



INTRAOSSIOUS INFUSION

Revised: 10/5/2018

INDICATIONS:

Intraosseous (IO) access is indicated for the following conditions when normal saline or emergency life-saving medication administration is required:

1. Cardiopulmonary arrest (adult or child)
2. Respiratory arrest (adult or child)
3. Trauma related arrest (adult or child)
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. Fracture of the 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 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 for age.
2. Locate appropriate insertion site at either leg proximal tibia:
 - Locate tibia tuberosity. Insertion site for adult size person is at the level of the bone that is two (2) fingertip widths below the tibia tuberosity and then immediately inside the anterior midline of the tibia on the flat table-like anteromedial surface of the tibia (avoid the top surface and knee joint).
 - For younger children who do not have a palpable tibial tuberosity (under 12 kg) go two (2) fingertip widths below the lower edge of the patella and then immediately inside the anterior midline of the tibia on the flat anteromedial surface of the tibia (avoid top surface and knee joint).
 - Do not attempt more than once at each tibia.
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.
5. Determine penetration of needle into marrow space by feeling loss of resistance as needle penetrates inner bone surface.
6. Stabilize 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

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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.
 - Child (14 years and under): 0.5 mg/kg 2% lidocaine (maximum dose 20 mg) do not repeat.
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
 - Child (14 years and under): flush with 5 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).

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. Adenosine is not effective when administered through an IO site.
2. 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

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