

# VACCINE ADMINISTRATION TECHNIQUES

## RECOMMENDATIONS OF MARICOPA COUNTY DEPARTMENT OF PUBLIC HEALTH COMMUNITY HEALTH NURSING IMMUNIZATION PROGRAM

Reviewed March 2009



### Vaccines and Routes of Administration

<u>Oral (PO):</u>	Rotavirus vaccines
<u>Intramuscular (IM):</u>	DTaP, DT, Td/Tdap, Hepatitis B, Hepatitis A, Hib, Inactivated polio (IPV) or subcutaneous(SC), Pneumococcal Conjugate (PCV7), Influenza, trivalent inactivated (TIV), Meningococcal (MCV4), Pneumococcal (PPV23) or subcutaneous (SC), Human Papillomavirus (HPV). Combination vaccines: ComVax – Hepatitis B/Hib, Pediarix – DTaP/IPV/Hepatitis B, and Pentacel – DTaP/IPV/Hib
<u>Subcutaneous (SC):</u>	MMR, Varicella, Inactivated Polio (IPV) or IM, Pneumococcal (PPV23) or IM. Combination vaccine: MMRV – MMR and Varicella
<u>Intradermal:</u>	PPD Mantoux test (Tuberculin skin test)
<u>Intranasal:</u>	Influenza, live attenuated (LAIV)

### Needle Sizes

<u>Intramuscular:</u> <i>Vastus Lateralis</i>  <i>Deltoid muscle</i>	1" - 1-1/2", 22- to 25-gauge needle ( <i>Lateral thigh muscle</i> ) - a 1" needle is recommended for infants, 7/8" may be used on small infants; For most children, a 1" needle is recommended. For obese children and adults, a minimum of a 1" needle is recommended. A longer needle length is preferred because it is more likely the vaccine will be delivered into muscle and not subcutaneous tissue. This is important with vaccine containing tetanus, diphtheria and/or pertussis (DTaP/DT/Td/Tdap) because of its tendency to form sterile abscesses or cellulitis in subcutaneous tissue. Vaccine efficacy could also be reduced by delivering into subcutaneous tissue rather than the muscle.
<u>Subcutaneous:</u>	5/8" - 23- to 25-gauge needle
<u>Intradermal:</u>	1/2" - 26- or 27-gauge needle
<u>Intranasal:</u>	0.2-ml sprayer, administer 0.1-ml into each nostril while patient is in an upright position.

### Sites

Entirely expose the injection area so the anatomical landmarks can be identified.

It is recommended to standardize the sites for each vaccine administered to reduce medication error.

**It is also recommended to give no more than 2 IMs in one muscle.**

Intramuscular for infants (not walking): Vastus lateralis muscle in the antero-lateral area of the middle or upper thigh. If more than one injection needs to be given in same site, separate by one inch. Use DTaP/DT alone in one site (*most reactive of the vaccines used in children under age 7*).

Intramuscular for toddlers, children and adults: Deltoid muscle, where the muscle is largest in the postero-lateral area below the level of the acromion and above the level of the armpit. If more than one injection needs to be given in the same arm, separate by one inch. Use HPV alone in one site (*most reactive of the vaccines used in older children*).

Subcutaneous, all ages: Back of the arm between shoulder and elbow or the outer aspect of the upper arm. An acceptable alternative for infants is the fatty area over the vastus lateralis muscle (subcutaneous tissue).

Intradermal, all ages: The PPD Mantoux test is administered on the volar surface of the left forearm.

### Needle Insertion

Intramuscular: Angle of the needle is perpendicular to the skin (90°angle). Use a quick thrust to penetrate the skin and then guide the needle to the muscle with firm and steady pressure.

Subcutaneous: Angle of the needle insertion is 45° to the skin. Pinching up some of the subcutaneous tissue with the other hand can prevent inadvertent injection into muscle.

Intradermal: Angle of the needle is nearly parallel to the skin, with needle bevel upward.

**Aspiration** There is no data documenting the necessity to aspirate before injecting routine childhood vaccines.

## Filling Syringes

Draw just the required amount for the dose (usually 0.5cc) from multi-dose vials or all liquid contained in single dose vial. Get rid of air bubbles or excess air from the syringe by gently tapping the side of the syringe and advancing the plunger. **Avoid squirting any vaccine out of the syringe.** Changing needles between the drawing of vaccine into the syringe and injecting is generally not necessary.

Use reconstituted MMR within 8 hours or else it must be discarded. **Never prefill varicella vaccine or MMRV vaccine.** It has to be used in 30 minutes or discarded. Reconstituted ActHib vaccine must be used within 24 hours. **Pentacel is reconstituted and used immediately!**

Vaccines may not be mixed in the same syringe unless they are a licensed combination vaccine (**ComVax**-Hepatitis B and Hib; **Pediarix**-DTaP, IPV and Hepatitis B; **Pentacel**-DTaP, IPV and ActHib; and, **MMRV**-Measles and Varicella).

Conjugate vaccines (Hib, Pneumococcal conjugate PCV7, Meningococcal conjugate MCV4) containing diphtheria, tetanus or meningococcal toxoid as protein carriers are not considered immunizing agents against diphtheria, tetanus or meningococcal diseases. Therefore there is no change in the DTaP/DT or MCV4 schedules.

## Safety

Before filling a syringe always check and re-check the vial to make sure you are using the correct vaccine.

## Simultaneous Administration (at Separate Sites)

Recommended by the Advisory Committee for Immunization Practices (ACIP). **Giving vaccines simultaneously does not increase risk of adverse events and does not reduce vaccine efficacy.** When injecting multiple vaccines in same site, separate by 1 to 2 inches. **It is recommended to use no more than two vaccines in one muscle.**

## Blood-borne Pathogen Standard

**Needle and syringe:** The **Needlestick Safety and Prevention Act of 2000** (effective 4/18/01) revises engineering controls to include: "**safer medical devices, such as sharps with engineered sharps injury protections and needleless systems**" are to be used where feasible. **Sharps with engineered sharps injury protections include:** syringes with a sliding sheath that shields the attached needle after use; and needles that retract into a syringe after use. **Needleless systems include** jet injection systems that deliver liquid medication beneath the skin or through to a muscle.

**Gloving:** Gloving is not required for giving immunizations. Gloves should always be available for emergency purposes or housekeeping (work area needs to be cleaned/decontaminated). At this time gloving is at the option of the program administrator or individual vaccine injector.

**Regulated Waste:** The contaminated item must release blood in a liquid or semi-liquid state if compressed. These items need to be contained in a labeled or color-coded bag.

**Unregulated Waste:** Used alcohol wipes, cotton balls and band-aids are discarded in plastic-lined trash containers.

## References and Resources:

Arizona Department of Health Services. *Arizona Immunization Guide*. Revised July 1998.

California Department of Health Services. *Vaccine Administration Techniques*. May 2001.

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Wink DM. *Is That Needle Long Enough For That Infant?* American Journal of Nursing. April 1990.

OSHA (Occupational Safety & Health Administration). Revision to OSHA's Bloodborne Pathogens Standard *Technical Background and Summary*. April 2001.

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Centers for Disease Control and Prevention. *Epidemiology and Prevention of Vaccine-Preventable Diseases*. Atkinson W, Hamborsky J, McIntyre L, and Wolfe S, eds. 10<sup>th</sup> ed. Washington DC: Public Health Foundation, Feb. 2008: Appendix D: pages D1-D26.