APPENDIX D

Vaccine Administration

Appendix D

Vaccine Administration

Appropriate vaccine administration is critical to vaccine effectiveness. The recommended site, route and dosage for each vaccine are based on clinical trials, practical experience and theoretical considerations. The following information provides general guidelines for administration of vaccines for those who administer vaccines, as well as those in training, education and supervisory positions. This information should be used in conjunction with professional standards for medication administration, vaccine manufacturers' product guidelines, CDC's Advisory Committee on Immunization Practices (ACIP) General Recommendations on Immunization, the American Academy of Pediatrics' (AAP) Report of the Committee on Infectious Diseases *Red Book***,** and state/agency-related policies and procedures. An education plan that includes competency-based training on vaccine administration should be considered for all persons who administer vaccines to children or adults (refer to "Skills Checklist for Immunization" - page D14).

Preparation

Patient Preparation - Patients should be prepared for vaccination with consideration for their age and stage of development. Parents/guardians and patients should be encouraged to take an active role before, during and after the administration of vaccines (see "Be There for Your Child During Shots" poster at http://cdlhn.com/default.htm, search for IMM674S).

- **Screening** - All patients should be screened for contraindications and precautions for each scheduled vaccine. Many state immunization programs and other organizations have developed and make available standardized screening tools. Basic screening questions can be found in Chapter 2. Sample screening forms for children and adults are available from the Immunization Action Coalition (www.immunize.org).

- **Vaccine Safety & Risk Communication** - Parents/guardians and patients are exposed through the media to information about vaccines, some of which is inaccurate or misleading. Healthcare providers should be prepared to discuss the benefits and risks of vaccines using Vaccine Information Statements (VIS) and other reliable resources. Establishing an open dialogue provides a safe, trust-building environment in which individuals can freely evaluate information, discuss vaccine concerns and make informed decisions regarding immunization (see Chapter 4 and Appendices E and F).

- **Atraumatic Care** - Vaccine safety issues and the need for multiple injections have increased the concerns and anxiety associated with immunizations. Healthcare providers need to display confidence and establish an environment that promotes a sense of security and trust for the patient and family, utilizing a variety of techniques to minimize the stress and discomfort associated with receiving injections. This is particularly important when administering vaccines to children.

  - **Positioning & Comforting Restraint** - The healthcare provider must accommodate for the patient's comfort, safety, age, activity level, and the site of administration when considering patient positioning and restraint. For a child, the parent/guardian should be encouraged to hold the child during

administration. If the parent is uncomfortable, another person may assist or the patient may be positioned safely on an examination table (refer to "Comforting Restraint for Immunizations" - page D22).

- **Pain Control** - Pain is a subjective phenomenon influenced by multiple factors, including an individual's age, anxiety level, previous healthcare experiences, and culture. Consideration for these factors is important as the provider develops a planned approach to management of injection pain (see "Be There for Your Child During Shots" poster).

  - *Topical Anesthetics* or a vapocoolant spray may be applied to decrease pain at the injection site. These products should be used only for the ages recommended and as directed by the product manufacturer.

  - *Analgesic Agents* - A non-aspirin containing pain reliever may be considered to decrease discomfort and fever following vaccination. These products should be used only in age- ppropriate doses.

  - *Diversionary Techniques* - Age-appropriate non pharmacologic techniques may provide distraction from pain associated with injections. Diversion can be accomplished through a variety of techniques, some of which are outlined on the "Be There for Your Child During Shots" poster.

  - *Dual Administrators* - Some providers favor the technique of two individuals simultaneously administering vaccines at separate sites. The premise is that this procedure may decrease anxiety from anticipation of the next injection(s). The effectiveness of this procedure in decreasing pain or stress associated with vaccine injections has not been evaluated.

Infection Control - Healthcare providers should follow Standard Precautions to minimize the risks of spreading disease during vaccine administration.

- **Handwashing** - The single, most effective disease prevention activity is good handwashing. Hands should be washed thoroughly with soap and water or cleansed with an alcohol-based waterless antiseptic between patients, before vaccine preparation or any time hands become soiled, e.g. diapering, cleaning excreta.

- **Gloving** - Gloves are not required to be worn when administering vaccines unless the person administering the vaccine is likely to come into contact with potentially infectious body fluids or has open lesions on the hands. It is important to remember that gloves cannot prevent needlestick injuries.

- **Needlestick Injuries** should be reported immediately to the site supervisor, with appropriate care and follow-up given as directed by state/local guidelines. Safety needles or needle-free injection devices should be used if available to reduce the risk of injury.

- **Equipment Disposal** - Used needles should not be detached from syringes, recapped or cut before disposal. All used syringe/needle devices should be placed in puncture proof containers to prevent accidental needlesticks and reuse. Empty or expired vaccine vials are considered medical waste and

should be disposed of according to state regulations.

Vaccine Preparation - Proper vaccine handling and preparation is critical in maintaining the integrity of the vaccine during transfer from the manufacturer's vial to the syringe and ultimately to the patient.

- **Equipment Selection**

  - **Syringe Selection** - A separate needle and syringe should be used for each injection. A parenteral vaccine may be delivered in either a 1-mL or 3-mL syringe as long as the prescribed dosage is delivered. Syringe devices with sharps engineered sharps injury protection are availble, recommended by OSHA, and required in many states to reduce the incidence of needle stick injuries and potential disease transmission. Personnel should be involved in evaluation and selection of these products. Staff should receive training with these device before using them in the clinical area.

  - **Needle Selection** - Vaccine must reach the desired tissue site for optimal immune response. Therefore, needle selection should be based upon the prescribed route, size of the individual, volume and viscosity of the vaccine, and injection technique. (See Subcutaneous & Intramuscular Injections, below.) Typically, vaccines are not highly viscous, and therefore a fine gauge needle (22-25 gauge) can be used.

  - **Needle-Free Injection** - A new generation of needle-free vaccine delivery devices has been developed in an effort to decrease the risks of needlestick injuries to healthcare workers and to prevent improper reuse of syringes and needles. For more information on needle-free injection technology, see the CDC website: www.cdc.gov/od/science/iso/vaxtech/nfit/.

- **Inspecting Vaccine** - Each vaccine vial should be carefully inspected for damage or contamination prior to use. The expiration date printed on the vial or box should be checked. Vaccine can be used through the last day of the month indicated by the expiration date unless otherwise stated on the package labeling. Expired vaccine should never be used.

- **Reconstitution** - Some vaccines are prepared in a lyophilized form that requires reconstitution, which should be done according to manufacturer guidelines. Diluent solutions vary; use only the specific diluent supplied for the vaccine. Once reconstituted, the vaccine must be either administered within the time guidelines provided by the manufacturer or discarded. Changing the needle after reconstitution of the vaccine is not necessary unless the needle has become contaminated or bent. Continue with standard medication preparation guidelines.

- **Prefilling Syringes** - CDC strongly discourages filling syringes in advance, because of the increased risk of administration errors. Once the vaccine is in the syringe it is difficult to identify the type or brand of vaccine. Other problems associated with this practice are vaccine wastage, and possible bacterial growth in vaccines that do not contain a preservative. Furthermore, medication administration guidelines state that the individual who administers a medication should be the one to draw up and prepare it. An alternative to prefilling syringes is to use filled syringes supplied by the vaccine manufac-

turer. Syringes other than those filled by the manufacturer are designed for immediate administration, not for vaccine storage.

In certain circumstances, such as a large influenza clinic, more than one syringe can be filled. One person should prefill only a few syringes at a time, and the same person should administer them. Any syringes left at the end of the clinic day should be discarded.

Under no circumstances should MMR, varicella, or zoster vaccines ever be reconstituted and drawn prior to the immediate need for them. These live virus vaccines are unstable and begin to deteriorate as soon as they are reconstituted with diluent.

- **Labeling -** Once a vaccine is drawn into a syringe, the content should be indicated on the syringe. There are a variety of methods for identifying or labeling syringes (e.g. keep syringes with the appropriate vaccine vials, place the syringes in a labeled partitioned tray, or use color coded labels or preprinted labels).

Administration

Route - Administering a vaccine by the recommended route is imperative. Deviation from the recommended route of administration might reduce vaccine efficacy or increase the risk of local reactions.

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

Vaccines	Dose	Route
Diphtheria, Tetanus, Pertussis (DTaP, DT, Tdap, Td)	0.5 mL	IM
***Haemophilus influenzae* type b (Hib)**	0.5 mL	IM
Hepatitis A (HepA)	≤18 yrs: 0.5 mL ≥19 yrs: 1.0 mL	IM
Hepatitis B (HepB) **Persons 11–15 yrs may be given Recombivax HB® (Merck) 1.0 mL adult formulation on a 2-dose schedule.*	≤19 yrs: 0.5 mL* ≥20 yrs: 1.0 mL	IM
Human papillomavirus (HPV)	0.5 mL	IM
Influenza, live attenuated (LAIV)	0.2 mL	Intranasal spray
Influenza, trivalent inactivated (TIV)	6-35 mos: 0.25 mL ≥3 yrs: 0.5 mL	IM
Measles, mumps, rubella (MMR)	0.5 mL	SC
Meningococcal, conjugated (MCV4)	0.5 mL	IM
Meningococcal, polysaccharide (MPSV4)	0.5 mL	SC
Pneumococcal conjugate (PCV)	0.5 mL	IM
Pneumococcal polysaccharide (PPV)	0.5 mL	IM or SC
Polio, inactivated (IPV)	0.5 mL	IM or SC
Rotavirus (Rv)	2.0 mL	Oral
Varicella (Var)	0.5 mL	SC
Zoster (Zos)	0.65 mL	SC
Combination Vaccines		
DTaP+HepB+IPV (Pediarix™) **DTaP+Hib (Trihibit™)** **Hib+HepB (Comvax™)**	0.5 mL	IM
MMR+Var (ProQuad®)	≤12 yrs: 0.5 mL	SC
HepA+HepB (Twinrix®)	≥18 yrs: 1.0 mL	IM

Injection Site and Needle Size

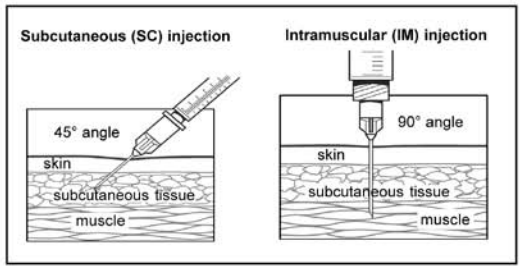
Subcutaneous (SC) injection
Use a 23–25 gauge needle. Choose the injection site that is appropriate to the person's age and body mass.

Age	Needle Length	Injection Site
Infants (1–12 mos)	⅝"	Fatty tissue over anterolateral thigh muscle
Children (≥12 mos), adolescents, and adults	⅝"	Fatty tissue over anterolateral thigh muscle or fatty tissue over triceps

Intramuscular (IM) injection
Use a 22–25 gauge needle. Choose the injection site and needle length appropriate to the person's age and body mass.

Age	Needle Length	Injection Site
Newborns (1st 28 days)	⅝"*	Anterolateral thigh muscle
Infants (1–12 mos)	1"	Anterolateral thigh muscle
Toddlers (1–2 yrs)	1"–1¼" ⅝"*–1"	Anterolateral thigh muscle or deltoid muscle of arm
Children & teens 3–18 yrs	⅝"*–1" 1"–1¼"	Deltoid muscle of arm or anterolateral thigh muscle
Adults ≥ age19 yrs		
Male or female less than 130 lbs	⅝"*–1"	Deltoid muscle of arm
Female 130–200 lbs Male 130–260 lbs	1"–1½"	Deltoid muscle of arm
Female 200+ lbs Male 260+ lbs	1½"	Deltoid muscle of arm

**If skin is stretched tight and subcutaneous tissue is not bunched.*



Please note: Always refer to the package insert included with each biologic for complete vaccine administration information. CDC's Advisory Committee on Immunization Practices (ACIP) recommendations for the particular vaccine should be reviewed as well.

Technical content reviewed by the Centers for Disease Control and Prevention, August 2007.

www.immunize.org/catg.d/p3085.pdf • Item #P3085 (8/07)

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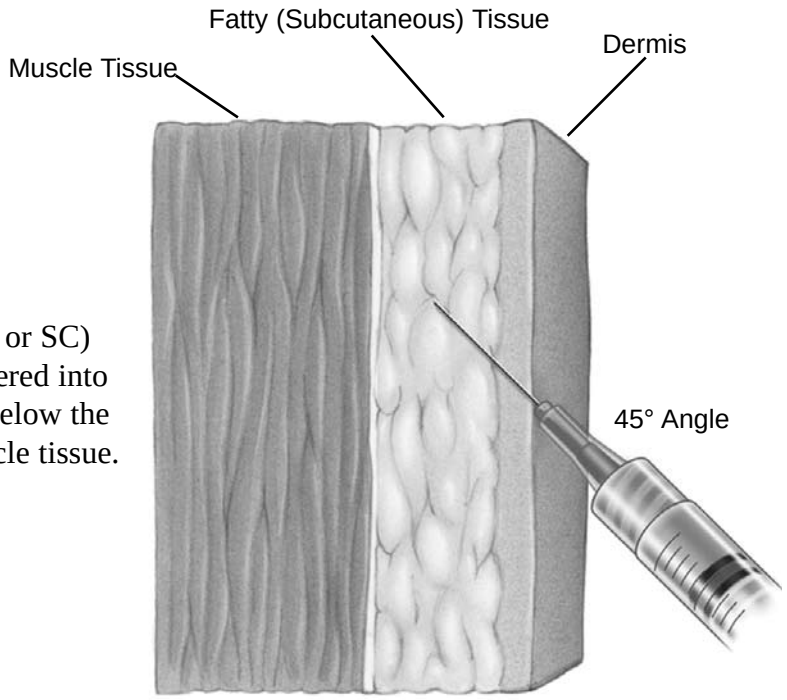

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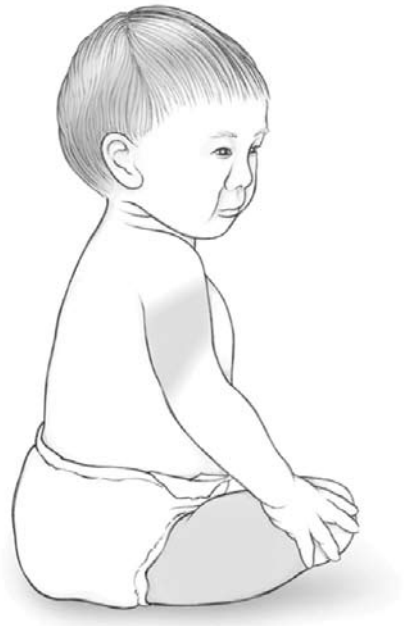
- **Subcutaneous** (Sub-Q or SC) injections are administered into the fatty tissue found below the dermis and above muscle tissue.

- **Site** - Subcutaneous tissue can be found all over the body. The usual sites for vaccine administration are the thigh (for infants <12 months of age) and the upper outer triceps of the arm (for persons ≥12 months of age). If necessary, the upper outer triceps area can be used to administer subcutaneous injections to infants.

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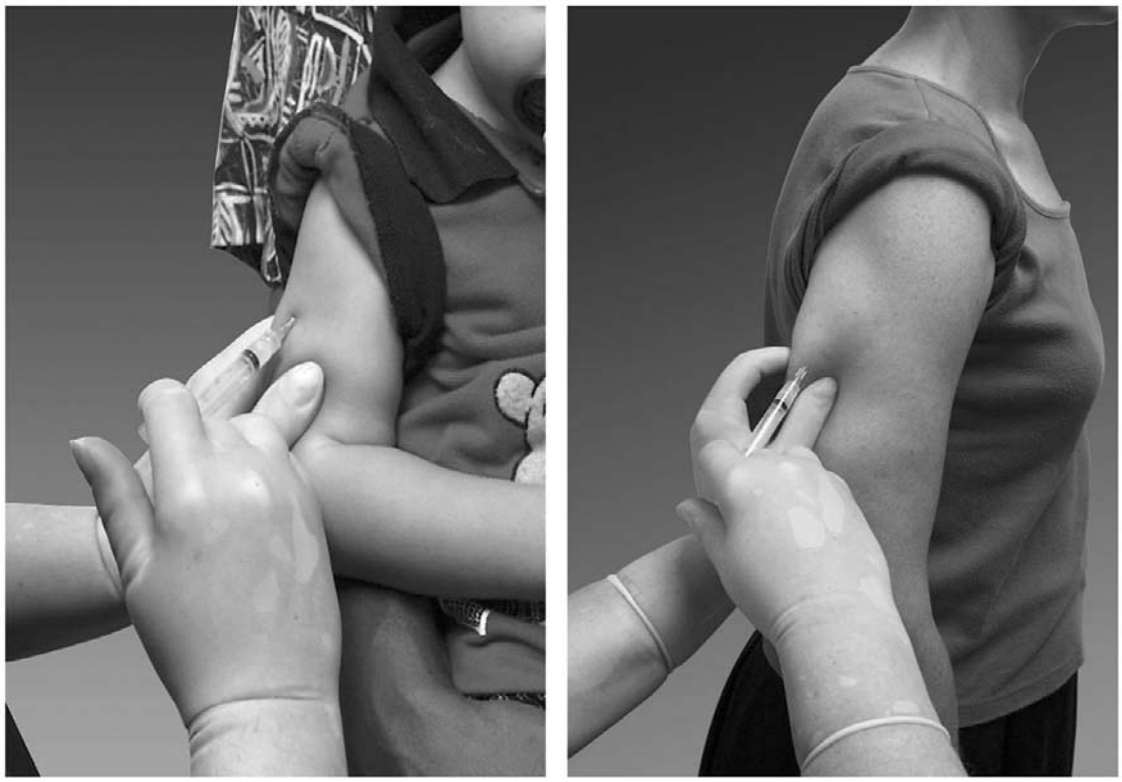
- **Needle Gauge & Length** - 5/8-inch, 23- to 25-gauge needle

- **Technique**

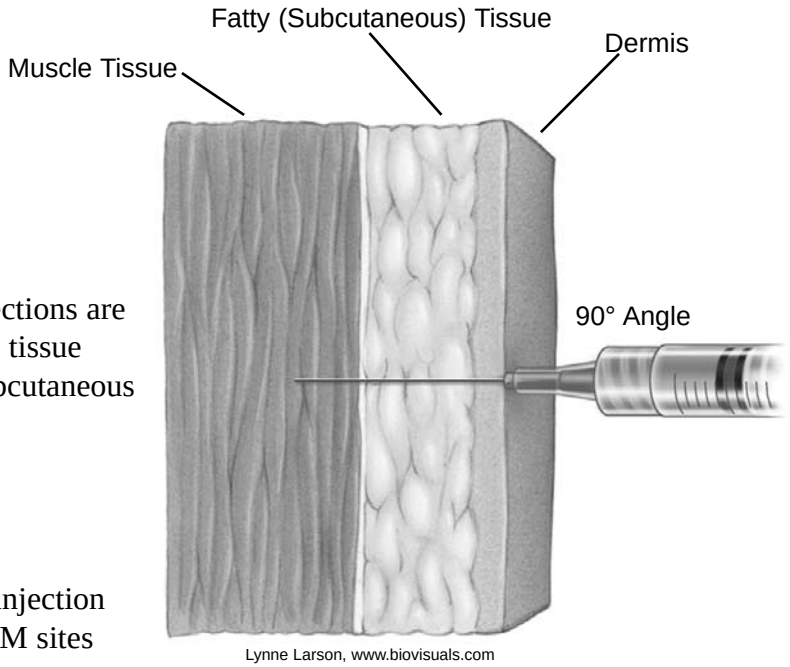
  - Follow standard medication administration guidelines for site assessment/selection and site preparation.

  - To avoid reaching the muscle, pinch up the fatty tissue, insert the needle at a 45° angle and inject the vaccine into the tissue.

  - Withdraw the needle and apply light pressure to the injection site for several seconds with a dry cotton ball or gauze.



Subcutaneous Administration Techniques



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- **Intramuscular** (IM) injections are administered into muscle tissue below the dermis and subcutaneous tissue.

- **Site** - Although there are several IM injection sites on the body, the recommended IM sites for vaccine administration are the vastus lateralis muscle (anterolateral thigh) and the deltoid muscle (upper arm). The site depends on the age of the individual and the degree of muscle development.

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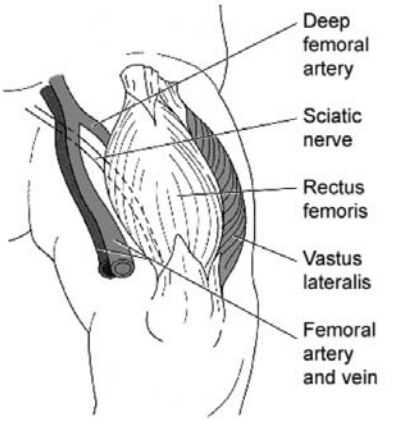
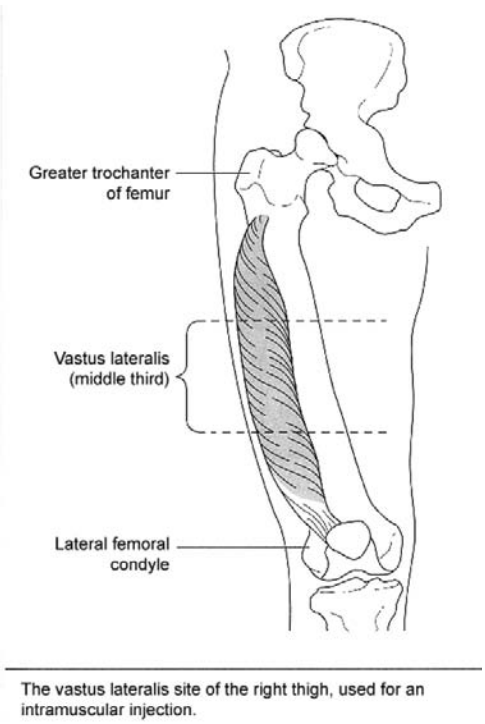
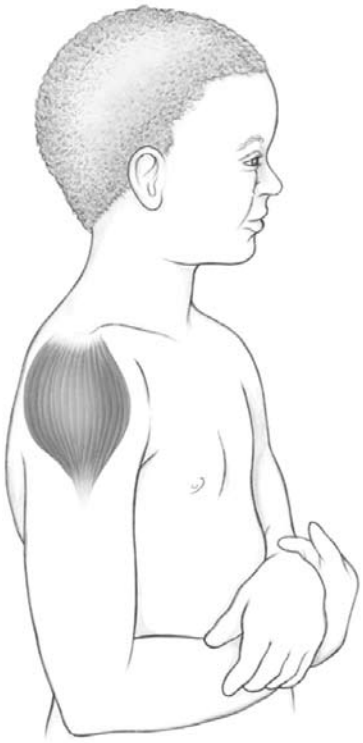


The vastus lateralis muscle of the upper thigh used for intramuscular injections.



The vastus lateralis site of the right thigh, used for an intramuscular injection.



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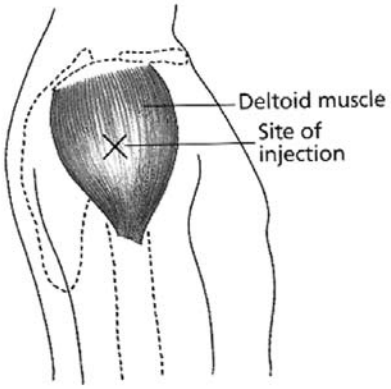


- **Needle Gauge** - 22- to 25-gauge needle

- **Needle Length** - For all intramuscular injections, the needle should be long enough to reach the muscle mass and prevent vaccine from seeping into subcutaneous tissue, but not so long as to involve underlying nerves, blood vessels, or bone. The vaccinator should be familiar with the anatomy of the area into which the vaccine will be injected.

  Decision on needle size and site of injection must be made for each person on the basis of the size of the muscle, the thickness of adipose tissue at the injection site, the volume of the material to be administered, injection technique, and the depth below the muscle surface into which the material is to be injected

  - *Infants (Younger Than 12 Months)*
    For the majority of infants, the anterolateral aspect of the thigh is the recommended site for injection because it provides a large muscle mass. The muscles of the buttock have not been used for administration of vaccines in infants and children because of concern about potential injury to the sciatic nerve, which is well documented after injection of antimicrobial agents into the buttock. If the gluteal muscle must be used, care should be taken to define the anatomic landmarks.*

*If the gluteal muscle is chosen, injection should be administered lateral and superior to a line between the posterior superior iliac spine and the greater trochanter or in the ventrogluteal site, the center of a triangle bounded by the anterior superior iliac spine, the tubercle of the iliac crest, and the upper border of the greater trochanter.

Injection technique is the most important factor to ensure efficient intramuscular vaccine delivery. If the subcutaneous and muscle tissue are bunched to minimize the chance of striking bone, a 1-inch needle is required to ensure intramuscular administration in infants. For the majority of infants, a 1-inch, 22-25-gauge needle is sufficient to penetrate muscle in an infant's thigh. For newborn (first 28 days of life) and premature infants, a 5/8 inch needle usually is adequate if the skin is stretched flat between thumb and forefinger and the needle inserted at a 90-degree angle to the skin.

- *Toddlers and Older Children (12 Months through 10 Years)*
  The deltoid muscle should be used if the muscle mass is adequate. The needle size for deltoid site injections can range from 22 to 25 gauge and from 5/8 to 1 inch on the basis of the size of the muscle and the thickness of adipose tissue at the injection site. A 5/8-inch needle is adequate only for the deltoid muscle and only if the skin is stretched flat between thumb and forefinger and the needle inserted at a 90° angle to the skin. For toddlers, the anterolateral thigh can be used, but the needle should be at least 1 inch in length.

- *Adolescents and Adults (11 Years or Older)*
  For adults and adolescents, the deltoid muscle is recommended for routine intramuscular vaccinations. The anterolateral thigh also can be used. For men and women weighing less than 130 lbs (60 kg) a 5/8-1-inch needle is sufficient to ensure intramuscular injection. For women weighing 130-200 lbs (60-90 kg) and men 130-260 lbs (60-118kg), a 1-1½-inch needle is needed. For women weighing more than 200 lbs (90 kg) or men weighing more than 260 lbs (118 kg), a 1½-inch needle is required.

- **Technique**

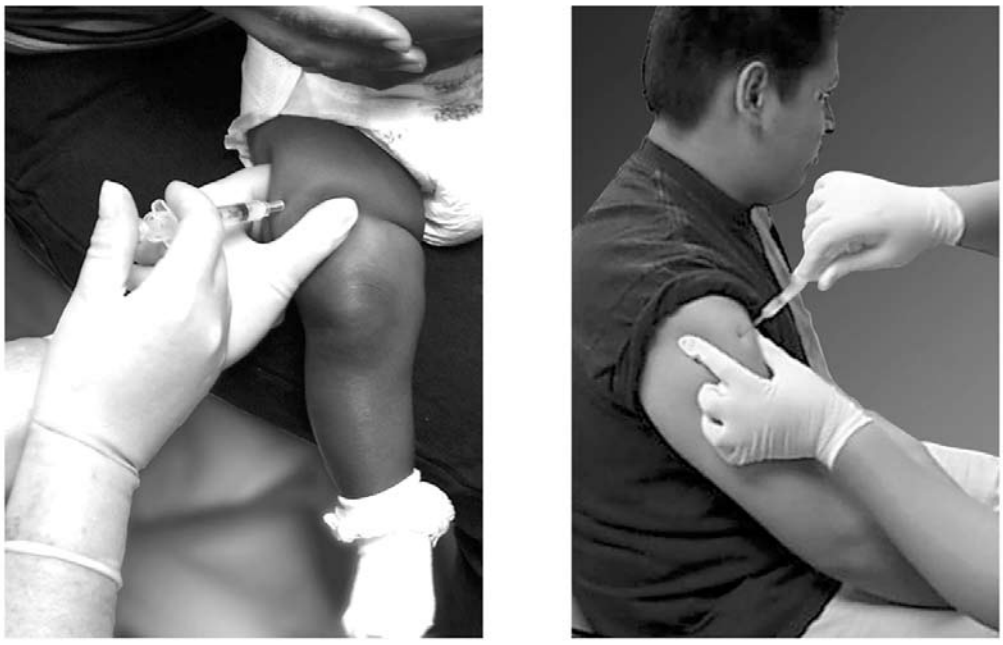
  - Follow standard medication administration guidelines for site assessment/selection and site preparation.

  - To avoid injection into subcutaneous tissue, spread the skin of the selected vaccine administration site taut between the thumb and forefinger, isolating the muscle. Another technique, acceptable mostly for pediatric and geriatric patients, is to grasp the tissue and "bunch up" the muscle.

  - Insert the needle fully into the muscle at a 90° angle and inject the vaccine into the tissue.

  - Withdraw the needle and apply light pressure to the injection site for several seconds with a dry cotton ball or gauze.

• **Aspiration** - Aspiration is the process of pulling back on the plunger of the syringe prior to injection to ensure that the medication is not injected into a blood vessel. Although this practice is advocated by some experts, the procedure is not required because no large blood vessels exist at the recommended injection sites.



Intramuscular Administration Techniques

- **Multiple Vaccinations** - When administering multiple vaccines, NEVER mix vaccines in the same syringe unless approved for mixing by the Food and Drug Administration (FDA). If more than one vaccine must be administered in the same limb, the injection sites should be separated by 1-2 inches so that any local reactions can be differentiated. Vaccine doses range from 0.2 mL to 1 mL. The recommended maximum volume of medication for an IM site, varies among references and depends on the muscle mass of the individual. However, administering two IM vaccines into the same muscle would not exceed any suggested volume ranges for either the vastus lateralis or the deltoid muscle in any age group. The option to also administer a subcutaneous vaccine into the same limb, if necessary, is acceptable since a different tissue site is involved.

  If a vaccine and an immune globulin preparation are administered simultaneously (e.g., Td/Tdap and tetanus immune globulin [TIG] or hepatitis B vaccine and hepatitis B immune globulin [HBIG]), a separate anatomic site should be used for each injection. The location of each injection should be documented in the patient's medical record.

- **Nonstandard Administration** - Deviation from the recommended route, site and dosage of vaccine is strongly discouraged and can result in inadequate protection. In situations where nonstandard administration has occurred, refer to the ACIP General Recommendation on Immunization, *MMWR* 2006; 55 (RR-15), for specific guidance.

Special Situations

Bleeding Disorders - Individuals with a bleeding disorder or who are receiving anticoagulant therapy may develop hematomas in IM injection sites. Prior to administration of IM vaccines the patient or family should be instructed about the risk of hematoma formation from the injection. Additionally, a physician familiar with the patient's bleeding disorder or therapy should be consulted regarding the safety of administration by this route. If the patient periodically receives hemophilia replacement factor or other similar therapy, IM vaccine administration should ideally be scheduled shortly after replacement therapy. A 23-gauge or finer needle should be used and firm pressure applied to the site for at least 2 minutes. The site should not be rubbed or massaged.

Latex Allergy - Administration of a vaccine supplied in a vial or syringe that contains natural rubber (refer to product information) should not be administered to an individual with a history of a severe (anaphylactic) allergy to latex, unless the benefit of vaccination clearly outweighs the risk of an allergic reaction. These situations are rare. Medical consultation and direction should be sought regarding vaccination. A local or contact sensitivity to latex is not a contraindication to vaccination.

Syncopal or Vasovagal Response ("fainting") may occur during vaccine administration, especially with adolescents and adults. Because individuals may fall and sustain injury as a result, the provider should have the patient sit during injection(s). A syncopal or vasovagal response is not common and is not an allergic reaction. However, if syncope develops, the provider should observe and administer supportive care until the patient is recovered.

Anaphylaxis (a life-threatening acute allergic reaction) - Each facility that administers vaccines should have a protocol, procedures and equipment to provide initial care for suspected anaphylaxis. Facility staff should be prepared to recognize and respond appropriately to this type of emergency situation. All staff should maintain current CPR certification. Emergency protocols, procedures and equipment/supplies should be reviewed periodically. For additional information on medical management of vaccine reactions in children, teens, and adults, see the 2006 ACIP General Recommendations on Immunization (p. 19), the 2006 AAP *Red Book* (pp. 64-66), and pages D18-D21 of this appendix. Although both fainting and allergic reactions are rare, vaccine providers should strongly consider observing patients for 15 minutes after they are vaccinated.

Documentation

All vaccines administered should be fully documented in the patient's permanent medical record. Documentation should include:

1. Date of administration
2. Name or common abbreviation of vaccine
3. Vaccine lot number
4. Vaccine manufacturer

5. Administration site

6. Vaccine Information Statement (VIS) edition date (found in the lower right corner of the back of the VIS).

7. Name and address of vaccine administrator. This should be the address where the record is kept. If immunizations are given in a shopping mall, for example, the address would be the clinic where the permanent record will reside.

Facilities that administer vaccines are encouraged to participate in state/local immunization information systems. The patient or parent should be provided with an immunization record that includes the vaccines administered with dates of administration.

The California Department of Health Services' Immunization Branch has developed a complete package of resources on vaccine administration, including a training video, posters and a skills checklist.

Ordering information is available on the Immunization Action Coalition (IAC) website: www.immunize.org/iztech/index.htm

IMM-694B (9/01)

Skills Checklist for Immunization

The Skills Checklist is a self-assessment tool for health care staff who administer immunizations. To complete it, review the competency areas below and the clinical skills, techniques and procedures outlined for each of them. Score yourself in the Self-Assessment column. If you check **Need to Improve** you indicate further study, practice or change is needed. When you check **Meets or Exceeds** you indicate you believe you are performing at the expected level of competence, or higher.

Supervisors: Use the Skills Checklist to clarify responsibilities and expectations for staff who administer vaccines. When you use it for performance reviews, give staff the opportunity to score themselves in advance. Next observe their performance as they provide immunizations to several patients and score in the Supervisor Review columns. If improvement is needed, meet with them to develop a Plan of Action (over) that will help them achieve the level of competence you expect; circle desired actions or write in others. In 30 days, observe their performance again. When all competency areas meet expectations, file the Skills Checklist in their personnel folder. At the end of the probationary period and annually thereafter, observe them again and complete the Skills Checklist.

		Self-Assessment		Supervisor Review		
Competency	**Clinical Skills, Techniques, and Procedures**	**Need to Improve**	**Meets or Exceeds**	**Need to Improve**	**Meets or Exceeds**	**Plan of Action***
A. Patient/Parent Education	1. Welcomes patient/family, establishes rapport, and answers any questions.					
	2. Explains what vaccines will be given and which type(s) of injection will be done.					
	3. Accommodates language or literacy barriers and special needs of patient/parents to help make them feel comfortable and informed about the procedure.					
	4. Verifies patient/parents received the Vaccine Information Statements for indicated vaccines and had time to read them and ask questions.					
	5. Screens for contraindications. (MA: score NA–not applicable–if this is MD function.)					
	6. Reviews comfort measures and after care instructions with patient/parents, inviting questions.					
B. Medical Protocols	1. Identifies the location of the medical protocols (i.e. immunization protocol, emergency protocol, reference material).					
	2. Identifies the location of the epinephrine, its administration technique, and clinical situations where its use would be indicated.					
	3. Maintains up-to-date CPR certification.					
	4. Understands the need to report any needlestick injury and to maintain a sharps injury log.					
C. Vaccine Handling	1. Checks vial expiration date. Double-checks vial label and contents prior to drawing up.					
	2. Maintains aseptic technique throughout.					
	3. Selects the correct needle size. 1"-1 1/2" for IM (DTaP, Td, Hib, HepA, HepB, Pneumo Conj., Flu); 5/8" for SC (MMR, Var); IPV and Pneumo Poly depends on route to be used.					
	4. Shakes vaccine vial and/or reconstitutes and mixes using the diluent supplied. Inverts vial and draws up correct dose of vaccine. Rechecks vial label.					
	5. Labels each filled syringe or uses labeled tray to keep them identified.					
	6. Demonstrates knowledge of proper vaccine handling, e.g. protects MMR from light, logs refrigerator temperature.					

Competency	Clinical Skills, Techniques, and Procedures	Self-Assessment		Supervisor Review		
		Need to Improve	Meets or Exceeds	Need to Improve	Meets or Exceeds	Plan of Action*
D. Administering Immunizations	1. Rechecks the physician's order or instructions against prepared syringes.					
	2. Washes hands and if office policy puts on disposable gloves.					
	3. Demonstrates knowledge of the appropriate route for each vaccine. (IM for DTaP, Td, Hib, HepA, HepB, Pneumo Conj, Flu; SC for MMR, Var; Either SC or IM for IPV and Pneumo Poly).					
	4. Positions patient and/or restrains the child with parent's help; locates anatomic landmarks specific for IM or SC					
	5. Preps the site with an alcohol wipe using a circular motion from the center to a 2" to 3" circle. Allows alcohol to dry.					
	6. Controls the limb with the non-dominant hand; holds the needle an inch from the skin and inserts it quickly at the appropriate angle (45° for SC or 90° for IM).					
	7. Injects vaccine using steady pressure; withdraws needle at angle of insertion.					
	8. Applies gentle pressure to injection site for several seconds with a dry cotton ball.					
	9. Properly disposes of needle and syringe in sharps container. Properly disposes of live vaccine vial.					
	10. Encourages comfort measures before, during and after the procedure.					
E. Records Procedures	1. Fully documents each immunization in patient's chart: date, lot number, manufacturer, site, VIS date, name/initials.					
	2. If applicable, demonstrates ability to use IZ registry or computer to call up patient record, assess what is due today, and update computer immunization history.					
	3. Asks for and updates patient's record of immunizations and reminds them to bring it to each visit.					

Plan of Action:

Circle desired next steps and write in the agreed deadline and date for the follow-up performance review. **a.** Watch video on immunization techniques. **b.** Review office protocols. **c.** Review manuals, textbooks, wall charts or other guides. **d.** Review package inserts. **e.** Review vaccine handling guidelines or video. **f.** Observe other staff with patients. **g.** Practice injections. **h.** Read Vaccine Information Statements. **i.** Be mentored by someone who has these skills. **j.** Role play with other staff interactions with parents and patients, including age-appropriate comfort measures. **k.** Attend a skills training or other courses or training. **l.** Attend health care customer satisfaction or cultural competency training. **m.** Renew CPR certification. **Other:**_____

Employee Signature _____ Date _____

Supervisor Signature _____ Date _____

Plan of Action Deadline _____

Date of Next Performance Review _____

IMMUNIZATION TECHNIQUES
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IMM-694B (9/01)

For 8 1/2" x 11" copies, enlarge to 155%

Immunization Site Map

Suggested sites for infant immunizations:

RD: _____

RT: _____

RT: _____

LD: _____

LT: _____

LT: _____

RD= Right deltoid (IM) or subcutaneous tissue on upper arm (SC).

RT= Right vastus lateralis (IM) or subcutaneous tissue on thigh (SC).

LD= Left deltoid (IM) or subcutaneous tissue on upper arm (SC).

LT= Left vastus lateralis (IM) or subcutaneous tissue on thigh (SC).

IMMUNIZATION TECHNIQUES
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IMM-718 (5/01)

Immunization Site Map

Suggested sites for toddler immunizations:

RD: _____

RT: _____

RT: _____

LD: _____

LT: _____

LT: _____

RD= Right deltoid (IM) or subcutaneous tissue on upper arm (SC).

RT= Right vastus lateralis (IM) or subcutaneous tissue on thigh (SC).

LD= Left deltoid (IM) or subcutaneous tissue on upper arm (SC).

LT= Left vastus lateralis (IM) or subcutaneous tissue on thigh (SC).

IMMUNIZATION TECHNIQUES
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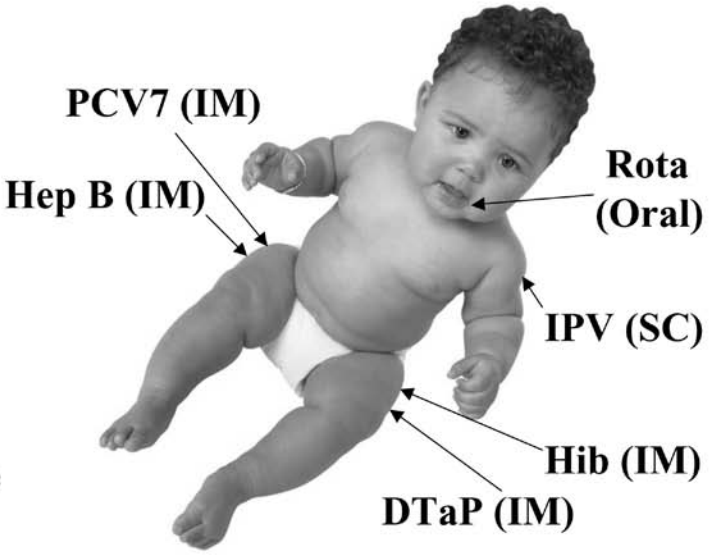
IMM-718 (5/01)

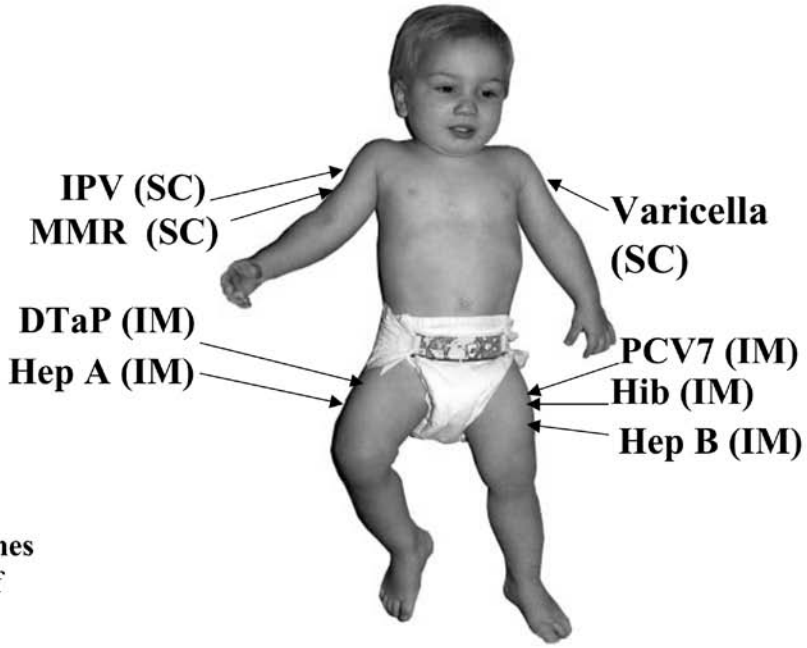
Giving All the Doses Under 12 Months

- Needle Lengths:
  IM=1 inch SC=5/8 inch
- Using combination vaccines will decrease the number of injections
- IM injections are given in the infant's thigh
- SC injections may be given in the arm or thigh
- Separate injection sites by 1-2 inches
- May consider a 5/8" needle for IM injections only in newborns less than 4 wks



Giving All the Doses 12 Months and Older

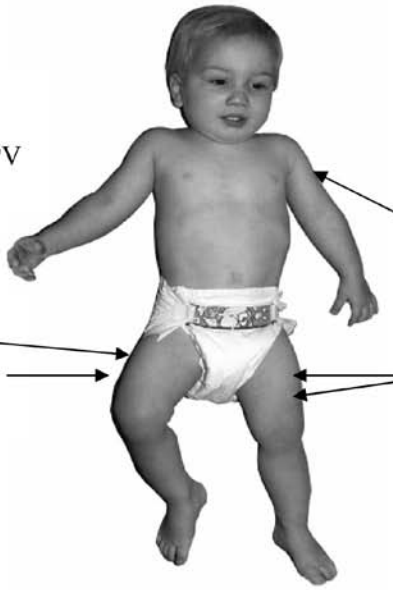
- Needle Lengths
  IM=1 to 1.5 inches
  SC=5/8 inch
- Separate injection sites by 1-2 inches
- Anterolateral thigh is the **preferred** site for multiple IM injections
- Deltoid (upper arm) is an option for IM in children ≥18 mo with adequate muscle mass
- Using **combination vaccines** will decrease the number of injections needed to keep a child up-to-date



Giving All the Doses 12 months through 5 years of age

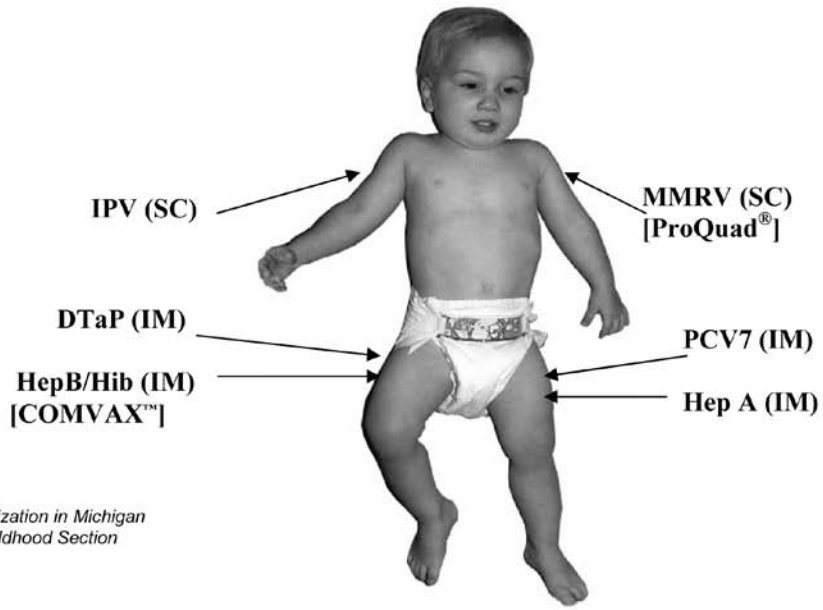
Using Pediarix™ (DTaP/HepB/IPV) and ProQuad® (MMRV)

Pediarix™ can only be used for the primary series; DO NOT use for: 4th or 5th dose of DTaP, 4th dose of IPV



- Needle Lengths: IM = 1-1.5 inches SC = 5/8 inch
- Injection sites should be separated 1-2 inches
- The anterolateral thigh is the **preferred** site for multiple IM injections
- The deltoid (upper arm) is an option for IM in children ≥ 18 mo with adequate muscle mass

Using COMVAX™ (HepB/Hib) and ProQuad® (MMRV)

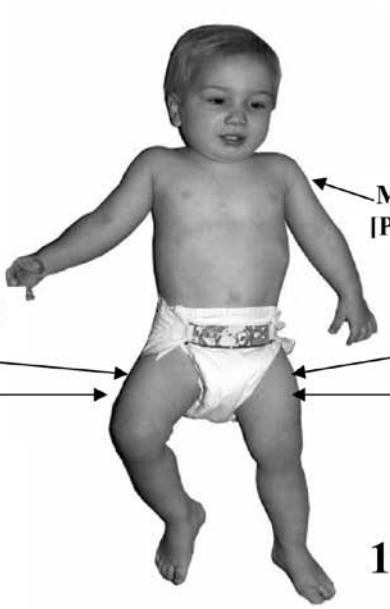


Alliance for Immunization in Michigan
2007 AIM Kit – Childhood Section

August 23, 2006

Giving All the Doses Including Influenza Vaccine (TIV)

Using Pediarix™ (DTaP/HepB/IPV) and ProQuad® (MMR/Var)

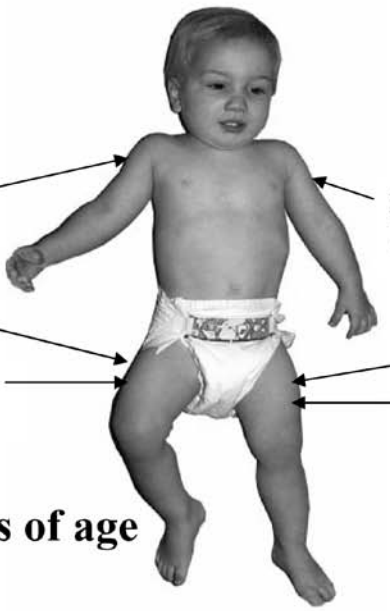


Pediarix™ can only be used for the primary series; DO NOT use for 4th or 5th dose of DTaP or 4th dose of IPV.

For children 12 thru 4 years of age

- TIV Dosages: 6-35 mos 0.25 mL; 3-8 yrs 0.5 mL
- 2 doses (4 weeks apart) are recommended for children 6 mo thru 8 yrs receiving any flu vaccine for the first time
- Children 6 mo-8 yrs who received influenza vaccine for the first time **during the previous influenza season**, and got only one dose, should receive two doses this season separated by 4 weeks

Using COMVAX™ (HepB/Hib) and ProQuad® (MMR/Var)



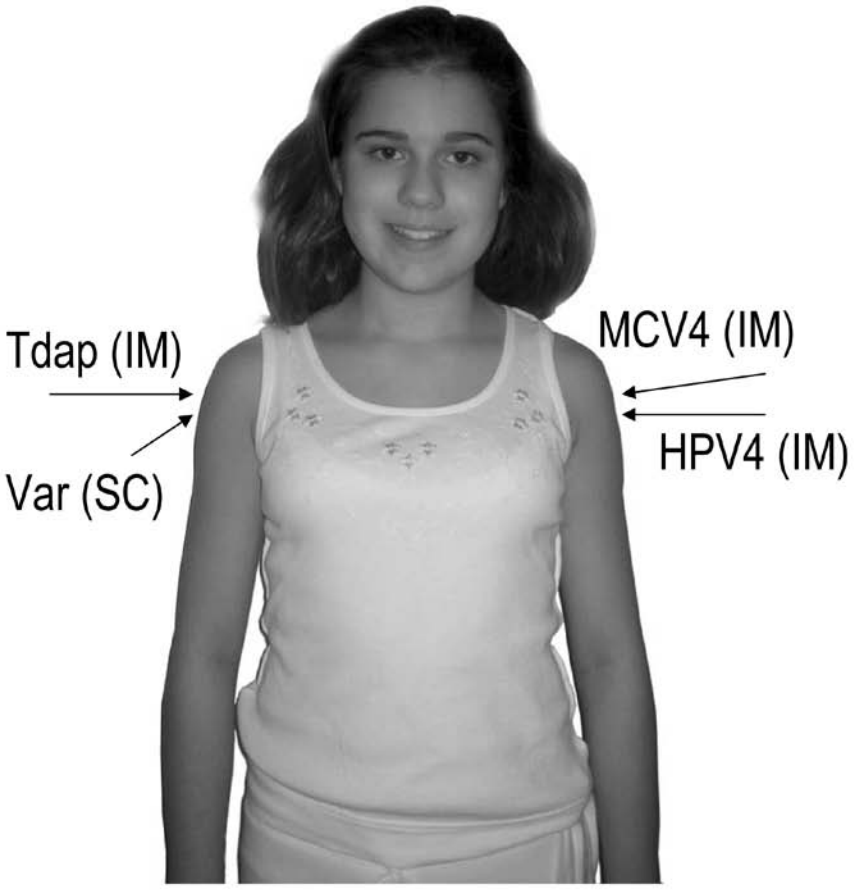
For children 12 months thru 4 years of age

September 21, 2007

GIVING ALL THE DOSES

11-12 Years of Age

- Needle Lengths
  IM= 1 to 1.5 in
  SC= 5/8 in
- Separate injection sites by 1-2 inches
- Professional judgment is appropriate when selecting needle length for use in all children, especially small infants or larger children.
- Assess for other recommended vaccines that may be needed-
  MMR Polio
  hep B Hep A
  influenza
- Syncope or fainting after vaccination may occur in adolescents & young adults, usually within 15 minutes of vaccination
- When giving vaccines to teens:
  Have the patient sit down while you are giving vaccine(s)
  Consider observing patients for 15-20 minutes after vaccination



NOTE:
Var should be administered to school age children and adolescents without:

- history of 2 doses of varicella vaccine
- a healthcare provider's diagnosis of varicella disease **or** verification of history of typical varicella disease
- history of shingles

HPV4 is licensed for use in **girls only** 9-26 years of age
MMRV (ProQuad®) is licensed for children 12 months thru 12 years of age only

Alliance for Immunization in Michigan
2008 AIM Kit—Adolescent Immunization Section

December 6, 2007

COMFORTING RESTRAINT

FOR IMMUNIZATIONS

• The method:

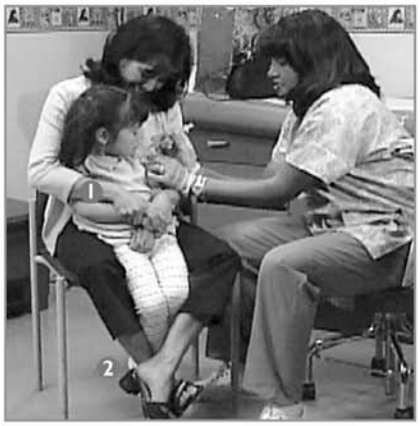
This method involves the parent in embracing the child and controlling all four limbs. It avoids "holding down" or overpowering the child, but it helps you steady and control the limb of the injection site.

• For infants and toddlers:

Have parent hold the child on parent's lap.

1. One of the child's arms embraces the parent's back and is held under the parent's arm.
2. The other arm is controlled by the parent's arm and hand. For infants, the parent can control both arms with one hand.
3. Both legs are anchored with the child's feet held firmly between the parent's thighs, and controlled by the parent's other arm.

• For kindergarten and older children:



Hold the child on parent's lap or have the child stand in front of the seated parent.

1. Parent's arms embrace the child during the process.
2. Both legs are firmly between parent's legs.

IMMUNIZATION TECHNIQUES
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Gray Davis, Governor—State of California
Grantland Johnson, Secretary—Health and Human Services Agency
Diana M. Bonta, R.N., Dr.P.H., Director—Department of Health Services
Immunization Branch • 2151 Berkeley Way • Berkeley, CA 94704

dhs
IMM-720 (12/01)

Injectable Vaccine Administration for Children Birth-6 years

Vaccine	Age/Reminders	Route	Site ¤	Needle*	Contraindications ⊕
Diphtheria, Tetanus, Pertussis (DTaP)	6 weeks-6 years	IM	Anterolateral Thigh **or** Deltoid±	1"-1.5" 22-25 g	Anaphylactic reaction to prior dose or component; encephalopathy without other cause within 7 days of a pertussis- containing vaccine
Haemophilus influenza type B (Hib)	No routine doses after 59 months	IM	Anterolateral Thigh **or** Deltoid	1"-1.5" 22-25 g	Anaphylactic reaction to prior dose or component
Pneumococcal conjugate (PCV7)	No routine doses after 59 months	IM	Anterolateral Thigh **or** Deltoid	1"-1.5" 22-25 g	Anaphylactic reaction to prior dose or component
Hepatitis B (Hep B)	1st dose at birth; last dose at/after 6 months	IM	Anterolateral Thigh **or** Deltoid	1"-1.5" 22-25 g	Anaphylactic reaction to a prior dose or component (baker's yeast)
Inactivated Polio Vaccine (IPV)	For school entry: 1st dose at/ after 6 wks of age; all doses spaced at least 4 weeks apart	SC	Anterolateral Thigh **or** Lateral Upper Arm	5/8" 23-25 g	Anaphylactic reaction to a prior dose or component (neomycin, streptomycin, polymyxin B)
		IM	Anterolateral Thigh **or** Deltoid	1"-1.5 22-25 g	
Measles, Mumps, Rubella (MMR)	1st dose at/after 12 mo; 4 week interval between two doses (all ages)	SC	Anterolateral Thigh **or** Lateral Upper Arm	5/8" 23-25 g	Anaphylactic reaction to a prior dose or component (neomycin or gelatin); pregnancy
Varicella (Var)	1st dose at/after 12 mo; 3 mo interval between doses (ages 12 mo-12 yrs)	SC	Anterolateral Thigh **or** Lateral Upper Arm	5/8" 23-25 g	Anaphylactic reaction to a prior dose or component (neomycin or gelatin); pregnancy
Inactivated Influenza (TIV)	6 months and older; brand to use based on age	IM	Anterolateral Thigh **or** Deltoid	1"-1.5" 22-25 g	Anaphylactic reaction to a prior dose or component (eggs)
Hepatitis A (Hep A)	1st dose at/after 12 mo 2nd dose 6 mo later	IM	Anterolateral Thigh **or** Deltoid	1"-1.5" 22-25 g	Anaphylactic reaction to prior dose or component; hypersensitivity to alum (Havrix®: 2-phenoxyethanol)

¤ Vaccines should never be administered in the buttocks. ⊕ See package insert for complete contraindication/component listing; may vary by brand * Professional judgment is appropriate when selecting needle length for use in all children, especially small infants or larger children.

± Use of the deltoid muscle in children 18 months and older (if adequate muscle mass is present) is an option for IM injections. December 11, 2007

Injectable Vaccines for Selected Populations**

Vaccine	Recommendations for use and age	Route	Site ¤	Needle Length*	Contraindications⊕
Meningococcal Conjugate » (MCV4)	• For children 2-10 yrs who are at high risk for meningococcal disease •Routinely given to adolescents (1 dose) ages 11 through 18 yrs	IM	Anterolateral Thigh **or** Deltoid ±	1"-1.5" 22-25 g	Anaphylactic reaction to prior dose or component
Pneumococcal polysaccharide (PPV 23)	• For children 2 yrs and older at high risk for invasive pneumococcal disease • Given after completion of an age-appropriate PCV7 series - Minimum interval of 8 weeks between PCV7 and PPV23	IM	Anterolateral Thigh **or** Deltoid ±	1"-1.5" 22-25 g	Anaphylactic reaction to prior dose or component
		SC	Anterolateral Thigh **or** Lateral Upper Arm	5/8" 23-25g	

¤ Vaccines should never be administered in the buttocks.
* Professional judgment is appropriate when selecting needle length for use in all children, especially small infants or larger children.
⊕ See package insert for complete contraindication/component listing; components may vary by brand used
» When meningococcal vaccine is indicated and MCV4 is not available, Meningococcal polysaccharide (MPSV4) may be used for persons 2 years and older (given SC). However, if indication is for routine adolescent vaccination (ages 11-18 years), defer until MCV4 is available.
± Use of the deltoid muscle in children 18 months and older (if adequate muscle mass is present) is an option for IM injections.
** Refer to Recommended Childhood and Adolescent Immunization Schedule (available in Child/Adolescent Immunization Section of the AIM Kit) for information on the selected populations.

Injectable Vaccine Administration for Children 7-18 Years

Vaccine	Age/Reminders	Route	Site*	Needle*	Contraindications ⊕
Tetanus, diphtheria (Td)	7 years and older	IM	Deltoid	1"-1.5" 22-25 g	Anaphylactic reaction to prior dose or component
Tetanus, diphtheria, pertussis (Tdap)	Routinely given at age 11-12 years; one dose ◙	IM	Deltoid	1"-1.5" 22-25 g	Anaphylactic reaction to prior dose or component; encephalopathy within 7 days of previous pertussis vaccine without other known cause
Hepatitis B (hep B)	1st dose at birth; last dose at/after 6 mo	IM	Deltoid	1"-1.5" 22-25 g	Anaphylactic reaction to a prior dose or component (baker's yeast)
Inactivated Polio Vaccine (IPV)	For school entry: 1st dose at/after 6 wks of age; all doses spaced at least 4 weeks apart	SC	Lateral Upper Arm	5/8" 23-25 g	Anaphylactic reaction to a prior dose or component (neomycin, streptomycin, or polymyxin B)
		IM	Deltoid	1"-1.5" 22-25 g	
Measles, Mumps, Rubella (MMR)	1st dose at/after12 mo	SC	Lateral Upper Arm	5/8" 23-25 g	Anaphylactic reaction to a prior dose or component (neomycin, gelatin); pregnancy
Varicella (Var)	1st dose at/after 12 mo 12mo-12 yr: 3 months between dose 1 & 2	SC	Lateral Upper Arm	5/8" 23-25 g	Anaphylactic reaction to a prior dose or component (neomycin, gelatin); pregnancy
Inactivated Influenza (TIV)	Assure vaccine brand being used is age-appropriate	IM	Deltoid	1"-1.5" 22-25 g	Anaphylactic reaction to a prior dose or component (eggs)
Meningococcal Conjugate (MCV4)	Routinely given at age 11-12 yrs; catch-up all adolescents 13-18 yrs	IM	Deltoid	1"-1.5" 22-25 g	Anaphylactic reaction to a prior dose or component; history of GBS
Human Papilloma-virus (HPV4)	Females 9 through 26 years	IM	Deltoid	1"-1.5" 22-25 g	Anaphylactic reaction to prior dose or component; hypersensitivity to baker's yeast
Hepatitis A (hep A)	1st dose at/after 12 mo 2nd dose 6 mo later	IM	Deltoid	1"-1.5" 22-25 g	Anaphylactic reaction to prior dose or component; hypersensitivity to alum (Havrix®: 2-phenoxyethanol)

* Professional judgment is appropriate when selecting needle length and administration site; do not administer vaccines in buttocks

⊕ See package insert for complete contraindication listing; components may vary by brand of vaccine used

◙ Two Tdap vaccines available: Boostrix® (GSK) is licensed for persons 10-18 yrs; ADACEL™ (sanofi pasteur) licensed for persons 11-64 yrs.

December 14, 2007

Injectable Vaccines for Selected Populations**

Vaccine	Recommendation for use and age	Route	Site*	Needle Length*	Contraindications⊕
Meningococcal Polysaccharide (MPSV4)	• For children 2 years and older at high risk for meningococcal disease **and** MCV4 (conjugate) is not available • For persons with a history of Guillain-Barre syndrome (GBS)	SC	Lateral Upper Arm	5/8" 23-25g	Anaphylactic reaction to prior dose of component
Pneumococcal polysaccharide (PPV 23)	• For children 2 yrs and older at high risk for invasive pneumococcal disease • Given after completion of an age-appropriate PCV7 series - Minimum interval of 8 weeks between PCV7 and PPV23	IM	Deltoid	1"-1.5" 22-25 g	Anaphylactic reaction to prior dose or component
		SC	Lateral Upper Arm	5/8" 23-25g	

*Professional judgment is appropriate when selecting needle length and administration site; do not administer vaccines in buttocks

⊕ See package insert for complete contraindication listing; components may vary by brand of vaccine used

** Refer to Recommended Childhood and Adolescent Immunization Schedule (available in Child/Adolescent Immunization Section of the AIM Kit on online at www.cdc.gov/vaccines) for information on the selected populations.

Medical Management of Vaccine Reactions in Children and Teens

All vaccines have the potential to cause an adverse reaction. To minimize adverse reactions, patients should be carefully screened for precautions and contraindications before vaccine is administered. Even with careful screening, reactions can occur. These reactions can vary from trivial and inconvenient (e.g., soreness, itching) to severe and life threatening (e.g., anaphylaxis). If reactions occur, staff should be prepared with procedures for their management. The table below describes procedures to follow if various reactions occur.

Reaction	Symptoms	Management
Localized	Soreness, redness, itching, or swelling at the injection site	Apply a cold compress to the injection site. Consider giving an analgesic (pain reliever) or antipruritic (anti-itch) medication.
	Slight bleeding	Apply an adhesive compress over the injection site.
	Continuous bleeding	Place thick layer of gauze pads over site and maintain direct and firm pressure; raise the bleeding injection site (e.g., arm) above the level of the patient's heart.
Psychological fright and syncope (fainting)	Fright before injection is given	Have patient sit or lie down for the vaccination.
	Extreme paleness, sweating, coldness of the hands and feet, nausea, light-headedness, dizziness, weakness, or visual disturbances	Have patient lie flat or sit with head between knees for several minutes. Loosen any tight clothing and maintain an open airway. Apply cool, damp cloths to patient's face and neck.
	Fall, without loss of consciousness	Examine the patient to determine if injury is present before attempting to move the patient. Place patient flat on back with feet elevated.
	Loss of consciousness	Check the patient to determine if injury is present before attempting to move the patient. Place patient flat on back with feet elevated. Call 911 if patient does not recover immediately.
Anaphylaxis	Sudden or gradual onset of generalized itching, erythema (redness), or urticaria (hives); angioedema (swelling of the lips, face, or throat); severe bronchospasm (wheezing); shortness of breath; shock; abdominal cramping; or cardiovascular collapse	See "Emergency Medical Protocol for Management of Anaphylactic Reactions in Children and Teens" on the next page for detailed steps to follow in treating anaphylaxis.

Supplies Needed

- ☐ Aqueous epinephrine 1:1000 dilution, in ampules, vials of solution, or prefilled syringes, including epinephrine auto-injectors (e.g., EpiPen). If EpiPens are to be stocked, both EpiPen Jr. (0.15 mg) and adult EpiPens (0.30 mg) should be available.
- ☐ Diphenhydramine (Benadryl) injectable (50 mg/mL solution) and oral (12.5 mg/5 mL suspension) and 25 mg or 50 mg capsules or tablets
- ☐ Syringes: 1–3 cc, 22–25g, 1", 1½", and 2" needles for epinephrine and diphenhydramine (Benadryl)
- ☐ Pediatric & adult airways (small, medium, and large)
- ☐ Sphygmomanometer (child, adult & extra-large cuffs) and stethoscope
- ☐ Pediatric & adult size pocket masks with one-way valve
- ☐ Alcohol swabs
- ☐ Tongue depressors
- ☐ Flashlight with extra batteries (for examination of mouth and throat)
- ☐ Wrist watch
- ☐ Tourniquet
- ☐ Cell phone or access to an on-site phone

www.immunize.org/catg.d/p3082a.pdf • Item #P3082a (8/06)

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Emergency Medical Protocol for Management of Anaphylactic Reactions in Children and Teens

Signs and Symptoms of Anaphylactic Reaction

Sudden or gradual onset of generalized itching, erythema (redness), or urticaria (hives); angioedema (swelling of the lips, face, or throat); bronchospasm (wheezing); shortness of breath; shock; abdominal cramping; or cardiovascular collapse.

Treatment in Children and Teens

a. If itching and swelling are confined to the injection site where the vaccination was given, observe patient closely for the development of generalized symptoms.

b. If symptoms are generalized, activate the emergency medical system (EMS; e.g., call 911) and notify the on-call physician. This should be done by a second person, while the primary nurse assesses the airway, breathing, circulation, and level of consciousness of the patient.

c. Administer aqueous epinephrine 1:1000 dilution (i.e., 1 mg/mL) intramuscularly; the standard dose is 0.01 mg/kg body weight, up to 0.3 mg maximum single dose in children and 0.5 mg maximum in adolescents (see chart below).

d. In addition, for anaphylaxis, administer diphenhydramine either orally or by intramuscular injection; the standard dose is 1 mg/kg body weight, up to 30 mg maximum dose in children and 100 mg maximum dose in adolescents (see chart below).

e. Monitor the patient closely until EMS arrives. Perform cardiopulmonary resuscitation (CPR), if necessary, and maintain airway. Keep patient in supine position (flat on back) unless he or she is having breathing difficulty. If breathing is difficult, patient's head may be elevated, provided blood pressure is adequate to prevent loss of consciousness. If blood pressure is low, elevate legs. Monitor blood pressure and pulse every 5 minutes.

f. If EMS has not arrived and symptoms are still present, repeat dose of epinephrine every 10–20 minutes for up to 3 doses, depending on patient's response.

g. Record all vital signs, medications administered to the patient, including the time, dosage, response, and the name of the medical personnel who administered the medication, and other relevant clinical information.

h. Notify the patient's primary care physician.

Suggested Dosing of Epinephrine and Diphenhydramine

Age Group Dose	Weight * in kg	Weight (lbs)* in lbs	Epinephrine Dose 1 mg/mL injectable (1:1000 dilution) intramuscular	Diphenhydramine (Benadryl) 12.5 mg/5 mL liquid 25 and 50 mg capsules or tabs 50 mg/mL injectable
1–6 mos	4–7 kg	9–15 lbs	0.05 mg (0.05 ml)	5 mg
7–18 mos	7–11 kg	15–24 lbs	0.1 mg (0.1 ml)	10 mg
19–36 mos	11–14 kg	24–31 lbs	0.15 mg (0.15 ml)	15 mg
37–48 mos	14–17 kg	31–37 lbs	0.15 mg (0.15 ml)	20 mg
49–59 mos	17–19 kg	37–42 lbs	0.2 mg (0.2 ml)	
5–7 yrs	19–23 kg	42–51 lbs	0.2 mg (0.2 ml)	30 mg
8–10 yrs	23–35 kg	51–77 lbs	0.3 mg (0.3 ml)	
11–12 yrs	35–45 kg	77–99 lbs	0.4 mg (0.4 ml)	40 mg
13 yrs & older	45+ kg	99+ lbs	0.5 mg (0.5 ml)	50–100 mg

*Dosing by body weight is preferred.

These standing orders for the medical management of vaccine reactions in child and teenage patients shall remain in effect for patients of the _____ (*name of clinic*) until rescinded or until _____ (*date*).

Medical Director's signature _____ Effective date _____

Sources: American Academy of Pediatrics. Passive Immunization. In: Pickering LK, ed. *Red Book: 2006 Report of the Committee on Infectious Diseases.* 27th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2006: 64–66.

American Pharmacists Association, Grabenstein, JD, *Pharmacy-Based Immunization Delivery,* 2002.

www.immunize.org/catg.d/p3082a.pdf • Item #P3082a (8/06)

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Medical Management of Vaccine Reactions in Adult Patients

All vaccines have the potential to cause an adverse reaction. In order to minimize adverse reactions, patients should be carefully screened for precautions and contraindications before vaccine is administered. Even with careful screening, reactions may occur. These reactions can vary from trivial and inconvenient (e.g., soreness, itching) to severe and life threatening (e.g., anaphylaxis). If reactions occur, staff should be prepared with procedures for their management. The table below describes procedures to follow if various reactions occur.

Reaction	Symptoms	Management
Localized	Soreness, redness, itching, or swelling at the injection site	Apply a cold compress to the injection site. Consider giving an analgesic (pain reliever) or antipruritic (anti-itch) medication.
	Slight bleeding	Apply an adhesive compress over the injection site.
	Continuous bleeding	Place thick layer of gauze pads over site and maintain direct and firm pressure; raise the bleeding injection site (e.g., arm) above the level of the patient's heart.
Psychological fright and syncope (fainting)	Fright before injection is given	Have patient sit or lie down for the vaccination.
	Extreme paleness, sweating, coldness of the hands and feet, nausea, light-headedness, dizziness, weakness, or visual disturbances	Have patient lie flat or sit with head between knees for several minutes. Loosen any tight clothing and maintain an open airway. Apply cool, damp cloths to patient's face and neck.
	Fall, without loss of consciousness	Examine the patient to determine if injury is present before attempting to move the patient. Place patient flat on back with feet elevated.
	Loss of consciousness	Check the patient to determine if injury is present before attempting to move the patient. Place patient flat on back with feet elevated. Call 911 if patient does not recover immediately.
Anaphylaxis	Sudden or gradual onset of generalized itching, erythema (redness), or urticaria (hives); angioedema (swelling of the lips, face, or throat); severe bronchospasm (wheezing); shortness of breath; shock; abdominal cramping; or cardiovascular collapse.	See "Emergency Medical Protocol for Management of Anaphylactic Reactions in Adults" on the next page for detailed steps to follow in treating anaphylaxis.

(continued on page 2)

Technical content reviewed by the Centers for Disease Control and Prevention. Nov. 2006

www.immunize.org/catg.d/p3082.pdf • Item #P3082 (11/06)

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(continued from page 1)

Emergency Medical Protocol for Management of Anaphylactic Reactions in Adults

Supplies Needed

- ☐ Aqueous epinephrine 1:1000 (i.e., 1 mg/mL) dilution, in ampules, vials of solution, or prefilled syringes, including epinephrine autoinjectors (e.g., EpiPen). If EpiPens are stocked, at least three adult EpiPens (0.30 mg) should be available.
- ☐ Diphenhydramine (Benadryl) injectable (50 mg/mL solution) and 25 mg or 50 mg capsules or tablets and syrup (12.5 mg/5 mL suspension)
- ☐ Syringes: 1–3 cc, 22–25g, 1", 1½", and 2" needles for epinephrine and diphenhydramine (Benadryl)
- ☐ Wristwatch with second hand
- ☐ Adult airways (small, medium, and large)
- ☐ Sphygmomanometer (adult and extra-large cuffs) and stethoscope
- ☐ Adult size pocket mask with one-way valve
- ☐ Alcohol swabs
- ☐ Tourniquet
- ☐ Tongue depressors
- ☐ Flashlight with extra batteries (for examination of the mouth and throat)
- ☐ Cell phone or access to an on-site phone

Signs and Symptoms of Anaphylactic Reaction

Sudden or gradual onset of generalized itching, erythema (redness), or urticaria (hives); angioedema (swelling of the lips, face, or throat); bronchospasm (wheezing); shortness of breath; shock; abdominal cramping; or cardiovascular collapse.

Treatment in Adults

a. If itching and swelling are confined to the injection site where the vaccination was given, observe patient closely for the development of generalized symptoms.

b. If symptoms are generalized, activate the emergency medical system (EMS; e.g., call 911) and notify the on-call physician. This should be done by a second person, while the primary nurse assesses the airway, breathing, circulation, and level of consciousness of the patient.

c. Administer aqueous epinephrine 1:1000 dilution intramuscularly, 0.01 mL/kg/dose (adult dose ranges from 0.3 mL to 0.5 mL, with maximum single dose of 0.5 mL).

d. In addition, for systemic anaphylaxis, administer diphenhydramine either orally or by intramuscular injection; the standard dose is 1–2 mg/kg, up to 100 mg maximum single dose.

e. Monitor the patient closely until EMS arrives. Perform cardiopulmonary resuscitation (CPR), if necessary, and maintain airway. Keep patient in supine position (flat on back) unless he or she is having breathing difficulty. If breathing is difficult, patient's head may be elevated, provided blood pressure is adequate to prevent loss of consciousness. If blood pressure is low, elevate legs. Monitor blood pressure and pulse every 5 minutes.

f. If EMS has not arrived and symptoms are still present, repeat dose of epinephrine every 10–20 minutes for up to 3 doses, depending on patient's response.

g. Record all vital signs, medications administered to the patient, including the time, dosage, response, and the name of the medical personnel who administered the medication, and other relevant clinical information.

h. Notify the patient's primary care physician.

Sources: 1. American Academy of Pediatrics. Passive Immunization. In: Pickering LK, ed. *Red Book: 2006 Report of the Committee on Infectious Diseases.* 27th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2006:64–66.
2. American Pharmacists Association, Grabenstein, JD. *Pharmacy-Based Immunization Delivery,* 2002.
3. *Got Your Shots? A Providers Guide to Immunizations in Minnesota,* Second Edition, Minnesota Department of Health, 2001:80-82.

These standing orders for the medical management of vaccine reactions in adult patients shall remain in effect for patients of the _____ (*name of clinic*) until rescinded or until _____ (*date*).

_____ Medical Director's signature

_____ Effective date

Appendix D