for MCV4). **Precautions** • Moderate or severe acute illness. • In pregnancy, studies of vaccination with MPSV4 have not documented adverse effects so may use MPSV4 if indicated. No data are available on the safety of MCV4 during pregnancy.
Human papillomavirus (HPV) (HPV2, Cervarix) (HPV4, Gardasil) *Give IM*	• Give 3-dose series to girls at age 11–12yrs on a 0, 1–2, 6m schedule. (May be given as early as age 9yrs.) • Vaccinate all older girls and women (through age 26yrs) who were not previously vaccinated. • Consider giving HPV4 to males age 9 through 26yrs to reduce their likelihood of acquiring genital warts.	Minimum intervals between doses: 4wks between #1 and #2; 12 wks between #2 and #3. Overall, there must be at least 24wks between doses #1 and #3. If possible, use the same vaccine product for all doses.	**Contraindication** Previous anaphylaxis to this vaccine or to any of its components. **Precautions** • Moderate or severe acute illness. • Pregnancy.

Diphtheria Toxoid, Tetanus Toxoid and Acellular Pertussis (DTaP) Vaccine

Vaccine Description	• Brands: Tripedia®, Infanrix®, and Daptacel® • Inactivated vaccine • See package inserts for contents; for some brands the stopper of the vial, tip cap, or the rubber plunger may contain dry natural latex rubber • DTaP also contained in several combination vaccines (see card 3-43) • For the prevention of pertussis, tetanus, and diphtheria in adolescents and adults, see the Tdap card for details.	
Dose & Route	• Dose: 0.5 mL • Route: IM (Precaution: hemophilia, thrombocytopenia, and anticoagulation therapy)	
Indications	• DTaP is recommended for all children 2 months through 6 years of age • Do NOT use in children 7 years of age and older (use Td or Tdap as appropriate)	
Administration Schedule	**Dose**	**Recommended Age**
Primary Schedule *Minimum age is 6 weeks **Can be administered as early as age 12 months **IF** it has been 6 months since DTaP3 and child is unlikely to return at age 15 to 18 months	DTaP #1	2 months*
	DTaP #2	4 months
	DTaP #3	6 months
	DTaP #4	15 to 18 months**
	DTaP #5	4 to 6 years
Minimum Intervals	**Doses**	**Minimum Interval**
	DTaP 1---DTaP 2	4 weeks
	DTaP 2---DTaP 3	4 weeks
	DTaP 3---DTaP 4	6 months
	DTaP 4---DTaP 5	6 months

DTaP Vaccine *(Continued)*

Contraindications	• Serious allergic reaction to prior dose or vaccine component • Encephalopathy without known cause within 7 days of a prior dose • Guillain-Barré syndrome (GBS) within 6 weeks of receiving a tetanus-containing vaccine • Moderate or severe acute illness
Precautions	Generally when these conditions are present, DTaP should not be given. But in situations when the benefit outweighs the risk (e.g., community pertussis outbreak), vaccination should be considered after evaluation by a healthcare provider: • T greater than 105°F (40.5°C) within 48 hrs after previous dose • Continuous crying lasting more than 3 hrs within 48 hrs after previous dose • Previous convulsion within 3 days after DTaP dose • Pale or limp episode or collapse within 48 hrs after previous dose • Unstable underlying neurologic problem (defer until stable)
Special Considerations	• DO NOT use in children age 7 years and older – use Td or Tdap instead. • DO NOT use when valid contraindication to DTaP vaccine exists – use DT*** • If dose #4 is given after 4th birthday, dose #5 is not needed • DO NOT restart series, no matter how long since previous dose
VIS: http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-dtap.pdf	

***Pediatric DT is used for children younger than 7 years of age when the pertussis component of DTaP is contraindicated.

Diphtheria and Tetanus (DT) Toxoid Vaccine

Vaccine Description	• Brand: Generic only • Inactivated vaccine • Contains aluminum; stopper to the vial contains dry natural latex rubber • See package insert	
Dose & Route	• Dose: 0.5 mL • Route: IM (Precaution: hemophilia, thrombocytopenia, and anticoagulation therapy)	
Indications	• Pediatric DT used if a valid contraindication to pertussis vaccine exists • Use DT in children with reactions to DTaP or with refusal of pertussis vaccine by parents • Do not use in children 7 years of age and older	
Administration Schedule	**Dose**	**Recommended Interval**
Primary Schedule	DT #1	2 months (minimum age 6 weeks)
	DT #2	4 months
	DT #3	6 months
	DT #4	15 to 18 months (can be given as early 12 months IF it has been 6 months since DT #3 and child unlikely to return at age 15-18 months)
	DT #5	4 to 6 years
Booster	Refer to Td and Tdap Cards.	
Contraindications	• Serious allergic reaction to prior dose or vaccine component • Moderate or severe acute illness • History of neurological reaction following previous dose	
Special Considerations	• DO NOT restart series, no matter how long since previous dose • Neurological reaction, including Guillain-Barré syndrome (GBS), within 6 weeks of receiving a tetanus-containing vaccine (provider must weigh benefits and risks) • DO NOT use in children age 7 years and older – use Td instead	

Tetanus and Diphtheria (Td) Toxoid Vaccine

Vaccine Description	• Brands: Generic Td and Decavac® • Inactivated vaccine • Td contains aluminum, formaldehyde, and thimerosal; Prefilled syringe caps may contain latex; See package insert • New vaccine: Tdap (tetanus, diphtheria, and pertussis vaccine) for use in adolescents and adults as a one time booster dose; See next card for information on Tdap	
Dose & Route	• Dose: 0.5 mL • Route: IM (Precaution: hemophilia, thrombocytopenia, and anticoagulation therapy)	
Indications	• People 7 years of age and older • Tdap is recommended at 11-12 year old visit as a single, one time booster dose • See package insert	
Administration Schedule	**Dose**	**Recommended Interval**
Primary Schedule* *only for previously unvaccinated patients 7 years of age and older	Td #1**	** Use Tdap for dose 1 if older than 10 years of age
	Td #2	4 weeks after dose #1
	Td #3	6 to 12 months after dose #2
Booster	Td (or Tdap if not received already)	First booster may be given at 11 to 12 years of age if at least 5 years have elapsed since the last dose of DTP, DTaP, or DT
Contraindications	• Serious allergic reaction to prior dose or vaccine component • Moderate or severe acute illness	
Special Considerations	• **DO NOT** restart the series, no matter how long since previous dose • History of Arthus reaction following a tetanus or diphtheria toxoid-containing vaccine (do not give TT, Td, or Tdap until at least ten years have elapsed since last dose) • Neurological reaction, including Guillain-Barré syndrome (GBS), within 6 weeks of receiving a tetanus-containing vaccine (provider must weigh benefits and risks) • See Storage and Handling Section	
VIS: http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-td-tdap.pdf		

Tetanus and Diphtheria Toxoids and Acellular Pertussis (Tdap) Vaccine

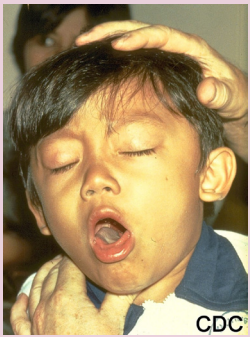
Vaccine Description	• Brands: Boostrix® (ages 10 and older) and Adacel® (ages 11-64) • Inactivated vaccine • The tip cap and the rubber plunger of the needleless prefilled syringes of Boostrix® contain dry natural latex rubber; Adacel is latex free; see package insert for other contents of each vaccine	
Dose & Route	• Dose: 0.5 mL • Route: IM (Precaution: hemophilia, thrombocytopenia, and anticoagulation therapy)	

Indications	• A single, one time booster dose of Tdap is recommended for people 10 through 64+ years, with recommendation of giving at 11-12 year visit
	• If the primary series of Td has not been given or completed, Tdap can be used for one of the missing doses, preferably the first dose if 10 years or older
	• ACIP recommendations (off-label):
	  • use Tdap when indicated regardless of interval since last tetanus-containing vaccine
	  • use Tdap in undervaccinated children 7-10 years of age
	  • use Tdap in pregnant women during third or late second trimester
	• See package insert	

Administration Schedule	**Dose**	**Recommended Interval**
	Single one time dose	Normally given at 11-12 years of age
Contraindications	• Serious allergic reaction to prior dose or vaccine component • Moderate or severe acute illness • Encephalopathy within 7 days of a pertussis-containing vaccine and not due to another identifiable cause • Not routinely recommended during pregnancy, but provider may recommend it in some cases • Unstable central nervous system disorder • See package insert for further information	

Tetanus and Diphtheria Toxoids and Acellular Pertussis (Tdap) Vaccine *(continued)*

Special Considerations	• Neurological reaction, including Guillain-Barré syndrome (GBS), within 6 weeks of receiving a tetanus-containing vaccine (provider must weigh benefits/risks) • While the ACIP does not recommend a minimal interval between Tdap and previous tetanus- or diphtheria-containing vaccines, a two-year minimum may be prudent based on a credentialed healthcare provider's benefit/risk analysis
VIS: http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-td-tdap.pdf Pregnancy registry: Adacel® 1-800-822-2463 (sanofi pasteur) or Boostrix® 1-888-825-5249 (GlaxoSmithKline); also notify VHC Networks for long-term support and follow-up	



FACTOID: About 25,000 cases of pertussis (whooping cough) were reported in the U.S. over the last five years.

Source: http://www.cdc.gov/vaccines/vpd-vac/pertussis/default.htm

Hepatitis A Vaccine

Vaccine Description	• Brands: Havrix® and Vaqta® • Inactivated whole virus • Adjuvant: aluminum hydroxide; Vial stopper and/or the syringe plunger stopper may contain dry natural latex rubber (check package insert); See package insert for other contents	
Route	• Route: IM (Precaution: hemophilia, thrombocytopenia, and anticoagulation therapy)	
Dose	• Vaqta® (1-18 years): 25 units (0.5 mL) • Havrix® (1-18 years): 720 EL.U. (0.5 mL)	
Indications	• All children 12 months to 18 years of age; if not vaccinated by 2 years of age, vaccinate at subsequent visit	
Administration Schedule	**Dose**	**Recommended Interval**
	Havrix® #1 Vaqta® #1	First dose of either brand at 1 to 18 years
	Havrix® #2 Vaqta® #2	Havrix®: 6 to 12 months after dose #1 Vaqta®: 6 to 18 months after dose #1
Contraindications	• Serious allergic reaction to prior dose or vaccine component • Moderate or severe acute illness	
Special Considerations	• Consider simultaneous immune globulin administration if person is traveling to highly endemic area sooner than 4 weeks after administration • You may interchange brands • DO NOT restart series, no matter how long since previous dose	
VIS: http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-hep-a.pdf		


720 EL.U./0.5 mL
NDC 58160-837-01
HEPATITIS A VACCINE, INACTIVATED
HAVRIX®
A
1 x 0.5 mL Child/ Adolescent Dose

Hepatitis B Vaccine

<table>
<tr><td>Vaccine Description</td><td colspan="2">• Brands: Engerix-B® and Recombivax HB®
• Inactive viral antigen
• Contains yeast and aluminum hydroxide; The tip cap and the rubber plunger of the needleless prefilled syringes contain dry natural latex rubber
• HepB for peds use also available as combined:
• Engerix-B® + Hib (Comvax®)
• DTaP, Engerix-B®, and IPV (Pediarix®)</td></tr>
<tr><td>Route</td><td colspan="2">• Route: IM (Precaution: hemophilia, thrombocytopenia, and anticoagulation therapy)
• Vaccine brands interchangeable for 3-dose schedule</td></tr>
<tr><td>Vaccine</td><td>Age</td><td>Dose</td></tr>
<tr><td>Engerix-B®</td><td>0-19 years</td><td>10 mcg (0.5 mL)</td></tr>
<tr><td rowspan="2">Recombivax HB®</td><td>0-19 years</td><td>5 mcg (0.5 mL)</td></tr>
<tr><td>11-15 years</td><td>10 mcg (1 mL) - This is a special dose for this age group and is given on a special schedule on back of card</td></tr>
<tr><td>Indications</td><td colspan="2">• Birth to 18 years of age
• Vaccinate all newborns with monovalent vaccine before hospital discharge. After dose #1, the series may be completed with single-antigen vaccine or up to 3 doses of Comvax (at 2m, 4m, 12 to 15m of age) or Pediarix (at 2m, 4m, 6m of age)
• If mother is HBsAg-positive: give the newborn HBIG and dose #1 within 12 hours of birth, dose #2 at 1 to 2 months of age, and dose #3 at 6 months of age
• If mother’s HBsAg status is unknown: give newborn dose #1 within 12 hours of birth, dose #2 at 1 to 2 months of age, and dose #3 at 6 months of age. If mother is subsequently found to be HBsAg positive, give infant HBIG as soon as possible (no later than age 1 week).
• Comvax®: Use when both Hep B and Hib antigens are indicated. Do not give to infants younger than 6 weeks of age.
• Pediarix®: Use when Hep B, DTaP, and polio antigens are indicated. Do not give to infants younger than 6 weeks of age.</td></tr>
</table>

Hepatitis B Vaccine *(Continued)*

<table>
<tr><td rowspan="5">Administration Schedule

Recommended schedule for routine infant immunization is
Dose #1: birth
Dose #2: 1-2 months
Dose #3: 6-18 months</td><td>Dose</td><td>Minimum Age</td></tr>
<tr><td>#1</td><td>Birth (thimerosal-free)*</td></tr>
<tr><td>#2</td><td>1 month (thimerosal-free)</td></tr>
<tr><td>#3</td><td>6 months</td></tr>
<tr><td colspan="2">*Thimerosal-free vaccine recommended for use in infants younger than 6 months old</td></tr>
<tr><td rowspan="3">Minimum Intervals
DO NOT restart series, no matter how long since previous dose

Doses administered sooner than minimum intervals may reduce efficacy</td><td>Dose</td><td>Minimum Intervals</td></tr>
<tr><td># 1-2</td><td>4 weeks</td></tr>
<tr><td># 2-3</td><td>At least 8 weeks IF it has been at least 16 weeks since dose #1 AND child is at least 6 months of age</td></tr>
<tr><td>Schedule for 11-15 year olds with Recombivax HB®</td><td colspan="2">2 doses of 10 mcg (1 mL): 0 and 4-6 months</td></tr>
<tr><td>Contraindications</td><td colspan="2">• Serious allergic reaction or adverse reaction to prior dose or vaccine component
• Moderate or severe acute illness</td></tr>
<tr><td>Special Considerations</td><td colspan="2">• Neonates weighing less than 2000 grams respond poorly to vaccine:
  • If mother is HBsAg neg, wait until hospital discharge or age 1 month to administer vaccine
  • If mother is HBsAg pos, administer vaccine and HBIG with 12 hours of birth. Do NOT count this dose in 3-dose series. The next dose is given at chronologic age 1 month, followed by a dose 1-2 months later and a final dose at 6 months of age. These infants should also be tested for HBsAg and anti-HBs at 9 to 18 months of age.
• Do not use Comvax® or Pediarix® in infants younger than 6 weeks of age
• DO NOT restart series, no matter how long since previous dose</td></tr>
<tr><td colspan="3">VIS: http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-hep-b.pdf</td></tr>
</table>

Haemophilus influenzae type b (Hib) Vaccine

Vaccine Description	• Brands: ActHIB®, PedvaxHIB® and Hiberix® (Hiberix® is not approved for primary immunization series) • Inactivated protein conjugate vaccine • Vaccine or diluent vial stopper may contain dry natural latex rubber (see package insert for components)				

Dose & Route	• Dose: 0.5 mL
	• Route: IM (Precaution: hemophilia, thrombocytopenia, and anticoagulation therapy)
	• Hib vaccine is also available as combined:
	  • Recombivax + Hib (Comvax®)
	  • DTaP + polio +Hib (Pentacel®)				

Indications	• All children 2 months - 5 years, including those born prematurely
	• People older than 5 yrs who are at risk, including those with:
	  • anatomical or functional asplenia
	  • cancer treated with chemotherapy (give at least 2 weeks before or 3 months after completion)
	  • immune suppression
	  • bone marrow or stem cell transplant (1 year post transplant)				

Administration Schedule		**Dose #1**	**Dose #2**	**Dose #3**	**Booster****
* Minimum age is 6 weeks. The number of recommended doses varies if the series is started after age 7 months. See other side of card. ** Hiberix® can be used for the booster dose in children 15 months through 4 years of age.	PedvaxHIB®	2* months	4 months		12 to 15 months
	ActHIB®	2* months	4 months	6 months	12 to 15 months
	• **Rules for all Hib vaccines:** Give the last dose (booster dose) at no earlier than 12 months of age and a minimum of 2 months after the previous dose • If using Comvax® (Hib + Hep B), give doses at 2, 4, and 12-15 months • If using Pentacel® (DTaP + polio + Hib), give doses at 2, 4, 6, and 12-15 months • If any other Hib vaccine was used within a primary series or if the brand used is unknown, the 4-dose schedule is recommended, depending on the age of child				

Hib Vaccine *(Continued)*

<table>
<tr><td>Minimum Intervals</td><td colspan="3">• The minimum interval between all primary doses is 4 weeks as long as age restrictions are met</td></tr>
<tr><td>Contraindications</td><td colspan="3">• Serious allergic reaction to prior dose or vaccine component
• Moderate or severe acute illness</td></tr>
<tr><td>Special Considerations</td><td colspan="3">• May give simultaneously with all other vaccines but at a separate injection site
• Hib vaccines are interchangeable; however, if different brands are used or the brand used is unknown, the 4-dose schedule is recommended, depending on the age of the child
• DO NOT restart series, no matter how long since previous dose</td></tr>
<tr><td rowspan="4">Recommended “Catch-Up” Schedule

Use if Hib vaccination is not initiated by 6 months of age</td><td>Age at First Vaccination</td><td>Primary Series</td><td>Booster</td></tr>
<tr><td>7 to 11 months</td><td>Two doses, 4 weeks apart</td><td>At 12 to 15 mos, at least 8 weeks after previous dose</td></tr>
<tr><td>12 to 14 months</td><td>1 dose</td><td>8 weeks after previous dose</td></tr>
<tr><td>15 to 59 months</td><td>1 dose</td><td>Not needed</td></tr>
<tr><td colspan="4">VIS: http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-hib.pdf</td></tr>
</table>

Human Papillomavirus (HPV) Vaccine

<table>
<tr><td>Vaccine Description</td><td colspan="2">• Brands: Gardasil® and Cervarix®
• Inactivated viral vaccine
• Contains aluminum and yeast
• See package insert</td></tr>
<tr><td>Dose & Route</td><td colspan="2">• Dose: 0.5 mL
• Route: IM (Precaution: hemophilia, thrombocytopenia, and anticoagulation therapy)</td></tr>
<tr><td>Indications</td><td colspan="2">• Gardasil®(HPV4): males and females 9-26 years of age (routinely given at 11-12 year old visit)
• Cervarix®(HPV2) Girls and women 9-25 years of age (routinely given at 11-12 year old visit); not approved for use in males</td></tr>
<tr><td rowspan="4">Administration Schedule</td><td>Dose</td><td>Recommended Interval</td></tr>
<tr><td>#1</td><td></td></tr>
<tr><td>#2</td><td>1-2 months after dose 1</td></tr>
<tr><td>#3</td><td>6 months after dose 1</td></tr>
<tr><td>Booster</td><td colspan="2">None</td></tr>
<tr><td>Contraindications</td><td colspan="2">• Serious allergic reaction to prior dose or vaccine component
• Moderate or severe acute illness
• Pregnancy - due to lack of safety studies
• Males may not receive Cervarix</td></tr>
<tr><td>Special Considerations</td><td colspan="2">• Syncope has been reported following vaccination; observation for 15 minutes after administration is recommended (see package insert)
• 3 cases of bronchospasm 1 to 15 days after HPV vaccine given not reported in placebo group</td></tr>
<tr><td colspan="3">VIS: http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-hpv-gardasil.pdf; http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-hpv-cervarix.pdf
Pregnancy registry: 1-800-986-8999 (for Gardasil®); 1-888-452-9622 (for Cervarix®); also notify the VHC Network for long-term support and follow-up</td></tr>
</table>

Inactivated Influenza Vaccine

Vaccine Description	• Brands: Afluria®, Fluvirin®, Fluarix®, and Fluzone® are approved for use in children (approved age groups for each brand can vary - check current product insert for approved age ranges) • Trivalent inactivated influenza vaccine (TIV) • The tip cap and rubber plunger of needleless prefilled syringes may contain dry natural latex rubber (see package inserts); Thimerosal content varies. Preservative-free formulations are available.	
Dose & Route	• Dose for age 6 months to 35 months: 0.25 mL • Dose for age 3 years and older: 0.5 mL • Route for all doses: IM (Precaution: hemophilia, thrombocytopenia, and anticoagulation therapy)	
Indications	• All people older than 6 months of age and older	
Administration Schedule	**Dose**	**Recommended Interval**
6 months through 8 years of age	6 to 35 months: 0.25 mL Older than 3 years: 0.5 mL	First time vaccinees or those who received only one dose in first year of vaccination: Give 2 doses separated by at least 4 weeks
9 years of age and older	One dose: 0.5 mL	Annually
Contraindications	• Serious allergic reaction to prior dose, vaccine component (neomycin and polymyxin), or to eggs • Moderate or severe acute illness • Prior serious adverse event or history of Guillain-Barré syndrome (GBS) within 6 weeks of a previous dose of influenza vaccine	
Special Considerations	• Persons who are immunocompromised may have reduced immune response • People with history of mild egg allergy may receive vaccine under healthcare provider advisement or supervision • See Storage and Handling Section	
VIS: http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-flu.pdf		

Live Attenuated Influenza Vaccine (FluMist®)

<table>
<tr><td>Vaccine Description</td><td colspan="3">• Brand: FluMist®
• Live, trivalent, nasally administered influenza vaccine
• Contains egg protein. See package insert.</td></tr>
<tr><td>Dose & Route</td><td colspan="3">• Dose: 0.2 mL Route: Intranasal (half per nostril)</td></tr>
<tr><td>Indications</td><td colspan="3">• Active immunization for the prevention of disease caused by influenza A & B viruses in healthy children and adolescents (2-17 years of age) and healthy adults (18-49 years of age)
• NOT indicated for immunization of people younger than 2 years or older than 49 years, nor for treatment of influenza, nor will it protect against infection and illness caused by infectious agents other than the included influenza A or B viruses</td></tr>
<tr><td rowspan="4">Administration Schedule</td><td>Age Groups</td><td>Vaccination Status</td><td>Dosage/ Schedule</td></tr>
<tr><td>Children ages 2 years through 8 years</td><td>Not previously vaccinated against influenza or only one dose in the first year of vaccination</td><td>2 doses (0.2 mL each) 4 weeks apart</td></tr>
<tr><td>Children ages 2 years through 8 years</td><td>Previously vaccinated against influenza and received two doses in the first year of vaccination</td><td>1 dose (0.2 mL) per season</td></tr>
<tr><td>Children and Adults ages 9 through 49 years</td><td>Not applicable</td><td>1 dose (0.2 mL) per season</td></tr>
<tr><td>Contraindications</td><td colspan="3">• History of hypersensitivity, especially anaphylactic reactions, to any component, including eggs or egg products, gentamicin, gelatin, and arginine
• Children and adolescents (2 to 17 years of age) receiving chronic aspirin or salicylate-containing medication therapy because of the risk for Reye syndrome
• Moderate or severe acute illness (including nasal congestion
(Continued on back of card)</td></tr>
</table>

Live Attenuated Influenza Vaccine *(Continued)*

Contraindications (continued)	• History of Guillain-Barré syndrome • Known or suspected immune-deficiency diseases, such as combined immunodeficiency, agammaglobulinemia, and thymic abnormalities • Conditions such as immunodeficiency virus infection, malignancy, leukemia, or lymphoma • Immune suppression or immune compromised due to treatment with systemic corticosteroids, alkylating drugs, antimetabolites, radiation, or other immune suppressing therapies • Pregnancy • People who have asthma, reactive airway disease, or other chronic pulmonary disease OR other chronic conditions that place them at high risk for complications from influenza illness (e.g., heart disease, diabetes, renal disease, sickle cell anemia)
Special Considerations	• Give inactivated influenza vaccine instead or LAIV to people who care for others who are severely immune compromised and who require a protective environment • Defer administration if nasal congestion might prevent LAIV from reaching nasopharyngeal mucosa • LAIV may be given at the same time as other live vaccines, including MMR or varicella • See Storage and Handling Section
VIS: http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-flulive.pdf	

Measles, Mumps, Rubella (MMR) Vaccine

Vaccine Description	• Brand: M-M-R II® • Live attenuated combined vaccine • Contains egg protein, neomycin, gelatin (see package insert) • Also available as combined MMR and varicella (ProQuad®) for use when both vaccines are indicated for children 12 months to 12 years of age	
Dose & Route	• Dose: 0.5 mL Route: SC • See package insert	
Indications	• All infants 12 months of age and older • Susceptible adolescents without documented evidence of immunity • In the event of an outbreak, local health authorities may recommend for infants 6 to 12 months of age (per the package insert)	
Administration Schedule	**Dose**	**Recommended Age (per ACIP)**
	#1	12 to 15 months
	#2	4 to 6 years
Minimum Intervals	**Dose**	**Minimum Interval (per ACIP)**
	#1	MUST be at least 12 months of age [May be administered sooner in an outbreak situation, but should NOT be counted as a valid dose: revaccinate after 12 months of age]
	#2	Usually given at 4 to 6 years of age, but may be given sooner: at least 28 days after dose #1. Catch-up opportunity at 11 to 18 years of age for dose #2.

Continued on Next Page

Measles, Mumps, Rubella (MMR) *(Continued)*

Contraindications * ACIP recommends avoiding pregnancy for 4 weeks; Package insert states 3 months	• Serious allergic reaction to prior dose or vaccine component; Allergy to "eggs" is no longer a valid contraindication to MMR per ACIP • Moderate or severe acute illness • Pregnancy or possibility of pregnancy within 4 weeks (use contraception)* • People who are immune compromised (cancer, leukemia, lymphoma). Note: HIV positivity NOT a contraindication, except for severely immune-compromised people. (MMWR: http://www.cdc.gov/mmwr/preview/mmwrhtml/rr6002a1.htm) • Immune suppression (e.g., from high-dose steroids, chemotherapy, radiation therapy) • Blood products or immune globulin administered during past 11 months (see card #1-9)
Special Considerations	• OK to apply tuberculin skin test (TST or PPD) at same visit as MMR. Delay TST for more than 4 wks if MMR given first OR apply TST first, then give MMR when TST is read • If another live injected vaccine and MMR are both needed and not administered on the same day, space them at least 4 weeks apart • ProQuad® (MMRV) may be used when both MMR and varicella vaccines are indicated for children 12 months through 12 years of age. Note: Unless the parent or caregiver expresses a preference for MMRV vaccine, separate MMR and varicella vaccines should be administered for the first dose for children 12 through 47 months of age. • See Storage and Handling Section
VIS: http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-mmr.pdf	

Meningococcal Vaccines

<table>
<tr><td>Vaccine Description</td><td colspan="2">• Brands: Menomune®, Menactra®, and Menveo®
• Inactivated, bacterial polysaccharide (MPVS4) - Menomune®
• Inactivated, bacterial polysaccharide conjugate (MCV4) - Menactra® and Menveo®
• Contains thimerosal (only multidose Menomune®) and latex (stopper only for Menomune® and Menactra®)
• See package insert</td></tr>
<tr><td>Dose & Route</td><td colspan="2">• Dose: 0.5 mL
• Route: SC (Menomune®) and IM (Menactra® and Menveo®) (Precaution: hemophilia, thrombocytopenia, and anticoagulation therapy)
• See package insert</td></tr>
<tr><td>Indications</td><td colspan="2">• All children at age 11 to 12 years and unvaccinated adolescents at subsequent visit
• College freshmen living in dormitories
• Military recruits and depolying personnel
• Children older than 9 months who:
- have functional or anatomic asplenia
- are traveling to or living in an endemic area
- have certain immune system disorders
- have been exposed to meningitis during an outbreak
• Menactra® or Menveo® are preferred; Menactra® is licensed for use in people 9 months - 55 years of age and Menveo® in people 2 - 55 years of age
• Menomune® may be given to children 3- 9 months of age if provider determines it is necessary</td></tr>
<tr><td rowspan="3">Administration Schedule</td><td>Age</td><td>Dose</td></tr>
<tr><td>3 -23 months of age, under special circumstances</td><td>2 doses of the age-appropriate vaccine, 3 months apart if indicated by the provider</td></tr>
<tr><td>2 years or older</td><td>1 dose of the age-appropriate vaccine</td></tr>
<tr><td>Booster (Menomune®)</td><td colspan="2">• Menomune®:
• After 5 years if 1st dose given at 7 years of age or older and at prolonged increased risk
• After 3 years if 1st dose given at 6 years of age or younger and at prolonged increased risk
See next page for booster information for Menactra® and Menveo®</td></tr>
</table>

Meningococcal Vaccines *(Continued)*

Booster (Menactra® and Menveo®**)**	Menactra® and Menveo®: • Need booster at 16 years of age if primary dose given between 11-12 years of age • Need booster at 16-18 years of age if primary dose given between 13-15 years of age • Every 5 years if complement component deficiency or asplenia • After 5 years if 1st dose given at 7 years of age or older and at prolonged increased risk • After 3 years if 1st dose given at 9 months through 6 years of age and at prolonged increased risk
Contraindications	• Serious allergic reaction to prior dose or vaccine component, including latex (stopper for Menomune® and Menactra®) • Moderate or severe acute illness • History of Guillain-Barré syndrome (Menactra®) • Children younger than 2 years of age (Menveo®), 9 months of age (Menactra®) or 3 months of age (Menomune®) • Adults older than 55 years of age (Menactra® or Menveo®)
Special Considerations	• Additional doses may be indicated for certain patients at continued risk • Refer children 3 to 9 months to a provider to determine whether Menomune® should be given • Menactra® is only licensed for use in people 9 months - 55 years and Menveo® is only licensed for use in people between the ages of 2 - 55 years • Menactra® and Menveo® have not been widely studied in pregnant and lactating women and should be given only if clearly indicated; Administer Menomune® if clearly indicated • There have been reports of Guillain-Barrè syndrome (GBS) after Menactra®; post-marketing study of this continues
VIS: http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-mening.pdf Pregnancy registry for Menactra®: 1-800-822-2463 (sanofi pasteur); Pregnancy registry for Menveo®: 1-877-311-8972 (Novartis); also notify VHC Networks for long-term support and follow-up	

Pneumococcal Conjugate Vaccine (PCV13)

<table>
<tr><td>Vaccine Description</td><td colspan="2">• Brand: Prevnar 13® (replaces original Prevnar 7®) - Continue series started with Prevnar 7® with Prevnar 13®
• Inactivated polysaccharide conjugate vaccine
• Contains diphtheria protein and aluminum (see package insert for other contents)</td></tr>
<tr><td>Dose & Route</td><td colspan="2">• Dose: 0.5 mL
• Route: IM (Precaution: hemophilia, thrombocytopenia, and anticoagulation therapy)</td></tr>
<tr><td>Indications</td><td colspan="2">• All children younger than 59 months of age
• Children aged 60-71 months, and sometimes those 6-18 years, with underlying medical conditions that increase risk for pneumococcal disease or complications (see back of card)</td></tr>
<tr><td>Administration Schedule</td><td>Dose</td><td>Recommended Age</td></tr>
<tr><td rowspan="4">*Minimum age: 6 wks

No. of doses varies if initiating series after age 7 months (see “catch-up” schedule below)</td><td>#1</td><td>2 months</td></tr>
<tr><td>#2</td><td>4 months</td></tr>
<tr><td>#3</td><td>6 months</td></tr>
<tr><td>#4</td><td>12 to 15 months</td></tr>
<tr><td rowspan="6">Recommended “Catch-up” Schedule</td><td>Age at First Dose</td><td># of Doses Needed: Schedule</td></tr>
<tr><td>7 to 11 months</td><td>3 doses: Two doses at least 8 wks apart; third dose at 12-15 months and at least 8 weeks after second dose</td></tr>
<tr><td>12 to 23 months</td><td>2 doses: Two doses at least 8 weeks apart</td></tr>
<tr><td>24 to 59 months</td><td>1 dose: healthy children
2 doses separated by 8 weeks: high-risk children (see back of card)</td></tr>
<tr><td>60 to 71 months</td><td>2 doses separated by 8 weeks: high-risk children (see back of card)</td></tr>
<tr><td>6 to 18 years</td><td>1 dose may be given: high-risk children (see back of card)</td></tr>
</table>

Pneumococcal Conjugate Vaccine (PCV13) *(Continued)*

• Children who received 1 or more doses of PCV7 (Prevnar®) should complete the series with PCV13 • Children aged 12-23 months who received 3 doses of PCV7 before 12 months of age should receive 1 dose of PCV13 (at least 8 weeks after last dose of PCV7) • A single supplemental dose of PCV13 is recommended for all children aged 14-59 months who received 4 doses of PCV7 and for high-risk children aged 60-71 months who received 4 doses of PCV7 • A single dose of PCV13 may also be administered to children aged 6-18 years who are at increased risk for pneumococcal disease • If both PCV13 and pneumococcal polysaccharide vaccine (PPV23) are indicated, give PPV23 at least 8 weeks after last dose of PCV13	
• **High-risk children:** Those with sickle cell disease; anatomic or functional asplenia; chronic cardiac, pulmonary, or renal disease; diabetes mellitus; CSF leak; HIV infection; immune suppression; cochlear implants; bone marrow transplant.	
Contraindications	• Serious allergic reaction to a prior dose or vaccine component • Moderate or severe acute illness
Special Considerations	• See Storage and Handling Section
VIS: http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-PneumoConjugate.pdf	

FACTOID: Currently there are more than 90 known pneumococcal types; the 10 most common types account for about 62% of invasive disease worldwide.

Source: http://www.nfid.org/factsheets/pneumofacts.shtml

Pneumococcal Polysaccharide Vaccine PPV23

Vaccine Description	• Brand: Pneumovax 23® • Inactivated polysaccharide vaccine • Contains phenol (see package insert)	
Dose & Route	• Dose: 0.5 mL • Route: SC or IM (Precaution: IM injection may be problematic for patients with hemophilia, thrombocytopenia, and anticoagulation therapy)	
Indications	• Children 2 years of age and older with - functional or anatomic asplenia - sickle cell disease - nephrotic syndrome - CSF leaks - immunosuppression, including HIV infection - cochlear implants - bone marrow transplant • Consider in the setting of any chronic illness • Children 2 and older who are Alaska Native or American Indian	
Administration Schedule	**Dose**	**Recommended Interval**
	1 dose if indicated	No sooner than 2 months after last dose of PCV7
Booster	• A second dose is recommended 5 years after the first dose for persons 2 years of age and older who are immunocompromised, have sickle cell disease, or who have functional or anatomic asplenia	
Contraindications	• Serious allergic reaction to prior dose or vaccine component • Moderate or severe acute illness	
Special Considerations	• Additional doses may be indicated for certain patients. Immunology consultation is recommended for patients who have recurrent infections. • Administer before immunosuppressive therapies or splenectomy for best effect (see package insert for timing)	
VIS: http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-ppv.pdf		

IPV-Inactivated Poliovirus Vaccine (IPV)

<table>
<tr><td>Vaccine Description</td><td colspan="3">• Brand: IPOL®
• Inactive virus (IPV) preferred; Live attenuated virus (OPV) is no longer distributed in US
• Contains neomycin, streptomycin, polymyxin B, formaldehyde, calf serum proteins, and 2-phenoxyethanol; needle cover contains dry natural latex rubber (see package insert)
• Also available as combined DTaP, Engerix-B® (HepB), and IPV (Pediarix®); combined DTaP and IPV (Kinrix™); combined DTaP, Hib, and IPV (Pentacel®)</td></tr>
<tr><td>Dose & Route</td><td colspan="3">• Dose: 0.5 mL
• Route: SC or IM (Precaution: hemophilia, thrombocytopenia, and anticoagulation therapy)</td></tr>
<tr><td>Indications</td><td colspan="3">• All infants and children 2 months of age and older
• Consider vaccination of travelers to polio-endemic countries</td></tr>
<tr><td rowspan="5">Routine Administration Schedule
(Refer to CDC website for catch-up and combination vaccine schedules)</td><td>Dose</td><td>Age</td><td>Minimum Interval
(from prior dose)</td></tr>
<tr><td>#1</td><td>2 months</td><td></td></tr>
<tr><td>#2</td><td>4 months</td><td>4 weeks</td></tr>
<tr><td>#3</td><td>6 to 18 months</td><td>4 weeks</td></tr>
<tr><td>#4</td><td>4 to 6 years</td><td>6 months</td></tr>
<tr><td>Contraindications</td><td colspan="3">• Serious allergic reaction to prior dose or vaccine component
• Moderate or severe acute illness</td></tr>
</table>

Continued on Next Page

IPV-Inactivated Poliovirus Vaccine (IPV)
(Continued)

Special Considerations	• DO NOT restart series, no matter how long since previous dose • May give dose #1 as early as 6 weeks of age • The final dose in the IPV series should be administered at age 4 years or older regardless of the number of previous doses • If person previously given OPV, finish series with IPV • 4 doses of any combination of OPV or IPV by 4 to 6 years of age constitutes a complete series • A fourth dose is not needed if the third dose was administered at 4 years of age or older and at least 6 months after the previous dose • Clarification from ACIP: When DTaP-IPV/Hib (Pentacel) is used to provide 4 doses at ages 2, 4, 6, and 15--18 months, an additional booster dose of age-appropriate IPV-containing vaccine (IPV [Ipol] or DTaP-IPV† [Kinrix]) should be administered at age 4--6 years. This will result in a 5-dose IPV vaccine series, which is considered acceptable by ACIP. DTaP-IPV/Hib is not indicated for the booster dose at age 4--6 years. ACIP recommends that the minimum interval from dose 4 to dose 5 should be at least 6 months to provide an optimum booster response. • If a child misses an IPV dose at age 4--6 years, the child should receive a booster dose as soon as feasible
VIS: http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-IPV.pdf	

Rotavirus Vaccine

<table>
<tr><td>Vaccine Description</td><td>• Brands: RotaTeq® and Rotarix®
• Live, oral pentavalent vaccine
• Rotarix® contains latex in the oral applicator
• See package inserts for full list of contents</td></tr>
<tr><td>Dose & Route</td><td>• Dose: 2 mL (RotaTeq®) and 1 mL (Rotarix®)
• Route: Orally
• See package insert</td></tr>
<tr><td>Indications</td><td>• Licensed for the prevention of rotavirus gastroenteritis in infants 6 weeks through 32 weeks of age</td></tr>
<tr><td>Administration Schedule

* NOTE: First and final dose recommendation differs slightly from the manufacturer's package inserts</td><td>
<table>
<tr><th>Vaccine</th><th>Dose 1</th><th>Dose 2</th><th>Dose 3</th></tr>
<tr><td>RotaTeq®</td><td>2 months</td><td>4 months</td><td>6 months</td></tr>
<tr><td>Rotarix®</td><td>2 months</td><td>4 months</td><td></td></tr>
</table>
Rules for rotavirus vaccines:
• Minimum of 4 weeks must separate doses
• First dose can be given as early as 6 weeks of age and should be given by 14 weeks and 6 days (per ACIP*); Vaccination should not be initiated for infants 15 weeks and 0 days or older because of insufficient data on safety of dose 1 of the vaccine in older infants.
• The maximum age for the last dose of rotavirus vaccine is 8 months and 0 days (per ACIP*)
</td></tr>
<tr><td>Contraindications</td><td>• Serious allergic reaction to prior dose or vaccine component
• Moderate or severe acute illness
• Immune suppression, including Severe Combined Immunodeficiency Disease (SCID)
• History of intussusception
• Not indicated for children younger than 6 weeks or older than 8 months and 0 days
• Precautions: History of gastrointestinal disorders or acute gastrointestinal illness, spina bifida, or bladder exstrophy</td></tr>
<tr><td>Special Considerations</td><td>• DO NOT restart series, no matter how long since previous dose
• See Storage and Handling Section</td></tr>
<tr><td colspan="2">VIS: http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-rotavirus.pdf</td></tr>
</table>

Varicella Vaccine

Vaccine Description	• Live attenuated viral vaccine • Contains gelatin, neomycin (see package insert) • Also available as combined MMR and varicella (ProQuad®) for use when both vaccines are indicated for children 12 months to 12 years of age	
Dose & Route	• Dose: 0.5 mL Route: SC • See package insert	
Indications	• All children 12 months of age and older, including all adolescents without evidence of immunity should receive two doses • May use as post-exposure prophylaxis if given within 3 days of exposure	
Administration Schedule	**Dose**	**Recommended Age**
	#1	12 to 15 months
	#2	4 to 6 years
Minimum Intervals	**Dose**	**Minimum Interval**
	#1	Must be at least 12 months of age
	#2	4 weeks after dose #1

Continued on Next Page

Varicella Vaccine *(Continued)*

Contraindications	• Serious allergic reaction to prior dose or vaccine component • Moderate or severe acute illness • Pregnancy, or possibility of pregnancy within one month • Immune suppression (see ACIP recommendations). • Active, untreated tuberculosis • Can give to people with isolated humoral immune deficiency, but NOT to those with cellular immune deficiency; immunology consultation recommended • Recent receipt of blood product (see table on card 1-9 for intervals between vaccines and various products) • For use in children taking salicylates, consult ACIP recommendations
Special Considerations	• If other live injected vaccines are needed and not administered on the same day, space them at least 4 weeks apart • OK to apply tuberculin skin test (TST or PPD) at same visit as varicella vaccine. Delay TST for more than 4 wks if varicella vaccine given first OR apply TST first, then give varicella vaccine when TST is read • 4% to 6% of recipients get a "varicella-like" rash that may be contagious to people who are not immune to varicella • DO NOT restart series, no matter how long since previous dose • Note: Discard if not used within 30 minutes after reconstitution; See Storage and Handling Section • ProQuad® (MMRV) may be used when both MMR and varicella vaccines are indicated for children 12 months through 12 years of age. Note: Unless the parent or caregiver expresses a preference for MMRV vaccine, separate MMR and varicella vaccines should be administered for the first dose for children 12 through 47 months of age.
VIS: http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-varicella.pdf Pregnancy registry: 1-800-986-8999 (Merck); also notify VHC Networks for long-term support and follow-up	

Pediatric Combination Vaccines

This provides only a summary of the various combination vaccines used in children. Refer to the package insert and ACIP recommendations for detailed information regarding these vaccines.

Vaccine	Components	Special Instructions
Comvax®	Hib and Hepatitis B	• Indicated for children at ages 2, 4, and 12-15 months and constitutes a complete series of Hib and hepatitis B vaccines (can be given as early as 6 weeks of age) • Should not be administered to any infant aged <6 weeks or adults (contains pediatric dose of hepatitis B) • Not licensed for infants whose mothers are known to be HBsAG positive
Kinrix™	DTaP and IPV	• Indicated for use as the fifth dose of DTaP and fourth dose of IPV in children aged 4 -- 6 years • Cannot be used in children 7 years and older because of DTaP component
Pediarix®	DTaP, Hepatitis B, and IPV	• Indicated for the primary series at ages 2, 4, and 6 months • Third dose should not be given before age 24 weeks • Should not be administered to any infant aged <6 weeks or any person aged >7 years
Pentacel®	DTaP, IPV, and Hib	• Indicated for use in infants and children at ages 2, 4, 6, and 15 -- 18 months • Licensed for use in children aged 6 weeks through 4 years
ProQuad®	MMR and Varicella	• Indicated for children 12 months to 12 years of age • Note: Unless the parent or caregiver expresses a preference for MMRV vaccine, separate MMR and varicella vaccines should be administered for the first dose for children 12 through 47 months of age.

Combination Vaccines *(Continued)*

Vaccine	Components	Special Instructions
Twinrix®	Hepatitis A and Hepatitis B	• Indicated for persons aged 18 years or older in three doses at 0, 1, and 6 months

Vaccine Storage and Handling

Vaccine Healthcare Centers Network

This content is based on manufacturer product inserts, DoD resources, MILVAX resources, and Centers for Disease Control and Prevention (CDC) resources.

Storage and Handling Resources

United States Army Medical Material Agency/Distribution Operation Center (USAMMA/DOC): Responsible for managing and coordinating the packing and storage of temperature sensitive medical products (TSMPs).

For vaccine TSMP questions:
- During hours of 0700-1700 EST call: 301-619-4318, 301-619-1197, or 301-619-4198
- After hours for urgent issues only call: 301-676-1184, 301-676-0857, or 301-256-8072
- For non-urgent issues email: USAMMADOC@amedd.army.mil
- Website: http://www.usamma.army.mil/cold_chain_management.cfm

Military Vaccine Agency (MILVAX):
Phone: 1-877-438-8222
Email: vaccines@amedd.army.mil
Website: www.vaccines.mil
Storage and Handling Webpage: www.vaccines.mil/default.aspx?cnt=disease/minidv&dID=61
Map of MILVAX Regional Analysts: www.vaccines.mil/MAP/map.aspx

Centers for Disease Control and Prevention (CDC):
Website: www.cdc.gov/vaccines/recs/storage/default.htm

Immunization Action Coalition (IAC):
Website: www.immunize.org/handouts/vaccine-storage-handling.asp

CONTACT MILVAX-UASAMMA before discarding vaccines to determine options if deviation in best practice for storage & handling.

Storage and Handling Overview

Vaccines are an important adjunct to preventing infectious diseases. Vaccines are costly to produce and store because of sensitivity to temperature changes. The success of immunization programs depends heavily upon maintenance of vaccine potency and stability through proper vaccine storage and handling practices. Each facility should have designated primary and back-up vaccine storage coordinators and Standard Operation Procedures (SOPs)/Operating Instructions (OIs) for vaccine storage.

Cold chain management is the process of maintaining required temperatures during all phases of distribution from the time the vaccine leaves the manufacturer until administration of the vaccine to the patient. Because vaccines are fragile, they must be stored in proper conditions at all times or they can lose their potency and become ineffective. Most vaccines are stored in the refrigerator, but some must be stored in the freezer. It is a good idea to place a sign on the front of the vaccine storage unit(s) indicating which vaccines are stored in the freezer and which are stored in the refrigerator.

Required storage temperatures:

Refrigerated vaccine storage: 2°C to 8°C (36°F to 46°F)

Freezer vaccine storage: -50°C to -15°C (-58°F to +5°F)

Temperature Logs for Vaccine Storage Units

To help ensure storage units stay within these ranges, the temperatures of the interior storage compartments should be checked and recorded twice daily. Ideally, check temperatures first thing in the morning and again at the end of the day. Temperatures should be monitored even if your unit has a temperature alarm. Logs should be kept for at least 3 years.

Temperature Log for Vaccines (Celsius) **Month/Year:_____ Days 1-15**

Completing the temperature log: Check the temperatures in both the freezer and the refrigerator compartments of your vaccine storage units at least twice each working day. Place an "X" in the box that corresponds with the temperature readings, and you initials. Once the month has ended, save each month's form for 3 years, unless state or local jurisdictions require a longer time period.

If the recorded temperature is in the shaded zone: This represents unacceptable temperature range. Follow these steps: 1. Label vaccine as "potentially compromised." 2. Move vaccine to functioning storage area as quickly as possible. 3. Call *USAMMA immediately to determine if potency of vaccines has been affected. 4. Call your Regional Analyst for further assistance.

Day of the month	1		2		3		4		5		6		7		8		9		10		11		12		13		14		15	
Staff Initials																														
Room Temp.																														
Exact Time																														
°C Temp	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Room Temp.	≥11°																													
	10°																													
	9°																													
Refrigerator	8°																													
	7°																													
	6°																													
	5°																													
Non-Freeze	4°																													
	3°																													
	2°																													
	1°																													
Room Temp.	0°																													
	≤1°																													
Freezer	≥12°																													
	-13°																													
	-14°																													
	-15°																													
	-16°																													
	≤-17°																													

Take immediate action if temperature is in shaded section*

Take immediate action if temperature is in shaded section*

Take immediate action if temperature is in shaded section*

Body Vaccines Refrigerated Below

Freezer Temp

***USAMMA Emergency Telephone Numbers:** Phone 301-619-4318/1197/4198, DSN [343], After Hours: 301-676-1184/0857, E-mail: USAMMADOC@amedd.army.mil

Adapted by the Military Vaccine (MILVAX) Agency courtesy of the Immunization Action Coalition.

Military Vaccine (MILVAX) Agency (October 2010) 1-877-GET-VACC www.vaccines.mil

Temperature Log for Vaccines (Celsius) **Month/Year:_____ Days 16-31**

Completing the temperature log: Check the temperatures in both the freezer and the refrigerator compartments of your vaccine storage units at least twice each working day. Place an "X" in the box that corresponds with the temperature readings, and you initials. Once the month has ended, save each month's form for 3 years, unless state or local jurisdictions require a longer time period.

If the recorded temperature is in the shaded zone: This represents unacceptable temperature range. Follow these steps: 1. Label vaccine as "potentially compromised." 2. Move vaccine to functioning storage area as quickly as possible. 3. Call *USAMMA immediately to determine if potency of vaccines has been affected. 4. Call your Regional Analyst for further assistance.

Day of the month	16		17		18		19		20		21		22		23		24		25		26		27		28		29		30		31
Staff Initials																															
Room Temp.																															
Exact Time																															
°C Temp	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Room Temp.	≥11°																															
	10°																															
	9°																															
Refrigerator	8°																															
	7°																															
	6°																															
	5°																															
Non-Freeze	4°																															
	3°																															
	2°																															
	1°																															
Room Temp.	0°																															
	≤1°																															
Freezer	≥12°																															
	-13°																															
	-14°																															
	-15°																															
	-16°																															
	≤-17°																															

Take immediate action if temperature is in shaded section*

Take immediate action if temperature is in shaded section*

Take immediate action if temperature is in shaded section*

Body Vaccines Refrigerated Below

Freezer Temp

***USAMMA Emergency Telephone Numbers:** Phone 301-619-4318/1197/4198, DSN [343], After Hours: 301-676-1184/0857, E-mail: USAMMADOC@amedd.army.mil

Adapted by the Military Vaccine (MILVAX) Agency courtesy of the Immunization Action Coalition.

Military Vaccine (MILVAX) Agency (October 2010) 1-877-GET-VACC www.vaccines.mil

Vaccine Storage Unit Set-Up

Set up your vaccine storage to maintain proper temperatures, to ensure vaccines can be located quickly, and to prevent mistaking one vaccine for another vaccine.

Recommendations for refrigerator vaccine storage:

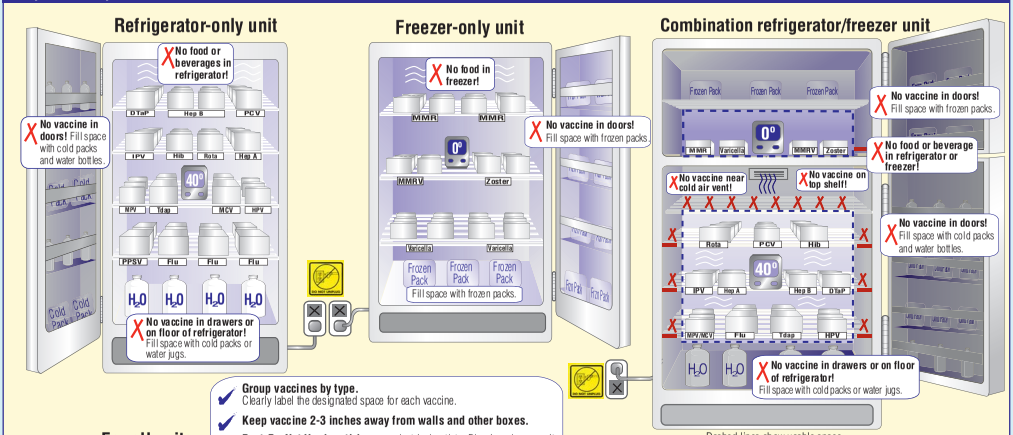
- Place thermometer in the center of the vaccine storage unit.
- Place vaccines in breathable plastic mesh baskets and clearly label each basket by type of vaccine (e.g., DTaP, HepB, Hib, etc.).
- Place baskets 2-3 inches from walls and other baskets.
- Keep vaccines in their original boxes until ready to use. This helps protect them from exposure to light which can damage many vaccines.
- Store ONLY vaccines and other medications in the vaccine storage unit(s).
- Use buffers, such as filled water bottles, in drawers and doors of the vaccine storage unit(s). This helps to stabilize the storage unit temperature.
- Keep vaccines with shorter expiration dates in the front of the shelf or basket to ensure these are used first.
- If you have vaccine that will expire in 3 months or less that you will not be able to use, notify USAMMA or pharmacy.
- Store pediatric and adult vaccines separately.
- Do NOT store vaccines in drawers or doors of vaccine storage unit(s).
- Label and store diluents with the corresponding vaccine to avoid mistakes. Only use the diluent supplied with the individual vaccine. If diluents are stored at room temperature or in the door or lower shelves of the refrigerator, label with the name and manufacturer of the corresponding vaccine. Diluents should NEVER be frozen.

Recommendations for freezer vaccine storage:

- Place thermometer in the center of the vaccine storage unit.
- Place vaccines in breathable plastic mesh baskets and clearly label each basket by type of vaccine (e.g., MMRV, MMR, varicella, etc.).
- Place baskets 2-3 inches from walls and other baskets
- Keep vaccines in their original boxes until ready to use. This helps protect them from exposure to light which can damage many vaccines.
- Store ONLY vaccines and other medications in the vaccine storage unit(s).
- Use buffers, such as cold packs, in drawers and doors of the vaccine storage unit(s). This helps to stabilize the storage unit temperature.
- Keep vaccines with shorter expiration dates in the front of the shelf or basket to ensure these are used first.
- If you have vaccine that will expire in 3 months or less that you will not be able to use, notify USAMMA or pharmacy.
- Do NOT store vaccines in drawers or doors of vaccine storage unit(s).
- Label and store diluents at room temperature or in the door or lower shelves of the refrigerator. Label clearly with the name and manufacturer of the corresponding vaccine. Diluents should NEVER be frozen.

Vaccine Storage Unit Set Up *(Continued)*

Proper Set-Up



For all units:

- **Group vaccines by type.** Clearly label the designated space for each vaccine.
- **Keep vaccine 2-3 inches away from walls and other boxes.**
- **Post *Do Not Unplug* stickers** on electrical outlets. Plug in only one unit per outlet.
- **Place thermometer probe in the center** of the unit. Post a temperature log on the door.

Protect the Power Supply

There are several key things you can do to protect the power supply to vaccine storage:

- Post warning signs indicating who to contact in case the temperature needs adjusting.
- Ensure electrical cord outlet and storage unit plugs are secured to prevent the unit(s) from accidently being unplugged or turned off.
  - Use safety-lock plugs and outlet covers to reduce the chance of this occurring.
  - Post signs or stickers placed by outlets warning not to unplug.
  - Label fuses and circuit breakers to alert others not to turn off power to vaccine storage unit(s).
- Use an alarm system to alert staff of after-hour emergencies, such as power failures or out-of-range temperatures in vaccine storage units.
- Use backup generator(s) to provide power during outages when large quantities of vaccines are stored.

Vaccine Preparation and Handling

All Vaccines: Take vaccines out of the storage unit only when ready to administer. Always double check that you have the correct vaccine before moving the cap. Remove the cap only when you are ready to administer the vaccine.

Single-dose vials with NO reconstitution needed: Single-dose vials are for one-time use only. Once you remove the cap, administer the vaccine as soon as possible.

Multidose vials with NO reconstitution needed: Doses that remain after withdrawal of the dose can be administered until the expiration date printed on the vial or vaccine packaging if the vial has been stored correctly and the vaccine is not visibly contaminated, unless otherwise specified by the manufacturer. Check the package insert for specific requirements and expiration information. Store multidose vials in the original packaging to protect from light. Write date and initials on vial when the vial is first opened.

Single-dose and multidose vials requiring reconstitution: After reconstitution with the manufacturer supplied diluent, these vaccines must be used within a specified time period. Review the package insert for the specific time period. Upon reconstitution, write the date, time, and initials on the vial.

Vaccine Storage and Handling

Vaccine	Vaccine Storage Temperature	Diluent	Specific Expiration after Opened/Reconstituted	Protect from Light	Other Comments
Adenovirus	2°C to 8°C (35°F to 46°F)		May be used until expiration date.		Keep bottles tightly closed and protect from moisture. Do not remove desiccant canister from bottles.
Anthrax	2°C to 8°C (35°F to 46°F)		Multidose vials may be used until expired unless contaminated.		Shake well before use.
DTaP, DT, Td, Tdap, DTaP-IPV (Kinrix), DTaP-IPV-Hib (Pediarix)	2°C to 8°C (35°F to 46°F)		Multidose vials may be used until expired unless contaminated.		Shake well before use.
DTaP-IPV-Hib (Pentacel)	2°C to 8°C (35°F to 46°F)	Yes – store in refrigerator	Use immediately after reconstitution.		Shake well before use.
HepA, HepA-HepB	2°C to 8°C (35°F to 46°F)				Shake well before use. Thorough agitation is needed to maintain suspension of the vaccine.
HepB	2°C to 8°C (35°F to 46°F)				Shake well before use.
Hib (ActHIB and Hiberix)	2°C to 8°C (35°F to 46°F)	Yes – store in refrigerator	Use within 24 hours of reconstitution.	Yes	Shake well before use.
Hib (PedvaxHIB), Hib-HepB (Comvax)	2°C to 8°C (35°F to 46°F)				Shake well before use. Thorough agitation is needed to maintain suspension of the vaccine.
Hib-HepB (Comvax)	2°C to 8°C (35°F to 46°F)				Shake well before use.
HPV	2°C to 8°C (35°F to 46°F)			Yes	Shake well before use. Thorough agitation is needed to maintain suspension of the vaccine.

Vaccine Storage and Handling

Vaccine	Vaccine Storage Temperature	Diluent	Specific Expiration after Opened/Reconstituted	Protect from Light	Other Comments
Influenza (LAIV)	2°C to 8°C (35°F to 46°F)		Formulated for use during current influenza season.		Follow the manufacturer's instructions to administer ½ dose into one nostril. Then remove dose-divider clip to administer remainder of dose into the other nostril.
Influenza (TIV)	2°C to 8°C (35°F to 46°F)		Formulated for use during current influenza season. May use multidose vials until expired unless contaminated.	Yes	Shake well before use.
JEV (Ixiaro)	2°C to 8°C (35°F to 46°F)			Yes	Shake well before use.
Meningococcal (Menactra)	2°C to 8°C (35°F to 46°F)			Yes	Shake well before use.
Meningococcal (Menveo)	2°C to 8°C (35°F to 46°F)	Yes – store in refrigerator	Use within 8 hours of reconstitution.	Yes	
Meningococcal (MPSV4)	2°C to 8°C (35°F to 46°F)	Yes – store in refrigerator	Use single dose within 30 minutes of reconstitution. Use multidose vial within 35 days of reconstitution.		Shake well before use.
MMR	2°C to 8°C (35°F to 46°F) or colder	Yes – store in refrigerator or at room temperature	Use within 8 hours of reconstitution and continue to protect from light.	Yes	
MMRV	2°C to 8°C (35°F to 46°F) or colder	Yes – store in refrigerator or at room temperature	Use within 30 minutes of reconstitution.	Yes	The lyophilized vaccine may also be stored in a freezer and subsequently transferred to a refrigerator; however, the lyophilized vaccine should not be refrozen.

Vaccine Storage and Handling

Vaccine	Vaccine Storage Temperature	Diluent	Specific Expiration after Opened/Reconstituted	Protect from Light	Other Comments
Pneumococcal (PCV)	2°C to 8°C (35°F to 46°F)				Shake well before use.
Pneumococcal (PPSV)	2°C to 8°C (35°F to 46°F)		Multidose vials may be used until expired unless contaminated.		
Polio (IPV)	2°C to 8°C (35°F to 46°F)		Multidose vials may be used until expired unless contaminated.		
Rabies	2°C to 8°C (35°F to 46°F)	Yes – store in refrigerator	Use immediately after reconstitution.		
Rotavirus (RotaTeq)	2°C to 8°C (35°F to 46°F)			Yes	
Rotavirus (Rotarix)	2°C to 8°C (35°F to 46°F)	Yes – store at room temperature	Use within 24 hours of reconstitution.	Yes	
Smallpox	2°C to 8°C (35°F to 46°F)	Yes – store at room temperature	Use within 30 days of reconstitution.		When reconstituting the vaccine, gently swirl the mixture. Do not shake. Save stopper in sterile container to reseal vial after use.
Typhoid (Typhim Vi)	2°C to 8°C (35°F to 46°F)		Multidose vials may be used until expired unless contaminated.		
Typhoid (Vivotif)	2°C to 8°C (35°F to 46°F)				Take one capsule every other day with cool or luke warm fluid. Do not chew or crush.

Vaccine Storage and Handling

Vaccine	Vaccine Storage Temperature	Diluent	Specific Expiration after Opened/Reconstituted	Protect from Light	Other Comments
Varicella (refrigerator formulation)	2°C to 8°C (35°F to 46°F) or colder	Yes – store in refrigerator or at room temperature	Use within 30 minutes of reconstitution.	Yes	The lyophilized vaccine may also be stored in a freezer and subsequently transferred to a refrigerator; however, the lyophilized vaccine should not be refrozen.
Varicella (freezer formulation)	-15°C (+5°F) or colder	Yes – store in refrigerator or at room temperature	Use within 30 minutes of reconstitution.	Yes	
Yellow Fever	2°C to 8°C (35°F to 46°F)	Yes – store in refrigerator	Use within 60 minutes of reconstitution.		
Zoster	-15°C (+5°F) or colder	Yes – store in refrigerator or at room temperature	Use within 30 minutes of reconstitution.	Yes	May be stored and/or transported at refrigerator temperature (2°C to 8°C, 36°F to 46°F) for up to 72 continuous hours prior to reconstitution.

Always refer to the product insert for the most up-to-date vaccine storage and handling instructions.

Special Instructions for Smallpox Reconstitution

Directions for Reconstitution:
You will need a sterile 21 gauge or smaller needle to release the vacuum in the vaccine vial before adding diluent. This needle will only be used to release the vacuum. This needle is NOT included in the kit.

1. Remove the vaccine vial from cold storage and allow it to come to room temperature before reconstitution.
2. Remove the flip cap seals of the vaccine and diluent vials.

3. Wipe both rubber stoppers with isopropyl alcohol and allow them to dry completely.
4. Insert a sterile 21 gauge needle into the vaccine vile stopper to release the vacuum. Discard this needle in biohazard waste container.

5. Open the vented needle included in the kit and attach to syringe.
6. Draw up 0.3 mL of diluent using aseptic technique.
7. Transfer the entire contents of the syringe to the vaccine vial using aseptic technique.

8. Gently swirl to mix, but try not to get solution on the rubber stopper. The reconstituted vaccine should be a clear to slightly hazy, colorless to straw-colored liquid free from extraneous matter.
9. Record date of reconstitution.
10. Store reconstituted vaccine at 2° to 8°C (36° to 46°F) when not in actual use. The vaccine may be stored in a refrigerator for up to 30 days after reconstitution.

NOTE: Gloves should be worn when reconstituting or administering smallpox vaccine.

Prefilling Syringes

Prefilling syringes is highly discouraged because of the increased risk of administration errors, possible bacterial growth in vaccines that do not contain preservatives, and potential vaccine wastage. However, a small amount of vaccine may be pre-drawn in a mass immunization setting (i.e., flu clinic) if the following procedures are followed:

- Only one vaccine type may be administered at the clinic. If more than one vaccine type is to be administered, separate vaccine administration stations must be set up for each vaccine type to prevent medication errors.
- Vaccine should not be drawn up in advance of arriving at the clinic site. There is a lack of data on the stability of vaccine stored in plastic syringes, therefore the practice of drawing up large quantities of vaccine hours or even days before a clinic is NOT acceptable.
- Vaccine should be transported to the clinic site in the manufacturer-supplied packaging.
- Patient flow should be monitored to avoid drawing up unnecessary doses.
- Draw up no more than 10 syringes at a time.
- At the end of the clinic day, discard any remaining vaccine in syringes; they cannot be used on subsequent days.

As an alternative, use manufacturer-supplied prefilled syringes when possible.

Potentially Compromised Vaccine Procedures

Immediate action must be taken if the temperature within the vaccine storage unit is not within the correct range.

The following actions need to be taken immediately:

- Notify the primary and/or back-up vaccine coordinator.
- Label any potentially compromised vaccine with the words "Do Not Use" and place the vaccine in a working storage unit at the correct temperature range. Do NOT leave the vaccine in the malfunctioning or out of range unit.
- Record the internal vaccine storage unit temperature and the room temperature at the time the problem was discovered.
- Record the length of time the vaccine was potentially exposed to out-of-range temperatures.
- Note if there were water bottles or frozen packs in the unit at the time of the event as these help to maintain temperatures within the unit.

The vaccine coordinator or a designee then needs to:

- Conduct an inventory of the vaccines affected by this event and record the actions taken.
- Report all potentially compromised vaccines to the U.S. Army Medical and Material Agency (USAMMA) to validate compromise and receive destruction instructions for compromised vaccines.
- Report all confirmed vaccine compromised losses through service-specific channels, and to the local Military Vaccine Agency Regional Analyst for your facility.
- Report must include: description of reason for loss, total vials/doses lost, the specific vaccines compromised, and the cost.

Medical/Reference

Immunization Tool Kit
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