

Patient/Family Care

Children's Hospital
Columbus, Ohio



NATIONWIDE CHILDREN'S
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General Procedure

Section: Medication	Originated: 1979
Number: 35:25	Revised: 3/99, 8/99, 6/03, 3/08, 1/10, 7/12, 6/15, 5/18, 5/19
Subject:	Medication Administration: Intramuscular, Subcutaneous and Intradermal

PURPOSE:

To safely administer intramuscular, subcutaneous and intradermal medication

POLICY STATEMENT:

1. All NCH medication administration policies apply.
2. If patient is to receive multiple injections, the sites must be rotated.
3. Anatomical landmarks for intramuscular injection sites should always be palpated due to individual anatomical differences.
4. Pain of injections will be managed using approved topical analgesia or devices as appropriate.
5. Recommended intramuscular sites for vaccine administration are the vastus lateralis and the deltoid.
6. Needle length should be long enough to reach muscle mass for injections indicated as intramuscular. Consider patient's weight and BMI when choosing needle length.
7. The Dorsogluteal site is **NOT** to be used as a site for intramuscular injections.
8. Z-Track Injection delivery should be used with any intramuscular injection where the skin can be displaced at least one inch.
9. Some medication administration may fall outside the outlined General Guide parameters (e.g. fosphenytoin can be given up to 20 ml per site; needle length may need to be greater than 1 ½ inch). Licensed healthcare professionals **MUST** check drug information references, primary literature and NCH-specific guidelines to confirm appropriateness.

RELATED POLICIES:

35:01 Medication Administration and Documentation
30:12 Patient Immunizations

APPROVED: _____
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PART I:

A. General Instructions for an Intramuscular (IM) injection via syringe

Intramuscular injections are administered into muscle tissue below the dermis and subcutaneous tissue.

Equipment:

Alcohol swabs
2X2 gauze pad
Appropriate sized syringe and safety needle
Band Aid

Intramuscular Injection General Guide				
Needle length should be long enough to reach muscle mass for injections indicated as intramuscular.				
Age	Injection Site	Needle Gauge	Needle Length	Max Solution Amount*
Premature Neonate	Vastus Lateralis	25-22	5/8-1 inch	0.5 ml
Newborn (1 st 28 days)	Vastus Lateralis	25-22	5/8-1 inch (5/8 when skin is stretched flat between thumb & finger)	1 ml
Infants (1-12 mo)	Vastus Lateralis	25-22	1 inch	1 ml
Toddlers (1-2 yr)	Vastus Lateralis Deltoid Ventrogluteal	25-22 25-22 25-22	1-1.25 inch 5/8-1 inch 1/2-1 inch	1 ml 1 ml 1.5 ml
Children & Teens (3-18 yr)	Vastus Lateralis Deltoid Ventrogluteal	25-22 25-22 25-22	1-1.5 inch 5/8-1 inch 1/2-1 inch	2 ml 1 ml 2 ml
Adults 19 yrs or older				
Male/female < 59 kg	Vastus Lateralis Deltoid Ventrogluteal	25-22 25-22 25-22	1- 1 1/2 inch 5/8-1 inch 1 1/2 inch	5 ml 2 ml 5 ml
Female >59- kg Male >59 kg	Vastus Lateralis Deltoid Ventrogluteal	25-22 25-22 25-22	1- 1 1/2 inch 1- 1 1/2 inch 1 1/2 inch	5 ml 2 ml 5 ml

Some medication administration may fall outside the outlined General Guide parameters (e.g. fosphenytoin can be given up to 20 ml per site; needle length may need to be greater than 1 1/2 inch). Licensed healthcare professionals **MUST** check drug information references, primary literature and NCH-specific guidelines to confirm appropriateness.

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Procedure	Points to Remember
1. Document according to policy 35:01 Medication Administration and Documentation.	
2. When withdrawing from vial or ampule use one needle to withdraw medication and another needle for injection.	Changing needles helps ensure that they are clean, sharp and dry.
3. Locate site appropriate for age and volume of medication, <u>Cleanse with alcohol and let dry.</u>	For location of sites, refer to procedures on following pages
4. Z-Track Delivery: <ol style="list-style-type: none"> a. After cleansing the site, pull the skin ~ 1 - 1 1/2 inches down or laterally away from the intended injection site. b. While maintaining traction on the tissue, swiftly insert needle fully into the muscle to the hub at a 90° angle quickly and firmly and hold steady c. Continue to maintain traction as you SLOWLY inject the medication d. Withdraw the needle and allow the retracted skin to resume its normal position. 	<p>Z-Track Injection delivery should be used with any intramuscular injection where the skin can be displaced at least one inch.</p> <p>A quick thrust facilitates needle entry and minimizes pain.</p>
5. When Z-Track is not possible: <ol style="list-style-type: none"> a. Insert needle fully into the muscle to the hub at a 90° angle quickly and firmly and hold steady. b. Inject medication SLOWLY to allow the muscle to distend to absorb the medication. c. When the injection is completed, wait 10 seconds before withdrawing the needle. d. Withdraw the needle and apply light pressure to the injection site for several seconds with a dry 2X2 gauze. 	<p>A quick thrust facilitates needle entry and minimizes pain.</p> <p>Injections given too rapidly may cause medication to be displaced into surrounding tissues where it can produce irritation and discomfort.</p> <p>This prevents the seepage of medication from the site.</p> <p>Never massage the site or allow patient to wear tight fitting clothes immediately following the injection to minimize the chance of medication from spreading into other layers of tissue.</p> <p>If the child is edematous or has a hemorrhagic tendency, additional pressure and frequent observation of the injection site will be necessary.</p>
6. Apply Band Aid as appropriate.	
7. Document the medication including the injection site.	

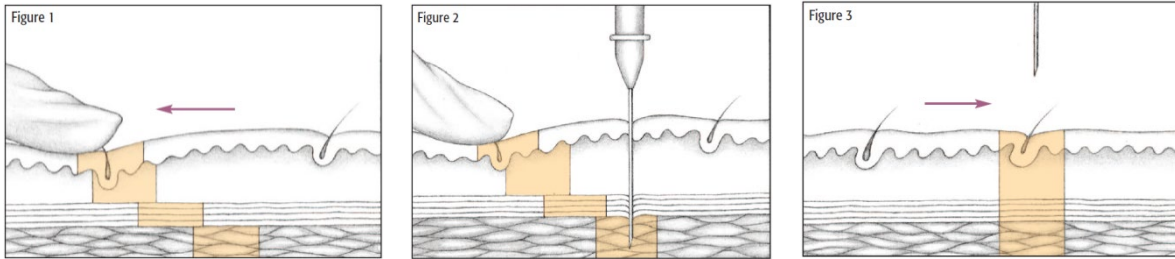
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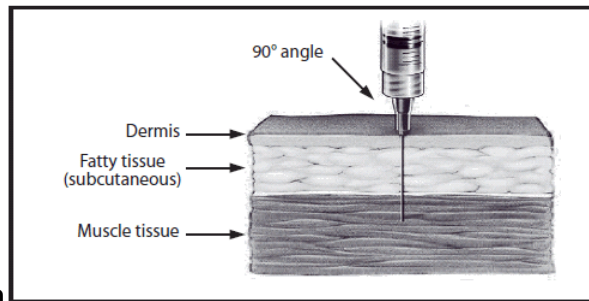
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Z-Track Illustration



Intramuscular Needle Insertion




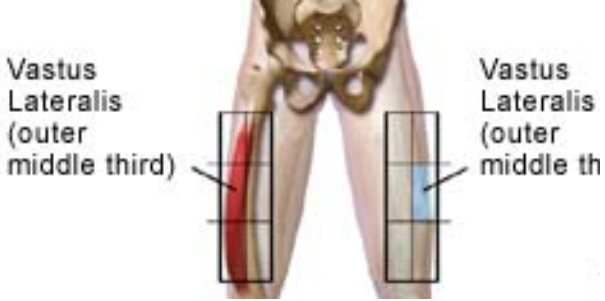
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B: Intramuscular Injection – Vastus Lateralis

Procedure	Points to Remember
<p>1. Locate the anterior surface of the mid-lateral thigh. This is illustrated between the greater trochanter and knee joint as seen on the diagram.</p>	 
<p>2. Follow Part 1: General instructions for IM injections outlined previously</p>	

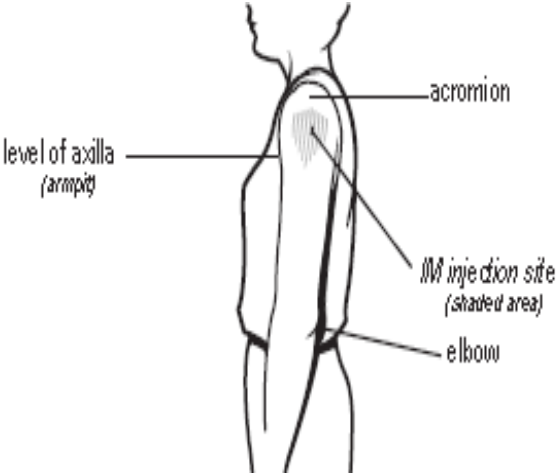
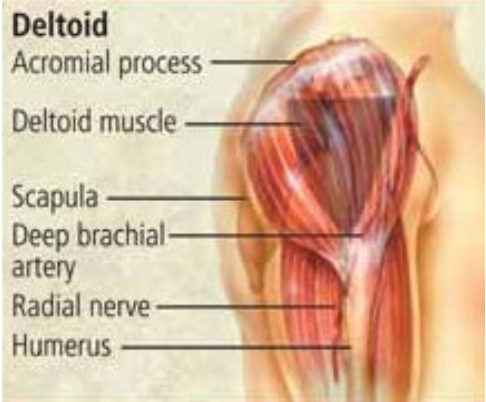
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C: Intramuscular Injection: Deltoid—Typically used for older children and adults with developed muscle mass

Procedure	Points to Remember
<p>1. Locate deltoid muscle site – fully expose the shoulder and arm, then locate the acromion process and axillary line, form a point of a triangle between these points.</p> <p>Injection site is two fingerbreadths below the acromion process just above the axilla</p>	 
<p>2. Follow Part I:General Instructions for IM injection outlined previously</p>	

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D. Intramuscular Injection – Ventrogluteal Site – A preferred site for patients of all ages.

Procedure	Points to Remember
1. Place the child on his side.	This site is also safely accessible with the child on his back, prone, or standing
<p>To locate site for injections:</p> <p>2. Place hand over the greater trochanter. Point thumb toward the patient's groin, point index finger to the anterior superior iliac spine, and extend middle away from index finger back along the iliac crest toward the buttock. The index finger, middle finger and iliac crest form a V-shaped triangle. The injection site is the center of the triangle.</p> <p>a) If injecting into the left gluteal - place the palm of the <u>right hand</u> on the greater trochanter and the index finger towards the anterior superior iliac spine.</p> <p>b) If injecting into the right gluteal – place the palm of the <u>left hand</u> on the greater trochanter and the index finger towards the anterior superior iliac spine.</p>	
3. Once site is located remove your hand and follow Part I: General Instructions for IM injection outlined previously	

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Part II: Subcutaneous Injection

Subcutaneous injections are administered into the fatty tissue found below the dermis and above muscle tissue.

Supplies:

- Alcohol swab
- Appropriate sized syringe and safety needle
- 2X2 gauze pad
- Band Aid

Subcutaneous (SC) Injection General Guide			
Needle length should be long enough to reach past the dermis into the subcutaneous (fatty) tissue.			
Needle Gauge for all ages and sites is 25-23			
This guide does not include Insulin Pen use which have shorter needle lengths			
Age	Injection Site	Needle Length	Max Solution Amount
Premature neonate -12 mo	Fatty tissue over: <ul style="list-style-type: none">Center third of Anterolateral thighMay use center third of lateral aspect of upper arm if necessary	1/2-5/8 inch	0.5 ml
Children > 12 mo, adolescents, and adults	Fatty tissue over: <ul style="list-style-type: none">Center third of Anterolateral thighCenter third of lateral aspect of upper armAbdominal wall below the costal margins to the ileac crest	1/2 - 5/8 inch	1 ml

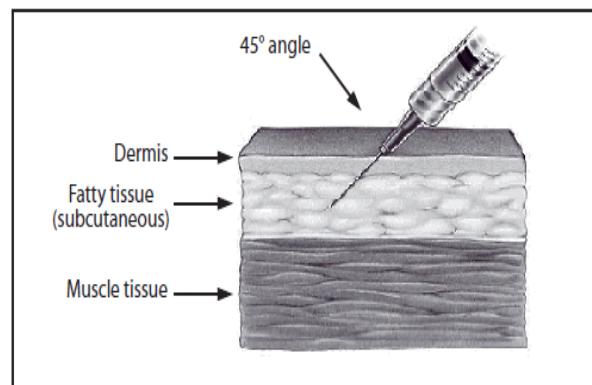
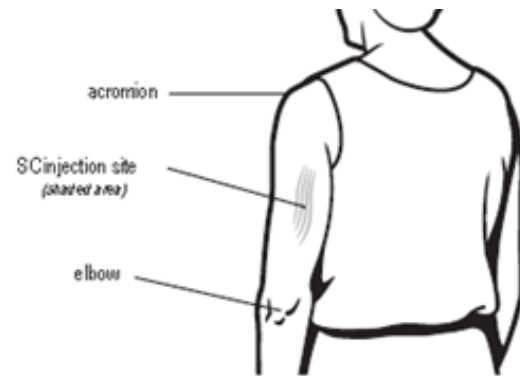
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Procedure	Points to Remember
1. Document according to policy 35:01 Medication Administration and Documentation.	
2. Locate appropriate site, cleanse with alcohol and let dry.	
3. Pinch subcutaneous tissue and insert needle at a 45 degree angle if there is little subcutaneous tissue or at 90 degrees if subcutaneous tissue is abundant.	
4. Insert medication SLOWLY, withdraw needle rapidly and apply gentle pressure with a 2X2 gauze.	Do not massage site.
5. Apply Band Aid as appropriate.	
6. Document the medication including the injection site	



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Part III: Intradermal Injection—primarily used for allergy and TB testing

Supplies: Alcohol swab
1 ml Tuberculin syringe
25-27 gauge safety needle
2X2 Gauze pad

Procedure	Points to Remember
1. Document according to policy 35:01 Medication Administration and Documentation.	
2. Locate appropriate site, cleanse with alcohol and let dry.	Inner aspect of forearms is a preferred site. Upper back may also be used.
3. Hold syringe between thumb and forefinger of dominant hand with needle bevel pointing up.	
4. With non-dominant hand, stretch skin over site with forefinger or thumb.	
5. Slowly insert needle at 5-15 degree angle 1/8 inch (3mm) below the skin surface.	
6. Inject medication slowly.	A small wheal should appear on the skin surface
7. Withdraw needle and lightly dab with a cotton ball or gauze if bleeding is present.	Do not massage site or apply Band Aid. Pressure on the site can cause the medication to disperse to surrounding tissues.
8. Document the medication including the injection site.	

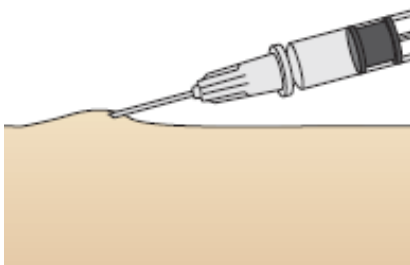


Fig. 1. Skin wheal caused by intradermal injection

