



**REGION 11  
CHICAGO EMS SYSTEM  
PROCEDURE**

Title: Intramuscular Medication Administration – BLS/ALS
Section: Medication Administration / Access
Approved: EMS Medical Directors Consortium
Effective: August 1, 2022

## **INTRAMUSCULAR MEDICATION ADMINISTRATION – BLS/ALS**

### **INDICATIONS**

- Naloxone (ALS)
- Glucagon (ALS)
- Midazolam (ALS)
- Epinephrine (BLS/ALS)
- Diphenhydramine (ALS)

### **CONTRAINDICATIONS**

None

### **EQUIPMENT**

- Medication from vial or prefilled syringe (glucagon kit requires reconstitution)
- Syringe (1 ml for Epinephrine and pediatric dosing, 3 ml or 10 ml for other)
- Needle (1 - 1.5 inch length and 23 gauge)
- Alcohol swab
- Sterile gauze
- Band-aid
- Sharps container

### **PROCEDURE**

1. Apply personal protective equipment: gloves.
2. Check the five rights of medication administration.
  - a. Right patient
  - b. Right medication
  - c. Right dosage/concentration
  - d. Right time
  - e. Right route
3. Clean vial with alcohol swab or prepare prefilled syringe.
4. Select appropriate needle size while maintaining sterility.
5. Draw appropriate amount of medication into syringe or reconstitute glucagon (see below).
6. Expel air from syringe.
7. Reaffirm medication with Medication Administration Cross Check (MACC).
8. Identify proper injection site (anterolateral thigh or deltoid muscle) and cleanse with alcohol pad.



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9. Stretch the skin flat between the thumb and forefinger.
10. Insert the needle at 90 degrees to the skin and deliver medication in a quick, steady manner.
11. Dispose of the needle properly in a sharps container.
12. Assess patient for desired effect and side effect.
13. Document the medication dose and clinical response.

**ADMINISTRATION<sup>1</sup>**

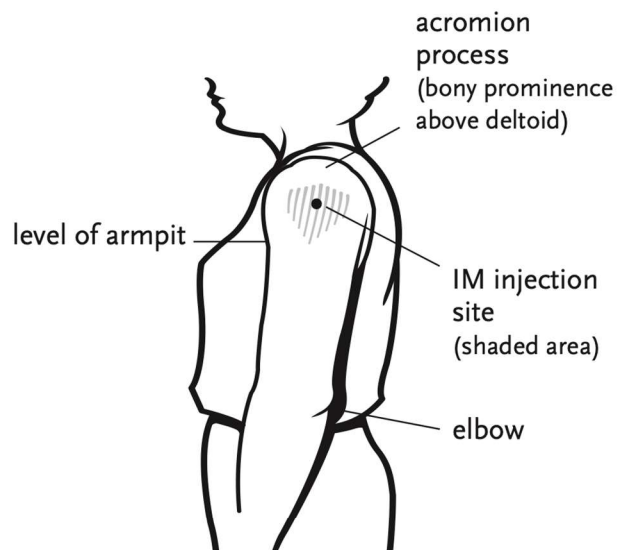
**1. Intramuscular Injection Site**

**Intramuscular (IM) injection site for infants and toddlers**



Insert needle at a 90° angle into the anterolateral thigh muscle.

**Intramuscular (IM) injection site for children and adults**



Give in the central and thickest portion of the deltoid muscle – above the level of the armpit and approximately 2–3 fingerbreadths (~2") below the acromion process. See the diagram. To avoid causing an injury, do not inject too high (near the acromion process) or too low.

<sup>1</sup> Referenced from Immunization Action Coalition (IAC) - <https://www.immunize.org/catg.d/p2020.pdf>



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2. Needle Size

PATIENT AGE	INJECTION SITE	NEEDLE SIZE
Infant (1–12 mos)	Anterolateral thigh muscle	1" (22–25 gauge)
Toddler (1–2 years)	Anterolateral thigh muscle	1–1¼" (22–25 gauge)
	Alternate site: Deltoid muscle of arm if muscle mass is adequate	5⁄8*–1" (22–25 gauge)
Children (3–10 years)	Deltoid muscle (upper arm)	5⁄8*–1" (22–25 gauge)
	Alternate site: Anterolateral thigh muscle	1–1¼" (22–25 gauge)
Children and adults (11 years and older)	Deltoid muscle (upper arm)	5⁄8†–1" (22–25 gauge)
	Alternate site: Anterolateral thigh muscle	1–1½" (22–25 gauge)

**Intramuscular (IM) injection** – Use a 22–25 gauge needle. Choose the needle length and site as indicated below:

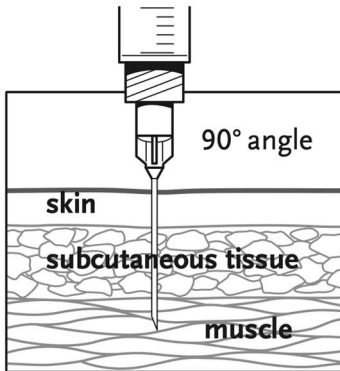
Gender/Weight	Needle Length	Injection Site
Female or male less than 130 lbs	5/8"-1"	Deltoid muscle of arm
Female or male 130–152 lbs	1"	
Female 153–200 lbs	1"–1½"	
Male 153–260 lbs		
Female 200+ lbs	1½"	
Male 260+ lbs		



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3. Needle Insertion



**Needle insertion**

Use a needle long enough to reach deep into the muscle.

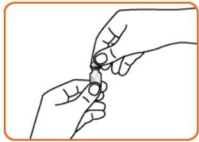
Insert needle at a 90° angle to the skin with a quick thrust.



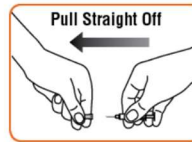
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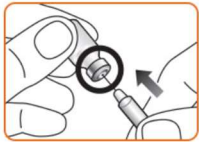
## 4. Glucagon reconstitution<sup>2</sup>



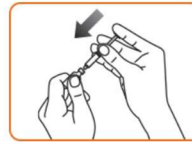
**Step 1.** Using your thumb, flip the orange plastic cap off the GlucaGen® vial.



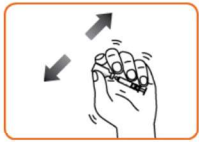
**Step 2.** Pick up the prefilled syringe containing sterile water. Hold the syringe with 1 hand and with your other hand, pull the needle cover off the syringe. **Do not** remove the plastic backstop from the syringe.



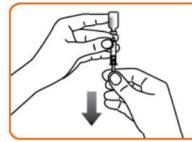
**Step 3.** Pick up the GlucaGen® vial. Hold the vial of dry powder with 1 hand and with your other hand, push the needle of the prefilled syringe through the center of the rubber stopper.



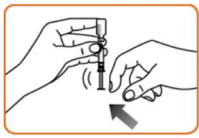
**Step 4.** Hold the vial and syringe together, with the needle still inserted into the vial. Carefully turn the vial and syringe together right side up. Slowly push the plunger down until the syringe is empty. **Do not take the syringe out of the vial.**



**Step 5.** Hold the entire unit (the vial and syringe) in one hand and gently shake the vial until the powder is completely dissolved. Do not use if a gel has formed, or if you see particles in the solution. **Do not take the syringe out of the vial.**



**Step 6.** Firmly hold the vial and syringe together, with the needle still inserted into the vial. Carefully turn the vial and syringe together upside down. Gently pull down on the plunger and slowly withdraw all of the liquid into the syringe. Do not pull the plunger out of the syringe.



**Step 7.** Keep the needle inside the vial. Check the syringe for air bubbles. If you see bubbles, tap the syringe until the bubbles rise to the top of the syringe. Gently push on the plunger to move only the air bubbles back into the vial.



**Step 8.** Hold the vial and syringe as shown.

<sup>2</sup> Referenced from <https://www.glucagenhypokit.com/instructions.html>