Intraosseous Access

Applies to:
P Paramedic

Clinical Indications:

1. Patients where rapid, regular IV access is unavailable with any of the following:
   a. Cardiac arrest
   b. When IV access is unsuccessful or, after evaluation of potential sites, it is determined that an IV attempt would not be successful in the setting of:
      i. Shock or evolving shock, regardless of the cause.
      ii. Impending arrest or unstable dysrhythmia.

Contraindications:

1. Fracture of the targeted bone.
2. IO within the past 48 hours in the targeted bone.
3. Infection at the insertion site.
4. Burns that disrupt actual bone integrity at the insertion site.
5. Inability to locate landmarks or excessive tissue over the insertion site.
6. Previous orthopedic procedure near the insertion site (e.g., prosthetic limb or joint).

Procedure:

1. Proximal humerus (preferred site in adults only, if available)
2. Proximal tibia
3. Distal tibia (if proximal humerus or proximal tibia are unsuitable)

Procedure:

1. Locate the insertion site:
   a. The proximal humerus site is the greater tubercle, identifiable as a prominence on the humerus when the arm is rotated inward and the patient's hand is on the abdomen.
   b. The proximal tibia site is on the flat medial aspect of the tibia, 2 finger-breadths below the lower edge of the patella and medial to the tibial tuberosity.
   c. The distal tibia site is 2 finger-breadths above the most prominent aspect of the medial malleolus (inside aspect of ankle) in the midline of the shaft of the tibia.
2. Prep the selected site with alcohol and allow to air dry.

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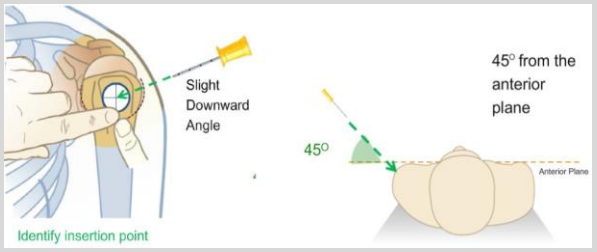
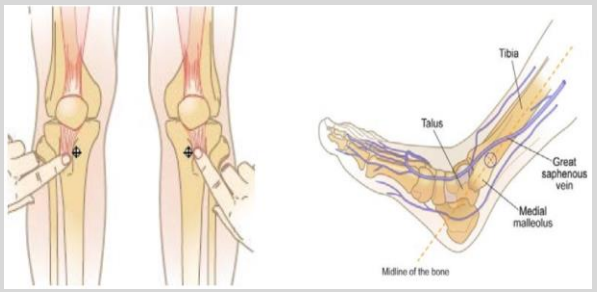
3. Select and load the appropriate sized needle on the driver.
   a. For humeral access, a 45mm (yellow) needle is used except in patient adults less than 40kg.
   b. For proximal and distal tibial access, the amount of soft tissue should be gauged to determine if a 25mm (blue) or 45mm (yellow) needle is appropriate.
4. Introduce the IO needle through the skin without engaging the power driver:
   a. For humeral access, the direction of the needle should be perpendicular to the skin, directed at a downward angle of 45 degrees from the frontal plane, heading slightly downward toward the feet.
   b. For tibial sites, the direction of the needle should be at a 90 degree angle to the flat surfaces of the tibia.





5. Once the needle has touched the bone surface, assess to see if the black line on the needle is visible. If it is not visible, either a larger needle is needed, or in the case of the 45mm needle, the soft tissue is too thick to allow the use of that needle.
6. With firm pressure, insert needle using the power driver. In most cases, the hub should be flush or touching the skin in adults; stop at the loss of resistance in peds. Verify that the needle is firmly seated in the bone; it should not wobble.
7. Remove the stylet and introduce Lidocaine if the patient is not in arrest.
   a. For conscious adult patients, 40mg of Lidocaine should be infused slowly over 1-2 minutes and allow 1 additional minute before flushing.
   b. For patients in arrest, Lidocaine is not necessary but may be needed if the patient regains consciousness.
8. Attach stabilizer to skin.
9. Flush with 10ml Saline. In conscious patients, flush with 5ml Saline initially and repeat if necessary.
10. Attach IV tubing to IO hub and begin infusion using pressure bag.
11. If painful, an additional 20mg of Lidocaine can be infused over 30 seconds, and after another minute, infusion should be restarted.
12. Monitor site for swelling or signs of infiltration and monitor pulses distal to area of placement.
13. Place wristband included with IO set on patient and document time of insertion on wristband.