Epinephrine Intramuscular (IM) Injection Administration EMT Optional Scope Highlights

Nor-Cal EMS
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Presented by Eric M. Rudnick, MD, FACEP, FAAEM, FAEMS, Medical Director for Northern California EMS, Inc.

Special Thank You To

- Seattle / King County EMS
- NY State Department of Health, Check and Inject Program

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EMT Optional Scope for IM Injection of Epinephrine

- You must have completed the EMT basic scope training prior to this Optional Scope training.
- Each department needs to send in their training roster initially and as changes occur.
- This is mandatory training that needs to occur every 1 years.
- Provider agencies may only use approved IM Epinephrine kits.

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Anaphylaxis - Overview

- Serious and systemic allergic reaction
  - Systemic (multi-system) involvement
  - Shock (poor perfusion)
  - Respiratory symptoms
  - Rapid onset
- Anaphylaxis will lead to death if left untreated!

Anaphylaxis

What anaphylaxis is not !

- An insect bite that itches
- A runny nose
- Sneezing
- Watery eyes

What anaphylaxis is!

- Rapid Onset
- Multisystem
- Life Threatening
- Anaphylaxis: a systemic and life-threatening
- Allergic reaction from contact with an allergen

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Common Causes of Anphylaxis

- Foods – nuts, shellfish, fruits
- Insects – bees, wasps
- Medications – antibiotics

Anaphylaxis - Treatments

- Epinephrine
- Immediate treatment - lifesaving
- Improves respiratory distress
- Reduces airway swelling
- Treats shock

- Supplemental Interventions
- Antihistamines (Diphenhydramine) – BLS (EMT-B and above)
- Inhalers (Albuterol) – Assist patient with own medication –BLS (EMT-B and EMR)

Anaphylaxis is likely when either criteria is met:

Likely Allergen

With any ***Two*** of the following occurring rapidly after exposure:

Skin and/or Mucosa

Respiratory Compromise

Decreased Blood Pressure

Known Allergen

- With any ***One*** of the following occurring rapidly after exposure:
- **Respiratory Compromise**
- **Decreased Blood Pressure**

Skin/Mucosa	***Respiratory Compromise***	***Decreased Blood Pressure***
Itching	Difficulty Breathing	
Flushing	Hypoxia	
Hives	Wheeze	
Swelling	Stridor	

Case Study #1

- 15 year old girl at summer camp when stung/bitten by an unknown insect on her cheek
- 30 minutes later she walked the camp infirmary
- She has an epinephrine auto injector for bee stings
- Pain locally, unable to open her right eye

- Vital signs on EMS arrival:
- RR: 24
- HR: 96
- BP: 132/64
- Lungs: increased ventilation rate,
- clear, and easy

Case Study #1

- The patient walked to the ambulance where she was transported to the local community hospital.
- En route, the crew monitored her for any airway swelling, difficulty breathing, or changes in mental status.
- She was transported to the hospital without progression of her symptoms.
- She only exhibited skin signs and did not have respiratory compromise nor hypotension.

Case Study #2

- 79 year old woman allergic to shellfish
- Taken out to dinner – no known exposure
- She developed hives over her face, chest, and back
- Took Benadryl orally

- Called EMS after experiencing difficulty breathing
- Vital signs at EMS arrival:
- RR: 26
- HR: 106
- BP: 102/52
- Lungs: wheezes, shallow,
- retractions noted at the neck and intercostal spaces

Case Study #2

- When EMS arrived, this patient was recognized to be suffering from an anaphylactic reaction.
- The patient had the rash and respiratory compromise in the light of exposure potential.
- Placed on oxygen and transported to the local hospital.
- While en route the EMS providers administered epinephrine to the patient.

Case Study #3

- 3 year old girl felt sick to her stomach after eating strawberries at family picnic
- Rash around patient's mouth
- Patient became pale and lethargic over next 15 minutes

- Vital signs at EMS arrival:
- RR: 10 to 12
- HR: 64
- BP: capillary refill >4 seconds
- Lungs: breath sounds nearly absent, faint
- Wheezes noted
- Patient is unresponsive

Case Study #3

- EMS recognize that despite the lack of all the classic symptoms, this child was experiencing anaphylaxis.
- She has signs of shock including delayed capillary refill and altered mental status, as well as respiratory compromise.
- EMS assist the ventilations, administer epinephrine, and begin the transport.
- The patient became more alert and started to cry.
- They discontinued assisted ventilations.

Check and Inject

curaplex

Epinephrine Injection Process

[NOT FOR IV USE]

1. VERIFY NEED

Trigger
- Food allergy
- Insect sting
- Drug allergy

Symptoms
- Respiratory distress
- Decreased BP
- Skin & Mucosa

Revision 1 - 04/27/17

2. SELECT/PREP

- Upper, outer thigh
- Clean with alcohol

3. VERIFY DRUG

- 1:1000 Epinephrine
- Expiration date
- Contents of vial should be clear

4. VERIFY DOSAGE

- Place needle on syringe
- Draw up the appropriate dose of epinephrine

Adult ≥ 30 kg / 66 lbs.
- 0.3 mL
- Fill to 'A' on syringe

Child < 30 kg / 66 lbs.
- 0.15 mL
- Fill to 'P' on syringe

5. INJECT

- Insert needle at 90 degree angle
- Push plunger to administer dose
- Remove needle
- Engage safety cap
- Massage site for 30 seconds
- Cover injection site with adhesive bandage

6. DOCUMENT

Monitor patient
- Reassure patient
- Observe response
- Observe side effects
- Reassess every 5 minutes

Update ALS

Document

Always follow your local protocols regarding product use and procedures.

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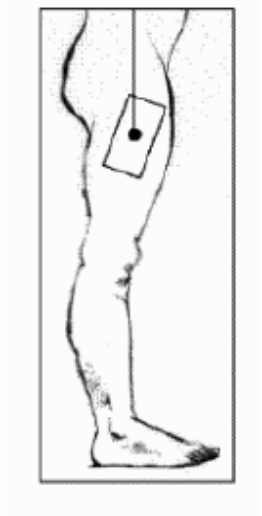
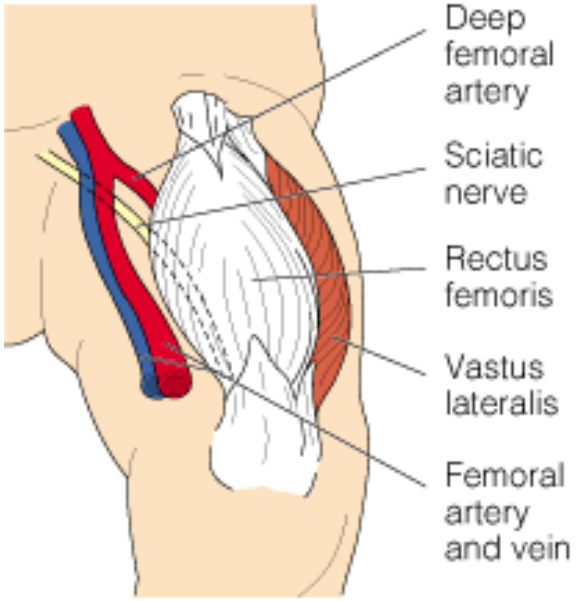
Intramuscular Injection Sites



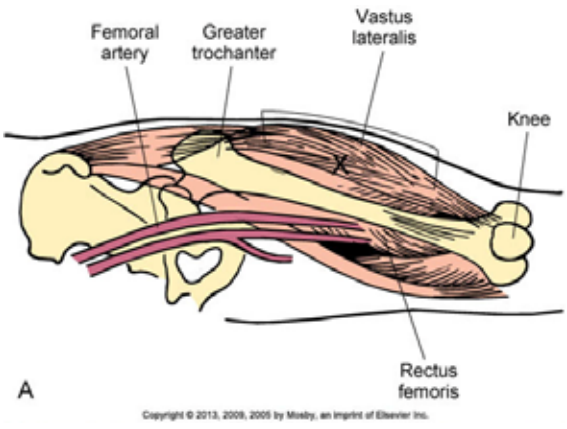
Where is the best IM injection site for infants and toddlers?

Vastus lateralis (Outer/Lateral thigh) is the approved site for administration



- Good site for all ages, especially under 3 years of age.
- Far from major blood vessels & nerves

Vastus Lateralis Site for IM Injection



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Epinephrine After Being Exposed To Sunlight for Various Times

Onset Epinephrine

- Onset (how long does it take to start working)
- IM Injection
- Typically 90 seconds in a healthy patient
- IM epinephrine in anaphylaxis: may take 3-5 min
- If no change at 5 min. consider 2nd dose!
- Duration (how long does it last)
- IM Injection
- Typically 1-4 hours

Contraindications

- The are no contraindications to the administration of IM epinephrine in anaphylaxis
- Side effects may include:
- Palpitations
- Hypertension
- Anxiousness
- Tremors
- Benefits of epinephrine outweigh risks

Epi Safety Kit Dosages

- Adults: equal to and/or greater than 30 kg or 66 lbs.
- Look at the custom syringe and find the adult marking at ***0.3 ml - A***

- Pediatric: less than 30 kg or 66 lbs.
- Look at the custom syringe and find the pediatric marking at ***0.15 ml - P***

- There are only two marking on the barrel of the syringe.
- There is an Adult and Pediatric dose.

Epinephrine Safety Syringe

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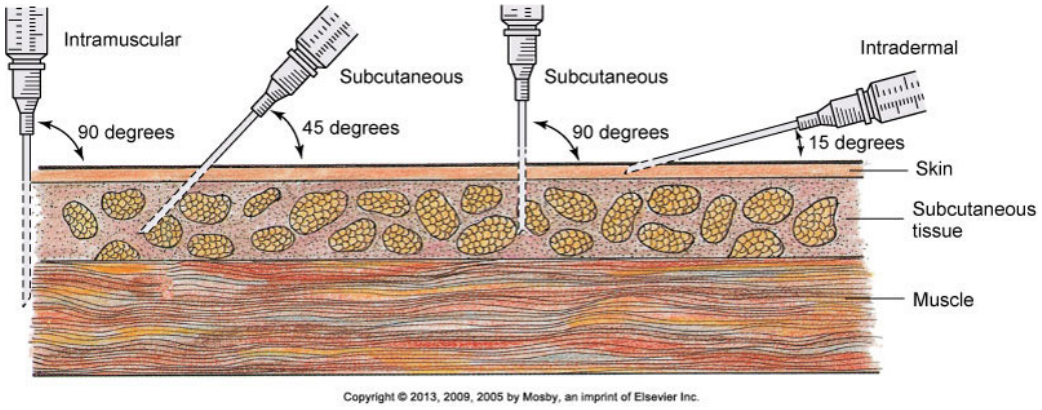
Discard Syringe if Needed

- **If blood is present when aspirating, withdraw the needle and discard the medication.**
- **This is another reason to carry extra needles and syringes.**

Comparison of Angles of Insertion for Injections



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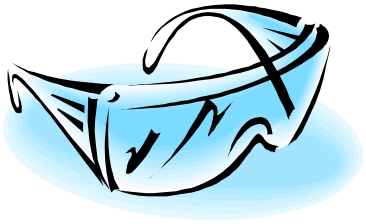
Confirm the Medication

- Medication name: Epinephrine
- Dosage/Concentration (1:1,000 or 1mg/1ml)
- Check the expiration date
- Not cloudy; no color or precipitate

Always Wear PPE

- Wear gloves and goggles when assessing the patient, preparing the medication, cleaning the site of injection, and administering the drug.



Document Your Findings

- Vital signs
- Appearance
- Work of breathing (for example: labored or easy)
- Lung sounds (for example clear or wheezing)
- Ability to speak
- Report responses and side effects to treatment
- Report findings of on-going assessments every 5 minutes

Always Check the Rights of Drug Administration

1. Right person
2. Right drug
3. Right dose
4. Right concentration
5. Right time
6. Right route
7. Right documentation

- ***Follow Safe Epinephrine Kit Insert***