

Indications:

- Inability to obtain peripheral vascular access after 2 attempts or 90 seconds and that has one or more of the following:
 - Hemodynamic instability
 - Respiratory compromise
 - Unresponsiveness

Contraindications:

- Suspected fracture of the associated tibia or femur.
- Previous orthopedic procedures: i.e., knee replacement
- Extremity that is compromised by a pre-existing medical condition. i.e. tumor or PVD
- Overlying skin infection/trauma at placement site
- Inability to locate the anatomical landmark for insertion
- Should not be utilized for prophylactic care

Procedure:

1. Locate proper sit: Proximal Tibia, Distal Femur, Humeral Head

- **Proximal Tibia:**

- Locate the anterior surface of the patella.
- Moving inferiorly, locate the tibial tuberosity
- Insertion location is 1 finger width medial of the tibial tuberosity



- **Distal Femur:**

- Locate the anterior surface of the patella
- The insertion site is just proximal to the patella (maximum 1 cm) and approximately 1-2cm medial to midline



▪ **Humeral Head:**

- Position arm in 90° flexion, with elbow kept to side of truck.
- Palpate and identify the mid-shaft humerus and continue palpating with a thumb proximal toward the humeral head.
- Near the shoulder, note the greater tubercle insertion site, as a small protrusion.
- With the opposite hand “pinching” the anterior and inferior aspects of the humeral head, confirm the identification of the greater tubercle in the midline of the humerus.



2. Cleanse the insertion site with Chlorohexidine or similar prep-pads using accepted aseptic technique. Remember to work from the inside to the outside in concentric circles.
3. If patient is conscious, inform patient of the need to perform procedure and that they might feel some discomfort until Lidocaine is administered. Obtain consent from patient; recall that the patient has the right to refuse.
4. Consider an anesthetic/analgesic if indicated by medical direction.
5. Prepare the EZ-IO™ Driver and Needle Set.
 - Open the cartridge and attach the needle set to the driver
 - Remove needle set from the cartridge.
 - Remove the cap from the needle set.
6. Begin insertion of the EZ-IO™
 - Hold the EZ-IO™ Driver in one hand and stabilize the insertion site with the opposite hand.
 - Position the driver at the insertion site at a 90o angle to the bone surface.
 - Power the driver through the skin at the insertion site until it makes contact with bone.
7. Power the EZ-IO™ Driver and continue insertion until the flange (base) of the EZ-IO™ needle set touches the skin *OR* a sudden lack of resistance is felt, indicating entry into the marrow cavity.
8. Remove the driver from the needle set.
9. Remove the stylet from the catheter and place in sharps container.
10. Confirm proper placement by checking for the following:
 - IO catheter standing at 90° and firmly seated in the bone.
 - Blood at tip of the stylet.
11. Attach and prime extension tubing.
12. **IF PATIENT IS CONSCIOUS FOR PROCEDURE:** prime tubing with and administer Lidocaine 2% slow IVP for local analgesia.
13. Adult: 50mg (2.5ml)
14. Pediatric: 0.5mg/kg
15. Confirm proper catheter tip placement by checking the following:
 - Ability to flush 10ml normal saline with no evidence of extravasation
 - A free-flow of fluid through the needle with no evidence of extravasation
16. Connect IV tubing and begin infusion.
17. If site does not flow, consider pressure infusion, reflush and/or rotate needle 180°. Consider a combination of these procedures and repeat as necessary.
18. Dress site with roller gauze to prevent accidental dislodgement.
19. Consider pain management for additional discomfort/pain associated with infusion.