

### Arrow EZ-IO Proximal Humerus Insertion Site Identification – Infant/Small Child

1. Using either method below, adduct elbow, rotate humerus internally:
  - Place the patient's hand over the abdomen with arm tight to the body
  - Place the arm tight against the body, rotate the hand so the palm is facing outward, thumb pointing down
2. Place your palm on the patient's shoulder anteriorly
  - The area that feels like a "ball" under your palm is the general target area
  - You should be able to feel this ball, even on obese patients, by pushing deeply
3. Place the ulnar aspect of your hand vertically over the axilla. Place the ulnar aspect of your other hand along the midline of the upper arm laterally
4. Place your thumbs together over the arm; this identifies the vertical line of insertion on the proximal humerus
5. Palpate deeply up the humerus to the surgical neck
  - This may feel like a golf ball on a tee – the spot where the "ball" meets the "tee" is the surgical neck
  - The insertion site is 1–2cm above the surgical neck, on the most prominent aspect of the greater tubercle

### EZ-IO Proximal Humerus Insertion Technique – Infant/Small Child

- Use aseptic technique
- Prepare supplies:
  - Prime EZ-Connect Extension Set: unlock clamp, prime set and purge air
    - Infant/child responsive to pain:** Prime EZ-Connect Extension Set with lidocaine; priming volume of the EZ-Connect Extension Set is approximately 1.0ml. For small doses of lidocaine, consider administering by carefully attaching syringe directly to needle hub (prime EZ-Connect Extension Set with normal saline)
    - Infant/child unresponsive to pain:** Prime EZ-Connect Extension Set with normal saline
  - Open EZ-Stabilizer package
- Clean insertion site by per protocol; stabilize the extremity for insertion
- Attach Needle Set to EZ-IO Power Driver and remove Safety Cap from Catheter
- Aim the Needle Set tip at a 45-degree angle to the anterior plane and posteromedial
- Gently press needle through the skin until the tip touches the bone. The 5 mm black mark must be visible above the skin prior to insertion
- Squeeze the trigger and apply gentle steady pressure. In the event of Driver failure, disconnect the Power Driver, grasp the Needle Hub by hand and advance into the medullary space while twisting back and forth
- Stabilize hub and remove Driver and Stylet. Place Stylet in an appropriate sharps container
- Place the EZ-Stabilizer Dressing over the Catheter hub
- Attach primed extension set firmly secure to Catheter hub with clamp open
- Remove adhesive from back of EZ-Stabilizer Dressing and apply dressing to skin
- Confirm placement. Flush the EZ-IO Catheter with normal saline (5–10 ml for adults; 2–5 ml for infants/children). May require multiple flushes. Prior to flush, consider 2% preservative-free and epinephrine-free lidocaine IO for patients responsive to pain – follow institutional protocols/policy.

## Infant/Child Responsive to Pain – Recommended Anesthetic

### Consider using anesthetic for patients responsive to pain:

Review manufacturer's lidocaine instructions for use prior to administration and observe recommended cautions/contraindications to using 2% preservative free and epinephrine free lidocaine (intravenous lidocaine):

### The following recommendations are based on published intraosseous clinical literature:

1. Confirm lidocaine dose per institutional protocol
2. Prime Extension Set with lidocaine
  - Note that the priming volume of the EZ-Connect Extension Set is approximately 1.0ml.
  - For small doses of lidocaine, consider administering by carefully attaching syringe directly to Catheter hub (prime extension set with normal saline).
3. Slowly infuse lidocaine IO over 120 seconds. Typical initial dose is 0.5 mg/kg, NOT to exceed 40 mg
4. Allow lidocaine to dwell in IO space 60 seconds
5. Flush with 2–5ml of normal saline
6. Slowly administer subsequent lidocaine (half the initial dose) IO over 60 seconds. Repeat PRN

Consider systemic pain control for patients not responding to IO lidocaine.

For more information visit: [www.EZIOComfort.com](http://www.EZIOComfort.com)

## Infant/Child Unresponsive to Pain

Flush the IO catheter with 2–5ml of normal saline. If patient develops signs indicating responsiveness to pain, refer to infant/child recommended anesthetic technique

- Deliver medication and fluids as ordered. Administer medications in same dose, rate, and concentration as given via peripheral IV. For optimal flow infuse with pressure. Verify placement/patency prior to all infusions. Use caution when infusing hypertonic solutions, chemotherapeutic agents, or vesicant drugs
- Stabilize and monitor site and limb for extravasation or other complications
  - For **proximal humerus insertions**, secure arm in place across the abdomen, or in adducted position (with the patient's arm close to body) using immobilizer or alternate method
- Document date and time on wristband and place on patient

## EZ-IO Removal Technique

- Remove EZ-Connect
- Lift and remove EZ-Stabilizer adhesive dressing
- Using a sterile luer-lock syringe as a handle, attach to hub of catheter, maintain alignment and rotate clockwise while pulling straight up. Do NOT rock or bend the catheter on removal
- Dispose of catheter with syringe attached in an approved sharps container
- Dress site per institutional protocol/policy

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