

**IMMUNIZATION COMPETENCIES AND BEST PRACTICES
FOR EMS PERSONNEL**

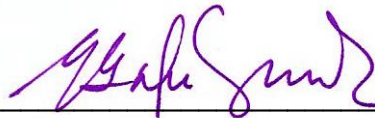
**THE DIVISION OF PREHOSPITAL MEDICINE RESEARCH
AND**

**REVIEWED, REVISED AND APPROVED BY
THE SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL**


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L. Brannon Traxler, MD, MPH
Public Health Director - Interim



Edgard DesChamps, III, MD
State EMS Medical Control Physician
Chair, EMS Advisory Board



Arnold Alier, EdD, NRP
Division Director of Prehospital Medicine Research

SUBJECT: INTRAMUSCULAR INJECTION BEST PRACTICES

POLICY STATEMENT:

Intramuscular injections of medications or biologics (e.g., vaccines, immunoglobulins, toxoids) will be administered using current guidelines related to site selected, volume injected into site, identification of landmarks for appropriate placement of injection, and use of medical safety equipment.

STANDARDS:

1. EMS personnel administering intramuscular injections must use proper medical safety devices, following the manufacturer's recommended procedures.
2. EMS personnel will not change needles after reconstitution of vaccine and/or medication in single dose vials unless the needle has become contaminated or bent or the manufacturer recommends a needle change. If the needle is changed, it must be replaced with a medical safety device needle. Needle may be changed after drawing up a dose from a multidose vial.
3. Administration of intramuscular injections will be performed according to DHEC standing orders, DHEC MD orders and manufacturer guidelines. For Home Health, administration of intramuscular injections will also be provided per MD order.
4. The buttocks or gluteal muscle should not be used for the administration of vaccines or toxoids because of the risk of injury to the sciatic nerve. Variation from the recommended route and site for some vaccines can result in inadequate protection. Injection in the buttocks may be required for certain medications used in programs other than immunization clinics.
5. OSHA regulations do not require gloves to be worn when administering vaccinations, unless persons administering vaccinations are likely to come into contact with potentially infectious body fluids or have open lesions on their hands.

Equipment/Supplies:

1. Soap and running water or hand sanitizer
2. Clean nitrile gloves (if appropriate)
3. Documentation supplies
4. Medication or biologics: vial or prefilled syringe
5. Cotton ball or 2x2 gauze
6. Alcohol wipe
7. Adhesive bandage (optional, must be on hand)
8. Syringe and needle with safety device (See table below for selection of appropriate safety syringe and needle based on patient age/muscle size)

Age	Needle Gauge and Length*	Muscle
Newborn to 28 days	25g -- 5/8 inch	• vastus lateralis
Infant 1-12 months	23-25g -- 5/8t to 1 inch	• vastus lateralis
Toddler 13-35 months	23g-25g - 1inch	• vastus lateralis (preferred site)
	25g - 5/8 inch	• deltoid (only if muscle mass is adequate)

Age	Needle Gauge and Length*	Muscle
Children 3 - 18 years	23-25g -- 5/8 ¹¹ to 1 inch	<ul style="list-style-type: none"> • deltoid (preferred site)
	23-25g -- 1 to 1 ½ inch	<ul style="list-style-type: none"> • vastus lateralis
Adults 19 and older	22-25 gauge -- 1 to 1 ½ inch 1 inch - Women < 200 pounds; men < 260 pounds 1 ½ inch - Women > 200 pounds; men > 260 pounds	<ul style="list-style-type: none"> • deltoid (preferred site) • vastus lateralis
For certain medications used in Home Health or Preventive Health clinics	22-25 gauge - 1 to 1 ½"	<ul style="list-style-type: none"> • ventrogluteal muscle • dorsogluteal muscle

* A 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

PROCEDURES:

Injection Techniques

1. Cleanse your hands and don gloves as appropriate. Use soap and running water if available; if not available use hand sanitizer.
2. Use appropriate technique to inject the medication or biologic:
 - a. **Select site.** In the absence of specific manufacturer recommendations or specific orders, selection of the location of injection administration is the responsibility of the paramedic. See illustrations in the Appendix for injection sites.

Potential injection sites:

- Vastus Lateralis: Anterolateral thigh
- Deltoid Muscle: 1-2" below the acromion process
- Ventrogluteal Muscle: Place palm on the greater trochanter. Make a "v" with index and middle finger, placing one on the anterior superior iliac spine and spreading the other toward the buttock. Inject into the "v" above the line extending from the greater trochanter and posterior superior iliac spine.
- Dorsogluteal Muscle: Locate the posterior superior iliac spine then locate the greater trochanter. Draw an imaginary line between the two and inject into the upper outer quadrant. This site is NOT used for vaccine administration.

- b. **Volume Considerations:** Paramedics must use clinical judgment regarding the safe maximum volume, considering the (a) size of the muscle, (b) health of the muscle, and (c) adequacy of blood flow. Ranges on acceptable volumes are specified in the Appendix under each figure describing the location of the injections.
 - c. The paramedic is responsible for safely positioning and/or restraining the patient during administration of injections.
 - d. Prepare the skin by swabbing with an alcohol wipe (unless contraindicated by medication instructions) and allowing the area to dry.
 - e. Pull the skin taut around the injection site with the thumb and index finger. If necessary to minimize the chance of striking bone, the subcutaneous and muscle tissue may be bunched between the thumb and index finger (1" needle must be used).
 - f. Holding the syringe as if it were a dart, insert the needle at a 90° angle with a quick thrust until it is at the appropriate depth sufficient to enter muscle.
 - g. Aspiration:
 - i. Review the manufacturer's recommendations to see if aspiration is suggested or required. Because there are no large blood vessels in the recommended sites where vaccines are administered, aspiration before injection of vaccines is not necessary.
 - ii. If aspiration is suggested/required, pull back slightly on the plunger to make sure the needle has not entered a vein. If blood is aspirated, remove and discard the syringe and needle. Start over with a new syringe and needle. If blood is not aspirated, continue with the injection process.
 - h. Depress the plunger to inject solution. Inject the medication slowly to allow it to disperse through the tissue and decrease discomfort.
 - i. Quickly remove the needle, cover the injection site with a cotton ball or 2x2 gauze and apply gentle pressure. Engage the medical safety device per the manufacturer's instructions.
 - j. If multiple injections in the same location are required, rotate to a site at least one inch from the previous site.
3. Follow your Exposure Control Plan regarding sharps.
 4. Remove gloves if they were needed and cleanse the hands.
 5. Document according to program standards, including
 - a. name of medication or biologic
 - b. route
 - c. site of the injection
 - d. lot number
 - e. dose number
 - f. date administered.
 6. Documentation may also include time administered, patient's response, etc.

REFERENCES:

Centers for Disease Control and Prevention. Epidemiology and Prevention of Vaccine-Preventable Diseases. Atkinson W, Wolfe S, Hamborsky J, eds. 12th ed. Washington DC: Public Health Foundation, 2012.

Centers for Disease Control and Prevention. General Recommendations on Immunization: Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 2011; 60 (No. RR 2).

DHEC Exposure Control Plan - <http://dhecneUhs/infection>

DHEC Standing Orders

Immunization Action Coalition - <http://www.immunize.org/> How to Administer Intramuscular (IM) Injections <http://www.immunize.org/handouts/administering-vaccines.asp>

OSHA Bloodborne Pathogens Standard 29 CFR 1910.1030; 12/6/91, 1/18/01

Aspiration Guidelines

White, L, Duncan, G, Baumle, W. **Foundations of Basic Nursing**. Third edition, pp. 859-864.

Smith, S, Duell, D, Martin, B. **Clinical Nursing Skills: Basic to Advanced Skills**. 1st Edition. 2008. P.617

DATE OF APPROVAL: December 16, 2004

REVISION DATE:

1/8/2014

3/5/2014

- Provided clarification for acceptable volumes noted in Appendix A.
- Within "Needle Gauge and Length" table, needle gauge for Infant 1-12 months changed to range of 23-25 g.

Appendix A: Injection Sites



Figure 1 - Vastus lateralis Muscle.
*Acceptable volume 0.5 to 1.0 ml for infant/child and up to 2.0 ml for adult depending on size of muscle.

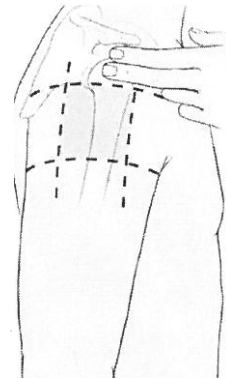


Figure 2 - Deltoid Muscle.
*Acceptable volume of 0.5 ml to 1.0 ml for infant/child and up to 2.0 ml (adult) depending on size of muscle.

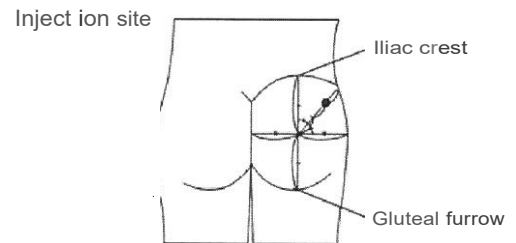
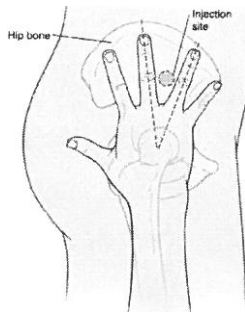


Figure 3 - Ventrogluteal Muscle.

*Acceptable volume 0.5 to 1.0 ml for infant/child and up to 2.0 ml for adult depending on size of muscle.

Figure 4 - Dorsogluteal Muscle.

*Acceptable volume of 0.5 ml to 1.0 ml for infant/child and up to 2.0 ml (adult) depending on size of muscle.

*These are general standards for volume considerations. Specific manufacturer recommendations will supersede these guidelines. (Refer to package insert)

EMS Skills List for Immunization Initiative

Competency	Clinical Skill, Technique, Procedure	Meets	Needs to Improve	Plan of Action
A. Education	1. Greets patient/family, introduces self, answers questions			
	2. Assesses patient immunization status, vaccine(s) needed			
	3. Accommodates for language barriers			
	4. Explains what vaccination to be given and possible side effects			
	5. Verifies VIS given/read, answers questions			
	6. Screens for precautions/contraindications to receipt of vaccine(s)			
	7. Reviews comfort measures appropriate to age			
B. Medical Orders/ Protocols	1. Knows where to find, and expresses understanding of Standing Orders, adverse reaction policy, and other appropriate policies/protocols			
	2. Identifies location and contents of emergency box			
	3. Knows to report needle stick injury or BBP exposure to supervisor immediately			
C. Vaccine Handling	1. Checks injectable vaccine vial/prefilled syringe label; intranasal sprayer label; and/or oral dosing applicator label for expiration date and contents			
	For vials:			
	2. Cleans vial stopper with alcohol swab			
	3. Selects correct needle size and refreshes needle prn			
	4. Shakes/inverts vial, draws up correct dose			
	5. Disposes of single dose vial in sharps container			
D. Administering IM/SC Vaccine	6. If multi-dose vial used, properly places opened/dated vial in storage unit.			
	1. Verifies patient identity			
	2. Washes hands - may apply gloves			
	3. Positions patient, properly restrained if necessary			
	4. Identifies correct anatomical site and preps in circular fashion with alcohol, allowing time to dry or dries with cotton/gauze			
	5. Injects vaccine at appropriate angle with steady pressure			
	6. Withdraws needle and applies gentle pressure to site with cotton ball or gauze			
	7. Properly engages needle safety device and disposes of needle in sharps container			
8. Provides appropriate comfort measures as needed/requested				

EMS Skills List for Immunizations Initiative

Paramedic Signature

Date

Supervising **MD** Signature

Date

Training Officer Signature

Date

Agency EMS Director

Date

By affixing my signature to this Document I hereby attest the above named individual has satisfactorily completed The immunization skills checklist and is proficient in all skills listed.

