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Arrow EZ-IO System

# Infant/Child Application Tips Clinical Resource

**Teleflex**

# The Arrow EZ-IO Intraosseous Vascular Access System

Indicated for adult and pediatric patients any time vascular access is difficult to obtain in emergent, urgent or medically necessary situations for up to 24 hours.

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## Infant/Child Site Identification

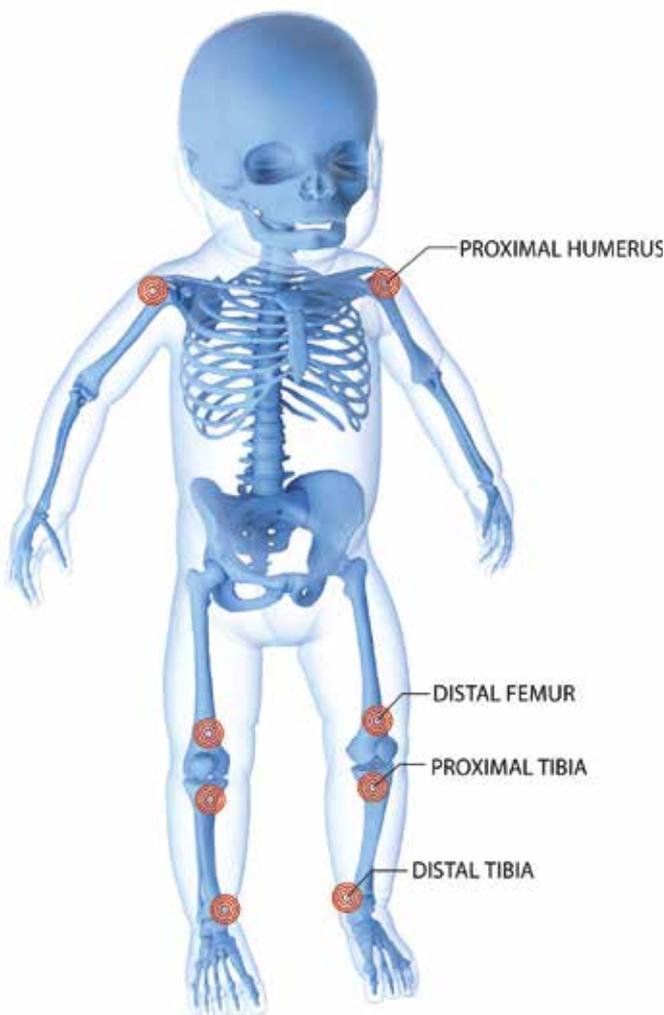
Site selection is based on several factors, including patient size, anatomy, presenting condition, ability to locate anatomical landmarks, clinical judgment and experience.

### Pediatric Insertion Sites

- Proximal Humerus
- Distal Femur
- Proximal Tibia
- Distal Tibia

### Contraindications

- Fracture of target bone
- Infection at area of insertion
- Inability to identify landmarks
- IO access or attempted IO access in target bone within previous 48 hours
- Prosthesis or orthopedic procedure near insertion site





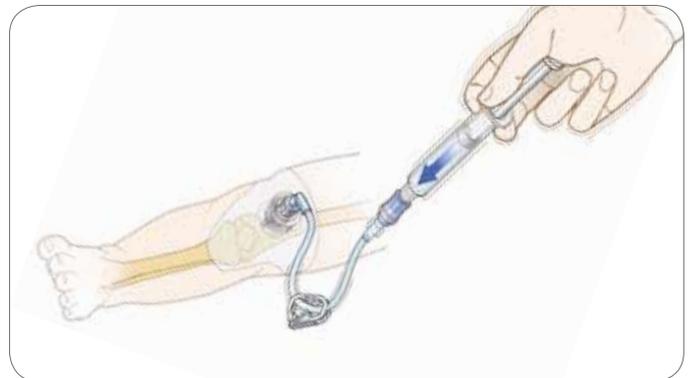
## Needle selection

The needle sets do not have “adult” or “pediatric” sizes. Each needle set is US FDA-cleared with weight range guidelines. The single use sterile needle sets are 15 gauge, 304 stainless steel available in 3 lengths. Clinical judgment should be used to determine appropriate needle set selection based on patient weight, anatomy and tissue depth overlying the insertion site.

With the needle set inserted through the soft tissue and touching bone, the 5 mm mark (at least one black line) must be visible outside the skin for confirmation of adequate needle set length prior to drilling.

## Insertion tips

- Apply the minimal amount of pressure required to keep the driver advancing into the bone.
- Immediately release the trigger when you feel the loss of resistance as the needle set enters the medullary space. Avoid recoil – do NOT pull back on the driver when releasing the trigger.
- With any manipulation, stabilize the catheter hub.
- Properly secure using an EZ-Stabilizer Dressing and stabilize the extremity.



## Infusions

- Perform a rapid normal saline flush into the IO space before attempting to infuse through the catheter – Infant/Child: 2 to 5 mL.
- Verify placement/patency prior to all infusions. Compartment syndrome, which can result from undetected infiltration/extravasation, is a serious complication. The IO insertion site should be monitored frequently for signs of infiltration/extravasation.”



## Site Identification Infant/Child



## Proximal Humerus

1. Place the patient's hand over the abdomen (elbow adducted and humerus internally rotated).
2. Place your palm on the patient's shoulder anteriorly.
3. The area that feels like a "ball" under your palm is the general target area.
4. You should be able to feel this ball, even on obese patients, by pushing deeply.
5. Place the ulnar aspect of your hand vertically over the axilla and the ulnar aspect of your other hand along the midline of the upper arm laterally.
6. Place your thumbs together over the arm; this identifies the vertical line of insertion on the proximal humerus.
7. Palpate deeply up the humerus to the surgical neck.
8. This may feel like a golf ball on a tee – the spot where the "ball" meets the "tee" is the surgical neck.
9. The insertion site is above the surgical neck, on the most prominent aspect of the greater tubercle.



## Distal Femur

1. Secure the leg out-stretched to ensure the knee does not bend. Identify the patella by palpation.
2. The insertion site is approximately 1 cm proximal to the superior border of the patella and approximately 1-2 cm medial to midline.



## Proximal Tibia

1. Extend the leg.
2. Insertion site is approximately 1 cm medial to the tibial tuberosity, or just below the patella (approximately 1 cm) and slightly medial (approximately 1 cm), along the flat aspect of the tibia.
3. Pinch the tibia between your fingers to identify the medial and lateral borders of the tibia.

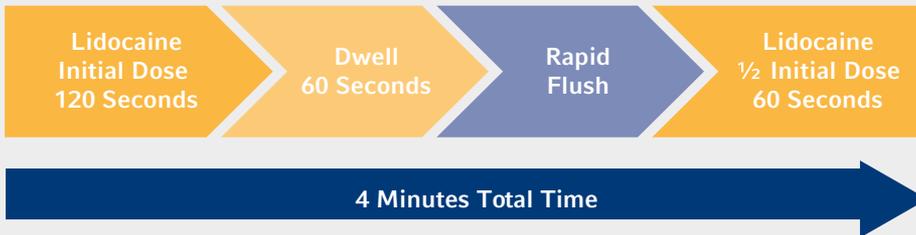


## Distal Tibia

1. Insertion site is located approximately 1-2 cm proximal to the most prominent aspect of the medial malleolus.
2. Palpate the anterior and posterior borders of the tibia to assure that your insertion site is on the flat center aspect of the bone.

## 2% Preservative Free and Epinephrine-free Lidocaine

Infant/Child: Typically 0.5 mg/kg (NOT to exceed 40 mg)



### Consider using anesthetic for infant/child responsive to pain:

For small doses of lidocaine, consider administering by carefully attaching syringe directly to catheter hub (prime extension set with normal saline).

**Disclaimer:** Selection and use of any medication, including lidocaine, given IV or IO is the responsibility of the treating physician, medical director, or qualified prescriber and is not an official recommendation of Teleflex. This information is not intended to be a substitute for sound clinical judgment or your institution's treatment protocols. Teleflex is not the manufacturer of lidocaine. Users should review the manufacturer's instructions or directions for use and be familiar with all indications, side effects, contraindications, precautions and warnings prior to administration of lidocaine or any other medication. Teleflex disclaims all liability for the application or interpretation of this information in the medical treatment of any patient.

## Frequently asked questions

### What is the risk of injury to the epiphyseal (growth) plate in pediatric patients?

Several clinical and preclinical studies have reported no cases of impaired growth or bone abnormalities as a result of IO insertion through the epiphyseal plate.<sup>1,2,3</sup>

### Is there a risk of over-penetration with the EZ-IO® Vascular Access System?

Penetration of the IO needle set through the posterior cortex of the bone is a possible complication, but avoidable with selection of appropriate needle set length and proper insertion technique.

## Resources

Online comprehensive resource for EZ-IO System education available at [www.teleflex.com/ezioeducation](http://www.teleflex.com/ezioeducation). Participate in online education, access and download videos, FAQs, templates and presentations to use within your health system.

Potential complications may include local or systemic infection, hematoma, extravasations, or other complications associated with percutaneous insertion of sterile devices. See the Instructions For Use included with each product for further information. This material is not intended to replace standard clinical education and training by Teleflex, Incorporated and should be utilized as an adjunct to more detailed information which is available about the proper use of the product. View educational resources at [www.teleflex.com/ezioeducation](http://www.teleflex.com/ezioeducation) or contact a Teleflex clinical professional for any detailed questions related to product insertion, maintenance, removal and other clinical education information.

Fiser DH. Intraosseous infusion. *N Engl J Med* 1990;322(22):1579-81.

Heinild S, Sondergaard T, Tuvad F. Bone marrow infusion in childhood. *J Pediatr* 1947;30(6):400-2.

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