

INTRAOSSEOUS (IO) ACCESS EMMCO WEST ALS GUIDELINE

Criteria:

- A. Patient in need of fluid administration for volume expansion or medication administration without IV access.

Procedure:**A. All Patients:**

1. Connect tubing to IO solution container.
2. Fill drip chamber ½ full.
3. Expose IO site:
 - a. Children < 3 years: proximal tibia, flat surface
 - b. Children ≥ 3 years: proximal tibia or medial malleolus
 - c. Adults: medial malleolus
4. Prepare insertion site (scrub with Betadine or alcohol).
5. Hold lower leg firmly (side-to-side) against firm surface.

B. Children:

1. Angling slightly away from perpendicular, toward the foot, penetrate the skin overlying the flat medial surface of the tibia, 1-2 cm below the tibial tuberosity. Apply firm but controlled pressure with a to-and-fro rotary motion until the tip of the needle passes through the cortex of the bone into the narrow cavity. In some infants, a release of resistance will be felt when this occurs.

C. Adults:

1. Locate the medial malleolus. Move 1-2 fingerbreadths anteriorly and locate the flat area of the tibia medial to the tibial crest. Holding the 18 gauge IO needle perpendicular to the site, insert the needle with a twisting motion until decreased resistance of a “pop” is felt.

D. All Patients:

1. Remove the stylet and aspirate with a blank syringe.
2. In conscious patients, lidocaine (2%, adults = 20-40 mg, peds = 0.5 mg/kg) should be administered prior to infusing medications or fluids through an IO to reduce the pain of infusions. If unconscious, infuse 1-2 ml NSS through the IO needle.
3. Observe for extravasation around the site and on the side of the leg opposite the needle entry site. proper placement is characterized by:
 - a. Solid anchoring of the needle;
 - b. Minimal resistance to infusion; and
 - c. Lack of extravasation of infused fluid
4. Attach tubing from IO solution container
5. Secure the IO needle
6. Adjust IO rate as desired, and monitor
7. **WARNING:** Sternal IO is **NOT** in scope of practice

Notes:

1. The distal femur and proximal humerus are acceptable alternative sites for adults and pediatrics if authorized by the ALS service medical director.
 2. Do not insert IO needles distal to a fracture site. Avoid inserting through burned tissue.
 3. Do not puncture the same bone more than once.
 4. Sterile technique should be utilized during IO placement.
 5. This technique is best accomplished in children younger than three years, particularly infants.
 6. Self-injury has also occurred while performing this procedure. Avoid this by holding the lower limb side-to-side, rather than with one hand underneath the limb, opposite the needle insertion site.
 7. All of the complications of peripheral IV lines apply to IO lines, including air and other emboli.
 8. Other complications include:
 - a. Osteomyelitis (be sure to use sterile technique).
 - b. Joint and growth plate damage (be sure to angle away from the joint).
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