IMMUNIZATION TOOL KIT

Adult, Military and Childhood Immunizations

Eighth Edition 2014

Developed and Distributed by

DHA
Defense Health Agency
Public Health Division
Immunization Healthcare

Immunization Healthcare Branch,
Defense Health Agency

Immunization Tool Kit
Adult, Military, and Childhood Immunizations
Eighth 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 Immunization Healthcare Branch, Defense Health Agency (DHA-IHB) (http://www.who.int/vaccine_safety/initiative/detection/AEFI/en/).
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 Statements (VIS),
- proper screening for individual patient health risk factors and medical problems,
- healthcare providers' orders, and
- DoD directives (Note: Where DoD guidance varies from CDC/FDA guidance, DoD guidance takes precedence).

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) assist in identifying 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 vaccine healthcare specialist. 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.

DHA-IHB 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, DHA-IHB supports a Vaccine Adverse Events Reporting System (VAERS) registry for long-term clinical case management and medical exemption tracking.

ACCESS to CLINICAL CONSULTATION SERVICES:

- DHA Immunization Healthcare Support Center: 1-877-438-8222
- Secure internet based consultation services: https://askvhc.amedd.army.mil
- Website: www.vaccines.mil
- Toll-free information line- (877) GET-VACC (438-8222)
- Email question-and-answer service – DoDVaccines@mail.mil
- Direct access to Regional Sites: See page xi

Project Design and Development (1999-2013)
COL (RET) Renata J. M. Engler, MD,
Director Emeritus, Vaccine Healthcare Centers Network

Project Development and Review Team for 2014

Immunization Healthcare Branch, Defense Health Agency
Limone C. Collins, Jr., MD, Medical Director; Herman Harris Jr., MA; Mary Alice Willis, RN, MSN; Vicki Ibaugh, ARNP, MSN; Christina Spooner, MS; Princess Facen RN, BSN, MSN, MHA; Amanda Williams, MS; Dana Brown, RN, BSN, MHA; Monica Peele, MA; Terrye Schnitski, MHA/ED; Tom Rampy, RN, BSN, MPA; Keith Boyce, MS; Celia Dowers, BS; Ray Anspach; Jateya Jones, MPH, CHES; Chris Orose; Lorne McCoy, IT Program Office

Allergy and Immunizations Program
Specialty Course Director:
LTC Cecilia P. Mikita, MD, MPH

Congressional Affairs
Office of the Army Surgeon General:
LTC Jennifer Mbuthia, MD, FAAP, FAAAAI, LTC, MC

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:
http://www.vaccines.mil/VHC/ImmunizationToolKit.aspx

U.S. Government Official Edition Notice

Use of ISBN Prefix

This is the Official U.S. Government edition of this publication and is herein identified to certify its authenticity. Use of the 0-16 ISBN prefix is for U.S. Government Printing Office Official Editions only. The Superintendent of Documents of the U.S. Government Printing Office requests that any reprinted edition clearly be labeled as a copy of the authentic work with a new ISBN.

About the Immunization Healthcare Branch, Defense Health Agency (DHA-IHB)

DHA-IHB is committed to ensuring quality vaccine administration and improving vaccine safety. We are committed to providing and enabling the best quality and responsive patient-centered immunization healthcare and readiness. Our Mission is to enhance the Military Health System focus on health and healing by supporting immunization program efficacy, safety and acceptability, enabling solutions that address personalized medicine and improved evidence based practices.

DHA-IHB supports Department of Defense (DoD) immunization programs through policy development, expert clinical, investigational, educational and consultative services for individual Service Members, beneficiaries, and healthcare workers, as well as other government associated stakeholders. The DHA-IHB organization provides global outreach supporting specialized expertise in immunization healthcare (with a focus on adult, travel, and biodefense vaccines) that is dedicated to enhance vaccine effectiveness, safety and acceptability within the Military Health System.

We also provide enhanced individual case management and causality assessments for medical exemptions and adverse events. Immunization specific education for Service Members, dependents, retirees, and other DoD beneficiaries is one of our most requested services. In addition, the staff of DHA-IHB is dedicated to maintaining the standards of immunization practices, 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.

The services provided by DHA-IHB are dedicated to protecting the health of our Soldiers, Sailors, Airmen, Marines; as well as all beneficiaries through enhanced trust in care, before, during, and after immunization.

For sale by the Superintendent of Documents, U.S. Government Printing Office
Internet: bookstore.gpo.gov Phone: toll free (866) 512-1800; DC area (202) 512-1800
Fax: (202) 512-2250 Mail: Stop SSOP, Washington, DC 20402-0001

ISBN 0-16-075227-2

Table of Contents

Page

Project Development, Message From the Director & Foreword ..... ii-ix

Immunization Healthcare Branch, Defense Health Agency ..... x-xi

Additional Resources for Providers..... xii-xiii

Know the Facts About Immunization..... 1-1

Risk Communication..... 1-2

Standards for Military Immunization..... 1-3

Missed Opportunities for Immunization..... 1-6

Safe Handling and Storage of Vaccines 1-7

Vaccines and Their True and Untrue Contraindications and Precautions 1-8

Antibody-Containing Products and Duration of Interference with Varicella or Measles Vaccine Immune Response..... 1-10

Vaccine Products Licensed for Use in the United States..... 1-12

How To Administer Intramuscular (IM) Injections..... 1-16

How To Administer Subcutaneous (SC) Injections..... 1-17

Sample Screening Questionnaire 1-18

Anaphylaxis..... 1-20

Principles of Anaphylaxis Management 1-22

Caring for Adverse Events After Vaccination and VICP 1-26

Vaccine Components (Excipients) 1-31

Medical Exemptions..... 1-34

Administrative Exemptions..... 1-35

ADULT & MILITARY IMMUNIZATIONS

Page

Adult Immunization Schedule 2-2
Adenovirus 2-7
Anthrax 2-9
Hepatitis A 2-11
Hepatitis B 2-13
Haemophilus influenzae type b (Hib) 2-15
Human Papillomavirus (HPV) 2-16
Injectable Influenza 2-17
Intranasal Influenza 2-19
Japanese Encephalitis 2-21
Measles, Mumps and Rubella (MMR) 2-23
Meningococcal 2-25
Pneumococcal Conjugate (PCV13) 2-27
Pneumococcal Polysaccharide (PPSV23) 2-29
Poliovirus 2-31
Rabies 2-33
Smallpox (Vaccinia) 2-35
Td (Tetanus and Diphtheria Toxoids) 2-43
Tdap (Tetanus and Diphtheria Toxoids and Acellular Pertussis) 2-44
TT (Tetanus Toxoid) 2-46
Typhoid 2-47
Varicella (Chickenpox) 2-49
Yellow Fever 2-51
Zoster (Shingles) 2-52

PEDIATRIC IMMUNIZATIONS

Page

Childhood/Adolescent Immunization Schedule 3-3

Summary of Recommendations for Immunization 3-9

DTaP (Diphtheria, Tetanus, and Acellular Pertussis) 3-13

DT (Diphtheria and Tetanus) 3-15

Td (Tetanus and Diphtheria) 3-16

Tdap (Tetanus, Diphtheria, and Acellular Pertussis) 3-17

Hepatitis A 3-19

Hepatitis B 3-21

Haemophilus influenzae type b (Hib) 3-23

Human Papillomavirus (HPV) 3-25

Injectable Influenza 3-26

Intranasal Influenza 3-27

Japanese Encephalitis 3-29

Measles, Mumps and Rubella (MMR) 3-31

Meningococcal 3-33

Pneumococcal Conjugate (PCV13) 3-35

Pneumococcal Polysaccharide (PPSV23) 3-37

Poliovirus 3-38

Rotavirus 3-40

Varicella (Chickenpox) 3-41

Combination Vaccines 3-43

STORAGE AND HANDLING INSTRUCTIONS

Storage and Handling Section: 4-1

Message From the Director:

Welcome to the Eighth 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.

The Military Health System (MHS) is dedicated to providing excellence in healthcare services. DHA-IHB provides the MHS with expertise and guidance related to vaccines, medical exemptions, adverse-events reporting and evaluation, and care management. The content of this tool kit represents one of several educational resources developed by DHA-IHB to ensure quality healthcare delivery and enhance vaccine efficacy, safety, and acceptability.

Vaccines are prescription drugs. The ITK does not eliminate the need to evaluate an individual's medical history and current state of health prior to immunization. For detailed guidelines and directions for safe administration of vaccinations, refer to the manufacturers' package inserts approved by the Food and Drug Administration (FDA), and the "Recommendations of the Advisory Committee on Immunization Practices (ACIP)" published in Morbidity and Mortality Weekly Report (MMWR) at www.cdc.gov.

Guidance and standards for quality military healthcare delivery are detailed in the joint military regulation "Medical Services Immunizations and Chemoprophylaxis" (published 7 October 2013).

For further information regarding DHA-IHB services and a downloadable format of this Tool Kit, please visit our website: www.vaccines.mil.

We look forward to serving you!

Margaret L. Yacovone, MD, MS
Colonel, Medical Corps, United States Army
Director, DHA-IHB

Immunization Healthcare Branch, Defense Health Agency

Vision:
We are committed to provide and enable the best quality and responsive patient-centered immunization healthcare and readiness.

Mission:
To enhance the Military Health System (MHS) focus on health and healing by supporting immunization program efficacy, safety and acceptability, enabling solutions that address personalized medicine and improved evidence based practices.

Headquarters Address:
7700 Arlington Boulevard
Suite 5143
Falls Church, VA 22042

DHA Immunization Healthcare Support Center: 1-877-438-8222
Secure and confidential website for vaccine-related questions or problems:
https://askvhc.amedd.army.mil

DHA-IHB
Regional Office Locations

National Capital Regional DHA-IHB Locations

Walter Reed Regional DHA-IHB
One Region – Two Sites
(Bethesda/Ft. Belvoir)

Walter Reed National Military Medical Center, BLDG 19, 4th Floor

4954 North Palmer Road
Bethesda, MD 20889-5630
Phone: (301) 319-2904; DSN 295-2904
Fax: (301) 319-8299

Ft. Belvoir Community Hospital

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

Fort Bragg Regional DHA-IHB

Bldg. 1-2532 Armistead Street
Fort Bragg, NC 28310
Phone: (910) 432-4015; DSN: 239-4015
Fax: (910) 396-3932

Wilford Hall Regional DHA-IHB

2201 Pepperrell Street,
Bldg-3350, Suite 1, Room 703
Lackland AFB, TX 78236-5314
Phone: (210) 292-0482; DSN: 554-0482
Fax: (210) 292-0493

Naval Medical Center Portsmouth
Richard E. Shope Regional DHA-IHB

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

www.vaccines.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.

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

www.cdc.gov/vaccines

Epidemiology and Prevention of Vaccine-Preventable Diseases (The Pink Book): http://www.cdc.gov/vaccines/pubs/pinkbook/index.html
CDC Health Information for International Travel (The Yellow Book): http://wwwnc.cdc.gov/travel/page/yellowbook-home-2014
National Immunization Hotline
1-800-232-4636 (English); 1-888-232-6348 (TTY)

Vaccine Adverse Event Reporting System (VAERS)

http://vaers.hhs.gov

Call toll-free VAERS information line at 1-800-822-7967.

National Vaccine Injury Compensation Program (VICP)

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

Countermeasures Injury Compensation Program (CICP)

www.hrsa.gov/cicp

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 A (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.

Project Immune Readiness

https://vhcprojectimmunereadiness.com/

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

Military Health System: Health Affairs Policies and Guidelines

www.health.mil/policies

This site lists all military service policies in one location.

Joint Instruction on Immunization and Chemoprophylaxis:

Dated 7 October 2013

http://www.vaccines.mil/ImmJointInstruction

Deployment Health

www.pdhealth.mil

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

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 409-200-0201.

Immunization Action Coalition

www.immunize.org

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. For more information, call 651-647-9009.

Know The Facts About Immunizations

- 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, 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 Immunizations

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 DHA-IHB:

- Phone: 301-319-2904, DSN: 295-2904
- Secure email: https://askvhc.amedd.army.mil
- Regional DHA-IHB info www.vaccines.mil
- DHA Immunization Healthcare Support Center: 1-877-438-8222

Standards for Military Immunization

Standard 1: Immunization Availability

a. Ensure immunications are available when required to minimize disruption of deployment or training schedules.
b. Ensure immunizations are available at convenient times without unnecessary barriers and are available on a walk-in basis, as staffing permits. As clinically appropriate, administer any vaccine doses required simultaneously to avoid missed opportunities.
c. Ensure immunization services are responsive to the needs of beneficiaries.
d. Review the vaccination status of all beneficiaries at every health care visit to determine which vaccines are indicated.
e. Implement standing orders if written orders are unavailable. Standing orders must address vaccine dosage and administration, contraindications and precautions, and documentation procedures. Ensure standing orders are signed by the privileged physician who has medical oversight of the clinic.

Standard 2: Vaccine Information and Vaccine Education

a. Educate beneficiaries about the benefits and risks of vaccination in a culturally appropriate manner and at an appropriate education level.
b. Prior to vaccination, provide all parents/guardians and vaccinees the most current Vaccine Information Statements (VISs) for each vaccine as mandated by Federal law (42 USC 300aa-26). Allow sufficient time to discuss any concerns or questions as noted by the vaccinee. Ensure VISs are accessible and visible in the patient waiting area of the clinic or activity that provides immunizations.
c. Prior to each vaccination provide all potential vaccinees the opportunity to read the current DoD and/or FDA mandated vaccine information brochure. Additional education requirements may be required as outlined in vaccination policy.
d. Ensure immunization personnel are readily available to accurately answer patients' immunization questions and concerns about vaccines. Ensure personnel have ready access to immunization information resources.

Standard 3: Vaccine Storage and Handling

a. Ensure staff members adhere to cold-chain management principles during administration, transportation, and storage. Ensure up-to-date, written cold-chain management protocols are accessible at all locations where vaccines are stored.
b. Implement temperature monitoring processes at any clinic or activity that administers immunizations. All vaccine storage devices should have a calibrated thermometer and alarm systems that are visually monitored at a minimum of twice a day.
c. The CDC's National Center for Immunization and Respiratory Disease strongly recommends that providers draw vaccine only at the time of administration to ensure that the cold chain is maintained and that vaccine is not inappropriately exposed to light. Do not pre-draw doses; draw them when they are needed.

Standard 4: Indications and Contraindications to Immunization

a. Screen each patient for allergies, health status, recent vaccinations, and previous adverse events before immunization. Provide each patient an opportunity to ask questions about potential contraindications. Refer patients for appropriate medical evaluation, as needed.
b. Screen each patient's immunization record to determine vaccine needs and requirements.
c. Ensure staff members document any contraindication to an immunization in the health record and ITS. Screen all women for pregnancy status.

Standard 5: Immunization Record Keeping

a. Record immunizations accurately in a DoD-and USCG-approved electronic ITS according to Service-specific policy at the time of immunization, or no later than 24 hours after administration of immunization. Transcribe all historical immunizations into the immunization tracking system.
b. Recommend any clinic or activity that administers immunizations has one or more mechanisms for notifying patients when the next dose of an immunization series is needed (a reminder system) or when doses are overdue (recall system). Reminder and recall systems may be automated or manual and may include mail, email, or telephone messages.
c. Record all military personnel immunization information in an electronic ITS record. All Services must record military date into an electronic database that communicates with a centralized DoD registry.

Standard 6: Training

a. Ensure all persons who administer vaccines, including immunization augmentees, are appropriately trained and work within their appropriate scope of practice as determined by Service policies.
b. Immunization training must meet a standard acceptable to the MTF commander, command surgeon, or other appropriate medical authority. Training will include vaccine storage and handling; vaccine characteristics; recommended vaccine schedules; patient screening; contraindications; vaccine administration techniques; and treatment and reporting of adverse events to include anaphylaxis; vaccine benefit and risk communication; and documentation and management.
c. Ensure personnel who administer vaccines complete a comprehensive immunization orientation and annual continuing education that addresses training standards and competency of vaccine related topics based on an individual's role in administering and/or handling vaccines. Individuals who routinely administer vaccines should complete at least 8 hours of training annually. Training resources include resident courses, self-paced online training programs, and video training.
d. Ensure 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) must be properly stored and readily available at all vaccination locations along with other supplies determined locally to manage adverse events. Ensure all immunization personnel are trained to administer epinephrine.
b. Provide easy access to telephones or radios to persons who administer vaccines for summoning emergency medical personnel. Medical providers must document adverse events in the health record at the time of the event or as soon as possible thereafter.
c. Report all clinically significant adverse events after vaccination to VAERS. Provide staff members with ready access to reporting options for VAERS.
d. Develop a quality improvement process to assure adverse events are reported to VAERS promptly.

Standard 8: Vaccine Advocacy to Protect the Military Family

a. Develop a mechanism at the MTF level to determine the extent of influenza and pneumococcal immunization coverage among its high-risk patients. Develop a plan to optimize vaccination uptake and coverage.
b. Implement 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. Conduct a quality improvement program to optimize its performance in immunizing children, adolescents, and adults against the preventable infections that most threaten them.
d. Ensure commanders use immunization databases to identify and resolve the vulnerabilities of their units.
e. All healthcare providers (not just those in any clinic or activity that administers immunizations) should 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
2. Standards for Immunization Practice. National Coalition for Adult Immunization
3. Quality Standards for Immunization. Guidelines from the Infectious Diseases Society of America
4. The Joint Commission (TJC) Standards for Accreditation
5. Joint Instruction on Immunization and Chemoprophylaxis (Available at: http://www.vaccines.mil/8Standards)

Training tool supporting immunization education: "Project Immune Readiness." Available at https://vhcprojectimmunereadiness.com/

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 their 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 from 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 TJC (The Joint Commission) emphasize proper handling and storage to ensure vaccine effectiveness and safety. Additional information can be found in the Storage and Handling Section of this Immunization Tool Kit. A vaccine handling and storage checklist is available from the Immunization Action Coalition:
www.immunize.org/catg.d/p3035.pdf

Resources
Vaccine Management.

- Vaccine package inserts: http://www.vaccines.mil/Package_Insert
- CDC Vaccine Storage and Handling Guide: http://www.cdc.gov/vaccines/recs/storage/toolkit/default.htm
- DHA-IHB Storage and Handling Guide: http://www.vaccines.mil/StorageAndHandlingGuidelines
- USAMMA cold-chain management: http://www.usamma.amedd.army.mil/cold_chain_management.cfm

"Vaccine Storage & Handling" online tutorial:
https://www.vhcprojectimmunereadiness.com
Complete registration
(2.75 hours CE/CME)

Vaccines and Their Untrue Contraindications and Precautions (adapted from CDC)

Note: True contraindications and precautions are addressed with each individual vaccine. Please refer to the vaccine cards in section 2 and 3 for true contraindications and precautions.

Vaccine(s)	Untrue Contraindications (Vaccine can be administered)
General for all vaccines, including DTaP, pediatric DT, adult Td, adolescent-adult Tdap, IPV, MMR, Hib, hepatitis A, hepatitis B, varicella, rotavirus, PCV, influenza, PPSV, MCV4, MPSV4, HPV, and herpes zoster	· Mild acute illness with or without fever · Mild-to-moderate local reaction (i.e., swelling, redness, soreness); low grade fever after previous dose · Lack of previous physical examination in well-appearing person · Current antimicrobial therapy (1) · Convalescent phase of illness · Premature birth (hepatitis B vaccine is an exception in certain circumstances) (2) · Recent exposure to an infectious disease · History of penicillin allergy, other nonvaccine allergies, relatives with allergies, or receiving allergen extract immunotherapy
DTaP	· Fever of <105°F (<40.5°C), fussiness or mild drowsiness after a previous dose of DTP/DTaP · Family history of seizures · Family history of sudden infant death syndrome · Family history of adverse event after DTP or DTaP administration · Stable neurological conditions (e.g., cerebral palsy, well-controlled seizures, or developmental delay)
Tdap	· Fever of ≥105°F (≥40.5°C) for 48 hours after vaccination with a previous dose of DTP or DTaP · Collapse or shock-like state (i.e., hypotonic hyporesponsive episode) within 48 hours after receiving a previous dose of DTP/DTaP · Seizure <3 days after receiving a previous dose of DTP/DTaP · Persistent, inconsolable crying lasting >3 hours within 48 hours after receiving a previous dose of DTP/DTaP · History of extensive limb swelling after DTP/DTaP/Td that is not an arthus-type reaction · Stable neurologic disorder · History of brachial neuritis · Latex allergy that is not anaphylactic · Breastfeeding · Immunosuppression
IPV	· Previous receipt of ≥1 dose of oral polio vaccine
MMR (3,4)	· Positive tuberculin skin test · Simultaneous tuberculin skin testing (5) · Breastfeeding · Pregnancy of recipient's mother or other close or household contact · Recipient is female of child-bearing age · Immunodeficient family member or household contact · Asymptomatic or mildly symptomatic HIV infection · Allergy to eggs
Hepatitis B	· Pregnancy · Autoimmune disease (e.g., systemic lupus erythematosis or rheumatoid arthritis)

Vaccines and Their Untrue Contraindications and Precautions (continued)

Vaccine(s)	Untrue Contraindications (Vaccine can be administered)
Varicella	· Pregnancy of recipient's mother or other close or household contact · Immunodeficient family member or household contact (6) · Asymptomatic or mildly symptomatic HIV infection · Humoral immunodeficiency (e.g., agammaglobulinemia)
Inactivated Influenza Vaccine (IIV)	· Nonsevere (e.g., contact) allergy to latex, thimerosal, or egg · Concurrent administration of coumadin or aminophylline
LAIV	· Healthcare providers that see patients or close contacts of patients with chronic diseases or altered immunocompetence (an exception is providers for severely immunocompromised patients requiring care in a protected environment) · Breastfeeding
PPSV	· History of invasive pneumococcal disease or pneumonia
HPV	· Immunosuppression · Previous equivocal or abnormal Papanicolaou test · Known HPV infection · Breastfeeding · History of genital warts
Rotavirus	· Prematurity · Immunosuppressed household contacts · Pregnant household contacts
Zoster	· Therapy with low-dose methotrexate (≤0.4 mg/kg/week), azathioprine (≤3.0 mg/kg/day), or 6-mercaptopurine (≤1.5 mg/kg/day) for treatment of rheumatoid arthritis, psoriasis, polymyositis, sarcoidosis, inflammatory bowel disease, or other conditions · Health-care providers or close contacts of patients with chronic disease or altered immunocompetence · Unknown or uncertain history of varicella in a U.S.-born person
MCV4	· ACIP does not consider a hstory of GBS to be a contraindication or precaution

(1) Antibacterial drugs might interfere with Ty21a oral typhoid vaccine, and certain antiviral drugs might interfere with varicella-containing vaccines and LAIV.
(2) Hepatitis B vaccination should be deferred for infants weighing <2,000 g if the mother is documented to be HBsAg-negative at the time of the infant's birth. Vaccination can commence at chronological age 1 month or at hospital discharge. For infants born to HBsAg-positive women, hepatitis B immune globulin and hepatitis B vaccine should be administered within 12 hours after birth, regardless of weight.
(3) MMR, LAIV, and varicella vaccines can be administered on the same day. If not administered on the same day, these vaccines should be separated by at least 28 days.
(4) HIV-infected children should receive immune globulin after exposure to measles. HIV-infected children can receive varicella and measles vaccine if CD4+ T-lymphocyte count is >15%. (Source: Adapted from American Academy of Pediatrics. Passive immunization. In: Pickering LK, ed. Red book: 2009 report of the Committee on Infectious Diseases. 28th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2009.)
(5) Measles vaccination might suppress tuberculin reactivity temporarily. Measles-containing vaccine can be administered on the same day as tuberculin skin testing. If testing cannot be performed until after the day of MMR vaccination, the test should be postponed for at least 4 weeks after the vaccination. If an urgent need exists to skin test, do so with the understanding that reactivity might be reduced by the vaccine.
(6) If a vaccinee experiences a presumed vaccine-related rash 7 through 25 days after vaccination, the person should avoid direct contact with immunocompromised persons for the duration of the rash.

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

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

Note: This does not include zoster vaccine which may be given with antibody-containing products

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
Varicella IG	125 units	60-200	IM	5 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

Abbreviations: HIV = human immunodeficiency virus; IG = immune globulin; IgG = immune globulin G; IGIV = intravenous immune globulin; mg IgG/kg = milligrams of immune globulin G per kilogram of body weight; IM = intramuscular; IV = intravenous; RBCs = red blood cells.

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.

Product Name	Trade Name	Manufacturer	Type	Usual Dose (volume)	Route
Adenovirus	Adenovirus Type 4 and Type 7 Vaccine, Live, Oral	Barr Labs, Inc	L	2 capsules	Oral, swallowed whole
Anthrax, adsorbed	Biothrax	Emergent Biosolutions	I	0.5 mL	IM
DT	No Trade Name	Sanofi Pasteur	I	0.5 mL	IM
DTaP	Tripedia	Sanofi Pasteur	I	0.5 mL	IM
DTaP	Infanrix	GlaxoSmithKline	I	0.5 mL	IM
DTaP	Daptacel	Sanofi Pasteur	I	0.5 mL	IM
DTaP + Hep B + IPV	Pediarix	GlaxoSmithKline	I	0.5 mL	IM
DTaP + IPV	Kinrix	GlaxoSmithKline	I	0.5 mL	IM
DTaP + IPV + Hib	Pentacel	Sanofi Pasteur	I	0.5 mL	IM
Hib (PRP-OMP)	PedvaxHIB	Merck	I	0.5 mL	IM
Hib (PRP-T)	ActHIB	Sanofi Pasteur	I	0.5 mL	IM
Hib (PRP-T)	Hiberix	Sanofi Pasteur	I	0.5 mL	IM
Hib + Hep B	Comvax	Merck	I	0.5 mL	IM
Hep A	Havrix	GlaxoSmithKline	I	0.5 mL/1 mL	IM
Hep A	Vaqta	Merck	I	0.5 mL/1 mL	IM

I = Inactivated LA = Live attenuated L = Live IM = Intramuscular SC = Subcutaneous

Product Name	Trade Name	Manufacturer	Type	Usual Dose (volume)	Route
Hep A + Hep B	Twinrix	GlaxoSmithKline	I	1 mL	IM
Hep B	Recombivax HB	Merck	I	0.5 mL/1 mL	IM
Hep B	Engerix-B	GlaxoSmithKline	I	0.5 mL/1 mL	IM
HPV	Cervarix	GlaxoSmithKline	I	0.5 mL	IM
HPV	Gardasil	Merck	I	0.5 mL	IM
Influenza (IIV)	Afluria	CSL Limited	I	0.25 mL/0.5 mL	IM
Influenza (IIV)	Agriflu	Novartis	I	0.5 mL	IM
Influenza (IIV)	Fluarix	GlaxoSmithKline	I	0.5 mL	IM
Influenza (IIV)	Fluarix Quadrivalent	GlaxoSmithKline	I	0.5 mL	IM
Influenza (IIV)	Flublok	Protein Sciences	I	0.5 mL	IM
Influenza (IIV)	Flucelvax	Novartis Vaccines	I	0.5 mL	IM
Influenza (IIV)	Fluvirin	Novartis Vaccines	I	0.25 mL/0.5 mL	IM
Influenza (IIV)	Fluzone	Sanofi Pasteur	I	0.25 mL/0.5 mL	IM
Influenza (IIV)	Fluzone High-Dose	Sanofi Pasteur	I	0.5 mL	IM
Influenza (IIV)	Fluzone Intradermal	Sanofi Pasteur	I	0.1 mL	Intradermal
Influenza (IIV)	FluLaval	GlaxoSmithKline	I	0.5 mL	IM

I = Inactivated LA = Live attenuated L = Live IM = Intramuscular SC = Subcutaneous

Product Name	Trade Name	Manufacturer	Type	Usual Dose (volume)	Route
Influenza (LAIV)	FluMist/Flumist Quadrivalent	MedImmune	LA	0.2 mL	Intranasal
Japanese Encephalitis	Ixiaro	Intercell Biomedical	I	0.25 ml/0.5 ml	IM
MMR	M-M-R II	Merck	LA	0.5 mL	SC
MMRV	ProQuad	Merck	LA	0.5 mL	SC
MCV	Menactra	Sanofi Pasteur	I	0.5 mL	IM
MCV	Menveo	Novartis Vaccines	I	0.5 mL	IM
MPSV	Menomune	Sanofi Pasteur	I	0.5 mL	SC
MenCY + Hib	Menhibrix	GlaxoSmithKline	I	0.5 mL	IM
PCV	Prevnar 13	Wyeth	I	0.5 mL	IM
PPSV	Pneumovax 23	Merck	I	0.5 mL	IM or SC
IPV (Polio)	IPOL	Sanofi Pasteur	I	0.5 mL	IM or SC
Rabies	Imovax	Sanofi Pasteur	I	1 mL	IM
Rabies	RabAvert	Novartis Vaccines	I	1 mL	IM

I = Inactivated *LA = Live attenuated* *L = Live* *IM = Intramuscular* *SC = Subcutaneous*

Product Name	Trade Name	Manufacturer	Type	Usual Dose (volume)	Route
Rotavirus	Rotarix	GlaxoSmithKline	LA	1 mL	Oral
Rotavirus	RotaTeq	Merck	LA	2 mL	Oral
Smallpox	ACAM2000	Acambis	L	15 jabs	Punctured into skin using bifurcated needle (percutaneous)
Td	Decavac, Tenivac	Sanofi Pasteur	I	0.5 mL	IM
Tdap	Adacel	Sanofi Pasteur	I	0.5 mL	IM
Tdap	Boostrix	GlaxoSmithKline	I	0.5 mL	IM
TT	No Trade Name	Sanofi Pasteur	I	0.5 mL	IM
Typhoid Oral (Ty21a)	Vivotif	Berna	LA	4 capsules	Oral, swallowed whole
Typhoid Vi	Typhim Vi	Sanofi Pasteur	I	0.5 mL	IM
Varicella	Varivax	Merck	LA	0.5 mL	SC
Yellow Fever	YF-Vax	Sanofi Pasteur	LA	0.5 mL	SC
Zoster	Zostavax	Merck	LA	0.65 mL	SC

I = Inactivated *LA = Live attenuated* *L = Live* *IM = Intramuscular* *SC = Subcutaneous*

How to Administer Intramuscular (IM) Vaccine Injections

Administer these vaccines by the intramuscular (IM) route: diphtheria-tetanus-pertussis (DTaP, Tdap); diphtheria-tetanus (DT, Td); *Haemophilus influenzae* type b (Hib); hepatitis A (HepA); hepatitis B (HepB); human papillomavirus (HPV); inactivated influenza (TIV); quadrivalent meningococcal conjugate (MCV4); and pneumococcal conjugate (PCV). Administer inactivated polio (IPV) and pneumococcal polysaccharide (PPSV23) 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 (upper arm)	⅝–1"* (22–25 gauge)
	Alternate site: Anterolateral thigh muscle	1–1¼" (22–25 gauge)
Adults 19 years and older	Deltoid muscle (upper arm)	1–1½"*† (22–25 gauge)
	Alternate site: Anterolateral thigh muscle	1–1½" (22–25 gauge)

*A ⅝" needle usually is adequate for neonates (first 28 days of life), preterm infants, and children ages 1 through 18 years if the skin is stretched flat between the thumb and forefinger and the needle is inserted at a 90° angle to the skin.

†A ⅝" needle is sufficient in adults weighing less than 130 lbs (<60 kg) if the subcutaneous tissue is not bunched and the injection is made at a 90-degree angle; 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 more than 200 lbs (>90 kg) or men weighing more than 260 lbs (>118 kg).

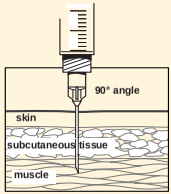
Needle insertion

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 of vaccine, 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.



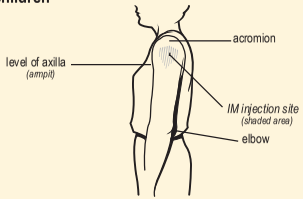
[1]CDC. "ACIP General Recommendations on Immunization" at www.immunize.org/acip

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 and adults



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

1-16

Technical content reviewed by the Centers for Disease Control and Prevention.

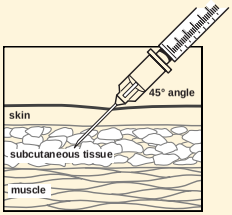
www.immunize.org/catg.d/p2020.pdf • Item #P2020 (10/12)

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

How to Administer Subcutaneous (SC) Vaccine Injections

Administer these vaccines by the subcutaneous (SC) route: measles, mumps, and rubella (MMR), varicella (VAR), meningococcal polysaccharide (MPSV4), and zoster (shingles [ZOS]). Administer inactivated polio (IPV) and pneumococcal polysaccharide (PPSV23) vaccines either SC or IM.

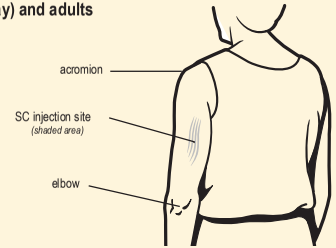
Patient age	Injection site	Needle size	Needle insertion
Birth to 12 mos.	Fatty tissue over the anterolateral thigh muscle	⅝" needle, 23–25 gauge	Pinch up on subcutaneous (SC) tissue to prevent injection into muscle. Insert needle at 45° angle to the skin. (Before administering an injection of vaccine, 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". *CDC. "ACIP General Recommendations on Immunization" at www.immunize.org/acip
12 mos. and older	Fatty tissue over anterolateral thigh or fatty tissue over triceps	⅝" needle, 23–25 gauge	



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 QUESTIONNAIRE

		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 QUESTIONNAIRE

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 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/content/122/18_suppl_3/S640.%20full)
- AHA ACLS information (http://circ.ahajournals.org/content/122/18_suppl_3/S729.full)
- AHA PALS information (http://circ.ahajournals.org/content/122/18_suppl_3/S862.full)
- AHA: Special Considerations: Anaphylaxis (http://circ.ahajournals.org/content/122/18_suppl_3/S829.full)

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.

Adverse Events After Vaccination

(Information for Responding to Patient Concerns)

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 they 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 following 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 DHA-IHB by calling the DHA Immunization Healthcare Support Center at 1-877-438-8222 (available 24 hours/day, 7 days/week), or online at: **https://askvhc.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 **http://www.cdc.gov/vaccines/hcp/vis/index.html** or in a variety of languages at **http://www.immunize.org/vis**). 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 DHA-IHB *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 1-27. 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 DHA-IHB vaccine safety expert consultants at **www.vaccines.mil**, 1-866-210-6469, or online: **https://askvhc.amedd.army.mil**

What is the Immunization Healthcare Branch, Defense Health Agency (DHA-IHB)?

The Department of Defense is committed to quality vaccination services and care. It established DHA-IHB to promote vaccination safety and to provide expert consultation for patients and providers, especially for side effects that are unexpected, prolonged, or serious. DHA-IHB experts care about your concerns and want to make sure that you get the proper treatment. DHA-IHB 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 DHA-IHB 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: **http://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.**

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.

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

For more information about vaccine safety and adverse event guidelines: Go to **www.vaccines.mil**, **www.cdc.gov/vaccines**, and **http://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** (VZV), **rotavirus** (RV), **influenza**, **meningococcal** (MCV4 and MPSV4), **human papillomavirus** (HPV), and **pneumococcal conjugate** (PCV) 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?

You may file a claim if you believe you were injured by a vaccine; if you are the parent or legal guardian of a child or disabled adult believed to have been injured by a vaccine; or the legal representative of the estate of a deceased individual whose death you believe was caused by a 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 (VICP)
Parklawn Building, Room 11C-26
5600 Fishers Lane
Rockville, Maryland 20857

Vaccine Excipient & Media Summary

Excipients Included in U.S. Vaccines, by Vaccine

This table includes not only vaccine ingredients (e.g., adjuvants and preservatives), but also substances used during the manufacturing process, including vaccine-production media, that are removed from the final product and present only in trace quantities.
In addition to the substances listed, most vaccines contain Sodium Chloride (table salt).

Last Updated September 2013

All reasonable efforts have been made to ensure the accuracy of this information, but manufacturers may change product contents before that information is reflected here. If in doubt, check the manufacturer's package insert.

Vaccine	Contains	Source: Manufacturer's P.I. Dated
Adenovirus	sucrose, D-mannose, D-fructose, dextrose, potassium phosphate, plasdone C, anhydrous lactose, micro crystalline cellulose, polacrilin potassium, magnesium stearate, cellulose acetate phthalate, alcohol, acetone, castor oil, FD&C Yellow #6 aluminum lake dye, human serum albumin, fetal bovine serum, sodium bicarbonate, human-diploid fibroblast cell cultures (WI-38), Dulbecco's Modified Eagle's Medium, monosodium glutamate	March, 2011
Anthrax (Biothrax)	aluminum hydroxide, benzethonium chloride, formaldehyde, amino acids, vitamins, inorganic salts and sugars	May, 2012
BCG (Tice)	glycerin, asparagine, citric acid, potassium phosphate, magnesium sulfate, Iron ammonium citrate, lactose	February, 2009
DT (Sanofi)	aluminum potassium sulfate, peptone, bovine extract, formaldehyde, thimerosal (trace), modified Mueller and Miller medium, ammonium sulfate	December, 2005
DTaP (Daptacel)	aluminum phosphate, formaldehyde, glutaraldehyde, 2-Phenoxyethanol, Stainer-Scholte medium, modified Mueller's growth medium, modified Mueller-Miller casamino acid medium (without beef heart infusion), dimethyl 1-beta-cyclodextrin, ammonium sulfate	July, 2012
DTaP (Infanrix)	formaldehyde, glutaraldehyde, aluminum hydroxide, polysorbate 80, Fenton medium (containing bovine extract), modified Latham medium (derived from bovine casein), modified Stainer-Scholte liquid medium	July, 2012
DTaP-IPV (Kinrix)	formaldehyde, glutaraldehyde, aluminum hydroxide, Vero (monkey kidney) cells, calf serum, lactalbumin hydrolysate, polysorbate 80, neomycin sulfate, polymyxin B, Fenton medium (containing bovine extract), modified Latham medium (derived from bovine casein), modified Stainer-Scholte liquid medium	July, 2012
DTaP-HepB-IPV (Pediarix)	formaldehyde, gluteraldehyde, aluminum hydroxide, aluminum phosphate, lactalbumin hydrolysate, polysorbate 80, neomycin sulfate, polymyxin B, yeast protein, calf serum, Fenton medium (containing bovine extract), modified Latham medium (derived from bovine casein), modified Stainer-Scholte liquid medium, Vero (monkey kidney) cells	August, 2012
DTaP-IPV/Hib (Pentacel)	aluminum phosphate, polysorbate 80, formaldehyde, gutaraldehyde, bovine serum albumin, 2-phenoxethanol, neomycin, polymyxin B sulfate, Mueller's Growth Medium, Mueller-Miller casamino acid medium (without beef heart infusion), Stainer-Scholte medium (modified by the addition of casamino acids and dimethyl-beta-cyclodextrin), MRC-5 (human diploid) cells, CMRL 1969 medium (supplemented with calf serum), ammonium sulfate, and medium 199	July, 2012
Hib (ActHIB)	ammonium sulfate, formalin, sucrose, Modified Mueller and Miller medium	November, 2012
Hib (Hiberix)	formaldehyde, lactose, semi-synthetic medium	March, 2012
Hib (PedvaxHIB)	aluminum hydroxphosphate sulfate, ethanol, enzymes, phenol, detergent, complex fermentation medium	December, 2010
Hib/Hep B (Comvax)	yeast (vaccine contains no detectable yeast DNA), nicotinamide adenine dinucleotide, hemin chloride, soy peptone, dextrose, mineral salts, amino acids, formaldehyde, potassium aluminum sulfate, amorphous aluminum hydroxyphosphate sulfate, sodium borate, phenol, ethanol, enzymes, detergent	December, 2010
Hib/Mening. CY (MenHibrix)	tris (trometamol)-HCl, sucrose, formaldehyde, synthetic medium, semi- synthetic medium	2012

Vaccine	Contains	Source: Manufacturer's P.I. Dated
Hep A (Havrix)	aluminum hydroxide, amino acid supplement, polysorbate 20, formalin, neomycin sulfate, MRC-5 cellular proteins	June, 2013
Hep A (Vaqta)	amorphous aluminum hydroxyphosphate sulfate, bovine albumin, formaldehyde, neomycin, sodium borate, MRC-5 (human diploid) cells	November, 2012
Hep B (Engerix-B)	aluminum hydroxide, yeast protein, phosphate buffers	July, 2012
Hep B (Recombivax)	yeast protein, soy peptone, dextrose, amino acids, mineral salts, potassium aluminum sulfate, amorphous aluminum hydroxyphosphate sulfate, formaldehyde, phosphate buffer	July, 2011
Hep A/Hep B (Twinrix)	formalin, yeast protein, aluminum phosphate, aluminum hydroxide, amino acids, phosphate buffer, polysorbate 20, neomycin sulfate, MRC-5 human diploid cells	August, 2012
Human Papilllomavirus (HPV) (Cerverix)	vitamins, amino acids, lipids, mineral salts, aluminum hydroxide, sodium dihydrogen phosphate dehydrate, 3-O-desacyl-4' Monophosphoryl lipid A, insect cell, bacterial, and viral protein.	August, 2012
Human Papillomavirus (HPV) (Gardasil)	yeast protein, vitamins, amino acids, mineral salts, carbohydrates, amorphous aluminum hydroxyphosphate sulfate, L-histidine, polysorbate 80, sodium borate	March, 2013
Influenza (Afluria)	beta-propiolactone, thimerosol (multi-dose vials only), monobasic sodium phosphate, dibasic sodium phosphate, monobasic potassium phosphate, potassium chloride, calcium chloride, sodium taurodeoxycholate, neomycin sulfate, polymyxin B, egg protein, sucrose	April, 2013
Influenza (Agriflu)	egg proteins, formaldehyde, polysorbate 80, cetyltrimethylammonium bromide, neomycin sulfate, kanamycin	June, 2012
Influenza (Fluarix)	octoxynol-10 (Triton X-100), α-tocopheryl hydrogen succinate, polysorbate 80 (Tween 80), hydrocortisone, gentamicin sulfate, ovalbumin, formaldehyde, sodium deoxycholate, sucrose, phosphate buffer	May, 2013
Influenza (Flublok)	monobasic sodium phosphate, dibasic sodium phosphate, polysorbate 20, baculovirus and host cell proteins, baculovirus and cellular DNA, Triton X-100, lipids, vitamins, amino acids, mineral salts	December, 2012
Influenza (Flucelvax)	Madin Darby Canine Kidney (MDCK) cell protein, MDCK cell DNA, polysorbate 80, cetyltrimethlyammonium bromide, β-propiolactone, phosphate buffer	October, 2012
Influenza (Fluvirin)	nonylphenol ethoxylate, thimerosal (multidose vial–trace only in prefilled syringe), polymyxin, neomycin, beta-propiolactone, egg proteins, phosphate buffer	January, 2012
Influenza (Flulaval)	thimerosal, formaldehyde, sodium deoxycholate, egg proteins	February, 2013
Influenza (Fluzone: Standard, High-Dose, &	formaldehyde, octylphenol ethoxylate (Triton X-100), gelatin (standard trivalent formulation only), thimerosal (multi-dose vial only) , egg protein, phosphate buffers, sucrose	April, 2013
Influenza (FluMist)	ethylene diamine tetraacetic acid (EDTA), monosodium glutamate, hydrolyzed porcine gelatin, arginine, sucrose, dibasic potassium phosphate, monobasic potassium phosphate, gentamicin sulfate, egg protein	July, 2013
Japanese Encephalitis	aluminum hydroxide, Vero cells, protamine sulfate, formaldehyde, bovine serum albumin, sodium metabisulphite, sucrose	May, 2013
Meningococcal (MCV4-	formaldehyde, phosphate buffers, Mueller Hinton agar, Watson Scherp media, Modified Mueller and Miller medium, detergent, alcohol, ammonium sulfate	November, 2011
Meningococcal (MCV4-	formaldehyde, amino acids, yeast extract, Franz complete medium, CY medium	August, 2013
Meningococcal (MPSV4-	thimerosal (multi-dose vial only), lactose, Mueller Hinton casein agar, Watson Scherp media, detergent, alcohol	October, 2012
MMR (MMR-II)	Medium 199, Minimum Essential Medium, phosphate, recombinant human albumin, neomycin, sorbitol, hydrolyzed gelatin, chick embryo cell culture, WI-38 human diploid	December, 2010
MMRV (ProQuad)	sucrose, hydrolyzed gelatin, sorbitol, monosodium L-glutamate, sodium phosphate dibasic, human albumin, sodium bicarbonate, potassium phosphate monobasic, potassium chloride, potassium phosphate dibasic, neomycin, bovine calf serum, chick embryo cell culture, WI-38 human diploid lung fibroblasts, MRC-5 cells	August, 2011

Vaccine	Contains	Source: Manufacturer's P.I. Dated
Pneumococcal (PCV13 – Prevnar 13)	casamino acids, yeast, ammonium sulfate, Polysorbate 80, succinate buffer, aluminum phosphate, soy peptone broth	January, 2013
Pneumococcal (PPSV-23 – Pneumovax)	phenol.	October, 2011
Polio (IPV – Ipol)	2-phenoxyethanol, formaldehyde, neomycin, streptomycin, polymyxin B, monkey kidney cells, Eagle MEM modified medium, calf serum protein, Medium 199	December, 2005
Rabies (Imovax)	Human albumin, neomycin sulfate, phenol red indicator, MRC-5 human diploid cells, beta-propriolactone	December, 2005
Rabies (RabAvert)	β-propiolactone, potassium glutamate, chicken protein, ovalbuminegg protein, neomycin, chlortetracycline, amphotericin B, human serum albumin, polygeline (processed bovine 14 gelatin), sodium EDTA, bovine serum	March, 2012
Rotavirus (RotaTeq)	sucrose, sodium citrate, sodium phosphate monobasic monohydrate, sodium hydroxide, polysorbate 80, cell culture media, fetal bovine serum, vero cells *[DNA from porcine circoviruses (PCV) 1 and 2 has been detected in RotaTeq. PCV-1 and PCV-2 are not known to cause disease in humans.]*	June, 2013
Rotavirus (Rotarix)	amino acids, dextran, sorbitol, sucrose, calcium carbonate, xanthan, Dulbecco's Modified Eagle Medium (DMEM) *[Porcine circovirus type 1 (PCV-1) is present in Rotarix. PCV-1 is not known to cause disease in humans.]*	September, 2012
Smallpox (Vaccinia –	human serum albumin, mannitol, neomycin, glycerin, polymyxin B, phenol, Vero cells, HEPES	September, 2009
Td (Decavac)	aluminum potassium sulfate, peptone, formaldehyde, thimerosal, bovine muscle tissue (US sourced), Mueller and Miller medium, ammonium sulfate	March, 2011
Td (Tenivac)	aluminum phosphate, formaldehyde, modified Mueller-Miller casamino acid medium without beef heart infusion, ammonium sulfate	December, 2010
Td (Mass Biologics)	aluminum phosphate, formaldehyde, thimerosal (trace), ammonium phosphate, modified Mueller's media (containing bovine extracts)	February, 2011
Tdap (Adacel)	aluminum phosphate, formaldehyde, glutaraldehyde, 2-phenoxyethanol, ammonium sulfate, Stainer-Scholte medium, dimethyl-beta-cyclodextrin, modified Mueller's growth medium, Mueller-Miller casamino acid medium (without beef heart infusion)	April, 2013
Tdap (Boostrix)	formaldehyde, glutaraldehyde, aluminum hydroxide, polysorbate 80 (Tween 80), Latham medium derived from bovine casein, Fenton medium containing a bovine extract, Stainer-Scholte liquid medium	February, 2013
Typhoid (inactivated – Typhim Vi)	hexadecyltrimethylammonium bromide, phenol, polydimethylsiloxane, disodium phosphate, monosodium phosphate, semi-synthetic medium	December, 2005
Typhoid (oral – Ty21a)	yeast extract, casein, dextrose, galactose, sucrose, ascorbic acid, amino acids, lactose, magnesium stearate	August, 2006
Varicella (Varivax)	sucrose, phosphate, glutamate, gelatin, monosodium L-glutamate, sodium phosphate dibasic, potassium phosphate monobasic, potassium chloride, sodium phosphate monobasic, potassium chloride, EDTA, residual components of MRC-5 cells including DNA and protein, neomycin, fetal bovine serum, human diploid cell cultures (WI-38), embryonic guinea pig cell cultures, human embryonic lung cultures	December, 2012
Yellow Fever (YF-Vax)	sorbitol, gelatin, egg protein	January, 2010
Zoster (Shingles – Zostavax)	sucrose, hydrolyzed porcine gelatin, monosodium L-glutamate, sodium phosphate dibasic, potassium phosphate monobasic, neomycin, potassium chloride, residual components of MRC-5 cells including DNA and protein, bovine calf serum	June, 2011

A table listing vaccine excipients and media *by excipient* can be found in:

Grabenstein JD. *ImmunoFacts: Vaccines and Immunologic Drugs* – 2013 (38th revision). St Louis, MO: Wolters Kluwer Health, 2012.

Source:
http://www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/B/excipient-table-2.pdf

Medical Exemptions from Vaccination

Table C–1
Medical exemption codes

Code	Meaning	Explanation of example	Duration
MD	Medical, declined	Declination of optional vaccines (not applicable to military required vaccinations).	Indefinite
MA	Medical, assumed	Prior immunization reasonably inferred from individual's past experiences (for example, basic military training), but documentation missing. Code used to avoid superfluous immunization. Code can be reversed upon further review.	Indefinite
MI	Medical, immune	Evidence of immunity (for example, by serologic antibody test); documented previous infection (for example, chickenpox infection); natural infection presumed (for example, measles, if born before 1957).	Indefinite*
MP	Medical, permanent	HIV infection, prolonged or permanent immune suppression, upper age limit, other contraindication determined by physician. Can be reversed if the condition changes. For tuberculosis, positive tuberculosis test.	Indefinite
MR	Medical, reactive	Permanent restriction from receiving additional doses of a specific vaccine. Use only after severe reaction after vaccination (for example, anaphylaxis). Report such reactions to VAERS. Code can be reversed if an alternate form of prophylaxis is available. Do not code mild, transient reactions as MR. code events referred for medical consultation as MT.	Indefinite
MS	Medical, supply	Exempt due to lack of vaccine supply.	Up to 90 days
MT	Medical, temporary	Pregnancy, hospitalization, events referred for medical consultation, temporary immune suppression, convalescent leave, pending medical evaluation board, any temporary contraindication to immunization.	Up to 365 days

* Unless involves a vaccine for which there is a regular booster requirement in which case, when due, the booster should be administered.

Source: Immunizations and Chemoprophylaxis for the Prevention of Infectious Diseases, October 2013

Report medical exceptions to DHA-IHB: https://askvhc.amedd.army.mil/

C–2. Administrative exemption codes
Administrative exemption codes appear in table C–2.

Table C–2
Administrative exemption codes

Code	Meaning	Explanation of example	Duration
AD	Administrative, deceased	Individual is deceased.	Indefinite
AL	Administrative, emergency leave	Individual is on emergency leave.	Up to 30 days
AM	Administrative, missing	Missing in action, prisoner of war.	Indefinite
AP	Administrative, PCS	Permanent change of station.	Up to 90 days
AR	Administrative, refusal	Personnel involved in actions under the Uniformed Code of Military Justice, religious waiver. (Indefinite and revocable. May be revoked at any time. See paragraph 2–6*b*(2.	Until resolution
AS	Administrative, separation	Pending discharge, separation (typically within 60 days), and retirement (typically within 180 days).	Until 180 days
AT	Administrative, temporary	Absent without leave, legal action pending (other than code AR).	Until 90 days
NR	Not required	Individuals who received immunization while eligible, subsequently changed occupational category and now serve as civilian employees or contract workers not otherwise required to be immunized.	Indefinite

Source: Immunizations and Chemoprophylaxis for the Prevention of Infectious Diseases, October 2013

Adult & Military Immunizations

Immunization Healthcare Branch, Defense Health Agency (DHA-IHB)

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

Refer to DoD vaccine guidance, manufacturer's package insert (available at http://www.vaccines.mil/Package_Insert) and ACIP guidelines for specific vaccine recommendations and precautions as only absolute contraindications are listed herein. Links to VIS (Vaccine Information Statement) created by CDC are provided where applicable under each vaccine.

Recommended Adult Immunization Schedule—United States - 2014

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

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

VACCINE ▼ AGE GROUP ►	19-21 years	22-26 years	27-49 years	50-59 years	60-64 years	≥ 65 years
Influenza [2,*]	1 dose annually					
Tetanus, diphtheria, pertussis (Td/Tdap) [3,*]	Substitute 1-time dose of Tdap for Td booster; then boost with Td every 10 yrs					
Varicella [4,*]	2 doses					
Human papillomavirus (HPV) Female [5,*]	3 doses					
Human papillomavirus (HPV) Male [5,*]	3 doses					
Zoster [6]					1 dose	
Measles, mumps, rubella (MMR) [7,*]	1 or 2 doses					
Pneumococcal 13-valent conjugate (PCV13) [8,*]	1 dose					
Pneumococcal polysaccharide (PPSV23) [9,10]	1 or 2 doses					1 dose
Meningococcal [11,*]	1 or more doses					
Hepatitis A [12,*]	2 doses					
Hepatitis B [13,*]	3 doses					
Haemophilus influenzae type b (Hib) [14,*]	1 or 3 doses					

*Covered by the Vaccine Injury Compensation Program

For all persons in this category who meet the age requirements and who lack documentation of vaccination or have no evidence of previous infection; zoster vaccine recommended regardless of prior episode of zoster

Recommended if some other risk factor is present (e.g., on the basis of medical, occupational, lifestyle, or other indication)

No recommendation

Report all clinically significant postvaccination reactions to the Vaccine Adverse Event Reporting System (VAERS). Reporting forms and instructions on filing a VAERS report are available at www.vaers.hhs.gov or by telephone, 800-822-7967.
Information on how to file a Vaccine Injury Compensation Program claim is available at www.hrsa.gov/vaccinecompensation or by telephone, 800-338-2382. To file a claim for vaccine injury, contact the U.S. Court of Federal Claims, 717 Madison Place, N.W., Washington, D.C. 20005; telephone, 202-357-6400.
Additional information about the vaccines in this schedule, extent of available data, and contraindications for vaccination is also available at www.cdc.gov/vaccines or from the CDC-INFO Contact Center at 800-CDC-INFO (800-232-4636) in English and Spanish, 8:00 a.m. - 8:00 p.m. Eastern Time, Monday - Friday, excluding holidays.
Use of trade names and commercial sources is for identification only and does not imply endorsement by the U.S. Department of Health and Human Services.

The recommendations in this schedule were approved by the Centers for Disease Control and Prevention's (CDC) Advisory Committee on Immunization Practices (ACIP), the American Academy of Family Physicians (AAFP), the American College of Physicians (ACP), American College of Obstetricians and Gynecologists (ACOG) and American College of Nurse-Midwives (ACNM).

Figure 2. Vaccines that might be indicated for adults based on medical and other indications[1]

VACCINE ▼ INDICATION ►	Pregnancy	Immunocompromising conditions (excluding human immunodeficiency virus [HIV])[4,6,7,8,15]	HIV infection CD4+ T lymphocyte count[4,6,7,8,15]		Men who have sex with men (MSM)	Kidney failure, end-stage renal disease, receipt of hemodialysis	Heart disease, chronic lung disease, chronic alcoholism	Asplenia (including elective splenectomy and persistent complement component deficiencies)[4,14]	Chronic liver disease	Diabetes	Healthcare personnel
			< 200 cells/μL	≥ 200 cells/μL							
Influenza[2,*]	1 dose IIV annually				1 dose IIV or LAIV annually	1 dose IIV annually					1 dose IIV or LAIV annually
Tetanus, diphtheria, pertussis (Td/Tdap)[3,*]	1 dose Tdap each pregnancy	Substitute 1-time dose of Tdap for Td booster; then boost with Td every 10 yrs									
Varicella[4,*]	Contraindicated		Contraindicated	2 doses							
Human papillomavirus (HPV) Female[5,*]		3 doses through age 26 yrs				3 doses through age 26 yrs					
Human papillomavirus (HPV) Male[5,*]		3 doses through age 26yrs				3 doses through age 21 yrs					
Zoster[6]	Contraindicated		Contraindicated		1 dose						
Measles, mumps, rubella (MMR)[7,*]	Contraindicated			1 or 2 doses							
Pneumococcal 13-valent conjugate (PCV13)[8,*]		1 dose									
Pneumococcal polysaccharide (PPSV23)[9,10]		1 or 2 doses									
Meningococcal[11,*]		1 or more doses									
Hepatitis A[12,*]		2 doses									
Hepatitis B[13,*]		3 doses									
Haemophilus influenzae type b (Hib)[14,*]	post-HSCT recipients only	1 or 3 doses									

*Covered by the Vaccine Injury Compensation Program

For all persons in this category who meet the age requirements and who lack documentation of vaccination or have no evidence of previous infection; zoster vaccine recommended regardless of prior episode of zoster

Recommended if some other risk factor is present (e.g., on the basis of medical, occupational, lifestyle, or other indication(s)

No recommendation

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

These schedules indicate the recommended age groups and medical indications for which administration of currently licensed vaccines is commonly indicated for adults ages 19 years and older, as of February 1, 2014. For all vaccines being recommended on the Adult Immunization Schedule: a vaccine series does not need to be restarted, regardless of the time that has elapsed between doses. Licensed combination vaccines may be used whenever any components of the combination are indicated and when the vaccine's other components are not contraindicated. For detailed recommendations on all vaccines, including those used primarily for travelers or that are issued during the year, consult the manufacturers' package inserts and the complete statements from the Advisory Committee on Immunization Practices (www.cdc.gov/vaccines/hcp/acip-recs/index.html). Use of trade names and commercial sources is for identification only and does not imply endorsement by the U.S. Department of Health and Human Services.

Footnotes
Recommended Immunization Schedule for Adults Aged 19 Years or Older: United States, 2014

1. **Additional information**
   - Additional guidance for the use of the vaccines described in this supplement is available at www.cdc.gov/vaccines/hcp/acip-recs/index.html.
   - Information on vaccination recommendations when vaccination status is unknown and other general immunization information can be found in the General Recommendations on Immunization at www.cdc.gov/mmwr/preview/mmwrhtml/rr6002a1.htm.
   - Information on travel vaccine requirements and recommendations (e.g., for hepatitis A and B, meningococcal, and other vaccines) is available at http://wwwnc.cdc.gov/travel/destinations/list.
   - Additional information and resources regarding vaccination of pregnant women can be found at http://www.cdc.gov/vaccines/adults/rec-vac/pregnant.html.
2. **Influenza vaccination**
   - Annual vaccination against influenza is recommended for all persons aged 6 months or older.
   - Persons aged 6 months or older, including pregnant women and persons with hives-only allergy to eggs, can receive the inactivated influenza vaccine (IIV). An age-appropriate IIV formulation should be used.
   - Adults aged 18 to 49 years can receive the recombinant influenza vaccine (RIV) (FluBlok). RIV does not contain any egg protein.
   - Healthy, nonpregnant persons aged 2 to 49 years without high-risk medical conditions can receive either intranasally administered live, attenuated influenza vaccine (LAIV) (FluMist), or IIV. Health care personnel who care for severely immunocompromised persons (i.e., those who require care in a protected environment) should receive IIV or RIV rather than LAIV.
   - The intramuscularly or intradermally administered IIV are options for adults aged 18 to 64 years.
   - Adults aged 65 years or older can receive the standard-dose IIV or the high-dose IIV (Fluzone High-Dose).
3. **Tetanus, diphtheria, and acellular pertussis (Td/Tdap) vaccination**
   - Administer 1 dose of Tdap vaccine to pregnant women during each pregnancy (preferred during 27 to 36 weeks' gestation) regardless of interval since prior Td or Tdap vaccination.
   - Persons aged 11 years or older who have not received Tdap vaccine or for whom vaccine status is unknown should receive a dose of Tdap followed by tetanus and diphtheria toxoids (Td) booster doses every 10 years thereafter. Tdap can be administered regardless of interval since the most recent tetanus or diphtheria toxoid containing vaccine.
   - Adults with an unknown or incomplete history of completing a 3-dose primary vaccination series with Td-containing vaccines should begin or complete a primary vaccination series including a Tdap dose.
   - For unvaccinated adults, administer the first 2 doses at least 4 weeks apart and the third dose 6 to 12 months after the second.
   - For incompletely vaccinated (i.e., less than 3 doses) adults, administer remaining doses.
   - Refer to the ACIP statement for recommendations for administering Td/Tdap as prophylaxis in wound management (see footnote 1).
4. **Varicella vaccination**
   - All adults without evidence of immunity to varicella (as defined below) should receive 2 doses of single-antigen varicella vaccine or a second dose if they have received only 1 dose.
   - Vaccination should be emphasized for those who have close contact with persons at high risk for severe disease (e.g., health care personnel and family contacts of persons with immunocompromising conditions) or 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).
   - 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 health care facility. The second dose should be administered 4 to 8 weeks after the first dose.
   - Evidence of immunity to varicella in adults includes any of the following:
     - documentation of 2 doses of varicella vaccine at least 4 weeks apart;
     - U.S.-born before 1980, except health care personnel and pregnant women;
     - history of varicella based on diagnosis or verification of varicella disease by a health care provider;
     - history of herpes zoster based on diagnosis or verification of herpes zoster disease by a health care provider; or
     - laboratory evidence of immunity or laboratory confirmation of disease.
5. **Human papillomavirus (HPV) vaccination**
   - Two vaccines are licensed for use in females, bivalent HPV vaccine (HPV2) and quadrivalent HPV vaccine (HPV4), and one HPV vaccine for use in males (HPV4).
   - For females, either HPV4 or HPV2 is recommended in a 3-dose series for routine vaccination at age 11 or 12 years and for those aged 13 through 26 years, if not previously vaccinated.
   - For males, HPV4 is recommended in a 3-dose series for routine vaccination at age 11 or 12 years and for those aged 13 through 21 years, if not previously vaccinated. Males aged 22 through 26 years may be vaccinated.
5. **Human papillomavirus (HPV) vaccination (cont'd)**
   - HPV4 is recommended for men who have sex with men through age 26 years for those who did not get any or all doses when they were younger.
   - Vaccination is recommended for immunocompromised persons (including those with HIV infection) through age 26 years for those who did not get any or all doses when they were younger.
   - A complete series for either HPV4 or HPV2 consists of 3 doses. The second dose should be administered 4 to 8 weeks (minimum interval of 4 weeks) after the first dose; the third dose should be administered 24 weeks after the first dose and 16 weeks after the second dose (minimum interval of at least 12 weeks).
   - HPV vaccines are not recommended for use in pregnant women. However, pregnancy testing is not needed before vaccination. If a woman is found to be pregnant after initiating the vaccination series, no intervention is needed; the remainder of the 3-dose series should be delayed until completion of pregnancy.
6. **Zoster vaccination**
   - A single dose of zoster vaccine is recommended for adults aged 60 years or older regardless of whether they report a prior episode of herpes zoster. Although the vaccine is licensed by the U.S. Food and Drug Administration for use among and can be administered to persons aged 50 years or older, ACIP recommends that vaccination begin at age 60 years.
   - Persons aged 60 years or older with chronic medical conditions may be vaccinated unless their condition constitutes a contraindication, such as pregnancy or severe immunodeficiency.
7. **Measles, mumps, rubella (MMR) vaccination**
   - Adults born before 1957 are generally 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 or laboratory evidence of immunity to each of the three diseases. Documentation of provider-diagnosed disease is not considered acceptable evidence of immunity for measles, mumps, or rubella.

   Measles component:
   - A routine second dose of MMR vaccine, administered a minimum of 28 days after the first dose, is recommended for adults who:
     - are students in postsecondary educational institutions;
     - work in a health care facility; or
     - 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 routine second dose of MMR vaccine, administered a minimum of 28 days after the first dose, is recommended for adults who:
     - are students in a postsecondary educational institution;
     - work in a health care facility; or
     - 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 health care facility) should be considered for revaccination 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 health care facility.

   Health care personnel born before 1957:
   - For unvaccinated health care personnel born before 1957 who lack laboratory evidence of measles, mumps, and/or rubella immunity or laboratory confirmation of disease, health care facilities should consider vaccinating personnel with 2 doses of MMR vaccine at the appropriate interval for measles and mumps or 1 dose of MMR vaccine for rubella.
8. **Pneumococcal conjugate (PCV13) vaccination**
   - Adults aged 19 years or older with immunocompromising conditions (including chronic renal failure and nephrotic syndrome), functional or anatomic asplenia, cerebrospinal fluid leaks, or cochlear implants who have not previously received PCV13 or PPSV23 should receive a single dose of PCV13 followed by a dose of PPSV23 at least 8 weeks later.
   - Adults aged 19 years or older with the aforementioned conditions who have previously received 1 or more doses of PPSV23 should receive a dose of PCV13 one or more years after the last PPSV23 dose was received. For adults who require additional doses of PPSV23, the first such dose should be given no sooner than 8 weeks after PCV13 and at least 5 years after the most recent dose of PPSV23.
   - When indicated, PCV13 should be administered to patients who are uncertain of their vaccination status history and have no record of previous vaccination.
   - Although PCV13 is licensed by the U.S. Food and Drug Administration for use among and can be administered to persons aged 50 years or older, ACIP recommends PCV13 for adults aged 19 years or older with the specific medical conditions noted above.

9. Pneumococcal polysaccharide (PPSV23) vaccination

- When PCV13 is also indicated, PCV13 should be given first (see footnote 8).
- Vaccinate all persons with the following indications:
  - all adults aged 65 years or older;
  - adults younger than 65 years with chronic lung disease (including chronic obstructive pulmonary disease, emphysema, and asthma), chronic cardiovascular diseases, diabetes mellitus, chronic renal failure, nephrotic syndrome, chronic liver disease (including cirrhosis), alcoholism, cochlear implants, cerebrospinal fluid leaks, immunocompromising conditions, and functional or anatomic asplenia (e.g., sickle cell disease and other hemoglobinopathies, congenital or acquired asplenia, splenic dysfunction, or splenectomy [if elective splenectomy is planned, vaccinate at least 2 weeks before surgery]);
  - residents of nursing homes or long-term care facilities; and
  - adults who smoke cigarettes.
- Persons with immunocompromising conditions and other selected conditions are recommended to receive PCV13 and PPSV23 vaccines. See footnote 8 for information on timing of PCV13 and PPSV23 vaccinations.
- Persons with asymptomatic or symptomatic HIV infection should be vaccinated as soon as possible after their diagnosis.
- When cancer chemotherapy or other immunosuppressive therapy is being considered, the interval between vaccination and initiation of immunosuppressive therapy should be at least 2 weeks. Vaccination during chemotherapy or radiation therapy should be avoided.
- Routine use of PPSV23 vaccine is not recommended for American Indians/Alaska Natives or other persons younger than 65 years unless they have underlying medical conditions that are PPSV23 indications. However, public health authorities may consider recommending PPSV23 for American Indians/Alaska Natives who are living in areas where the risk for invasive pneumococcal disease is increased.
- When indicated, PPSV23 vaccine should be administered to patients who are uncertain of their vaccination status and have no record of vaccination.

10. Revaccination with PPSV23

- One-time revaccination 5 years after the first dose of PPSV23 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), or immunocompromising conditions.
- Persons who received 1 or 2 doses of PPSV23 before age 65 years for any indication should receive another dose of the vaccine at age 65 years or later if at least 5 years have passed since their previous dose.
- No further doses of PPSV23 are needed for persons vaccinated with PPSV23 at or after age 65 years.

11. Meningococcal vaccination

- Administer 2 doses of quadrivalent meningococcal conjugate vaccine (MenACWY [Menactra, Menveo]) at least 2 months apart to adults of all ages with functional asplenia or persistent complement component deficiencies. HIV infection is not an indication for routine vaccination with MenACWY. If an HIV-infected person of any age is vaccinated, 2 doses of MenACWY should be administered at least 2 months apart.
- Administer a single dose of meningococcal vaccine to microbiologists routinely exposed to isolates of *Neisseria meningitidis*, military recruits, persons at risk during an outbreak attributable to a vaccine serogroup, and persons who travel to or live in countries in which meningococcal disease is hyperendemic or epidemic.
- First-year college students up through age 21 years who are living in residence halls should be vaccinated if they have not received a dose on or after their 16th birthday.
- MenACWY is preferred for adults with any of the preceding indications who are aged 55 years or younger as well as for adults aged 56 years or older who a) were vaccinated previously with MenACWY and are recommended for revaccination, or b) for whom multiple doses are anticipated. Meningococcal polysaccharide vaccine (MPSV4 [Menomune]) is preferred for adults aged 56 years or older who have not received MenACWY previously and who require a single dose only (e.g., travelers).
- Revaccination with MenACWY every 5 years is recommended for adults previously vaccinated with MenACWY or MPSV4 who remain at increased risk for infection (e.g., adults with anatomic or functional asplenia, persistent complement component deficiencies, or microbiologists).

12. Hepatitis A vaccination

- Vaccinate any person seeking protection from hepatitis A virus (HAV) infection and persons with any of the following indications:
  - men who have sex with men and persons who use injection or non-injection illicit drugs;
  - persons working with HAV-infected primates or with HAV in a research laboratory setting;
  - persons with chronic liver disease and persons who receive clotting factor concentrates;
  - persons traveling to or working in countries that have high or intermediate endemicity of hepatitis A; and

12. Hepatitis A vaccination (cont'd)

  - 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. (See footnote 1 for more information on travel recommendations.) 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 to 12 months (Havrix), or 0 and 6 to 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 to 30 followed by a booster dose at month 12.

13. Hepatitis B vaccination

- Vaccinate persons with any of the following indications and any person seeking protection from hepatitis B virus (HBV) infection:
  - sexually active persons who are not in a long-term, mutually monogamous relationship (e.g., persons with more than 1 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;
  - health care personnel and public safety workers who are potentially exposed to blood or other infectious body fluids;
  - persons with diabetes who are younger than age 60 years as soon as feasible after diagnosis; persons with diabetes who are age 60 years or older at the discretion of the treating clinician based on the likelihood of acquiring HBV infection, including the risk posed by an increased need for assisted blood glucose monitoring in long-term care facilities, the likelihood of experiencing chronic sequelae if infected with HBV, and the likelihood of immune response to vaccination;
  - persons with end-stage renal disease, including patients receiving hemodialysis, persons with HIV infection, and persons with chronic liver disease;
  - household contacts and sex partners of hepatitis B surface antigen–positive persons, 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; and
  - all adults in the following settings: STD treatment facilities, HIV testing and treatment facilities, facilities providing drug abuse treatment and prevention services, health care settings targeting services to injection drug users or men who have sex with men, correctional facilities, end-stage renal disease programs and facilities 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, give 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 mcg/mL (Recombivax HB) administered on a 3-dose schedule at 0, 1, and 6 months or 2 doses of 20 mcg/mL (Engerix-B) administered simultaneously on a 4-dose schedule at 0, 1, 2, and 6 months.

14. *Haemophilus influenzae type b* (Hib) vaccination

- One dose of Hib vaccine should be administered to persons who have functional or anatomic asplenia or sickle cell disease or are undergoing elective splenectomy if they have not previously received Hib vaccine. Hib vaccination 14 or more days before splenectomy is suggested.
- Recipients of a hematopoietic stem cell transplant should be vaccinated with a 3-dose regimen 6 to 12 months after a successful transplant, regardless of vaccination history; at least 4 weeks should separate doses.
- Hib vaccine is not recommended for adults with HIV infection since their risk for Hib infection is low.

15. Immunocompromising conditions

- Inactivated vaccines generally are acceptable (e.g., pneumococcal, meningococcal, and 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/hcp/acip-recs/index.html.

Immunizations for Military Personnel (See individual vaccines in this toolkit for schedules)

Immunizing Agent	Army	Navy	Air Force	Marine Corps	Coast Guard
Adenovirus[1]	Acc[2]	Acc	Acc	Acc	Acc
Anthrax	Risk	Risk	Risk	Risk	Risk
Haemophilus influenza type b	Risk	Risk	Risk	Risk	Risk
Hepatitis A	Acc, Rou[3]	Acc, Rou	Acc, Rou	Acc, Rou	Acc, Rou
Hepatitis B	Acc, Rou	Acc, Rou	Acc, Rou	Acc, Rou	Acc, Rou
Influenza	Acc, Rou	Acc, Rou	Acc, Rou	Acc, Rou	Acc, Rou
Japanese encephalitis	Risk[4]	Risk	Risk	Risk	Risk
Measles, Mumps, Rubella	Acc, Rou	Acc, Rou	Acc, Rou	Acc, Rou	Acc, Rou
Meningococcal	Acc, Rou	Acc, Rou	Acc, Rou	Acc, Rou	Acc, Rou
Pneumococcal	Risk	Risk	Risk	Risk	Risk
Poliovirus[5]	Acc, Rou	Acc, Rou	Acc, Rou	Acc, Rou	Acc, Rou
Rabies	Risk	Risk	Risk	Risk	Risk
Smallpox (vaccinia)	Risk	Risk	Risk	Risk	Risk
Tetanus-diphtheria (preferably with pertussis vaccine)	Acc, Rou	Acc, Rou	Acc, Rou	Acc, Rou	Acc, Rou
Typhoid	Risk	Risk	Risk	Risk	Risk
Varicella	Acc, Rou	Acc, Rou	Acc, Rou	Acc, Rou	Acc, Rou
Yellow fever	Risk	Risk	Risk	Acc, Risk	Risk

Notes:

[1] Initial entry and basic training accession only

[2] Acc = accessions

[3] Rou = adult routine

[4] Risk = special, risk-based, and occupational

[5] Because of the high level of childhood immunization against this disease, do not screen immunization records with regard to poliovirus immunity after completion of initial entry training except in an outbreak setting or for individual clinical purposes.

Adenovirus Vaccine

Vaccine Description	• Brand: Adenovirus Type 4 and Type 7 Vaccine, Live, Oral • 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 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 afterward) • 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

Adenovirus Vaccine *(Continued)*

Special Considerations	• Instruct vaccinee to use proper personal hygiene, such as frequent hand washing especially following bowel movements • Adenovirus vaccine can be administered simultaneously or at any interval before or after other vaccines, including live vaccines
VIS: http://www.cdc.gov/vaccines/hcp/vis/vis-statements/adenovirus.html Pregnancy Registry: 1-866-790-4549 also notify DHA-IHB	

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://afhsc.mil/viewMSMR?file=2012/v19_n03.pdf#Page=02

Anthrax Vaccine

<table>
<tr><td>Vaccine
Description</td><td>• Brand: Biothrax®
• Inactivated vaccine
• Adjuvant: aluminum hydroxide as adjuvant;
• Vial stopper may contain dry natural latex rubber
• See package insert</td></tr>
<tr><td>Dose & Route</td><td>• Dose: 0.5 mL
• Route: IM into the DELTOID muscle (Precaution: hemophilia, thrombocytopenia, and anticoagulation therapy); NOTE: Only SC route is approved by FDA for post-exposure prophylaxis
• See package insert</td></tr>
<tr><td>Indications</td><td>• Age 18 to 65 years according to current military guidelines
• People with occupational risk
• As adjunct treatment after exposure to anthrax bacillus (inhallation)
• Interruption of the vaccination schedule does not require restarting the entire anthrax vaccine series nor addition of extra doses</td></tr>
<tr><td>Administration
Schedule

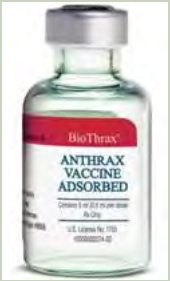
Note: Delays do NOT interfere with vaccine response and may increase immune response, particularly for dose #2 [Pittman et al. Vaccine. 2000 Sep 15;19:213-6]</td><td>Given in a series of 5 doses at 0, 4 weeks, 6 months, 12 months, and 18 months with an annual booster to sustain immunity

<table><tr><th>Dose</th><th>Dose Recommended Interval</th></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></table></td></tr>
<tr><td>Booster</td><td>Annually (every 12 months) if required by duty status</td></tr>
<tr><td>Contraindications</td><td>• 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 medically verified cutaneous anthrax does not require the vaccine
• Pregnant women should not be routinely vaccinated pre-exposure
• Breastfeeding is not a contraindication
• Refer to DHA-IHB 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 DHA-IHB for consultation regarding optimum treatment and medical exemptions • See Storage and Handling Section

VIS: http://www.cdc.gov/vaccines/hcp/vis/vis-statements/anthrax.html
Bioterrorism: http://emergency.cdc.gov/agent/anthrax/
DHA-IHB: http://www.vaccines.mil/Anthrax
BioThrax (Anthrax) Vaccine Pregnancy Registry (619) 553-9255, DSN 553-9255, email: nhrc-birthregistry@med.navy.mil; also notify DHA-IHB



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

Source: http://www.cdc.gov/anthrax/types/index.html

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®-Combination Hepatitis A (pediatric dose) and Hepatitis B (adult dose) for people 18 years and older.
Dose: 1 mL
Route: IM (Precaution: hemophilia, thrombocytopenia, and anticoagulation therapy)

If mixing schedule of Twinrix® with individual doses of HepA and HepB, see info paper for number of doses needed (http://www.vaccines.mil/documents/1508MIP-Hep%20A-B%20Recruit%20Schedule.pdf)</td><td>Routine schedule: 3 doses at 0, 1m, 6m</td><td>There must be at least 4 wks between doses #1 and #2 and at least 5 months between doses #2 and #3. Overall, there must be at least 6 months between dose #1 and #3.</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/hcp/vis/vis-statements/hep-a.html
Pregnancy registry for Twinrix®: 1-888-452-9622 (GlaxoSmithKline)
also notify DHA-IHB</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/HAV/index.htm

Hepatitis B Vaccine

Vaccine Description	• Brands: Recombivax HB® and Engerix-B® • Inactive viral antigen • Adjuvant: aluminum hydroxide • Tip cap and the rubber plunger of the needleless prefilled syringes may contain dry natural latex rubber • See package insert	
Route	• IM (Precaution: hemophilia, thrombocytopenia, and anticoagulation therapy)	
Vaccine	**Age**	**Dose**
Recombivax HB®	0-19 years	5 mcg (0.5 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) • Persons with HIV • Persons with diabetes • Persons with chronic liver disease • Patients receiving hemodialysis and patients with renal disease that may result in dialysis • Recipients of certain blood products • Healthcare and public safety workers with frequent blood contact • Residents and 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®-Combination Hepatitis A (pediatric dose) and Hepatitis B (adult dose) for people 18 years and older.
Dose: 1 mL
Route: IM (Precaution: hemophilia, thrombocytopenia, and anticoagulation therapy)

If mixing schedule of Twinrix® with individual doses of HepA and HepB, see info paper for number of doses needed (http://www.vaccines.mil/documents/1508MIP-Hep%20A-B%20Recruit%20Schedule.pdf)</td><td>Routine schedule: 3 doses at 0, 1m, 6m</td><td>There must be at least 4 wks between doses #1 and #2 and at least 5 months between doses #2 and #3. Overall, there must be at least 6 months between dose #1 and #3.</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">• There must be at least 4 wks between doses #1 and #2 and at least 5 months between doses #2 and #3. Overall, there must be at least 6 months between dose #1 and #3.
• If the series is delayed between doses, DO NOT start the series over. Continue from where you left off.
• For vaccine non-responders (negative Hep B Ab titers), consult allergy/immunology, DHA-IHB, infectious disease
• See Storage and Handling Section</td></tr>
<tr><td colspan="3">VIS: http://www.cdc.gov/vaccines/hcp/vis/vis-statements/hep-b.html
Pregnancy registry for Twinrix®: 1-888-825-5249 (GlaxoSmithKline); also notify DHA-IHB</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	• People over 5 years of age who are at risk, including people with:
	  • anatomical or functional asplenia (e.g., sickle cell disease, postsplenectomy)
	  • 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/hcp/vis/vis-statements/hib.html	

Human Papillomavirus (HPV) Vaccine

<table>
<tr><td>Vaccine Description</td><td colspan="2">• Brands: Gardasil® and Cervarix®
• Inactivated viral vaccine
• Contains aluminum and yeast
• Cervarix® syringe may contain dry natural latex rubber
• 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): Females 9-26 years of age (routinely given at 11-12 year old visit) and males 9-21 years of age (routinely given at 11-12 year old visit and may be given to males 22-26 years of age)
• Cervarix®(HPV2): Females 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 (Note - Cervarix prefilled syringes have a tip cap that may contain natural rubber latex or tip cap and syringe plunger of dry natural latex which may cause allergic reactions in latex sensitive persons)
• 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)
• If a female reaches 26 years of age before series is completed, remaining doses may be given
• People with impaired immunity can receive vaccine but may not develop adequate immunity</td></tr>
<tr><td colspan="3">VIS: http://www.cdc.gov/vaccines/hcp/vis/vis-statements/hpv-gardasil.html; http://www.cdc.gov/vaccines/hcp/vis/vis-statements/hpv-cervarix.html
Pregnancy registry: 1-888-452-9622 (for Cervarix®); also notify DHA-IHB</td></tr>
</table>

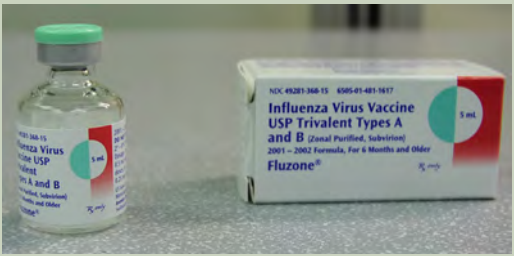
Inactivated Influenza Vaccine

Note: In the past inactivated influenza vaccine was abbreviated as TIV (trivalent influenza vaccine), but since quadrivalent influenza vaccines are now available the abbreviation was changed to IIV (inactivated influenza vaccine). Trivalent inactivated influenza vaccine is abbreviated as IIV3 and quadrivalent inactivated influenza vaccine as IIV4.

Vaccine Description	• Brands: Afluria®, Agriflu®, Fluarix®, Fluarix Quadrivalent®, FluBlok®, Flucelvax®, FluLaval®, Fluvirin®, Fluzone®, Fluzone High-Dose®, and Fluzone Intradermal® • Inactivated virus/viral components • Some brands contain 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; given over deltoid not forearm)	
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 (Note: healthy, non-pregnant persons 2 through 49 years of age without high risk health conditions can recieve IIV or LAIV) • 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

Inactivated Influenza Vaccine *(continued)*

Contraindications	• Serious allergic reaction to prior dose, vaccine component (see special considerations for information regarding egg allergy) • Moderate or severe acute illness • Serious adverse event or history of Guillain-Barré syndrome (GBS) within 6 weeks of any prior influenza vaccination
Special Considerations	• People with a history of egg allergies who have experienced hives only can receive IIV (rather than LAIV) if administered by healthcare provider familar with possible reactions and if observed for at least 30 minutes following vaccine administration • People who report reactions to egg that include symptoms such as angioedema or respiratory distress or who required epinephrine or medical treatment, should be referred to a provider with expertise in allergy management for further assessment • See Storage and Handling Section
VIS: http://www.cdc.gov/vaccines/hcp/vis/vis-statements/flu.html	



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 Quadrivalent® • Live nasally administered vaccine (LAIV4) • Contains egg protein. See package insert.	
Dose & Route	• Dose: 0.2 mL • Route: intranasal • See package insert	
Indications	• Indicated for healthy, non-pregnant persons 2 through 49 years who do not have a contraindication • 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 disease, severe immune compromise, human 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) • who are close contacts or healthcare personnel caring for persons who are severely immunocompromised and requiring a protective environment	

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/hcp/vis/vis-statements/flulive.html	

Japanese Encephalitis Vaccine

Vaccine Description	• Brands: Ixiaro® • Inactivated • Contains aluminum hydroxide • See package insert
Dose and Route	• Dose: 0.5 mL (for persons 3 years and older) • Route: IM (IM Precaution: hemophilia, thrombocytopenia, and anticoagulation therapy) • See package insert
Indications	• Individuals 2 months 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
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	• Individuals 17 years of age and older: If the primary series of two doses was completed more than 1 year previously, a booster dose may be given if ongoing exposure or re-exposure to JEV is expected. • However, adults aged 17 years and older who have received JE-VAX previously and require further vaccination against JE virus should receive a 2-dose primary series of Ixiaro.
Contraindications	• Serious allergic reaction to prior dose of Ixiaro® or other JEV vaccine, vaccine component, or to protamine sulfate • Moderate or severe acute illness - any illness with a fever of more than 100°F (37.8°C) [until illness resolves] • Younger than 2 months of age

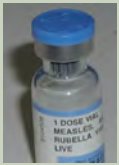
Japanese Encephalitis Vaccine *(Continued)*

Precautions	• A bleeding disorder which increase risk of bleeding or bruising and cannot receive injections in the arm • A weakended immune system (e.g., due to a genetic defect or HIV infection) • Pregnancy, planning to become pregnant, or breastfeeding; Ixiaro® has not been studied in pregnant/breastfeeding women; given only if clearly indicated and after discussion with healthcare provider
Special Considerations	• See pediatric section for information on giving this vaccine to persons younger than 17 years of age. • See Storage and Handling Section
VIS: http://www.cdc.gov/vaccines/hcp/vis/vis-statements/je-ixiaro.html	

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 (serological) or vaccination • All children and adolescents 1 year and older	
Administration Schedule	**Dose**	**Recommended Interval**
	#1	
	#2 (if recommended*)	Minimum 4 weeks after #1

* The following adults will need either positive serology showing immunity or to receive 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 and 1-10)
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 egg is not a contraindication to MMR vaccination • See Storage and Handling Section
VIS: http://www.cdc.gov/vaccines/hcp/vis/vis-statements/mmr.html	

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/measles/about/overview.html/Contraindications

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®) • 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 licensed 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®)	• Booster is needed every 5 years for people 56 years of age and older who are at increased risk due to travel, persistent complement component deficiency, or functional or anatomic asplenia. See next page for booster information for Menactra® and Menveo®

Meningococcal Vaccine *(Continued)*

Booster (Menactra® and Menveo®)	Menactra® and Menveo®: • People 19 through 21 years of age who are first-year college students and living in residence halls need booster if previous dose given at age younger than 16 years • People 2 through 55 with persistent risk need booster every 5 years for as long as risk is present (this includes those with risk due to travel, persistent complement component deficiency, or functional or anatomic asplenia)
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 months -55 years of age (See package insert)
Special Considerations	• Menomune® is used mainly in those 56 years of age and older • 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/hcp/vis/vis-statements/mening.html Pregnancy registry for Menactra®: 1-800-822-2463 (Sanofi Pasteur); Pregnancy registry for Menveo®: 1-877-311-8972 (Novartis); also notify DHA-IHB	

Pneumococcal Conjugate Vaccine (PCV13)

Vaccine Description	• Brand: Prevnar 13® • Inactivated polysaccharide conjugate vaccine • Contains diphtheria protein and aluminum (see package insert for other contents)
Dose & Route	• Dose: 0.5 mL • Route: IM (Precaution: hemophilia, thrombocytopenia, and anticoagulation therapy)
Indications	Adults 19 years of older with one or more of the following: • Congenital or acquired immunodeficiencies HIV, chronic renal failure, nephrotic syndrome, Hodgkin's disease, leukemia, lymphoma, cancer, solid organ transplant • Diseases requiring treatment with immunosuppressive drugs, including long-term systemic corticosteroids and radiation therapy • Functional or anatomical asplenia including patients with sickle cell disease/other hemoglobinopathies • Cerebrospinal fluid (CSF) leak • Cochlear impants
Administration Schedule	• One time dose • If given prior to PPSV23, separate PCV13 and PPSV23 by at least 8 weeks. • If PPSV23 has already been given, do not give PCV13 sooner than 1 year after PPSV23
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/hcp/vis/vis-statements/pcv13.html	

Pneumococcal Conjugate Vaccine (PCV13) *(Continued)*

NOTE: Some adults will also need to receive PPSV23 vaccine. See next card for PPSV23 information.

Source: http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6140a4.htm

Pneumococcal Polysaccharide Vaccine (PPSV23)

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	• Adults 65 years of age and older • Adults 19 years old and older who have chronic illness or other risk factors, including chronic cardiac, pulmonary (including asthma), or liver disease, alcoholism, diabetes, cerebrospinal fluid (CSF) leaks, adults 19 years old and older who smoke • People with an immunocompromising condition, including HIV infection, leukemia, lymphoma, Hodgkin's disease, multiple myeloma, generalized malignancy, chronic renal failure, nephrotic syndrome, or solid organ transplant • People receiving immunosuppressive therapy, including high-dose 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 • If given prior to PPSV23, separate PCV13 and PPSV23 by at least 8 weeks. • If PPSV23 has already been given, do not give PCV13 sooner than 1 year after PPSV23
Booster	• Persons younger than 65 years of age with functional or anatomical asplenia (including sickle cell disease) or immunocompromising condition need to receive a booster dose 5 years after dose #1, followed by an additional booster dose at 65 years of age or older provided at least 5 years has elapsed since the prior dose. • For all others who received a dose of PPSV23 prior to 65 years of age, give a booster dose at 65 years of age or older if at least 5 years have elapsed since prior dose.

Pneumococcal Polysaccharide Vaccine (PPSV23) *(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 PPSV23 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/hcp/vis/vis-statements/ppv.html	

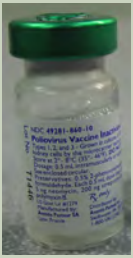
Poliovirus Vaccine

<table>
<tr><td>Vaccine Description</td><td colspan="2">• Inactivated virus (IPV)
• Contains neomycin, streptomycin, polymyxin B, formaldehyde, calf serum proteins, and 2-phenoxyethanol</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
• Revaccination 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/hcp/vis/vis-statements/ipv.html	



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/Polioandprevention.aspx

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; • See package inserts
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/hcp/vis/vis-statements/rabies.html	

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 the 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

<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">•Dose: 15 punctures using bifurcated needle (for primary and re-vaccination)
• Route: Percutaneous (puncture of skin using bifurcated needle)</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>Booster 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)*

Screening Questionnaire 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 such as chest pain, prior heart attack, heart failure, stroke or "mini stroke," dyspnea on exertion, or have three of the following: Tobacco use, high blood pressure, high cholesterol, diabetes, or significant cardiac family history – 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 **Postexposure** • There are NO absolute contraindications following post-smallpox exposure

Smallpox (Vaccinia) Vaccine *(Continued)*

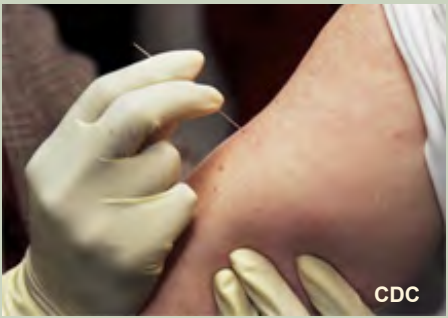
Precautions and Issues Temporary medical exemption may be needed May require consultation and treatment before vaccination	**Pre-Event** • Topical immunosuppressive therapy • Systemic lupus and other connective tissue disease, particularly if on immunosuppressive therapy • Other acute or chronic diseases 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.vaccines.mil** See DHA-IHB Immunization Tool Kit.
Vaccinator Education & Competency Assessment	• Assure that training and competency assessment has been completed by vaccinator. Education available at: **www.vaccines.mil** and as part of Project Immune Readiness: **https://vhcprojectimmunereadiness.com** or **http://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)

Smallpox (Vaccinia) Vaccine *(Continued)*

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
	  ∗ Pregnant women
	  ∗ Infants
	• 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 soiled 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*	• See storage and handling section for how to reconstitute vaccine; Note: Diluent vial contains 0.6 mL of solution, but only 0.3 mL is mixed with the vaccine for reconstitution. • 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 non-adherent bandage package so that sterile surface of package wrapper and non-adherent bandage are conveniently located near vial • Open vial and place stopper on its side on the sterile non-adherent bandage; 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 • CDC 731 (formally PHS 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 DHA-IHB brochure, *What You Need to Know About Smallpox Vaccine*. 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: http://www.vaccines.mil - Resource Center, Forms
For more information: http://www.vaccines.mil Pregnancy registry: 1-619 553-9255 (Service Members); 1-877-554-4625 (Civilians); also notify DHA-IHB	

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, Tenivac® and Decavac® • Inactivated vaccine • Td contains aluminum and formaldehyde; The tip caps 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/hcp/vis/vis-statements/td.html		

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 years of age and older (see special recommendation for pregnant women below)
	• 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
	  • give a dose of Tdap during each pregnancy irrespective of prior history of Tdap with optimal timing for administration between 27 and 36 weeks gestation
	• 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 • Unstable central nervous system disorder • 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) • Shorter intervals between Tdap and last Td may increase the risk of mild local reactions but may be appropriate if your patient will have contact with infants or is at high risk for contracting pertussis, such as during an outbreak • See Storage and Handling Section
VIS: http://www.cdc.gov/vaccines/hcp/vis/vis-statements/tdap.html Pregnancy registry: Adacel® 1-800-822-2463 (Sanofi Pasteur) or Boostrix® 1-888-825-5249 (GlaxoSmithKline); also notify DHA-IHB	

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 (6 years of age and older); 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 1 hour before meal. 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 • Do not administer ViCPS to people with moderate or severe gastrointestinal illness • Do not administer Ty21a to people who are immunocompromised • Do not administer Ty21a to people who have taken antibiotics or sulfonamides during prior 3 days. • 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 • Do NOT restart oral typhoid 4-dose series unless an interval extends greater than 3 weeks • See Storage and Handling Section
VIS: http://www.cdc.gov/vaccines/hcp/vis/vis-statements/typhoid.html	

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 immunocompromised</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 and 1-10 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 weeks after receiving varicella vaccine due to 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/hcp/vis/vis-statements/varicella.html Pregnancy monitoring: 1-877-888-4231 (Merck); also notify DHA-IHB	

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, other travel medical website, or local travel clinic 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 is 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; The effect of nonsimultaneous administration of rubella, mumps, varicella, and yellow fever vaccines is unknown. • Must be used within one hour of reconstitution • See Storage and Handling Section

VIS: http://www.cdc.gov/vaccines/hcp/vis/vis-statements/yf.html

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 • 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/hcp/vis/vis-statements/shingles.html Pregnancy monitoring: 1-877-888-4231 (Merck); also notify DHA-IHB		

Pediatric Immunizations

Immunization Healthcare Branch, Defense Health Agency (DHA-IHB)

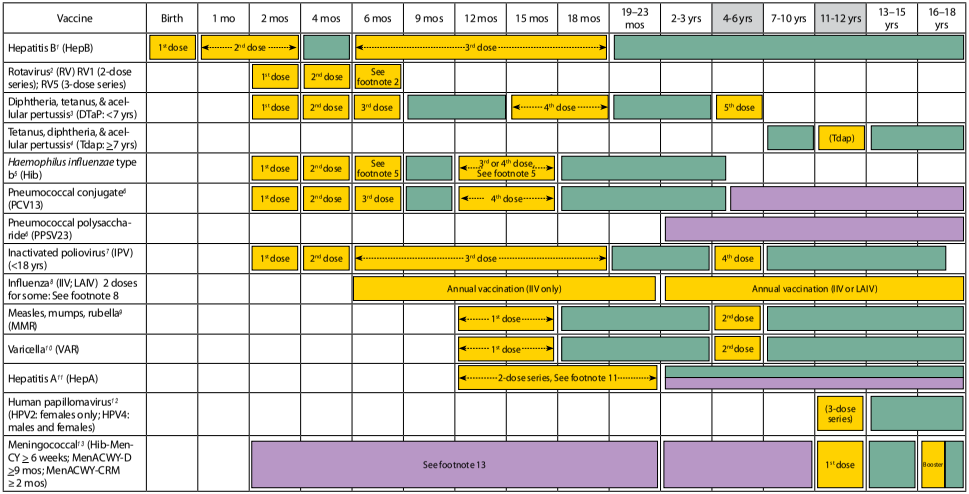
Based on the Recommendations of the Advisory Committee on Immunization Practices (ACIP), Centers for Disease Control and Prevention (CDC).

Refer to manufacturer's package insert (available at http://www.vaccines.mil/ResourceCenter) and ACIP guidelines for specific vaccine recommendations and precautions as only absolute contraindications are listed herein. Links to VIS (Vaccine Information Statement) created by CDC are provided where applicable under each vaccine.

Figure 1. Recommended immunization schedule for persons aged 0 through 18 years – United States, 2014.

(FOR THOSE WHO FALL BEHIND OR START LATE, SEE THE CATCH-UP SCHEDULE [FIGURE 2]).

These recommendations must be read with the footnotes that follow. For those who fall behind or start late, provide catch-up vaccination at the earliest opportunity as indicated by the green bars in Figure 1. To determine minimum intervals between doses, see the catch-up schedule (Figure 2). School entry and adolescent vaccine age groups are in bold.



Range of recommended ages for all children

Range of recommended ages for catch-up immunization

Range of recommended ages for certain high-risk groups

Range of recommended ages during which catch-up is encouraged and for certain high-risk groups

Not routinely recommended

This schedule includes recommendations in effect as of January 1, 2014. 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. Vaccination providers should consult the relevant Advisory Committee on Immunization Practices (ACIP) statement for detailed recommendations, available online at http://www.cdc.gov/vaccines/hcp/acip-recs/index.html. Clinically significant adverse events that follow vaccination should be reported to the Vaccine Adverse Event Reporting System (VAERS) online (http://www.vaers.hhs.gov) or by telephone (800-822-7967).Suspected cases of vaccine-preventable diseases should be reported to the state or local health department. Additional information, including precautions and contraindications for vaccination, is available from CDC online (http://www.cdc.gov/vaccines/recs/vac-admin/contraindications.htm) or by telephone (800-CDC-INFO [800-232-4636]).

This schedule is approved by the Advisory Committee on Immunization Practices (http//www.cdc.gov/vaccines/acip), the American Academy of Pediatrics (http://www.aap.org), the American Academy of Family Physicians (http://www.aafp.org), and the American College of Obstetricians and Gynecologists (http://www.acog.org).

NOTE: The above recommendations must be read along with the footnotes of this schedule.

FIGURE 2. Catch-up immunization schedule for persons aged 4 months through 18 years who start late or who are more than 1 month behind — United States, 2014.

The figure 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. Always use this table in conjunction with Figure 1 and the footnotes that follow.

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; minimum age for the final dose is 24 weeks		
Rotavirus[2]	6 weeks	4 weeks	4 weeks[2]		
Diphtheria, tetanus, & acellular pertussis[3]	6 weeks	4 weeks	4 weeks	6 months	6 months[3]
Haemophilus influenzae type b[5]	6 weeks	4 weeks if first dose administered at younger than age 12 months 8 weeks (as final dose) if first dose administered at age 12 through 14 months No further doses needed if first dose administered at age 15 months or older	4 weeks[5] if current age is younger than 12 months and first dose administered at < 7 months old 8 weeks and age 12 months through 59 months (as final dose)[5] if current age is younger than 12 months and first dose administered between 7 through 11 months (regardless of Hib vaccine [PRP-T or PRP-OMP] used for first dose); OR if current age is 12 through 59 months and first dose administered at younger than age 12 months; OR first 2 doses were PRP-OMP[5] and administered at younger than 12 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 through 59 months who received 3 (PRP-T) doses before age 12 months and started the primary series before age 7 months	
Pneumococcal[6]	6 weeks	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 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 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[7]	6 weeks	4 weeks[7]	4 weeks[7]	6 months[7] minimum age 4 years for final dose	
Meningococcal[13]	6 weeks	8 weeks[13]	See footnote 13	See footnote 13	
Measles, mumps, rubella[9]	12 months	4 weeks			
Varicella[10]	12 months	3 months			
Hepatitis A[11]	12 months	6 months			
Persons aged 7 through 18 years					
Tetanus, diphtheria; tetanus, diphtheria, & acellular pertussis[4]	7 years[4]	4 weeks	4 weeks if first dose of DTaP/DT administered at younger than age 12 months 6 months if first dose of DTaP/DT administered at age 12 months or older and then no further doses needed for catch-up	6 months if first dose of DTaP/DT administered at younger than age 12 months	
Human papillomavirus[12]	9 years	Routine dosing intervals are recommended[12]			
Hepatitis A[11]	12 months	6 months			
Hepatitis B[1]	Birth	4 weeks	8 weeks (and at least 16 weeks after first dose)		
Inactivated poliovirus[7]	6 weeks	4 weeks	4 weeks[7]	6 months[7]	
Meningococcal[13]	6 weeks	8 weeks[13]			
Measles, mumps, rubella[9]	12 months	4 weeks			
Varicella[10]	12 months	3 months if person is younger than age 13 years 4 weeks if person is aged 13 years or older			

NOTE: The above recommendations must be read along with the footnotes of this schedule.

Footnotes — Recommended immunization schedule for persons aged 0 through 18 years—United States, 2014

For further guidance on the use of the vaccines mentioned below, see: http://www.cdc.gov/vaccines/hcp/acip-recs/index.html.
For vaccine recommendations for persons 19 years of age and older, see the adult immunization schedule.

Additional information

- For contraindications and precautions to use of a vaccine and for additional information regarding that vaccine, vaccination providers should consult the relevant ACIP statement available online at http://www.cdc.gov/vaccines/hcp/acip-recs/index.html.
- For purposes of calculating intervals between doses, 4 weeks = 28 days. Intervals of 4 months or greater are determined by calendar months.
- Vaccine doses administered 4 days or less before the minimum interval are considered valid. Doses of any vaccine administered ≥5 days earlier than the minimum interval or minimum age should not be counted as valid doses and should be repeated as age-appropriate. The repeat dose should be spaced after the invalid dose by the recommended minimum interval. For further details, see *MMWR, General Recommendations on Immunization and Reports* / Vol. 60 / No. 2; Table 1. *Recommended and minimum ages and intervals between vaccine doses* available online at http://www.cdc.gov/mmwr/pdf/rr/rr6002.pdf.
- Information on travel vaccine requirements and recommendations is available at http://wwwnc.cdc.gov/travel/destinations/list.
- For vaccination of persons with primary and secondary immunodeficiencies, see Table 13, "*Vaccination of persons with primary and secondary immunodeficiencies*," in General Recommendations on Immunization (ACIP), available at http://www.cdc.gov/mmwr/pdf/rr/rr6002.pdf; and American Academy of Pediatrics. Immunization in Special Clinical Circumstances, in Pickering LK, Baker CJ, Kimberlin DW, Long SS eds. *Red Book: 2012 report of the Committee on Infectious Diseases. 29th ed.* Elk Grove Village, IL: American Academy of Pediatrics.

1. Hepatitis B (HepB) vaccine. (Minimum age: birth)
Routine vaccination:
At birth:
- Administer monovalent HepB vaccine to all newborns before hospital discharge.
- For infants born to hepatitis B surface antigen (HBsAg)-positive mothers, administer HepB vaccine and 0.5 mL of hepatitis B immune globulin (HBIG) within 12 hours of birth. These infants should be tested for HBsAg and antibody to HBsAg (anti-HBs) 1 to 2 months after completion of the HepB series, at age 9 through 18 months (preferably at the next well-child visit).
- If mother's HBsAg status is unknown, within 12 hours of birth administer HepB vaccine regardless of birth weight. For infants weighing less than 2,000 grams, administer HBIG in addition to HepB vaccine within 12 hours of birth. Determine mother's HBsAg status as soon as possible and, if mother is HBsAg-positive, also administer HBIG for infants weighing 2,000 grams or more as soon as possible, but no later than age 7 days.

Doses following the birth dose:
- The second dose should be administered at age 1 or 2 months. Monovalent HepB vaccine should be used for doses administered before age 6 weeks.
- Infants who did not receive a birth dose should receive 3 doses of a HepB-containing vaccine on a schedule of 0, 1 to 2 months, and 6 months starting as soon as feasible. See Figure 2.
- Administer the second dose 1 to 2 months after the first dose (minimum interval of 4 weeks), administer the third dose at least 8 weeks after the second dose AND at least 16 weeks after the **first** dose. The final (third or fourth) dose in the HepB vaccine series should be administered no earlier than age 24 weeks.
- Administration of a total of 4 doses of HepB vaccine is permitted when a combination vaccine containing HepB is administered after the birth dose.

Catch-up vaccination:
- Unvaccinated persons should complete a 3-dose series.
- A 2-dose series (doses separated by at least 4 months) of adult formulation Recombivax HB is licensed for use in children aged 11 through 15 years.
- For other catch-up guidance, see Figure 2.

2. Rotavirus (RV) vaccines. (Minimum age: 6 weeks for both RV1 [Rotarix] and RV5 [RotaTeq])
Routine vaccination:
Administer a series of RV vaccine to all infants as follows:
1. If Rotarix is used, administer a 2-dose series at 2 and 4 months of age.
2. If RotaTeq is used, administer a 3-dose series at ages 2, 4, and 6 months.
3. If any dose in the series was RotaTeq or vaccine product is unknown for any dose in the series, a total of 3 doses of RV vaccine should be administered.

Catch-up vaccination:
- The maximum age for the first dose in the series 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.
- For other catch-up guidance, see Figure 2.

3. Diphtheria and tetanus toxoids and acellular pertussis (DTaP) vaccine. (Minimum age: 6 weeks. Exception: DTaP-IPV [Kinrix]: 4 years)
Routine vaccination:
- Administer a 5-dose series of DTaP vaccine at ages 2, 4, 6, 15 through 18 months, and 4 through 6 years. The fourth dose may be administered as early as age 12 months, provided at least 6 months have elapsed since the third dose.

Catch-up vaccination:
- The fifth dose of DTaP vaccine is not necessary if the fourth dose was administered at age 4 years or older.
- For other catch-up guidance, see Figure 2.

4. Tetanus and diphtheria toxoids and acellular pertussis (Tdap) vaccine. (Minimum age: 10 years for Boostrix, 11 years for Adacel)
Routine vaccination:
- Administer 1 dose of Tdap vaccine to all adolescents aged 11 through 12 years.
- Tdap may be administered regardless of the interval since the last tetanus and diphtheria toxoid-containing vaccine.
- Administer 1 dose of Tdap vaccine to pregnant adolescents during each pregnancy (preferred during 27 through 36 weeks gestation) regardless of time since prior Td or Tdap vaccination.

Catch-up vaccination:
- Persons aged 7 years and older who are not fully immunized with DTaP vaccine should receive Tdap vaccine as 1 (preferably the first) dose in the catch-up series; if additional doses are needed, use Td vaccine. For children 7 through 10 years who receive a dose of Tdap as part of the catch-up series, an adolescent Tdap vaccine dose at age 11 through 12 years should NOT be administered. Td should be administered instead 10 years after the Tdap dose.
- Persons aged 11 through 18 years who have not received Tdap vaccine should receive a dose followed by tetanus and diphtheria toxoids (Td) booster doses every 10 years thereafter.
- Inadvertent doses of DTaP vaccine:
  - If administered inadvertently to a child aged 7 through 10 years may count as part of the catch-up series. This dose may count as the adolescent Tdap dose, or the child can later receive a Tdap booster dose at age 11 through 12 years.
  - If administered inadvertently to an adolescent aged 11 through 18 years, the dose should be counted as the adolescent Tdap booster.
- For other catch-up guidance, see Figure 2.

5. *Haemophilus influenzae* type b (Hib) conjugate vaccine. (Minimum age: 6 weeks for PRP-T [ACTHIB, DTaP-IPV/Hib (Pentacel) and Hib-MenCY (MenHibrix)], PRP-OMP [PedvaxHIB or COMVAX], 12 months for PRP-T [Hiberix])
Routine vaccination:
- Administer a 2- or 3-dose Hib vaccine primary series and a booster dose (dose 3 or 4 depending on vaccine used in primary series) at age 12 through 15 months to complete a full Hib vaccine series.
- The primary series with ActHIB, MenHibrix, or Pentacel consists of 3 doses and should be administered at 2, 4, and 6 months of age. The primary series with PedvaxHib or COMVAX consists of 2 doses and should be administered at 2 and 4 months of age; a dose at age 6 months is not indicated.
- One booster dose (dose 3 or 4 depending on vaccine used in primary series) of any Hib vaccine should be administered at age 12 through 15 months. An exception is Hiberix vaccine. Hiberix should only be used for the booster (final) dose in children aged 12 months through 4 years who have received at least 1 prior dose of Hib-containing vaccine.

For further guidance on the use of the vaccines mentioned below, see: http://www.cdc.gov/vaccines/hcp/acip-recs/index.html.

5. ***Haemophilus influenzae*** **type b (Hib) conjugate vaccine (cont'd)**
   - For recommendations on the use of MenHibrix in patients at increased risk for meningococcal disease, please refer to the meningococcal vaccine footnotes and also to *MMWR* March 22, 2013; 62(RR02):1-22, available at http://www.cdc.gov/mmwr/pdf/rr/rr6202.pdf.

   Catch-up vaccination:
   - If dose 1 was administered at ages 12 through 14 months, administer a second (final) dose at least 8 weeks after dose 1, regardless of Hib vaccine used in the primary series.
   - If the first 2 doses were PRP-OMP (PedvaxHIB or COMVAX), and were 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 third (and final) dose at age 12 through 15 months or 8 weeks after second dose, whichever is later, regardless of Hib vaccine used for first dose.
   - If first dose is administered at younger than 12 months of age and second dose is given between 12 through 14 months of age, a third (and final) dose should be given 8 weeks later.
   - For unvaccinated children aged 15 months or older, administer only 1 dose.
   - For other catch-up guidance, see Figure 2. For catch-up guidance related to MenHibrix, please see the meningococcal vaccine footnotes and also *MMWR* March 22, 2013; 62(RR02):1-22, available at http://www.cdc.gov/mmwr/pdf/rr/rr6202.pdf.

   Vaccination of persons with high-risk conditions:
   - Children aged 12 through 59 months who are at increased risk for Hib disease, including chemotherapy recipients and those with anatomic or functional asplenia (including sickle cell disease), human immunodeficiency virus (HIV) infection, immunoglobulin deficiency, or early component complement deficiency, who have received either no doses or only 1 dose of Hib vaccine before 12 months of age, should receive 2 additional doses of Hib vaccine 8 weeks apart; children who received 2 or more doses of Hib vaccine before 12 months of age should receive 1 additional dose.
   - For patients younger than 5 years of age undergoing chemotherapy or radiation treatment who received a Hib vaccine dose(s) within 14 days of starting therapy or during therapy, repeat the dose(s) at least 3 months following therapy completion.
   - Recipients of hematopoietic stem cell transplant (HSCT) should be revaccinated with a 3-dose regimen of Hib vaccine starting 6 to 12 months after successful transplant, regardless of vaccination history; doses should be administered at least 4 weeks apart.
   - A single dose of any Hib-containing vaccine should be administered to unimmunized* children and adolescents 15 months of age and older undergoing an elective splenectomy; if possible, vaccine should be administered at least 14 days before procedure.
   - Hib vaccine is not routinely recommended for patients 5 years or older. However, 1 dose of Hib vaccine should be administered to unimmunized* persons aged 5 years or older who have anatomic or functional asplenia (including sickle cell disease) and unvaccinated persons 5 through 18 years of age with human immunodeficiency virus (HIV) infection.

   ** Patients who have not received a primary series and booster dose or at least 1 dose of Hib vaccine after 14 months of age are considered unimmunized.*

6. **Pneumococcal vaccines. (Minimum age: 6 weeks for PCV13, 2 years for PPSV23)**

   Routine vaccination with PCV13:
   - Administer a 4-dose series of PCV13 vaccine at ages 2, 4, and 6 months and at age 12 through 15 months.
   - For children aged 14 through 59 months who have received an age-appropriate series of 7-valent PCV (PCV7), administer a single supplemental dose of 13-valent PCV (PCV13).

   Catch-up vaccination with PCV13:
   - Administer 1 dose of PCV13 to all healthy children aged 24 through 59 months who are not completely vaccinated for their age.
   - For other catch-up guidance, see Figure 2.

   Vaccination of persons with high-risk conditions with PCV13 and PPSV23:
   - All recommended PCV13 doses should be administered prior to PPSV23 vaccination if possible.
   - For children 2 through 5 years of age with any of the following conditions: chronic heart disease (particularly cyanotic congenital heart disease and cardiac failure); chronic lung disease (including asthma if treated with high-dose oral corticosteroid therapy); diabetes mellitus; cerebrospinal fluid leak; cochlear implant; sickle cell disease and other hemoglobinopathies; anatomic or functional asplenia; HIV infection; chronic renal failure; nephrotic syndrome; diseases associated with treatment with immunosuppressive drugs or radiation therapy, including malignant neoplasms, leukemias, lymphomas, and Hodgkin disease; solid organ transplantation; or congenital immunodeficiency:
     1. Administer 1 dose of PCV13 if 3 doses of PCV (PCV7 and/or PCV13) were received previously.
     2. Administer 2 doses of PCV13 at least 8 weeks apart if fewer than 3 doses of PCV (PCV7 and/or PCV13) were received previously.

6. **Pneumococcal vaccines (cont'd)**
     3. Administer 1 supplemental dose of PCV13 if 4 doses of PCV7 or other age-appropriate complete PCV7 series was received previously.
     4. The minimum interval between doses of PCV (PCV7 or PCV13) is 8 weeks.
     5. For children with no history of PPSV23 vaccination, administer PPSV23 at least 8 weeks after the most recent dose of PCV13.
   - For children aged 6 through 18 years who have cerebrospinal fluid leak; cochlear implant; sickle cell disease and other hemoglobinopathies; anatomic or functional asplenia; congenital or acquired immunodeficiencies; HIV infection; chronic renal failure; nephrotic syndrome; diseases associated with treatment with immunosuppressive drugs or radiation therapy, including malignant neoplasms, leukemias, lymphomas, and Hodgkin disease; generalized malignancy; solid organ transplantation; or multiple myeloma:
     1. If neither PCV13 nor PPSV23 has been received previously, administer 1 dose of PCV13 now and 1 dose of PPSV23 at least 8 weeks later.
     2. If PCV13 has been received previously but PPSV23 has not, administer 1 dose of PPSV23 at least 8 weeks after the most recent dose of PCV13.
     3. If PPSV23 has been received but PCV13 has not, administer 1 dose of PCV13 at least 8 weeks after the most recent dose of PPSV23.
   - For children aged 6 through 18 years with chronic heart disease (particularly cyanotic congenital heart disease and cardiac failure), chronic lung disease (including asthma if treated with high-dose oral corticosteroid therapy), diabetes mellitus, alcoholism, or chronic liver disease, who have not received PPSV23, administer 1 dose of PPSV23. If PCV13 has been received previously, then PPSV23 should be administered at least 8 weeks after any prior PCV13 dose.
   - A single revaccination with PPSV23 should be administered 5 years after the first dose to children with sickle cell disease or other hemoglobinopathies; anatomic or functional asplenia; congenital or acquired immunodeficiencies; HIV infection; chronic renal failure; nephrotic syndrome; diseases associated with treatment with immunosuppressive drugs or radiation therapy, including malignant neoplasms, leukemias, lymphomas, and Hodgkin disease; generalized malignancy; solid organ transplantation; or multiple myeloma.

7. **Inactivated poliovirus vaccine (IPV). (Minimum age: 6 weeks)**

   Routine vaccination:
   - Administer a 4-dose series of IPV at ages 2, 4, 6 through 18 months, and 4 through 6 years. The final dose in the series should be administered on or after the fourth birthday and at least 6 months after the previous dose.

   Catch-up vaccination:
   - 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).
   - If 4 or more doses are administered before age 4 years, an additional dose should be administered at age 4 through 6 years and at least 6 months after 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 after 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. IPV is not routinely recommended for U.S. residents aged 18 years or older.
   - For other catch-up guidance, see Figure 2.

8. **Influenza vaccines. (Minimum age: 6 months for inactivated influenza vaccine [IIV], 2 years for live, attenuated influenza vaccine [LAIV])**

   Routine vaccination:
   - Administer influenza vaccine annually to all children beginning at age 6 months. For most healthy, nonpregnant persons aged 2 through 49 years, either LAIV or IIV may be used. However, LAIV should NOT be administered to some persons, including 1) those with asthma, 2) children 2 through 4 years who had wheezing in the past 12 months, or 3) those who have any other underlying medical conditions that predispose them to influenza complications. For all other contraindications to use of LAIV, see *MMWR* 2013; 62 (No. RR-7):1-43, available at http://www.cdc.gov/mmwr/pdf/rr/rr6207.pdf.

   For children aged 6 months through 8 years:
   - For the 2013–14 season, administer 2 doses (separated by at least 4 weeks) to children who are receiving influenza vaccine for the first time. Some children in this age group who have been vaccinated previously will also need 2 doses. For additional guidance, follow dosing guidelines in the 2013-14 ACIP influenza vaccine recommendations, *MMWR* 2013; 62 (No. RR-7):1-43, available at http://www.cdc.gov/mmwr/pdf/rr/rr6207.pdf.
   - For the 2014–15 season, follow dosing guidelines in the 2014 ACIP influenza vaccine recommendations.

   For persons aged 9 years and older:
   - Administer 1 dose.

For further guidance on the use of the vaccines mentioned below, see: http://www.cdc.gov/vaccines/hcp/acip-recs/index.html.

9. Measles, mumps, and rubella (MMR) vaccine. (Minimum age: 12 months for routine vaccination)

Routine vaccination:

- Administer a 2-dose series of MMR vaccine at ages 12 through 15 months and 4 through 6 years. The second dose may be administered before age 4 years, provided at least 4 weeks have elapsed since the first dose.
- Administer 1 dose of MMR vaccine to infants aged 6 through 11 months before departure from the United States for international travel. These children should be revaccinated with 2 doses of MMR vaccine, the first at age 12 through 15 months (12 months if the child remains in an area where disease risk is high), and the second dose at least 4 weeks later.
- Administer 2 doses of MMR vaccine to children aged 12 months and older before departure from the United States for international travel. The first dose should be administered on or after age 12 months and the second dose at least 4 weeks later.

Catch-up vaccination:

- Ensure that all school-aged children and adolescents have had 2 doses of MMR vaccine; the minimum interval between the 2 doses is 4 weeks.

10. Varicella (VAR) vaccine. (Minimum age: 12 months)

Routine vaccination:

- Administer a 2-dose series of VAR vaccine at ages 12 through 15 months and 4 through 6 years. The second dose may be administered before age 4 years, provided at least 3 months have elapsed since the first dose. If the second dose was administered at least 4 weeks after the first dose, it can be accepted as valid.

Catch-up vaccination:

- Ensure that all persons aged 7 through 18 years without evidence of immunity (see *MMWR* 2007; 56 [No. RR-4], available at http://www.cdc.gov/mmwr/pdf/rr/rr5604.pdf) have 2 doses of varicella vaccine. For children aged 7 through 12 years, the recommended minimum interval between doses is 3 months (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.

11. Hepatitis A (HepA) vaccine. (Minimum age: 12 months)

Routine vaccination:

- Initiate the 2-dose HepA vaccine series at 12 through 23 months; separate the 2 doses by 6 to 18 months.
- Children who have received 1 dose of HepA vaccine before age 24 months should receive a second dose 6 to 18 months after the first dose.
- For any person aged 2 years and older who has not already received the HepA vaccine series, 2 doses of HepA vaccine separated by 6 to 18 months may be administered if immunity against hepatitis A virus infection is desired.

Catch-up vaccination:

- The minimum interval between the two doses is 6 months.

Special populations:

- Administer 2 doses of HepA vaccine at least 6 months apart to previously unvaccinated persons who live in areas where vaccination programs target older children, or who are at increased risk for infection. This includes persons traveling to or working in countries that have high or intermediate endemicity of infection; men having sex with men; users of injection and non-injection illicit drugs; persons who work with HAV-infected primates or with HAV in a research laboratory; persons with clotting-factor disorders; persons with chronic liver disease; and 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. The first dose should be administered as soon as the adoption is planned, ideally 2 or more weeks before the arrival of the adoptee.

12. Human papillomavirus (HPV) vaccines. (Minimum age: 9 years for HPV2 [Cervarix] and HPV4 [Gardasil])

Routine vaccination:

- Administer a 3-dose series of HPV vaccine on a schedule of 0, 1-2, and 6 months to all adolescents aged 11 through 12 years. Either HPV4 or HPV2 may be used for females, and only HPV4 may be used for males.
- The vaccine series may be started at age 9 years.
- Administer the second dose 1 to 2 months after the first dose (minimum interval of 4 weeks), administer the third dose 24 weeks after the first dose and 16 weeks after the second dose (minimum interval of 12 weeks).

Catch-up vaccination:

- Administer the vaccine series to females (either HPV2 or HPV4) and males (HPV4) at age 13 through 18 years if not previously vaccinated.
- Use recommended routine dosing intervals (see above) for vaccine series catch-up.

13. Meningococcal conjugate vaccines. (Minimum age: 6 weeks for Hib-MenCY [MenHibrix], 9 months for MenACWY-D [Menactra], 2 months for MenACWY-CRM [Menveo])

Routine vaccination:

- Administer a single dose of Menactra or Menveo vaccine at age 11 through 12 years, with a booster dose at age 16 years.
- Adolescents aged 11 through 18 years with human immunodeficiency virus (HIV) infection should receive a 2-dose primary series of Menactra or Menveo with at least 8 weeks between doses.
- For children aged 2 months through 18 years with high-risk conditions, see below.

Catch-up vaccination:

- Administer Menactra or Menveo vaccine at age 13 through 18 years if not previously vaccinated.
- If the first dose is administered at age 13 through 15 years, a booster dose should be administered at age 16 through 18 years with a minimum interval of at least 8 weeks between doses.
- If the first dose is administered at age 16 years or older, a booster dose is not needed.
- For other catch-up guidance, see Figure 2.

Vaccination of persons with high-risk conditions and other persons at increased risk of disease:

- Children with anatomic or functional asplenia (including sickle cell disease):
  1. For children younger than 19 months of age, administer a 4-dose infant series of MenHibrix or Menveo at 2, 4, 6, and 12 through 15 months of age.
  2. For children aged 19 through 23 months who have not completed a series of MenHibrix or Menveo, administer 2 primary doses of Menveo at least 3 months apart.
  3. For children aged 24 months and older who have not received a complete series of MenHibrix or Menveo or Menactra, administer 2 primary doses of either Menactra or Menveo at least 2 months apart. If Menactra is administered to a child with asplenia (including sickle cell disease), do not administer Menactra until 2 years of age and at least 4 weeks after the completion of all PCV13 doses.
- Children with persistent complement component deficiency:
  1. For children younger than 19 months of age, administer a 4-dose infant series of either MenHibrix or Menveo at 2, 4, 6, and 12 through 15 months of age.
  2. For children 7 through 23 months who have not initiated vaccination, two options exist depending on age and vaccine brand:
     a. For children who initiate vaccination with Menveo at 7 months through 23 months of age, a 2-dose series should be administered with the second dose after 12 months of age and at least 3 months after the first dose.
     b. For children who initiate vaccination with Menactra at 9 months through 23 months of age, a 2-dose series of Menactra should be administered at least 3 months apart.
     c. For children aged 24 months and older who have not received a complete series of MenHibrix, Menveo, or Menactra, administer 2 primary doses of either Menactra or Menveo at least 2 months apart.
- For children who travel to or reside in countries in which meningococcal disease is hyperendemic or epidemic, including countries in the African meningitis belt or the Hajj, administer an age-appropriate formulation and series of Menactra or Menveo for protection against serogroups A and W meningococcal disease. Prior receipt of MenHibrix is not sufficient for children traveling to the meningitis belt or the Hajj because it does not contain serogroups A or W.
- For children at risk during a community outbreak attributable to a vaccine serogroup, administer or complete an age- and formulation-appropriate series of MenHibrix, Menactra, or Menveo.
- For booster doses among persons with high-risk conditions, refer to *MMWR* 2013; 62(RR02);1-22, available at http://www.cdc.gov/mmwr/preview/mmwrhtml/rr6202a1.htm.

Catch-up recommendations for persons with high-risk conditions:

1. If MenHibrix is administered to achieve protection against meningococcal disease, a complete age-appropriate series of MenHibrix should be administered.
2. If the first dose of MenHibrix is given at or after 12 months of age, a total of 2 doses should be given at least 8 weeks apart to ensure protection against serogroups C and Y meningococcal disease.
3. For children who initiate vaccination with Menveo at 7 months through 9 months of age, a 2-dose series should be administered with the second dose after 12 months of age and at least 3 months after the first dose.
4. For other catch-up recommendations for these persons, refer to *MMWR* 2013; 62(RR02);1-22, available at http://www.cdc.gov/mmwr/preview/mmwrhtml/rr6202a1.htm.

For complete information on use of meningococcal vaccines, including guidance related to vaccination of persons at increased risk of infection, see *MMWR* March 22, 2013; 62 (RR02);1-22, available at http://www.cdc.gov/mmwr/pdf/rr/rr6202.pdf.

Recommended and Minimum Ages and Intervals Between 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
Hepatitis B (HepB)-1[3]	Birth	Birth	1-4 months	4 weeks
HepB-2	1-2 months	4 weeks	2-17 months	8 weeks
HepB-3[4]	6-18 months	24 weeks	—	—
Diphtheria-tetanus-acellular pertussis (DTaP)-1[3]	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[5,6]
DTaP-4	15-18 months	12 months	3 years	6 months[5]
DTaP-5	4-6 years	4 years	—	—
Haemophilus influenzae type b (Hib)-1[3,7]	2 months	6 weeks	2 months	4 weeks
Hib-2	4 months	10 weeks	2 months	4 weeks
Hib-3[8]	6 months	14 weeks	6-9 months	8 weeks
Hib-4	12-15 months	12 months	—	—
Inactivated poliovirus (IPV)-1[3]	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[9]	4-6 years	4 years	—	—
Pneumococcal conjugate (PCV)-1[7]	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	—	—
Measles-mumps-rubella (MMR)-1[10]	12-15 months	12 months	3-5 years	4 weeks
MMR-2[10]	4-6 years	13 months	—	—
Varicella (Var)-1[10]	12-15 months	12 months	3-5 years	12 weeks[11]
Var-2[10]	4-6 years	15 months	—	—
Hepatitis A (HepA)-1	12-23 months	12 months	6-18 months[5]	6 months[5]
HepA-2	≥18 months	18 months	—	—
Influenza, inactivated (TIV)[12]	≥6 months	6 months[13]	1 month	4 weeks
Influenza, live attenuated (LAIV)[12]	2-49 years	2 years	1 month	4 weeks
Meningococcal conjugate (MCV4)-1[14]	11-12 years	2 years	4-5 years	8 weeks
MCV4-2	16 years	11 years (+ 8 weeks)	—	—
Meningococcal polysaccharide (MPSV4)-1[14]	—	2 years[15]	5 years	5 years
MPSV4-2	—	7 years	—	—
Tetanus-diphtheria (Td)	11-12 years	7 years	10 years	5 years
Tetanus-diphtheria-acellular pertussis (Tdap)[16]	≥11 years	7 years	—	—
Pneumococcal polysaccharide (PPSV)-1	—	2 years	5 years	5 years
PPSV-2[17]	—	7 years	—	—
Human papillomavirus (HPV)-1[18]	11-12 years	9 years	2 months	4 weeks
HPV-2	11-12 years (+ 2 months)	9 years (+ 4 weeks)	4 months	12 weeks[19]
HPV-3[19]	11-12 years (+ 6 months)	9 years (+24 weeks)	—	—
Rotavirus (RV)-1[21]	2 months	6 weeks	2 months	4 weeks
RV-2	4 months	10 weeks	2 months	4 weeks
RV-3[21]	6 months	14 weeks	—	—
Herpes zoster[22]	≥60 years	60 years	—	—

1 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.

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

3 Combination vaccines containing a hepatitis B component (Comvax, Pediarix, and Twinrix) are available. These vaccines should not be administered to infants younger than 6 weeks because of the other components (i.e., Hib, DTaP, HepA, and IPV).

4 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.

5 Calendar months.

6 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.

7 Children receiving the first dose of Hib or PCV vaccine at age 7 months or older require fewer doses to complete the series.

8 If PRP-OMP (Pedvax-Hib) was administered at ages 2 and 4 months, a dose at age 6 months is not required.

9 A fourth dose is not needed if the third dose was administered on or after the 4th birthday and at least 6 months after the previous dose.

10 Combination measles-mumps-rubella-varicella (MMRV) vaccine can be used for children aged 12 months through 12 years. (See CDC. General recommendations on Immunization: recommendations of the ACIP. *MMWR* 2011;60[No. RR-2],7.)

11 For persons beginning the series on or after the 13th birthday, the minimum interval from varicella-1 to varicella-2 is 4 weeks.

12 One dose of influenza vaccine per season is recommended for most people. Children younger than 9 years of age who are receiving influenza vaccine for the first time should receive 2 doses this season. See current influenza recommendations for other factors affecting the decision to administer one vs. two doses to children younger than 9 years.

13 The minimum age for inactivated influenza vaccine varies by vaccine manufacturer and formulation. See package inserts for vaccine-specific minimum ages.

14 Revaccination with meningococcal vaccine is recommended for previously vaccinated persons who remain at high risk for meningococcal disease. (See CDC. Updated recommendations from the ACIP for vaccination of persons at prolonged increased risk for meningococcal disease. *MMWR* 2009;58:[1042-3])

15 Menactra may be given as young as 9 months for high-risk children.

16 Only one dose of Tdap is recommended. Subsequent doses should be given as Td. For one brand of Tdap (Adacel), the minimum age is 11 years. For management of a tetanus-prone wound in a person who has received a primary series of a tetanus-toxoid containing vaccine, there is no minimum interval between a previous dose of any tetanus-containing vaccine and Tdap.

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

18 Bivalent HPV vaccine (Cervarix) is approved for females 10 through 25 years of age. Quadravalent HPV vaccine (Gardasil) is approved for males and females 9 through 26 years of age.

19 The minimum age for HPV-3 is based on the baseline minimum age for the first dose (108 months) and the minimum interval of 24 weeks between the first and third doses. Dose 3 need not be repeated if it is given at least 16 weeks after the first dose (and if the intervals between doses 1 and 2 and doses 2 and 3 are maintained at 4 weeks and 12 weeks, respectively).

20 The first dose of rotavirus must be administered between 6 weeks 0 days and 14 weeks 6 days. The vaccine series should not be started after age 15 weeks 0 days. Rotavirus should not be administered to children older than 8 months 0 days, regardless of the number of doses received before that age.

21 If two doses of Rotarix are administered as age appropriate, a third dose is not necessary.

22 Herpes zoster vaccine is recommended as a single dose for persons 60 years of age and older.

Adapted from Table 1, ACIP General Recommendations on Immunization. February 2012

Source: http://www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/A/age-interval-table.pdf

Summary of Recommendations for Child/Teen Immunization *(Age 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 low birth weight (less than 2000 grams), also give HBIG within 12hrs. For infants weighing 2000 grams or more whose mother is subsequently found to be HBsAg positive, give the infant HBIG ASAP (no later than 7d of birth) and follow HepB immunization 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. **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. **Precautions** • Moderate or severe acute illness. • For infants who weigh less than 2000 grams, see ACIP recs.*
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; use Tdap or Td. • 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 not attributable to an identifiable cause, within 7d after DTP/DTaP/Tdap. **Precautions** • Moderate or severe acute illness. • History of arthus reaction following a prior dose of tetanus or diphtheria toxoid-containing vaccine; defer vaccination until at least 10yrs have elapsed since the last tetanus toxoid-containing vaccine. • 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) seizure within 3d. • For DTaP/Tdap only: Progressive or unstable neurologic disorder, uncontrolled seizures, or progressive encephalopathy until a treatment regimen has been established and the condition has stabilized.
Tdap, Td (Tetanus, diphtheria, acellular pertussis) *Give IM*	• For children and teens lacking previous Tdap: give Tdap routinely at age 11–12yrs and vaccinate older teens on a catch-up basis; then boost every 10yrs with Td. • Make special efforts to give Tdap to children and teens who are 1) in contact with infants younger than age 12m and 2) healthcare workers with direct patient contact. • Give Tdap to pregnant adolescents during each pregnancy (preferred during 27–36 weeks' gestation), regardless of number of years since prior Td or Tdap.	• 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 Tdap for any dose in the series, preferably as dose #1. • Tdap should be given regardless of interval since previous Td.	
Inactivated 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 these recommendations, 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.

Technical content reviewed by the Centers for Disease Control and Prevention

www.immunize.org/catg.d/p2010.pdf • Item #P2010(5/13)

Immunization Action Coalition • 1573 Selby Avenue • Saint Paul, MN 55104 • (651) 647-9009 • www.immunize.org • www.vaccineinformation.org • admin@immunize.org

Summary of Recommendations for Child/Teen Immunization *(Age 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)
Influenza Inactivated influenza vaccine (IIV) *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, spaced 4wks apart, to children age 6m through 8yrs who 1) are first-time vaccinees or 2) who meet any of the additional guidance in the current year's ACIP influenza vaccine recommendations*. •For IIV, 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, including egg protein. •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. For children/teens who experience only hives with exposure to eggs, give IIV with additional safety precautions as found in the 2012 ACIP influenza recommendations, pages 613–618.* **Precautions** •Moderate or severe acute illness. •History of Guillain-Barré syndrome (GBS) within 6wks of a previous influenza vaccination. •For LAIV only: 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. If the 2nd dose was given at least 4wks after 1st dose, it can be accepted as valid. •Give a 2nd dose to all older children/teens 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 be used for the first doses in this age group.	•If younger than age 13yrs, space dose #1 and #2 at least 3m apart. If age 13yrs and 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 immunodeficiency, including HIV/AIDS (although vaccination may be considered if CD4+ T-lymphocyte percentages are either 15% or greater in children age 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's *General Recommendations on Immunization** regarding time to wait before vaccinating. •Receipt of specific antivirals (i.e., acyclovir, famciclovir, or valacyclovir) 24hrs before vaccination, if possible; delay resumption of these antiviral drugs for 14d after vaccination. •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 MMR at age 6 through 11m if traveling internationally; revaccinate with 2 doses of MMR at age 12–15m (and at least 4wks later). The dose given at younger than 12m does not count toward the 2-dose series. •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*). Vaccination is recommended if indicated for 1) children age 12m through 5yrs whose CD4+ T-lymphocyte percentage has been greater than 15% for at least 6m or 2) for children age 6yrs and older whose CD4+ T-lymphocyte counts have been 200 cells/µL or greater for at least 6m. **Precautions** •Moderate or severe acute illness. •If blood, plasma, or immune globulin given in past 11m, see ACIP's *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. •Need for tuberculin skin testing (TST). If TST needed, give TST before or on same day as MMR, or give TST 4wks following MMR.

Summary of Recommendations for Child/Teen Immunization *(Age 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: give at ages 2m, 4m, 6m, 12–15m (booster dose). • PedvaxHIB or Comvax: give at ages 2m, 4m, 12–15m (booster dose). • Dose #1 of Hib vaccine should not be given earlier than age 6wks. • Give final dose (booster dose) of any Hib vaccine 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 is necessary to complete the primary series in infants. • Give 1 dose of Hib vaccine to unvaccinated or partially vaccinated children age 5yrs and older who have leukemia, malignant neoplasms, anatomic or functional asplenia (including sickle cell disease), HIV infection, or other immunocompromising condition. • Hib is not routinely given to healthy children age 5yrs and older. • Hiberix is approved ONLY for the booster dose at age 12m through 4yrs.	**All Hib vaccines:** • If #1 was given at age 12–14m, give booster in 8wks. • Give only 1 dose to unvaccinated children age 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. Recipients of hematopoietic stem cell transplant should receive 3 doses of Hib vaccine at least 4wks apart beginning 6–12m after transplant, regardless of Hib vaccination history.	**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*	• Give at ages 2m, 4m, 6m, 12–15m (booster dose). • Dose #1 may be given as early as age 6wks. • When children are behind on PCV13 schedule, minimum interval between doses given to children younger than age 12m is 4wks; for doses given at 12m and older, it is 8wks. • 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 supplemental dose of PCV13 at least 8wks after the most recent dose. • For high-risk** children age 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 of PCV13, 4wks apart, with a 3rd dose at age 12–15m; if history of 1 or 2 doses, give 1 dose of PCV13 with a 2nd dose at age 12–15m at least 8wks later. • For age 12–23m: If unvaccinated or history of 1 dose before age 12m, give 2 doses of PCV13 8wks apart; if history of 1 dose at or after age 12m or 2 or 3 doses before age 12m, give 1 dose of PCV13 at least 8wks after most recent dose; if history of 4 doses of PCV7 or other age-appropriate complete PCV7 schedule, give 1 supplemental dose of PCV13 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 of PCV13, 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 supplemental dose of PCV13 at least 8wks after the most recent PCV7 dose. • For children age 6 through 18yrs with functional or anatomic asplenia (including sickle cell disease), HIV infection or other immunocompromising condition, cochlear implant, or CSF leak, give 1 dose of PCV13 if no prior history of PCV13.	**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 (PPSV23) *Give IM or SC*	• Give 1 dose at least 8wks after final dose of PCV13 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.
Human papillomavirus (HPV) (HPV2, Cervarix) (HPV4, Gardasil) *Give IM*	• Give 3-dose series of either HPV2 or HPV4 to girls and 3-dose series of HPV4 to boys at age 11–12yrs on a 0, 1–2, 6m schedule. (May be given as early as age 9yrs.) • Give a 3-dose series of either HPV2 or HPV4 to all older girls/women (through age 26yrs) and 3-dose series of HPV4 to all older boys/men (through age 21yrs) who were not previously vaccinated.	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.

Summary of Recommendations for Child/Teen Immunization *(Age 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 ages 2m, 4m. • RotaTeq (RV5): give at ages 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. • History of intussusception. • Diagnosis of severe combined immunodeficiency (SCID). **Precautions** • Moderate or severe acute illness. • Altered immunocompetence other than SCID. • Chronic gastrointestinal disease. • Spina bifida or bladder exstrophy.
Hepatitis A (HepA) *Give IM*	• Give 2 doses spaced 6 to 18m 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 and lack a specific risk factor. - 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. - Use 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 and teens 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. **Precaution** Moderate or severe acute illness.
Meningococcal conjugate, quadrivalent (MCV4) Menactra (MCV4-D) Menveo (MCV4-CRM) *Give IM* —— **Hib-MenCY** *Give IM* —— **Meningococcal polysaccharide** (MPSV4) *Give SC*	• Give quadrivalent MCV (Menactra [MCV4-D] or Menveo [MCV4-CRM]) dose #1 routinely at age 11 through 12yrs and a booster dose at age 16yrs. • Give MCV4 to all unvaccinated teens age 13 through 18yrs; if vaccinated at age 13–15yrs, give booster dose at age 16–18yrs with a minimum interval of at least 8 weeks between doses. • Give 1 initial dose to unvaccinated first-year college students age 19–21yrs who live in residence halls; give booster dose if most recent dose given when younger than age 16yrs. • Give Hib-MenCY (MenHibrix) to children age 2 through 18m with persistent complement component deficiency or anatomic/functional asplenia; give at ages 2, 4, 6, 12–15m • For unvaccinated or partially vaccinated children age 9 through 23m with persistent complement component deficiency, complete a series of 2 doses of MCV4-D at least 12wks apart. • Give either brand of MCV4 to unvaccinated or partially vaccinated children age 24m and older with persistent complement component deficiency or anatomic or functional asplenia; complete a series of 2 doses, 2m apart. If MCV4-D is given, it must be separated by 4wks from the final dose of PCV13. • Give age-appropriate series of MCV (brand must be licensed for age of child) to 1) children age 2m and older at risk during a community outbreak attributable to a vaccine serogroup and 2) children age 9m and older travelling to or living in countries with hyperendemic or epidemic meningococcal disease. Prior receipt of Hib-MenCY is not sufficient for children traveling to the meningitis belt or the Hajj.	• If previously vaccinated with MPSV4 or MCV4 and risk of meningococcal disease persists, revaccinate with MCV4 in 3yrs (if previous dose given when younger than age 7yrs) or in 5yrs (if previous dose given at age 7yrs or older). Then, give additional booster doses every 5yrs if risk continues. • When administering MCV4 to children and teens with HIV infection, give 2 initial doses, separated by 8wks. • Minimum ages for MCV: 6 wks (Hib-MenCY), 9m (MCV4-D), 2yrs (MCV4-CRM).	**Contraindication** Previous anaphylaxis to this vaccine or to any of its components. **Precaution** Moderate or severe acute illness. **Note:** Only use MPSV4 if there is a permanent contraindication or precaution to MCV4.

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 at end of peds section) • 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: • Temperature greater than 105°F (40.5°C) within 48 hours after previous dose • Continuous crying lasting more than 3 hours within 48 hours after previous dose • Previous convulsion within 3 days after DTaP dose • Pale or limp episode or collapse within 48 hours 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/hcp/vis/vis-statements/dtap.html	

***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 recommendation: 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/hcp/vis/vis-statements/td.html		

Tetanus and Diphtheria Toxoids and Acellular Pertussis (Tdap) Vaccine

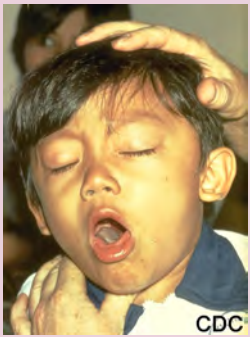
Vaccine Description	• Brands: Boostrix® (ages 10 and older) and Adacel® (ages 11-64) • Inactivated vaccine • The tip cap and the rubber plunger of the needleless prefilled syringes of Boostrix® contain dry natural latex rubber; Adacel is latex free; see package insert for other contents of each vaccine	
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 years and older, with recommendation of giving at 11-12 year visit (see note on pregnancy below)
	• 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
	  • give Tdap to pregnant women during each pregnacy (irregarless of prior Tdap immunization) with optimal timing between 27 and 36 weeks gestation
	• See package insert	

Administration Schedule	**Dose**	**Recommended Interval**
	Single 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 • 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, evaluations in children and adolescents suggested that the safety of intervals as short as 18 months were acceptable
VIS: http://www.cdc.gov/vaccines/hcp/vis/vis-statements/tdap.html Pregnancy registry: Adacel® 1-800-822-2463 (Sanofi Pasteur) or Boostrix® 1-888-825-5249 (GlaxoSmithKline); also notify DHA-IHB	



FACTOID: More than 41,000 cases of pertussis (whooping cough) were provisionally reported across the United States during 2012, including 18 deaths.
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) Note: Havrix® should not be administered into the glutal region due to suboptimal response.	
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/hcp/vis/vis-statements/hep-a.html		


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

Vaccine Description	• 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 in combination vaccines. See the end of this section for a list of combination vaccines.	
Route	• Route: IM (Precaution: hemophilia, thrombocytopenia, and anticoagulation therapy)	
Vaccine	**Age**	**Dose**
Engerix-B®	0-19 years	10 mcg (0.5 mL)
Recombivax HB®	0-19 years	5 mcg (0.5 mL)
	11-15 years	10 mcg (1 mL) - *This is a special dose for this age group and is given on a special schedule on back of card*
Indications	• Birth through 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). Note: it is OK if some babies get 4 doses; the extra dose is not harmful. • **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).	

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 negative, wait until hospital discharge or age 1 month to administer vaccine
  • If mother is HBsAg positive, 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
• Vaccine brands interchangeable for 3-dose schedule</td></tr>
<tr><td colspan="3">VIS: http://www.cdc.gov/vaccines/hcp/vis/vis-statements/hep-b.html</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®)
	  • MenCY + Hib (MenHibrix®)

Indications	• All children 2 months - 5 years, including those born prematurely
	• People older than 5 years 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 months, 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/hcp/vis/vis-statements/hib.html</td></tr>
</table>

Human Papillomavirus (HPV) Vaccine

Vaccine Description	• Brands: Gardasil® and Cervarix® • Inactivated viral vaccine • Contains aluminum and yeast; prefilled syringes may contain latex • See package insert	
Dose & Route	• Dose: 0.5 mL • Route: IM (Precaution: hemophilia, thrombocytopenia, and anticoagulation therapy)	
Indications	• Gardasil®(HPV4): Females 9-26 years of age (routinely given at 11-12 year old visit) and males 9-21 years of age (routinely given at 11-12 year old visit and may be given to males 22-26 years of age) • 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 • People with impaired immunity may not develop adequate protection	
VIS: http://www.cdc.gov/vaccines/hcp/vis/vis-statements/hpv-gardasil.html; http://www.cdc.gov/vaccines/hcp/vis/vis-statements/hpv-cervarix.html Pregnancy monitoring: 1-877-888-4231 (for Gardasil®); 1-888-452-9622 (for Cervarix®); also notify the DHA-IHB		

Inactivated Influenza Vaccine

Note: In the past inactivated influenza vaccine was abbreviated as TIV (trivalent influenza vaccine), but since quadrivalent influenza vaccines are now available the abbreviation was changed to IIV (inactivated influenza vaccine). Trivalent inactivated influenza vaccine is abbreviated as IIV3 and quadrivalent inactivated influenza vaccine as IIV4.

Vaccine Description	• Brands: Afluria®, Fluarix®, Fluarix Quadrivalent®, Fluvirin®, Fluzone® are approved for use in children (check current product insert for approved age ranges) • The tip cap and rubber plunger of needleless prefilled syringes may contain dry natural latex rubber (see package inserts); Thimerosal may be found in multidose vials. Preservative-free forms 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 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 have not received 2 or more doses since July 1, 2010: 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); NOTE: See special considerations for information regarding egg allergy • 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 • Note: healthy, non-pregnant persons 2 through 49 years of age without high risk health conditions can recieve IIV or LAIV • People with a history of egg allergies who have experienced hives only can receive IIV (rather than LAIV) if adminsitered by healthcare provider familar with possible reactions and if observed for at least 30 minutes following vaccine administration • People who report reactions to egg that include symptoms such as angioedema or respiratory distress or who required epinephrine or medical treatment, should be referred to a provider with expertise in allergy management for further assessment • See Storage and Handling Section	
VIS: http://www.cdc.gov/vaccines/hcp/vis/vis-statements/flu.html		

Live Attenuated Influenza Vaccine (FluMist®)

<table>
<tr><td>Vaccine Description</td><td colspan="3">• Brand: FluMist®, FluMist Quadrivalent®
• Live virus, nasally administered influenza vaccine
• Contains egg protein, gelatin, gentamicin. 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">• Healthy non-pregnant persons 2 through 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 did not receive 2 or more doses since July 1, 2010</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 2 or more doses since July 1, 2010</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 (GBS) • 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/hcp/vis/vis-statements/flulive.html	

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: • ***0.25 mL*** (for persons 2 months to <3 years of age): must expel and discard half of the volume of the 0.5 mL pre-filled syringe by pushing the plunger stopper to the edge of the red line on the syringe barrel prior to injection. NOTE: This does not apply to current vaccine that does not have a red line or to future pre-filled 0.25 mL filled syringes. • ***0.5 mL*** (for persons 3 years and older) • Route: IM (IM Precaution: hemophilia, thrombocytopenia, and anticoagulation therapy) • See package insert
Indications	• Individuals 2 months of age and older spending a month or longer in endemic areas (especially rural) during transmission season (determine risk by checking CDC or other travel medicine websites or your local travel clinic)
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	Infants, children and adolescents 2 months to <17 years of age: The safety and immunogenicity of a booster dose has not been evaluated.
Contraindications	• Serious allergic reaction to prior dose of Ixiaro® or other JEV vaccine, vaccine component, or to protamine sulfate • Moderate or severe acute illness - any illness with a fever of more than 100°F (37.8°C) [until illness resolves] • Younger than 2 months of age

Japanese Encephalitis Vaccine *(Continued)*

Precautions	• A bleeding disorder which increases risk of bleeding or bruising and cannot receive injections in the arm • A weakended immune system (e.g., due to a genetic defect or HIV infection) • Pregnancy, planning to become pregnant, or breastfeeding; Ixiaro® has not been studied in pregnant/breastfeeding women; given only if clearly indicated and after discussion with healthcare provider
Special Considerations	• Suspension for injection supplied in 0.5 mL single dose syringes. For children 3 years of age and younger, ½ of the syringe contents are expelled (to the red line) prior to injection. • See Storage and Handling Section
VIS: http://www.cdc.gov/vaccines/hcp/vis/vis-statements/je-ixiaro.html	

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 serological immunity • In the event of an outbreak, local health authorities may recommend for infants 6 to 12 months of age (per the package insert) • All persons aged 6 month or older who plan international travel or living abroad in measles endemic region should be evaluated for recommendations on receipt of vaccine	
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 weeks 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/hcp/vis/vis-statements/mmr.html	

Meningococcal Vaccines

Vaccine Description	• Brands: Menomune®, Menactra®, Menveo®, and MenHibrix® (combination meningococcal and Hib vaccine) • Inactivated, bacterial polysaccharide (MPSV4) - Menomune® • Inactivated, bacterial polysaccharide conjugate (MCV4) - Menactra® and Menveo® and MenHibrix® (Hib-MenCY) - MenHibrix® • 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®, Menveo® and MenHibrix®) (Precaution: hemophilia, thrombocytopenia, and anticoagulation therapy) • See package insert	
Indications	• All children at age 11 to 12 years and unvaccinated adolescents at subsequent visit • College freshmen living in dormitories • Children 2 months and older who: - have functional or anatomic asplenia, including sickle cell disease - have certain immune system disorders (complement component deficiency) • Children older than 9 months who: - are traveling to or living in an endemic area - have been exposed to meningitis during an outbreak • MCV4 is preferred; MenHibrix® is licensed for use in ages 6 weeks - 18 months; Menactra® is licensed for use in ages 9 months - 55 years of age; Menveo® is licensed for use in ages 2 months - 55 years of age • Menomune® is mainly used for those 56 years and older	
Administration Schedule continued on back	**Age**	**Schedule**
	2-6 months at high risk	2, 4, 6, and 12-15 months of age with age appropriate vaccine and booster dose with age appropriate vaccine after 3 years and every 5 years (per ACIP)
	7-23 months of age at high risk	2 doses, 3 months apart with age appropriate vaccine and booster dose after 3 years and every 5 years with age appropriate vaccine

Meningococcal Vaccines *(Continued)*

Administration Schedule (continued)	2-18 years without health risk/ travel risk	1 dose of MCV4, with booster at 16 years if primary dose given at age 12 years or younger; or booster at 16-18 years if primary dose at age 13-18 years
	2-18 years with travel risk	1 dose of MCV4, with booster of age appropriate vaccine every 5 years if risk persists (NOTE: give 2 doses, 2 months apart if person has HIV)
	2-18 years with health risk (asplenia; complement deficiency)	2 dose of MCV4 given 2 months apart, with booster of age appropriate vaccine every 5 years if risk persists
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 months of age (Menveo®), 9 months of age (Menactra®) or 6 weeks of age (MenHibrix®) • Older than 18 months of age (MenHibrix®) or 55 years of age (Menactra® or Menveo®)	
Special Considerations	• Menactra® and Menveo® have not been widely studied in pregnant and lactating women and should be given only if clearly indicated; Alternately Menomune® can be given if clearly indicated • Menomune® is used mainly in those 56 years of age and older • There have been reports of Guillain-Barrè syndrome (GBS) after Menactra® but population-based increase of disease related to vaccine has not been documented	
VIS: http://www.cdc.gov/vaccines/hcp/vis/vis-statements/mening.html Pregnancy registry for Menactra®: 1-800-822-2463 (Sanofi Pasteur); Pregnancy registry for Menveo®: 1-877-311-8972 (Novartis); also notify DHA-IHB		

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 6 weeks through 59 months of age
• Children aged 60-71 months with certain health conditions (see back of card)
• Consider vaccination for those 6-18 years, with underlying medical conditions (see back of card)</td></tr>
<tr><td>Administration Schedule</td><td colspan="2">• Routine schedule: 2, 4, 6, and 12-15 months of age (*Minimum age: 6 wks)
• The number of doses varies if initiating series after age 7 months (see “catch-up” schedule below)</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 weeks 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>
<tr><td>PCV7 for Prior Doses</td><td colspan="2">• For all children age 14-59 months who received age-appropriate series of PCV7, give 1 dose of PCV13 (give 2 doses, 8 weeks apart if incomplete series was given)
• For children 5 years and older who received age-appropriate series of PCV7 and who have underlying medical conditions (see back of card), give 1 dose of PCV13</td></tr>
</table>

Pneumococcal Conjugate Vaccine (PCV13) *(Continued)*

High-risk health conditions in children:	
Applies through age 71 months only	• Chronic cardiovascular disease (excluding hypertention) • Chronic pulmonary disease • Diabetes mellitus • Candidate for or recipeint of cochlear impant
Applies to all	• Cerebrospinal fluid (CSF) leak • Functional or anatomic asplenia (including sickle cell disease) • Immunocompromising conditions (including HIV, leukemia, congenital immunodeficiency, Hodgkin's disease, lymphoma, multiple myeloma, generalized malignancy, immunosuppressive therapy) • Solid organ transplantation • Chronic renal failure or nephrotic syndrome
Contraindications	• Serious allergic reaction to a prior dose or vaccine component • Moderate or severe acute illness
Special Considerations	• If both PCV13 and pneumococcal polysaccharide vaccine (PPSV23) are indicated, give PPSV23 at least 8 weeks after last dose of PCV13 • See Storage and Handling Section
VIS: http://www.cdc.gov/vaccines/hcp/vis/vis-statements/pcv13.html	

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.cdc.gov/vaccines/pubs/pinkbook/pneumo.html

Pneumococcal Polysaccharide Vaccine PPSV23

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 1- Chronic liver disease 2- Chronic cardiovascular disease (excluding hypertention) 3- Chronic pulmonary disease 4- Diabetes mellitus 5- Candidate for or recipeint of cochlear impant 6- Functional or anatomic asplenia (including sickle cell disease) 7- Immunocompromising conditions (including HIV, leukemia, congenital immunodeficiency, Hodgkin's disease, lymphoma, multiple myeloma, generalized malignancy, immunosuppressive therapy) 8- Solid organ transplantation 9- Chronic renal failure or nephrotic syndrome	
Administration Schedule	**Dose**	**Recommended Interval**
	1 dose if indicated above	No sooner than 1 year after PCV13
Booster	• A second dose is recommended 5 years after the first dose for persons 2 years of age and older who are in categories 6 through 9 on the indications list with an additional dose at age 65 years if more than 5 years have elapsed since prior dose. For all others a booster dose is recommended at 65 years of age.	
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/hcp/vis/vis-statements/ppv.html		

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/hcp/vis/vis-statements/ipv.html	

Rotavirus Vaccine

Vaccine Description

- Brands: RotaTeq® and Rotarix®
- Live, oral vaccine
- Rotarix® contains latex in the oral applicator
- See package inserts for full list of contents

Dose & Route

- Dose: 2 mL (RotaTeq®) and 1 mL (Rotarix®)
- Route: Orally
- See package insert

Indications

- Licensed for the prevention of rotavirus gastroenteritis in infants 6 weeks through 32 weeks of age

Administration Schedule

Vaccine	Dose 1	Dose 2	Dose 3
RotaTeq®	2 months	4 months	6 months
Rotarix®	2 months	4 months	

* NOTE: First and final dose recommendation differs slightly from the manufacturer's package inserts

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*)
- If any dose in series was RV-5 or product is unknown for any dose in the series, a total of 3 doses of rotavirus vaccine should be administered

Contraindications

- 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
- Precautions: History of gastrointestinal disorders or acute gastrointestinal illness, spina bifida, or bladder exstrophy

Special Considerations

- DO NOT restart series, no matter how long since previous dose
- See Storage and Handling Section

VIS: http://www.cdc.gov/vaccines/hcp/vis/vis-statements/rotavirus.html

Varicella Vaccine

<table>
<tr><td>Vaccine Description</td><td colspan="2">• 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</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">• 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</td></tr>
<tr><td>Administration Schedule</td><td>Dose</td><td>Recommended Age</td></tr>
<tr><td></td><td>#1</td><td>12 to 15 months</td></tr>
<tr><td></td><td>#2</td><td>4 to 6 years</td></tr>
<tr><td>Minimum Intervals</td><td>Dose</td><td>Minimum Interval</td></tr>
<tr><td></td><td>#1</td><td>Must be at least 12 months of age</td></tr>
<tr><td></td><td>#2</td><td>• Ages 1-12 years: 3 months after dose #1
• Ages 13 years and older: 4 weeks after dose #1</td></tr>
<tr><td>Contraindications</td><td colspan="2">• 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</td></tr>
</table>

Varicella Vaccine *(Continued)*

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 weeks if varicella vaccine given first OR apply TST first, then give varicella vaccine when TST is read • 4% to 6% of recipients (1% to 2% after 2nd dose) get a "varicella-like" rash within 3 weeks. While rare, individuals may be at risk if they have no immunity or are at high risk for complications (HIV, etc). • Avoid use of salicylates (asprin) for 6 weeks following administration due to risk for Reye syndrome • 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/hcp/vis/vis-statements/varicella.html Pregnancy monitoring: 1-877-888-4231 (Merck); also notify DHA-IHB	

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
Menhibrix®	MenCY, Hib	• Licensed to be given as a four-dose series at 2, 4, 6, and 12-15 months of age if meningococcal vaccine is also needed dur to high risk condition such as complement component deficiency or functional or anatomic asplenia including sickle cell disease
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

Combination Vaccines *(Continued)*

Vaccine	Components	Special Instructions
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.
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

Immunization Healthcare Branch, Defense Health Agency (DHA-IHB)

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 or 301-619-3017
- After hours for urgent issues only call: 301-676-0808, 301-676-1184, or 301-676-0326
- For non-urgent issues email: usarmy.detrick.medcom-usamma.mbx.doc@mail.mil
- Website: http://www.usamma.amedd.army.mil/net/Pages/doc/coldChainManagement.aspx

DHA-IHB:
Phone: 1-877-438-8222
Email: DODvaccines@mail.mil
Website: http://www.vaccines.mil
Storage and Handling Webpage: http://www.vaccines.mil/Storage_and_Handling
Storage and Handling Guide: http://www.vaccines.mil/documents/1632_SH_Guidelines.pdf
Map of DHA-IHB Immunization Healthcare Specialist: http://www.vaccines.mil/map

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

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

CONTACT MILVAX-USAMMA 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.

New CDC recommendations:

1. Use a biosafe glycol-encased probe or a similar temperature buffered probe rather than measurement of ambient air temperatures.
2. Use digital data loggers with detachable probes that record and store temperature information at frequent programmable intervals for 24 hour temperature monitoring rather than non-continuous temperature monitoring,
3. Use stand-alone refrigerator and stand-alone freezer units suitable for vaccine storage rather than combination (refrigerator+freezer) or other units not designed for storing fragile biologics, such as vaccines
4. Discontinue use of dorm-style or bar-style refrigerator/freezers for ANY vaccine storage, even temporary storage
5. Conduct weekly review of vaccine expiration dates and rotation of vaccine stock.

Required storage temperatures:

Refrigerated vaccine storage: 2°C to 8°C (35°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 Immunization Healthcare Specialist 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
Too warm ≥11°																														
10°	Take immediate action if temperature is in shaded section*																													
9°																														
Refrigerator temperature 8°																														
7°																														
6°																														
Aim for 5° → 5°																														
4°																														
3°																														
2°																														
Too cold 1°																														
0°	Take immediate action if temperature is in shaded section*																													
≤1°																														
Too warm ≥12°																														
-13°	Take immediate action if temperature is in shaded section*																													
-14°																														
Freezer temp -15°																														
-16°																														
≤17°																														

*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 MILVAX-VHCN courtesy of the Immunization Action Coalition.

MILVAX-VHCN (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.

References:

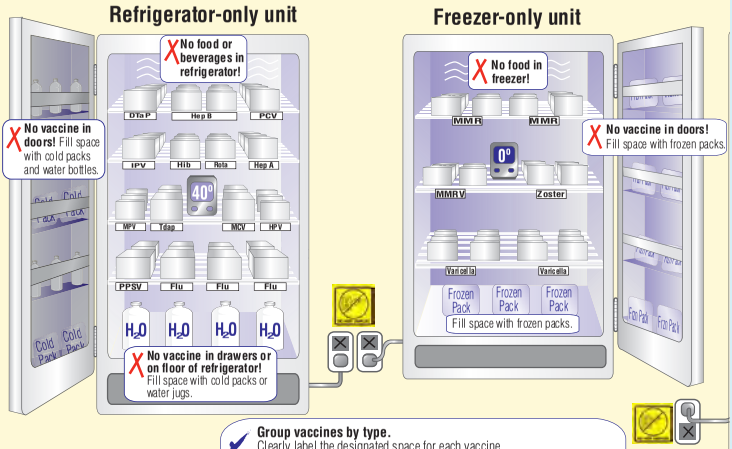
http://www.cdc.gov/vaccines/recs/storage/default.htm

http://www.usamma.amedd.army.mil/net/Pages/doc/coldChainManagement.aspx

http://www.vaccines.mil/Storage_and_Handling

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.

Minnesota Dept. of Health, Immunization Program

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.
MenCY+Hib	2°C to 8°C (36°F to 46°F)	Yes – store in refrigerator or at room temperature	Use single immediately after reconstitution.	Yes	Shake well before use.

Vaccine Storage and Handling

Vaccine	Vaccine Storage Temperature	Diluent	Specific Expiration after Opened/Reconstituted	Protect from Light	Other Comments
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.
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.

Vaccine Storage and Handling

Vaccine	Vaccine Storage Temperature	Diluent	Specific Expiration after Opened/Reconstituted	Protect from Light	Other Comments
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.
Varicella (refrigerator formulation)	2°C to 8°C (36°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 vial stopper to release the vacuum. Discard this needle in biohazard waste container.

5. Open the vented needle and attach to syringe.
6. Draw up 0.3 mL of diluent using aseptic technique. Note: The 0.3 mL will not be the entire content of the diluent vial.
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 must be worn when reconstituting and administering smallpox vaccine. Goggles are highly recommended when reconstituting smallpox vaccine.

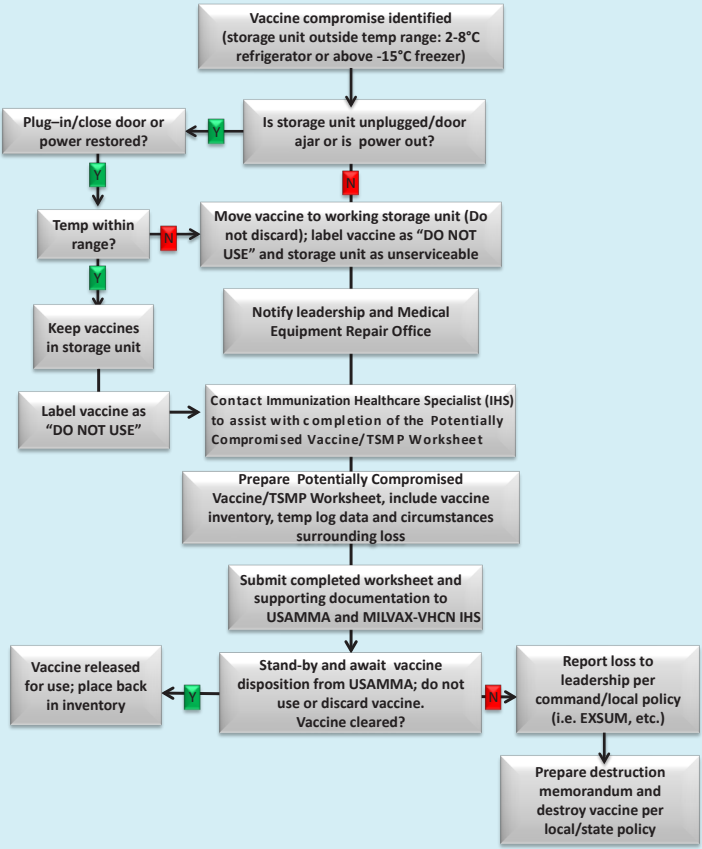
Prefilling Syringes

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. However, if the black tip cap is removed from the manufacturer's prefilled syringe, it must be properly disposed of at the end of the 8 hour duty day.

Steps to take for Potentially Compromised Vaccine Event



You can obtain more information and a worksheet for recording details of a potentially compromised vaccine event at:
http://www.vaccines.mil/documents/1710_PotentiallyCompromisedVaccineTSMPWorksheet.pdf

Potentially Compromised Vaccine/TSMP Response Worksheet

Date: **Service:** **Component:** **Phone #:**

Site/Clinic Name/Address:

POC: **POC Email:**

Type of Site: **IHS:**

Click on the links to find your Immunization Healthcare Specialist (IHS): www.vaccines.mil/ClinicFinder or www.vaccines.mil/Map

Follow these steps in the event of a potential compromise:

1. Move vaccine(s)/Temperature Sensitive Medical Products (TSMP) to working storage unit at proper temperature and activate your emergency plan.
2. Label the vaccine(s) or other TSMP as "DO NOT USE until released by USAMMA/DLA/IHS".
3. Do **NOT** destroy/discard the vaccine(s) or other TSMP until final disposition from USAMMA/DLA.
4. Contact your MILVAX-VHCN Immunization Healthcare Specialist (IHS) for help with completing this worksheet.
5. Complete ALL required information on the worksheet and send completed worksheet along with copies of your temperature logs to your IHS for review and submittal to USAMMA/DOC. Standby for further instructions from your IHS and/or USAMMA/DOC.
   - USAMMA/DOC phone #: (301) 619-3017/4318, after hours: (301) 676-0808/1184, or email: usarmy.detrick.medcom-usamma.mbx.doc@mail.mil
   - Defense Logistics Agency - Troop Support Medical (DLA - TSM) phone #: (215) 737-5537, or email: paacoldchainteam@dla.mil or DSCPColdchain@dla.mil

Required information:

1a. Temperatures recorded in F or C: b. Air temperature of room where storage unit(s) are located:

2. Refrigerator temp: current: warmest: coldest: Freezer temp: current: warmest: coldest:
3. When was the last time the storage unit(s) temp was in normal range? date: time: refrigerator temp: freezer temp:
4. Estimated amount of time the storage unit's temperature(s) was outside the normal range: refrigerator: freezer:
5. Were water bottles in the refrigerator? Yes ◯ No ◯ Were ice packs in the freezer? Yes ◯ No ◯
6. Prior to this event, was the vaccine(s) or other TSMP exposed to temperatures outside the recommended range? Yes ◯ No ◯
7. Document vaccine(s) or TSMP potentially compromised on the back of this worksheet (use page 3 if additional space is needed).
8. In the space below, document circumstances surrounding the potential compromise of vaccine(s) or other TSMP (i.e., pharmacologic and laboratory). Include date, time, location of the vaccine(s) or TSMP, current and last recorded temperatures of storage unit(s), personnel notified and actions taken once the potential compromise was identified.

Please select all event types that apply:

Non-Preventable Loss:

Negligence:

Non-Compliance:

Potentially Compromised Vaccine Response Worksheet

Vaccines (or other TSMP) Stored in Refrigerator

Brand Name and Manufacturer/NDC/Part #	Lot #	Expiration Date	Quantity (# of doses)	Cost of Affected TSMP	# Vial(s) Open
	Total Cost of Affected TSMP:				

Vaccines (or other TSMP) Stored in Freezer

Brand Name and Manufacturer/NDC/Part #	Lot #	Expiration Date	Quantity (# of doses)	Cost of Affected TSMP	# Vial(s) Open
	Total Cost of Affected TSMP:				

For USAMMA/DOC use only

Save completed document to your desktop and click the submit by email button and it will send your completed form directly to USAMMA/DOC; if you know your IHS's email, add to the "To": line before clicking submit.

MILVAX-VHCN (16 Apr 14) (877) GET-VACC 2 Submit By Email www.vaccines.mil

Potentially Compromised Vaccine Response Worksheet (continuation sheet)

Brand Name and Manufacturer/NDC/Part #	Lot #	Expiration Date	Quantity (# of doses)	Cost of Affected TSMP	# Vial(s) Open
	Total Cost of Affected TSMP:				

Medical/Reference

Immunization Tool Kit
Design and Development (1999-2013)

COL Margaret Yacovone, MD
Director, Immunization Healthcare Branch,
Defense Health Agency,
Defense Health Headquarters
7700 Arlington Boulevard, Suite 5143
Falls Church, VA 22042

www.vaccines.mil

ISBN 0-16-075227-2