

**OREGON STATE PUBLIC HEALTH DIVISION,  
DHS IMMUNIZATION PROGRAM**

**Recommended Sites and Routes for Vaccine Administration**

**Revisions as of 7/28/06**

- Addition of the ventrogluteal hip site as a choice for intramuscular (IM) injections of vaccines and Immune globulin (IG).
- Instructions in how to administer a ventrogluteal IM injection are attached to this order.
- New table format and additional vaccine updates in Section II - Recommended Sites for Simultaneous Vaccine Administration.

**I. ORDER:**

Vaccinators should be familiar with the anatomy of the area into which they are injecting vaccine. An individual decision on needle size and site of injection must be made for each person on the basis of age, the volume of the material to be administered, the size of the muscle or subcutaneous area, and the depth below the muscle surface into which the material is to be injected.

Subcutaneous (SC) injections for immunizations are usually administered at a 45 degree angle into the thigh of infants aged <12 months and in the upper-outer triceps area of persons aged ≥ 12 months. SC injections can be administered into the upper-outer triceps area of an infant, if necessary.

Intramuscular (IM) injections for immunizations are administered at a 90 degree angle into the vastus lateralis muscle of infants. IM injections for children and adults may be administered into the vastus lateralis, deltoid, or ventrogluteal muscle depending on the muscle mass of each vaccinee. The needle should be long enough to reach the muscle mass and prevent vaccine from seeping into subcutaneous tissue. The dorsal gluteal buttock site should never be used as a vaccination site for active immunization.

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Signature

Health Officer or Medical Provider

Date

July 28, 2006

## II. A. RECOMMENDED SITES FOR SIMULTANEOUS VACCINE ADMINISTRATION

Administering Vaccines: Dose, Route, <sup>1,2,3</sup> Site, <sup>3,4,5,6</sup> and Needle Size <sup>7,8</sup>				
Intramuscular= IM, Subcutaneous=SC				
Vaccines	Dose	Route	Site choices	Needle Size
Diphtheria, Tetanus, Pertussis (DTaP, DT, Tdap, Td)	0.5 ml	IM	<b>Vastus lateralis:</b> infants (and toddlers lacking adequate deltoid mass) <b>Deltoid:</b> toddlers, children, adults <b>Ventrogluteal:</b> 3yr. thru adult	22-25g. 1-2" 21-23g.
Haemophilus influenza type B (HIB)	0.5 ml	IM	<b>Vastus lateralis:</b> infants (and toddlers lacking adequate deltoid mass) <b>Deltoid:</b> toddlers, children, adults <b>Ventrogluteal:</b> 3 yr. thru adult	22-25g. 1-2" 21-23g.
Hepatitis A (HepA)	≤18 yrs: 0.5 ml ≥19 yrs: 1.0 ml	IM	<b>Vastus lateralis:</b> infants (and toddlers lacking adequate deltoid mass) <b>Deltoid:</b> toddlers, children, adults <b>Ventrogluteal:</b> 3 yr. thru adult	22-25g. 1-2" 21-23g.
Hepatitis B (HepB)	≤19 yrs: 0.5 ml <sup>5</sup> ≥20 yrs: 1.0 ml	IM	<b>Vastus lateralis:</b> infants (and toddlers lacking adequate deltoid mass) <b>Deltoid:</b> toddlers, children, adults	22-25g. 1-2"
Influenza, live attenuated (LAIV)	0.5 ml	Intra nasal spray	Administer 0.25 ml dose into each nostril while patient is in an upright position	NA
Influenza, trivalent inactivated (TIV)	6-35 mos: 0.25 ml ≥3 yrs: 0.5 ml	IM	<b>Vastus lateralis:</b> infants (and toddlers lacking adequate deltoid mass) <b>Deltoid:</b> toddlers, children adults <b>Ventrogluteal:</b> 3 yrs. thru adult	22-25g. 1-2" 21-23g.
Measles, mumps, rubella (MMR)	0.5 ml	SC	<b>Anterolateral fat of thigh:</b> young children <b>Posterolateral fat of upper arm:</b> children or adults	23-25g. 5/8"

## II. A. RECOMMENDED SITES FOR SIMULTANEOUS VACCINE ADMINISTRATION (Continued)

Administering Vaccines: Dose, Route, <sup>1,2,3</sup> Site, <sup>3,4,5,6</sup> and Needle Size <sup>7,8</sup>				
Intramuscular= IM, Subcutaneous=SC				
Vaccines	Dose	Route	Site choices	Needle Size
Meningococcal (Menomune®)	0.5 ml	SC	<b>Anterolateral fat of thigh:</b> young children <b>Posterolateral fat of upper arm:</b> children and adults	23-25g. 5/8"
(Menactra™)	0.5 ml	IM	<b>Deltoid:</b> children and adults <b>Ventrogluteal:</b> children and adults	22-25g. 1-2" 21-23g.
Pneumococcal conjugate (PCV7)	0.5 ml	IM	<b>Vastus lateralis:</b> infants (and toddlers lacking adequate deltoid mass) <b>Deltoid:</b> toddlers and children <b>Ventrogluteal:</b> 3yr-5yr children	22-25g. 1-2" 21-23g.
Pneumococcal polysaccharide (PPV23)	0.5 ml	IM	<b>Deltoid:</b> children and adults <b>Ventrogluteal:</b> 3 yr thru adult	22-25g. 1-2" 21-23g.
		SC	<b>Anterolateral fat of thigh:</b> young children <b>Posterolateral fat of upper arm:</b> children and adults	23-25g. 5/8"
Polio, Inactivated (IPV)	0.5 ml	IM	<b>Vastus lateralis:</b> infants (and toddlers lacking adequate deltoid mass) <b>Deltoid:</b> toddlers and children	23-25g. 1-2"
		SC	<b>Anterolateral fat of thigh:</b> young children <b>Posterolateral fat of upper arm:</b> children and adults	23-25g. 5/8"
Rotavirus, live attenuated (RV)	2.0 ml	oral suspension	Squeeze the liquid into child's mouth until tube is empty	NA

## II. A. RECOMMENDED SITES FOR SIMULTANEOUS VACCINE ADMINISTRATION (Continued)

Administering Vaccines: Dose, Route <sup>1,2,3</sup> , Site <sup>3,4,5,6</sup> , and Needle Size <sup>7,8</sup>				
		Intramuscular = IM	Subcutaneous = SC	
Vaccine	Dose	Route	Site	Needle Size
Varicella (Var)	0.5 ml	SC	<b>Anteriolateral fat of thigh:</b> young children <b>Posterolateral fat of upper arm:</b> children and adults	23-25g. 5/8"
Human Papillomavirus (HPV)	0.5 ml	IM	<b>Deltoid:</b> children and adults <b>Ventrogluteal:</b> children or adults	22-25g. 1-2" 21-23g
Zoster Vaccine, Live (Zostavax®)	0.65 ml	SC	<b>Posterolateral fat of upper arm:</b> adults	23-25g. 5/8"

<sup>1</sup> Administering a vaccine by the recommended route is imperative. Delivering the vaccine into the appropriate tissue promotes optimal vaccine efficacy and diminishes the risk of severe local adverse reactions.

<sup>2</sup> In patients with bleeding disorders, the risk of bleeding after an IM injection can be minimized by vaccine administration immediately after receipt of replacement factor, use of a 23-gauge (or smaller) needle, and immediate application of direct pressure to the immunization site for at least 2 minutes.

<sup>3</sup> Vaccine containing adjuvants (DTaP, DT, Td, Tdap, Hep B) should be injected deep into the muscle mass to avoid local irritation.

<sup>4</sup> Intramuscular administration of large amounts of immune globulin or other passive immunization products should be performed with care to avoid injury to the patient. Select a site that is well into the upper, outer gluteal muscle mass or use the ventrogluteal site which is not near any major bones, nerves, or vessels.

<sup>5</sup> Research evidence from the last decade shows that the ventrogluteal site is not near any major bones, nerves, or vessels – thus is associated with no injuries and has less likelihood of unintentional subcutaneous injection which can result in more pain and altered drug absorption. The volume of medication is the critical factor in determining which site to use; volumes of 2 ml. or greater should be administered in the ventrogluteal (VG) site (CDC, 1999). Children should be ≥3 years or be judged to have adequate muscle mass before this site is used.

<sup>6</sup> **The dorsal gluteal buttock site should never be used as a vaccination site for active immunization.** Injection into the buttock has been associated with decreased immunogenicity of the Hepatitis B vaccine and Rabies vaccines. Give these two vaccines in the deltoid muscle. An individual decision must be made for each child based on the volume of the material to be administered and the size of the muscle into which it is to be injected.

<sup>7</sup> The needle gauge for IM injections in infants, children, and adults is 21–25 gauge (depending on the site) and the recommended needle length runs from 1 to 2 inches in children and adults depending on the muscle mass of the individual. A needle length of 7/8 inches is recommended for some newborns and infants with small muscle mass.

<sup>8</sup> The needle gauge for SC injections in infants, children, and adults is 23–25 gauge and the recommended needle length is 5/8 inches for all ages.

## II.B RECOMMENDED SITES FOR ADMINISTERING COMBINATION VACCINES

Administering Vaccines: Dose, Route <sup>1,2,3</sup> , Site <sup>3,4,5,6</sup> , and Needle Size <sup>7,8</sup>				
		Intramuscular = IM		Subcutaneous = SC
Combination Vaccines	Dose	Route	Site	Needle Size
DTaP+HepB+IPV (Pediatrix™)	0.5 ml	IM	<b>Vastus lateralis:</b> for infants (& toddlers lacking adequate deltoid mass) <b>Deltoid:</b> toddlers & children	22-25g, 1-2"
DTaP+Hib(Trihibit™)				
Hib+HipB(Comvax™)				
MMR+Varicella (ProQuad®)	0.5 ml	SC	<b>Anteriolateral fat of thigh:</b> young children <b>Posterolateral fat of upper arm:</b> older children	23-25g, 5/8"
HepA+HepB (Twinrix®)	≥18 yrs: 1.0 ml	IM	<b>Deltoid:</b> adults <b>Ventrogluteal:</b> adults	22-25g, 1-2" 21-25g.

<sup>1</sup> Administering a vaccine by the recommended route is imperative. Delivering the vaccine into the appropriate tissue promotes optimal vaccine efficacy and diminishes the risk of severe local adverse reactions.

<sup>2</sup> In patients with bleeding disorders, the risk of bleeding after an IM injection can be minimized by vaccine administration immediately after receipt of replacement factor, use of a 23-gauge (or smaller) needle, and immediate application of direct pressure to the immunization site for at least 2 minutes.

<sup>3</sup> Vaccine containing adjuvants (DTaP, DT, Td, Tdap, Hep B) should be injected deep into the muscle mass to avoid local irritation.

<sup>4</sup> Intramuscular administration of large amounts of immune globulin or other passive immunization products should be performed with care to avoid injury to the patient. Select a site that is well into the upper, outer gluteal muscle mass or use the ventrogluteal site which is not near any major bones, nerves, or vessels.

<sup>5</sup> Research evidence from the last decade shows that the ventrogluteal site is not near any major bones, nerves, or vessels – thus is associated with no injuries and has less likelihood of unintentional subcutaneous injection which can result in more pain and altered drug absorption. The volume of medication is the critical factor in determining which site to use; volumes of 2 ml. or greater should be administered in the ventrogluteal (VG) site (CDC, 1999). Children should be ≥3 years or be judged to have adequate muscle mass before this site is used.

<sup>6</sup> **The dorsal gluteal buttock site should never be used as a vaccination site for active immunization.** Injection into the buttock has been associated with decreased immunogenicity of the Hepatitis B vaccine and Rabies vaccines. Give these two vaccines in the deltoid muscle. An individual decision must be made for each child based on the volume of the material to be administered and the size of the muscle into which it is to be injected.

**Section II. B Footnotes Continued:**

<sup>7</sup> The needle gauge for IM injections in infants, children, and adults is 21–25 gauge (depending on the site) and the recommended needle length runs from 1 to 2 inches in children and adults depending on the muscle mass of the individual. A needle length of 7/8 inches is recommended for some newborns and infants with small muscle mass.

<sup>8</sup> The needle gauge for SC injections in infants, children, and adults is 23–25 gauge and the recommended needle length is 5/8 inches for all ages.

Source: Adapted from table located at; [www.immunize.org/catg.d/p3085.pdf](http://www.immunize.org/catg.d/p3085.pdf) Item #P3085 (10/05)

Please note: Always refer to the package insert included with each biologic for complete vaccine administration information.

**III. INTRADERMAL INJECTIONS:**

Age	Needle Gauge	Needle Length	Site
All	25-27	3/8-3/4 inch	Volar surface of the forearm <sup>1, 2</sup>

<sup>1</sup>The PPD Mantoux screening test for TB should be given within 20 minutes of drawing it up. More than a brief exposure to room temperature or light can make the skin test antigens less effective. (Source: Tuberculosis Skin Test Procedures Manual; April 2000 – National Health and Nutrition Examination Survey; p4-2.)

<sup>2</sup> Exception: preexposure intradermal rabies vaccine should be given over the deltoid area. See: MMWR, Rabies Prevention - United States, 1991; Recommendations and Reports, March 22, 1991/Vol. 40/No. RR-3.

**IV. ADVERSE EVENT REPORTING:**

Adverse events following should be reported by public providers to the Oregon State Public Health Division, DHS Immunization Program using a Vaccine Adverse Events Reporting System form (VAERS), according to state guidelines. Private providers should report all adverse events directly to VAERS. VAERS phone number: (800) 822-7967, and the website address is: [www.vaers.hhs.gov](http://www.vaers.hhs.gov).

**V. REFERENCES:**

1. Vaccine Administration. In: *Epidemiology and Prevention of Vaccine-Preventable Diseases* (“Pink Book”). Atkinson W, Hamborsky J, Wolfe S, eds. 9<sup>th</sup> ed. Washington, DC: Public Health Foundation, 2006: Appendix D.
2. Vaccine Administration. In: Pickering LK, ed. *Red Book: 2006 Report of the Committee on Infectious Diseases*. 27<sup>th</sup> ed. Elk Grove Village, IL: American Academy of Pediatrics; 2006: 18-21.

3. Greenway K (2004) *Nursing Standard* 18 (25), 39-42; Using the ventrogluteal site for intramuscular injections.
4. Nicholl LH & Hesby A (2002) *Applied Nursing Research* 15 (3), 149-162; Intramuscular Injection: An Integrative Research Review and Guideline for Evidence-Based Practice.
5. Beyea, S.C. & Nicoll. L.H. (1995). Administration of medications via the intramuscular route: An integrative review of the literature and research-based protocol for the procedure. *Applied Nursing Research*, 8 (1), 23-33.
6. *Immunization Techniques Video*; presented by the California Department of Health Services Immunization Branch (June, 2001)
7. ACIP General Recommendations on Immunization; February 2002.  
[www.cdc.gov/mmwr/pdf/rr/rr5102.pdf](http://www.cdc.gov/mmwr/pdf/rr/rr5102.pdf).
8. Biologic package inserts.

For more information or to clarify any part of the above order, consult with your health officer or call the Oregon State Public Health Division, DHS Immunization Program at (971) 673-0300.

**Visit our website at <http://oregon.gov/dhs/ph/imm/index.shtml>.  
To request this material in an alternate format (e.g., braille),  
please call (971) 673-0300.**