



**HUMERAL INTRAOSSEOUS INFUSION – ADULT
PILOT PROJECT (FOR APPROVED ALS PROVIDERS)**

Revised: _____

INDICATIONS:

Humeral intraosseous (IO) access is indicated for the following conditions when normal saline or emergency life-saving medication administration is required and: 1) the patient has bilateral above the knee amputations, bilateral infectious process over proximal tibias, or bilateral tibia fractures; 2) peripheral intravenous cannulation is not possible; and 3) the patient does not have a functioning hemodialysis shunt or other approved peripheral access device. Base hospital contact required:

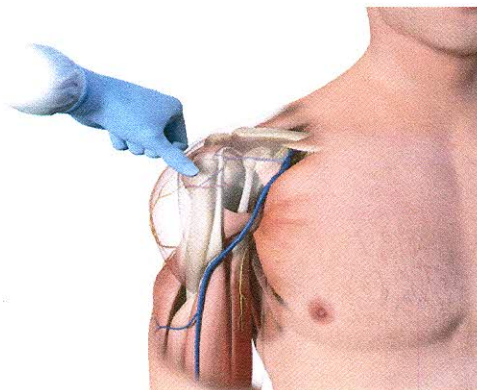
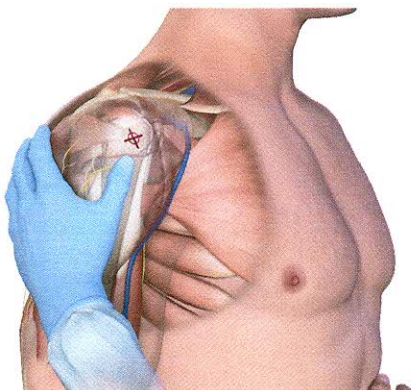
1. Cardiopulmonary arrest
2. Respiratory arrest (adult)
3. Trauma related arrest (adult)
4. Life-threatening unstable vital signs (refer to OCEMS Policy # 310.30)
5. Unconscious diabetic with blood glucose less than 60, unresponsive to IM glucagon

CONTRAINDICATIONS:

1. Suspected injury to the upper extremity selected for IO infusion
2. Excessive soft tissue at the insertion site, such that anatomic landmarks cannot be identified
3. Previous orthopedic procedures within the past six (6) weeks on the upper extremity selected for IO insertion
4. Obvious skin or other infection at the site selected for IO insertion

PROCEDURE:

1. Assemble equipment, clear IV extension tubing with fluids and select correct IO needle.
2. Locate appropriate insertion site on either arm over the humeral head:
 - Flex the elbow to 90 degrees and rotate the arm so the patient's hand is on their umbilicus
 - Locate the greater tubercle on the humeral head. Insertion site for adult size person is on the most prominent aspect of the greater tubercle, 1 to 2 cm above the surgical neck
 - It will resemble the feeling of a golf ball on a tee (see images below)
 - Do not attempt more than once at each humerus



Approved:

S. Matsumoto

Review Date:
Initial Release Date: 01/04/2019
Final Date for Implementation: 4/01/2019
OCEMS copyright © 2019



**HUMERAL INTRAOSSEOUS INFUSION – ADULT
PILOT PROJECT (FOR APPROVED ALS PROVIDERS)**

Revised: _____

3. Use sterile technique, including sterile gloves and prepare insertion site with an alcohol or chlorhexidine prep.
4. Stabilize extremity and insert appropriate size IO device using manufacturer's recommendations. Insert at a 90 degree angle to the skin.
5. Determine penetration of needle into marrow space by feeling loss of resistance as needle penetrates inner bone surface.
6. Stabilize the arm by strapping it in position with a gauze wrap or other suitable material, stabilize the needle, and remove any stylet within device. Place stylet in sharps container.
7. Connect IV tubing and normal saline to IO needle hub and confirm correct placement by the following:
 - IO needle is firmly seated and stable
 - Observe blood at the catheter hub or able to aspirate blood from IO needle
8. If patient is conscious, to decrease pain from IO infusion, slowly (over 1 minute) administer lidocaine 2% (Preservative Free) through IO needle:
 - Adult/Adolescent: 20 mg 2% lidocaine, may repeat 20 mg once (total 40 mg) for pain control.
9. Flush IO catheter with syringe filled with normal saline prior to infusion of fluid or medications:
 - Adult/Adolescent: flush with 10 mL normal saline
 - Comments:
 - A. Repeat syringe flush as needed to keep IO flowing
 - B. Failure to syringe flush may result in limited or no flow through IO
 - C. To maintain infusion after syringe flush, it may be necessary to pressurize the IV infusion bag by inflating a BP cuff around bag or applying manual squeezing pressure
10. Begin infusion of normal saline, administer any medications as appropriate.
11. Secure catheter and tubing from accidental bumping or pulling that may cause dislodgement.
12. Monitor IO infusion flow and device stability, observe extremity for any signs of extravasation

DOCUMENTATION:

1. Document all IO attempts and IO insertion site and time placed.
2. Notify receiving hospital staff of IO use and site (even when not successful).
3. All uses of humeral IO for this pilot require notification of OCEMS within 48 hours. Send the incident number to the OCEMS ALS Coordinator via email or within Elite messaging.

Approved:

Review Date:
Initial Release Date: 01/04/2019
Final Date for Implementation: 4/01/2019
OCEMS copyright © 2019



**HUMERAL INTRAOSSEOUS INFUSION – ADULT
PILOT PROJECT (FOR APPROVED ALS PROVIDERS)**

Revised: _____

REMOVAL OF IO NEEDLE:

1. Attach a syringe to the IO needle hub.
2. Support the patient's extremity while rotating the needle/syringe and gently pulling out.
3. Apply sterile dressings to site, warn patient of signs of infection (redness, swelling, increasing pain at site)
4. Dispose of IO in sharps container.

NOTES:

1. Humeral IO training must be approved by Orange County EMS.
2. Adenosine is not effective when administered through an IO site.
3. Potential IO complications include:
 - A. Local infiltration of infusion fluid or medications
 - B. Infusion fails to flow due to IO occlusion from clot or tissue
 - C. Infection at site or sepsis
 - D. Fat or bone emboli
 - E. Stress fracture from insertion of IO

Approved:

A handwritten signature in blue ink, appearing to read "S. Smith", written over a horizontal line.

Review Date:
Initial Release Date: 01/04/2019
Final Date for Implementation: 4/01/2019
OCEMS copyright © 2019