ARROW®

Arrow®

EZ-IO®

Intraosseous Vascular Access System

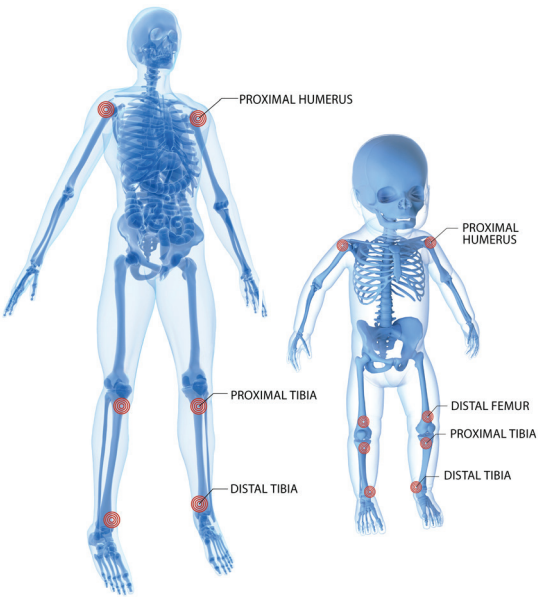
When every moment matters, it's time to rethink difficult vascular access.

Teleflex®

Site Selection – Adult & Pediatric

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

Insertion Sites



Adult Pediatric

Do not use the EZ-IO® System in the sternum.

Needle Size Selection

Clinical judgment should be used to determine appropriate needle set selection based on patient weight, anatomy, and tissue depth overlying insertion site.

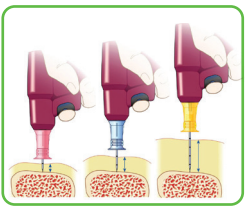
Consider longer needle to ensure adequate needle length for insertion.

EZ-IO® 15 mm Needle Set: 3 - 39 kg

EZ-IO® 25 mm Needle Set: ≥3 kg

EZ-IO® 45 mm Needle Set: ≥40 kg

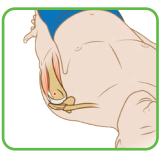
All EZ-IO® Needle Sets are marked with black lines. Prior to activating the EZ-IO® Power Driver, push needle set tip through skin until tip rests against the bone. The 5 mm mark, closest to the hub, must be visible above skin for needle set length confirmation.



Arm Positioning Options

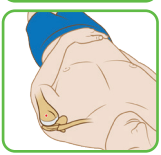
Proximal Humerus

Using either method below, adduct and internally rotate the arm.



METHOD 1

Place the arm tight against the body. Rotate the hand so the palm is facing outward, thumb pointing down.

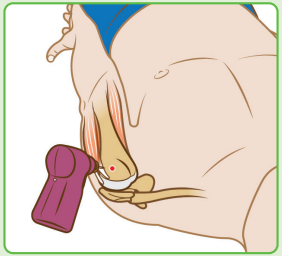


METHOD 2

Place the hand over the abdomen with arm tight to the body.

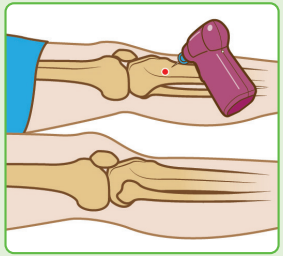
Landmarking – Adult/Older Child

Proximal Humerus (for adult and pediatric patients)



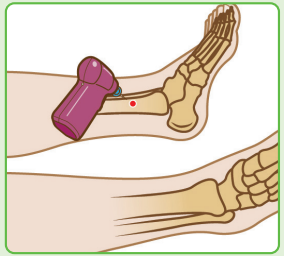
- To landmark on the anterior shoulder, palpate the greater tubercle by letting it sink into the palm of your hand. You must be able to palpate the greater tubercle before insertion to avoid errant placement.
- Insert needle at an approximate 45-degree angle as if aiming toward the opposite hip.
- Do not raise arm above 45 degrees after insertion to prevent inadvertent dislodgement.

Proximal Tibia



- Extend the leg. Find the tibial tuberosity. Insertion site is approximately 2 cm medial or the mid-point between the medial and lateral portion along the flat aspect of the anterior tibia (depending on patient anatomy).
- If unable to palpate the tibial tuberosity, the insertion site is approximately 3 cm below the inferior border of the patella at the same site if tuberosity were palpated.
- Aim needle at a 90-degree angle to the bone for insertion.

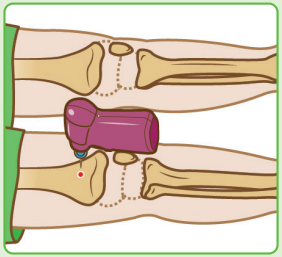
Distal Tibia



- Insertion site is approximately 3 cm proximal to the most prominent aspect of the medial malleolus.
- Palpate the anterior and posterior borders of the tibia to ensure that the insertion site is mid-line on the flat center aspect of the bone.
- Aim needle at a 90-degree angle to the bone for insertion.

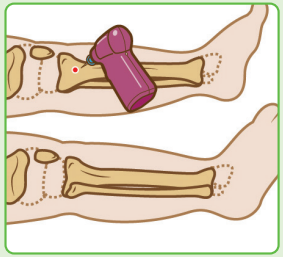
Landmarking – Neonate/Young Child

Distal Femur



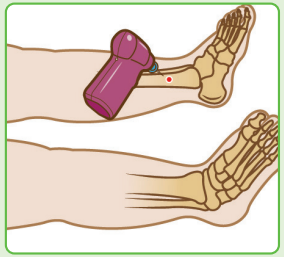
- Secure site with leg outstretched to ensure knee does not bend.
- The insertion site is approximately 1-2 cm proximal to the superior border of the patella and approximately 1 cm medial to the mid-line (depending on patient anatomy).
- Aim needle at a 90-degree angle to the bone for insertion.

Proximal Tibia



- Extend the leg. If the tibial tuberosity can be palpated, the insertion site is approximately 1 cm medial to the tibial tuberosity.
- If the tibial tuberosity cannot be palpated, the insertion site is approximately 1-2 cm below the patella and approximately 1 cm medial along the flat aspect of the anterior tibia (depending on patient anatomy).
- Aim needle at a 90-degree angle to the bone for insertion.

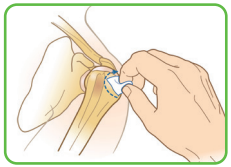
Distal Tibia



- Insertion site is approximately 1-2 cm proximal to the most prominent aspect of the medial malleolus (depending on patient anatomy).
- Palpate the anterior and posterior borders of the tibia to ensure that the insertion site is on the flat center aspect of the bone.
- Aim needle at a 90-degree angle to the bone for insertion.

Insertion Technique

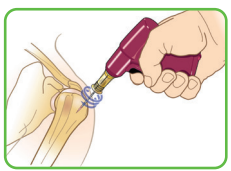
STEP 1: Clean insertion site per institutional protocol/ policy. Stabilize extremity.



STEP 2: Prepare supplies:

- Unlock clamp on EZ-Connect® Extension Set.
- Prime EZ-Connect® Extension Set and purge air.
- Attach EZ-IO® Needle Set to EZ-IO® Power Driver and remove safety cap from needle.

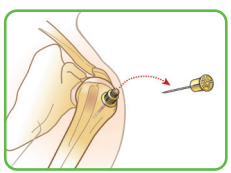
STEP 3: Push needle set through skin until tip rests against the bone. The 5 mm black mark on the cannula must be visible prior to activating the driver.



Squeeze the trigger, applying gentle steady pressure.

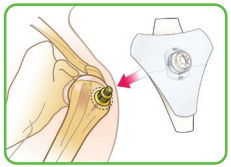
Immediately release the trigger when you feel a sudden "give" or loss of resistance as the needle set enters the medullary space. Use caution, and do not apply excessive pressure, as this may cause the driver to slow and/or stop.

STEP 4: Stabilize needle set hub, disconnect driver, and remove stylet. Place stylet into locking sharps block for sharps containment.



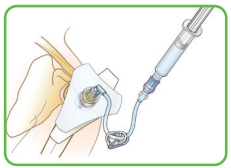
Obtain sample for lab analysis, if needed.

STEP 5: Place EZ-Stabilizer® Dressing over cannula hub.



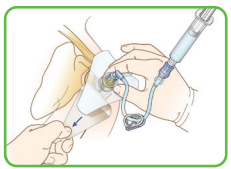
For patients responsive to pain, consider 2% preservative-free and epinephrine-free lidocaine; follow institutional protocols/policy.

STEP 6: Attach primed EZ-Connect® Extension Set to cannula hub.

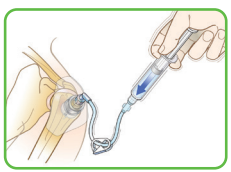


Firmly secure by twisting clockwise and ensure clamp is open.

STEP 7: Pull the tabs off the dressing to expose adhesive and adhere to skin.

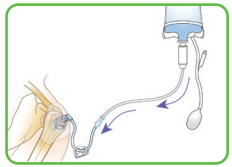


STEP 8: Confirm placement. Flush cannula with normal saline (5-10 mL for adults; 2-5 mL for infants/ children). Multiple flushes may be required.



It is essential to perform a rapid flush with normal saline before attempting to infuse fluids into the IO space. The flush helps displace marrow, facilitating flow.

STEP 9: Deliver medication and fluids as ordered. If adequate IO flow rates cannot be achieved with an infusion pump, a pressure bag should be considered.



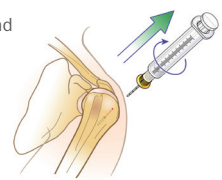
STEP 10: Document date/time of insertion and apply wristband.

CARE & MAINTENANCE – ALL SITES

Keep extremities secure to minimize movement. Assess frequently for extravasation, swelling, and optimal flow rate. Ensure site is securely in place, connections are secure, and dressing is clean, dry and intact. Confirm patency/placement prior to and throughout medication and fluid administration.

REMOVAL

- Remove EZ-Connect® Extension Set.
- Lift and remove EZ-Stabilizer® Dressing.
- Attach luer-lock syringe to hub of cannula.
- Maintain axial alignment and rotate clockwise while pulling straight out. **Do NOT rock or bend the cannula.** Improper technique may cause cannula to break.



- Once removed, immediately place cannula, with syringe attached, in appropriate sharps container.
- Dress site per institutional protocol/policy.

When to Use

The Arrow® EZ-IO® System may be used any time in which vascular access is difficult to obtain in emergent, urgent or medically necessary cases*, such as:

Shock

- Anaphylaxis
- Burns
- Dehydration
- Sepsis/SIRS
- Trauma

Cardiac

- Cardiac arrest
- Chest pain
- Congestive heart failure (CHF)
- Dysrhythmia
- Myocardial infarction
- STEMI/NSTEMI

Respiratory

- COPD
- Intubation (RSI)
- Pneumonia
- Respiratory failure
- Status asthmaticus

Neurological

- Encephalopathy
- Head injury
- Status epilepticus
- Stroke
- TBI

Other

- Diabetic ketoacidosis
- Sickle cell crisis
- Therapeutic hypothermia

Indications & Contraindications

The Arrow® EZ-IO® System provides fast[1] access via the intraosseous route and provides a reliable bridge[2] until longer term vascular access can be established.[3]

Indications for Use:

For intraosseous access anytime in which vascular access is difficult to obtain in emergent, urgent, or medically necessary cases for up to 24 hours. For patients ≥12 years old, the device may be extended for up to 48 hours when alternative intravenous access is not available or reliably established.

Contraindications for Use:

- Fracture in target bone
- Infection at area of insertion
- Excessive tissue (severe obesity) and/or absence of adequate anatomical landmarks
- IO access (or attempted IO access) in targeted bone within past 48 hours
- Previous, significant orthopedic procedure at the site, prosthetic limb or joint

Fluids & Medications

Many fluids and medications that can be safely infused via peripheral IV access may be infused through the IO route using similar dosing, rates, and concentrations.[4-6]

Scan the QR code for a list of medications included in clinical literature as administered via the IO route.

IO Infusion Pain Management Using 2% Lidocaine (preservative-free and epinephrine-free)

This is a suggested anesthetic procedure for a patient who is responsive to pain. Review lidocaine manufacturer's IFU prior to administration and observe recommended cautions/contraindications.

With the stabilizer in place, carefully attach syringe **directly to IO catheter luer-lock hub,** without extension set in place

1. **Slowly infuse** initial dose of lidocaine over 120 seconds and allow to dwell for 60 seconds
   ADULT: initial dose 40 mg
   INFANT/CHILD: initial dose 0.5 mg/kg (NOT to exceed 40 mg)
2. **Flush IO** catheter with normal saline
   ADULT flush: 5-10 mL
   INFANT/CHILD flush: 2-5 mL
3. **Assess pain. If needed, slowly infuse** lidocaine (half of initial dose) over 60 seconds
4. **Attach extension set** primed with normal saline and flush

≥ 4 min total time

Consider systemic pain control for patients not responding to IO lidocaine.
For continued analgesia related to intraosseous pain, follow institutional protocol/policy.

Arrow® EZ-IO® System Components

Arrow® EZ-IO® Power Driver

- No charging necessary; no downtime or additional equipment needed
- Designed for use in ground and air transport, hospital, and military environments
- Fully sealed design for quick and easy cleaning
- Green/red battery indicator light

Order No. 9058

Arrow® EZ-IO® Needle Set

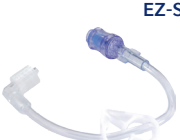
- Color-coded needles enable quick selection and post-insertion identification
- Diamond needle tip designed for precision performance

EZ-IO® Needle + Stabilizer Kits

DESCRIPTION	ORDER NO.
45 mm needle	9079P-VC-005
25 mm needle	9001P-VC-005
15 mm needle	9018P-VC-005

Accessories (Included in Needle + Stabilizer Kits)

EZ-Stabilizer® Dressing



Arrow® EZ-Connect® Extension Set

NeedleVISE® Sharps Block

Resources

The Arrow® EZ-IO® System App

Scan to Download

Visit Teleflex.com/EZIO for additional product information & clinical resources

- Videos
- Instructional Literature
- Ordering Information
- E-Learning & Webinars

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Customer Service
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cs@teleflex.com

References:

1. Davidoff J, et al. *JEMS*. 2005;30(10)-s23. research sponsored by Teleflex Incorporated.
2. Leidel BA, et al. *Resuscitation*. 2012;83(1):40-45.
3. Dolister M, et al. *J Vasc Access*. 2013;14(3):216-224. Research sponsored by Teleflex Incorporated.
4. Neumar RW, et al. *Circulation*. 2010;122(18 suppl 3):S729-S767.
5. Orlowski JP, et al. *Am J Dis Child*. 1990;144(1):112-117.
6. Von Hoff DD, et al. *Am J Emerg Med*. 2008;26:31-38.

*The Arrow® EZ-IO® System is indicated for intraosseous access anytime in which vascular access is difficult to obtain in emergent, urgent or medically necessary cases for up to 24 hours. For patients ≥ 12 years old, the device may be extended for up to 48 hours when alternate intravenous access is not available or reliably established.

Rx Only.

CAUTION: Federal (USA) law restricts this device to sale by or on the order of a physician.

The Arrow® EZ-IO® Needle Set is Sterile, Single Use: Do not reuse, reprocess or re-sterilize. Reuse of device creates a potential risk of serious injury and/or infection which may lead to death. Refer to Instructions for Use for complete warnings, indications, contraindications, precautions, and potential complications.

Teleflex®