



Arrow® EZ-IO® Intraosseous Vascular Access System

MC-004827rev3.1

Key Concepts of Intraosseous Vascular Access

Objectives

- Verbalize indications and contraindications of the Arrow® EZ-IO® Intraosseous Vascular Access System
- List considerations for insertion site selection
- Recognize insertion sites and landmarking techniques
- Identify critical concepts for needle set selection
- Understand preparation for procedure and supplies
- Distinguish insertion technique recommendations
- Apply pain management technique for intraosseous (IO) infusions
- Understand utilization, care, and removal of the IO vascular access
- Discuss care and maintenance of the Arrow® EZ-IO® Driver
- Identify documentation and additional considerations

Indications and Contraindications

Arrow[®] EZ-IO[®] System

Indications

For intraosseous access anytime in which vascular access is difficult to obtain in emergent, urgent or medically necessary cases for up to 24 hours.

Adults (≥ 22 years old)	Pediatrics (≤21 years old)
<ul style="list-style-type: none">• Proximal humerus• Proximal tibia• Distal tibia	<ul style="list-style-type: none">• Distal femur• Proximal humerus• Proximal tibia• Distal tibia

For patients ≥ 12 years old, the device may be extended for up to 48 hours in the U.S. when alternate intravenous access is not available or reliably established.

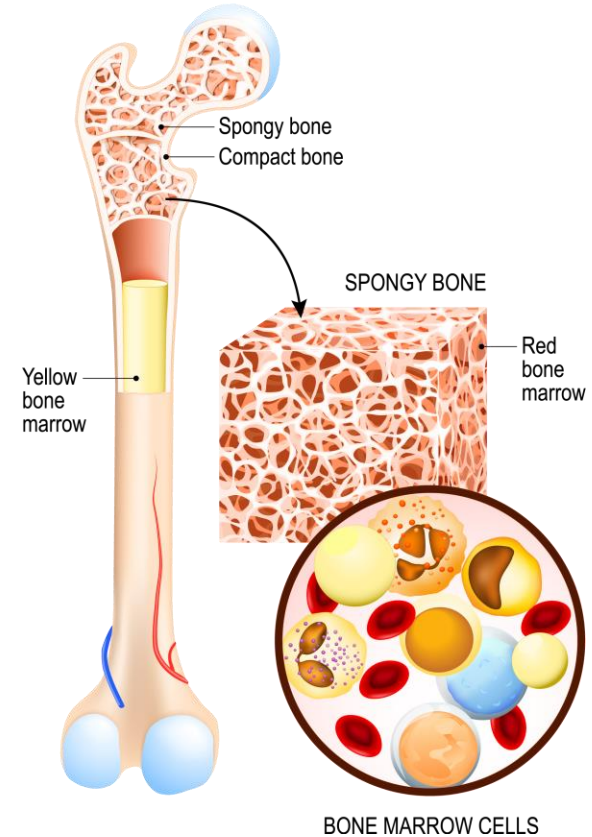
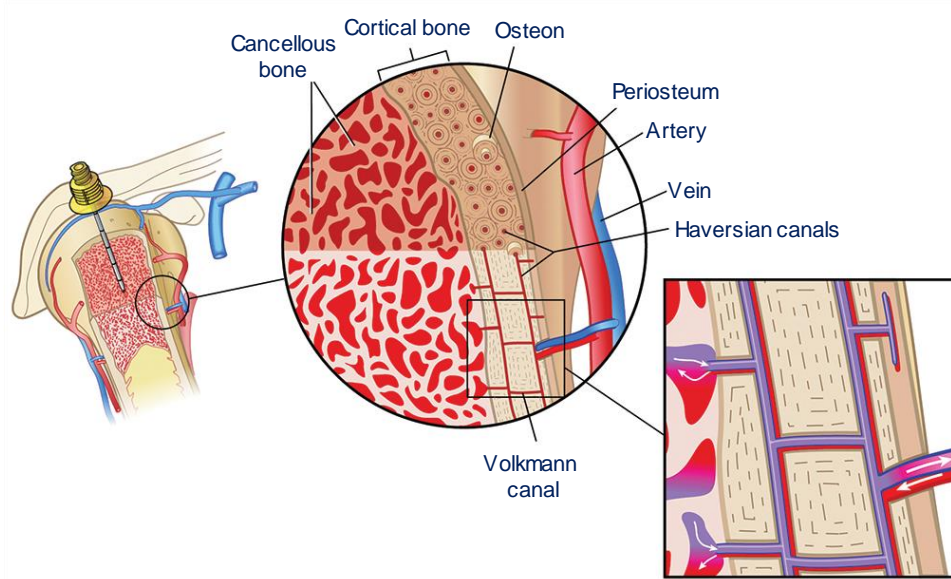
Contraindications

- 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 target bone within previous 48 hours
- Previous, significant orthopedic procedure at the site, prosthetic limb or joint.

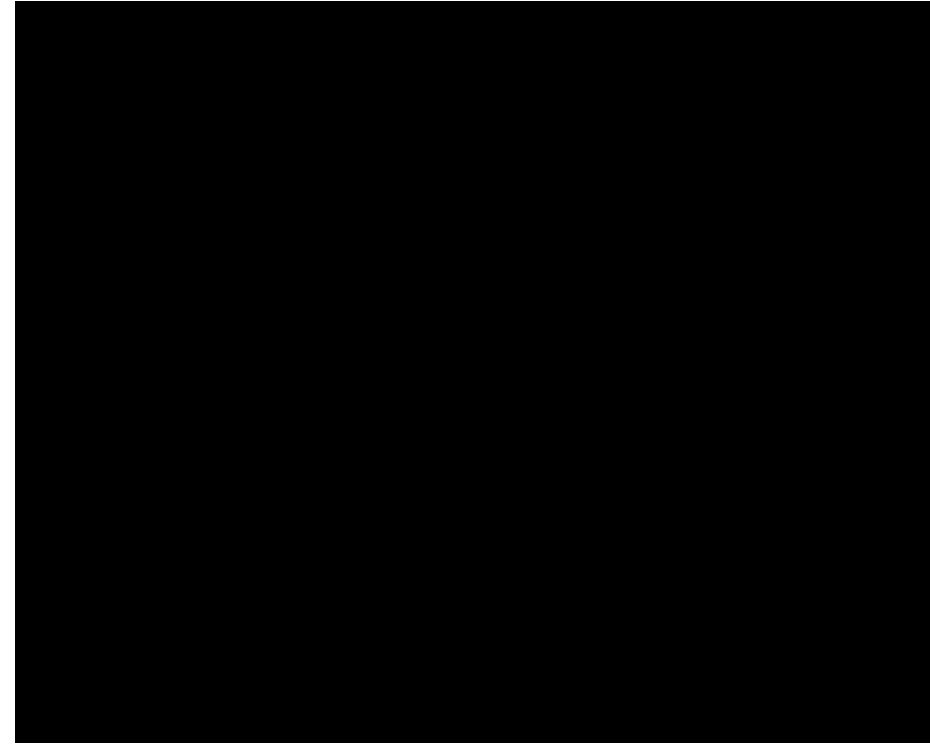
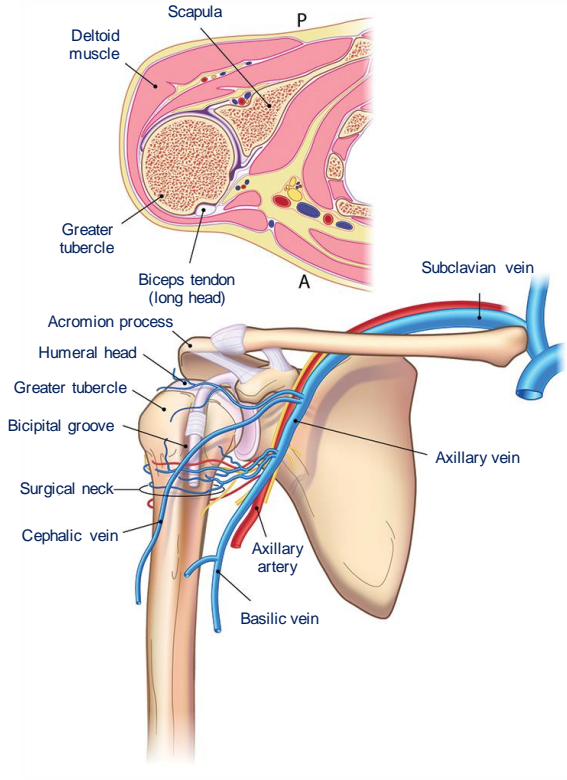


Anatomy and Physiology

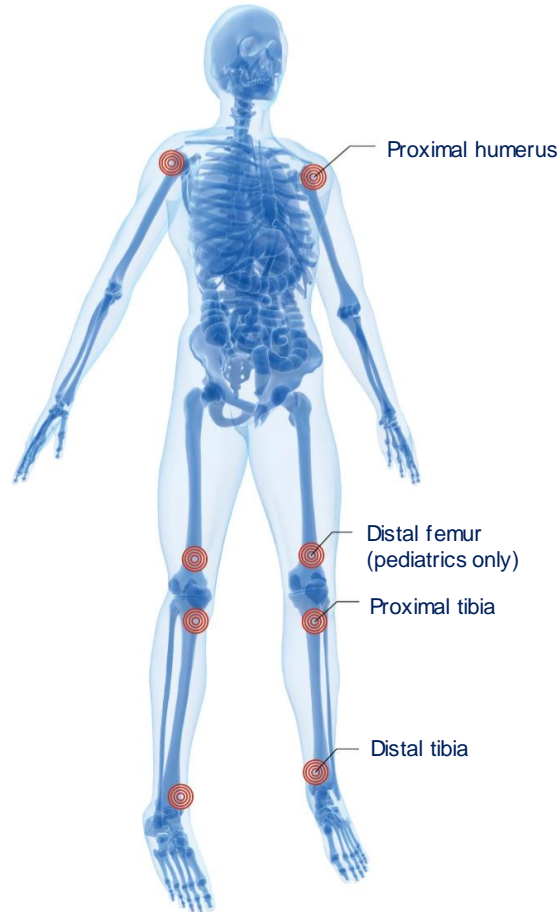
Highly vascular, non-collapsible access



Real-time Fluoroscopy – Human Model



Insertion Site Selection



- 3 seconds to heart with medication/fluids^{1*}
- Flow rates average 6.3 L/hr. under pressure^{2*}
- Less pain reported with saline flush^{3*†}
- Less medication required for pain management during infusion^{3*†}

- Insertion success rate of 98-100%⁴

- Flow rates average 1.0 L/hr. under pressure^{3†}

*Based on adult proximal humerus data

†Based on adult proximal tibia data

‡Compared to EZ-IO® System tibial insertions

Arrow® EZ-IO® Needle Set Selection

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



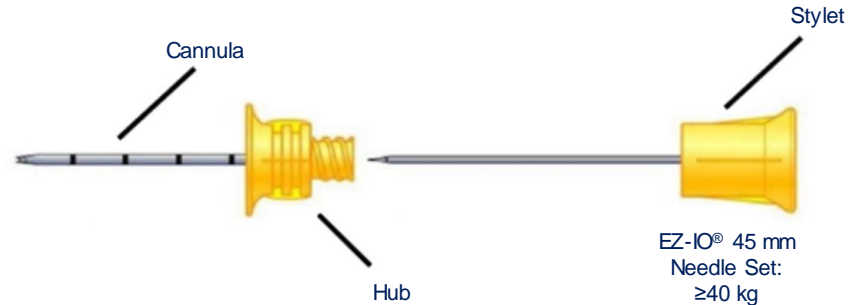
EZ-IO® 15 mm Needle Set: 3-39 kg



EZ-IO® 25 mm Needle Set: ≥3 kg



EZ-IO® 45 mm Needle Set: ≥40 kg



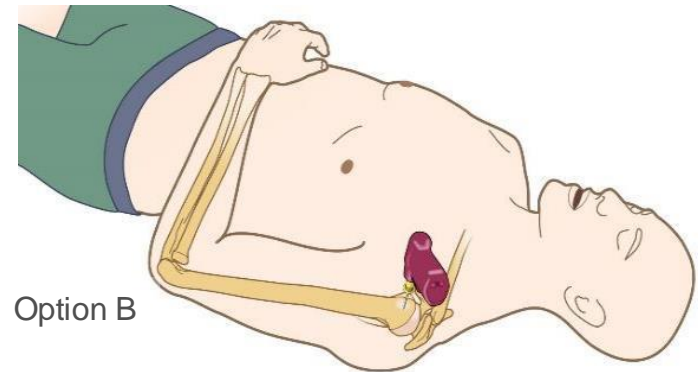
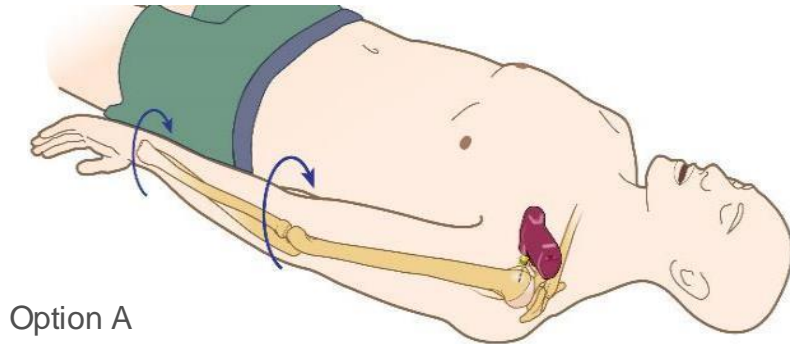
Positioning for Proximal Humerus Site Identification

Using either method below, adduct elbow to rotate humerus internally

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

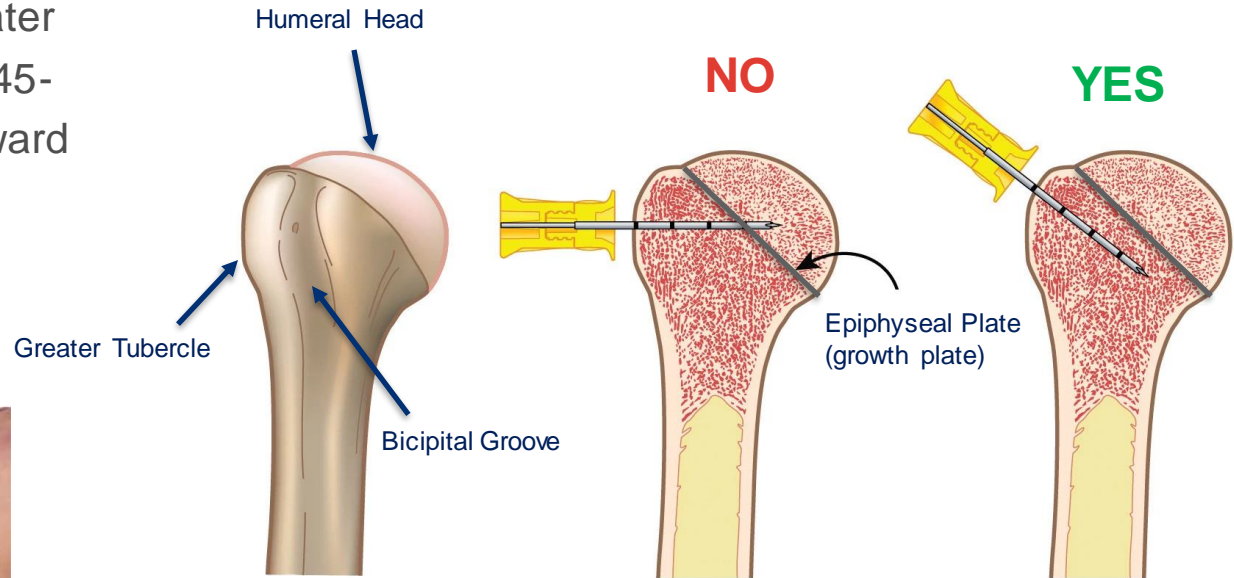
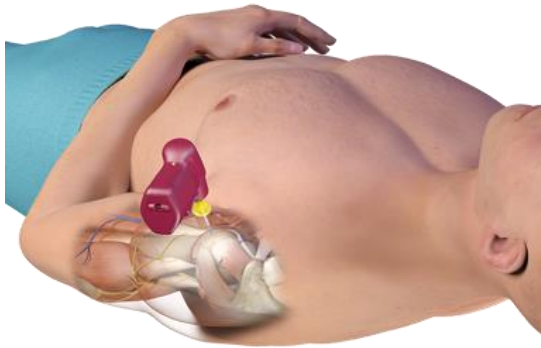
OR

Place the patient's hand over the
abdomen with arm tight to the body



Proximal Humerus Insertion Angle

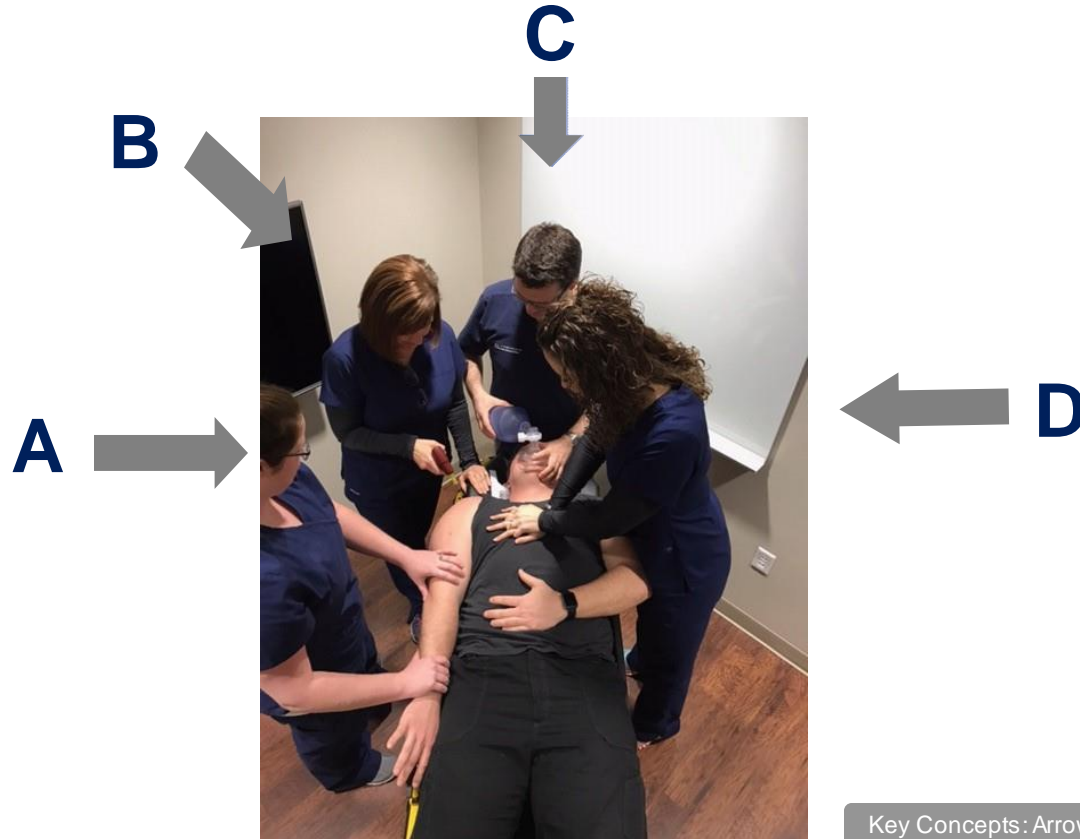
Insert needle set into the greater tubercle at an approximately 45-degree angle, as if aiming toward the opposite hip.



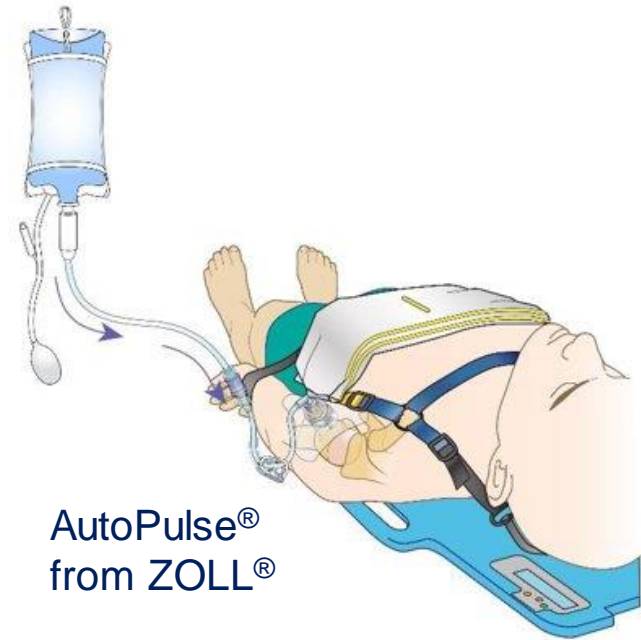
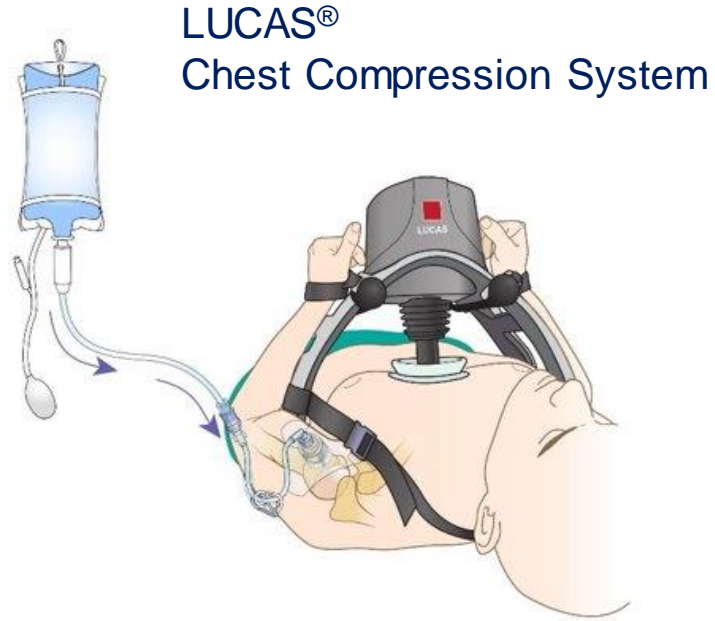
Proximal Humerus Insertion Angle



Myth: "There is not enough space at the head of the bed."

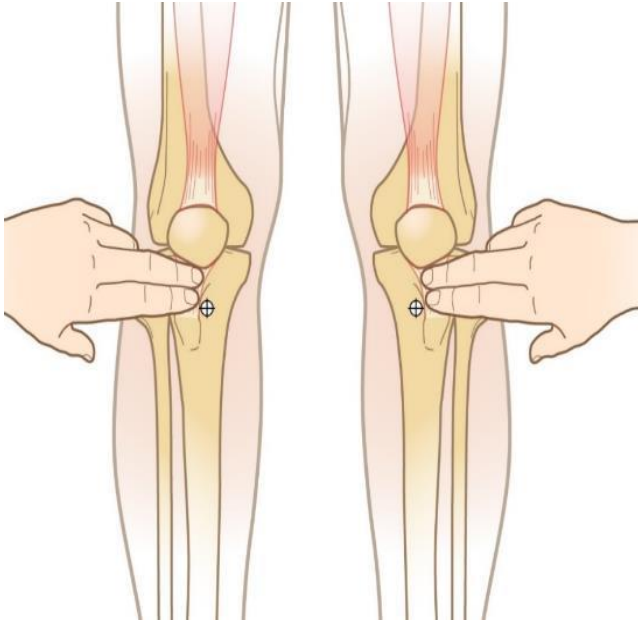


Proximal Humerus IO Access and Mechanical CPR Devices

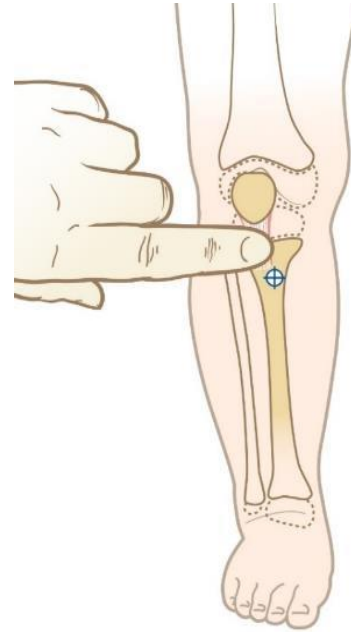


Proximal Tibia Site Identification

Adult/Older Child

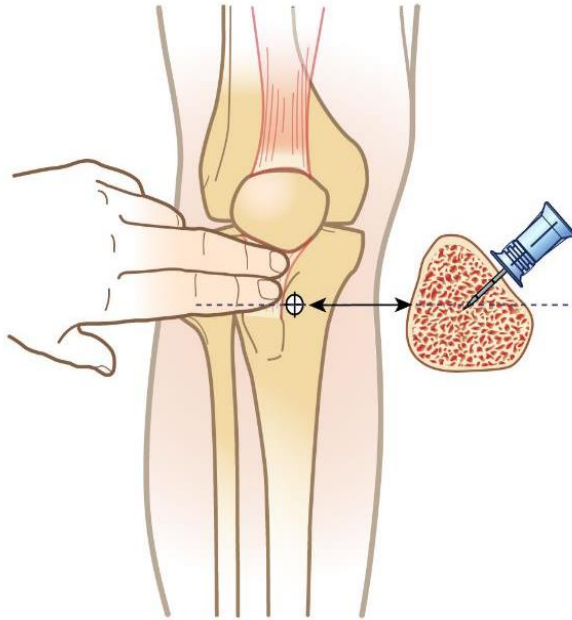


Neonate/Young Child

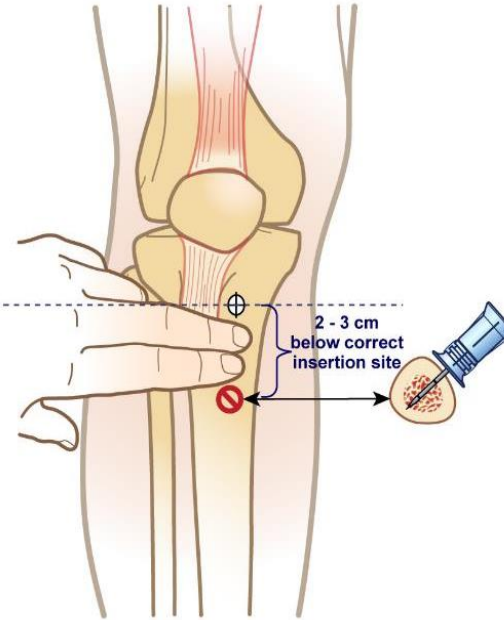


Proximal Tibia Site Identification

Correct



Incorrect

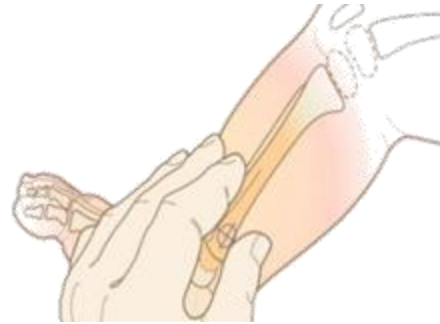
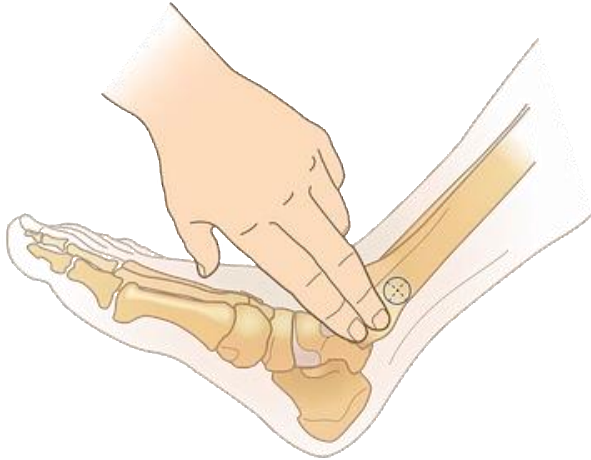


Proximal Tibia Site Identification

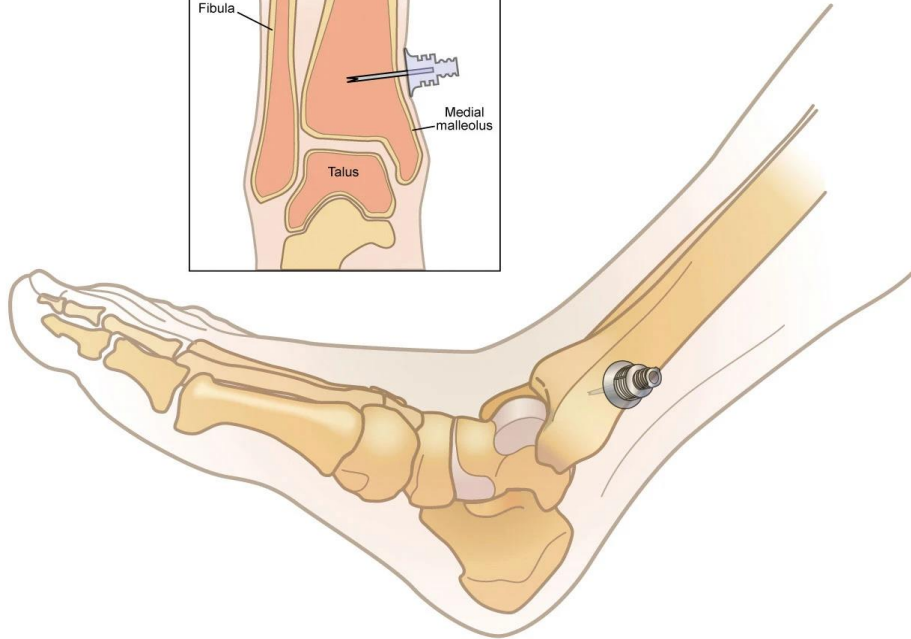
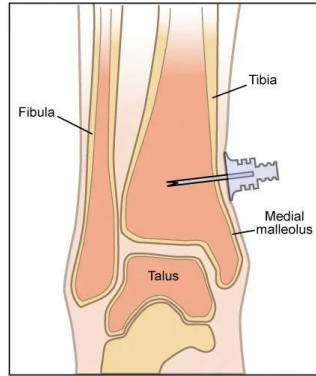


Distal Tibia Site Identification

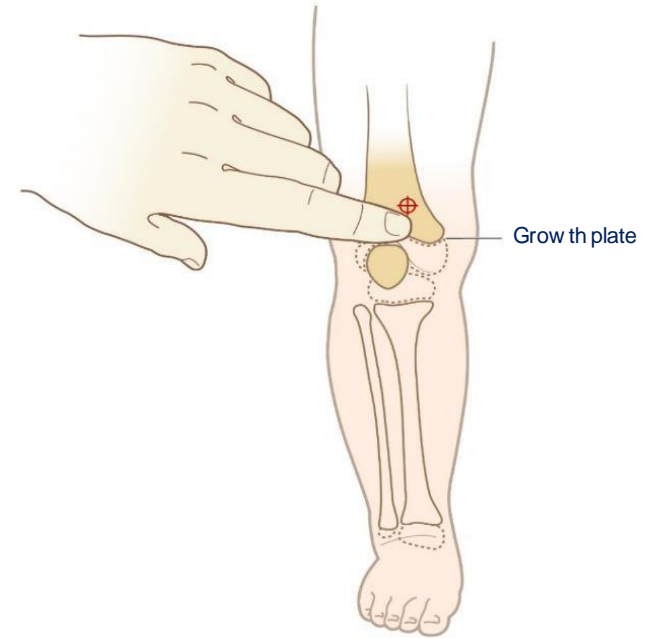
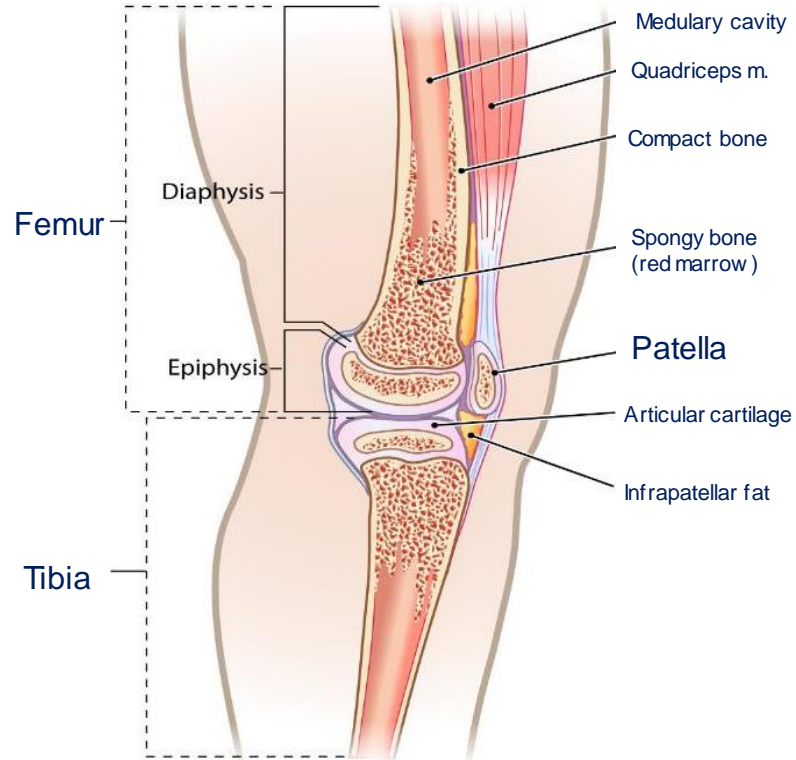
Insert medially on the flat, center aspect of the bone



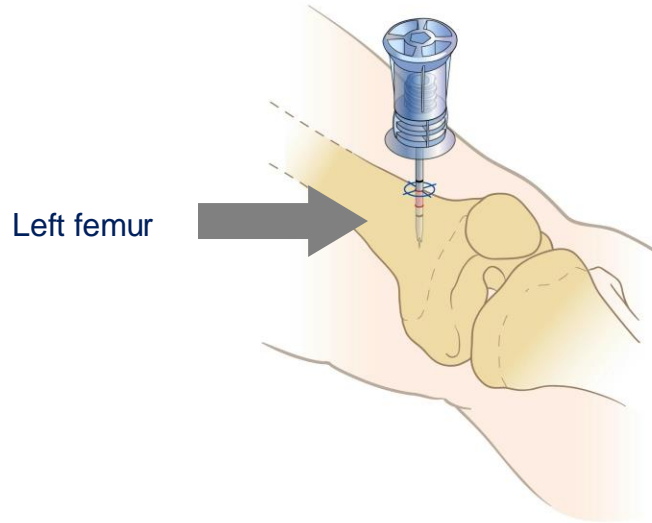
Distal Tibia Site Identification



Distal Femur Site Identification

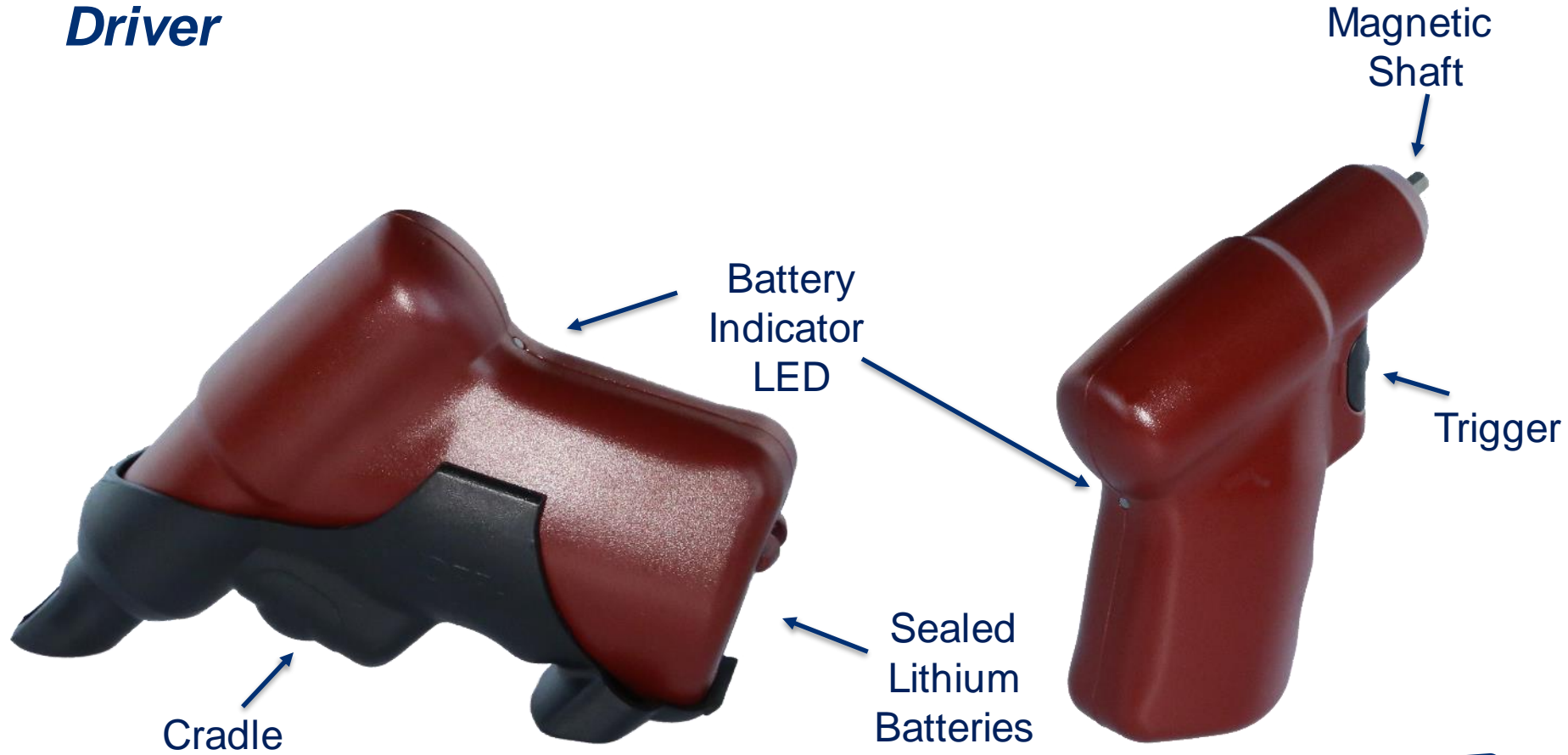


Distal Femur Site Identification



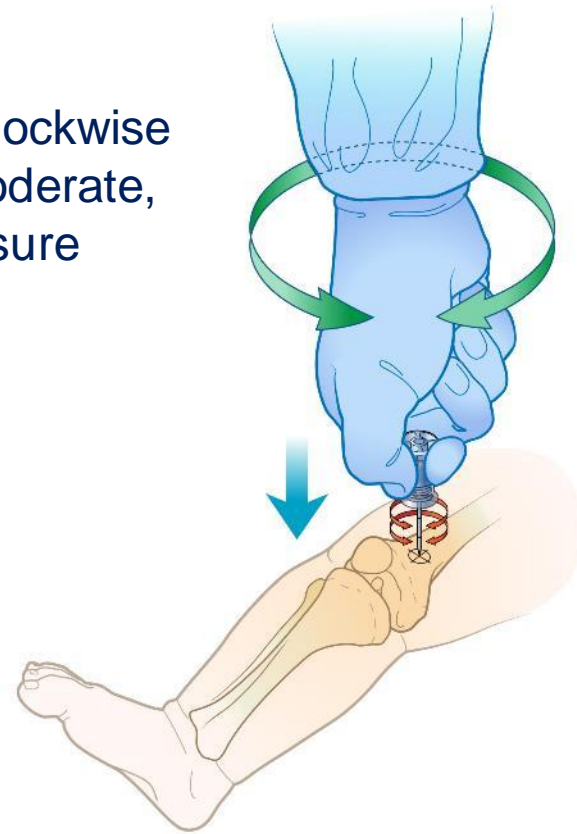
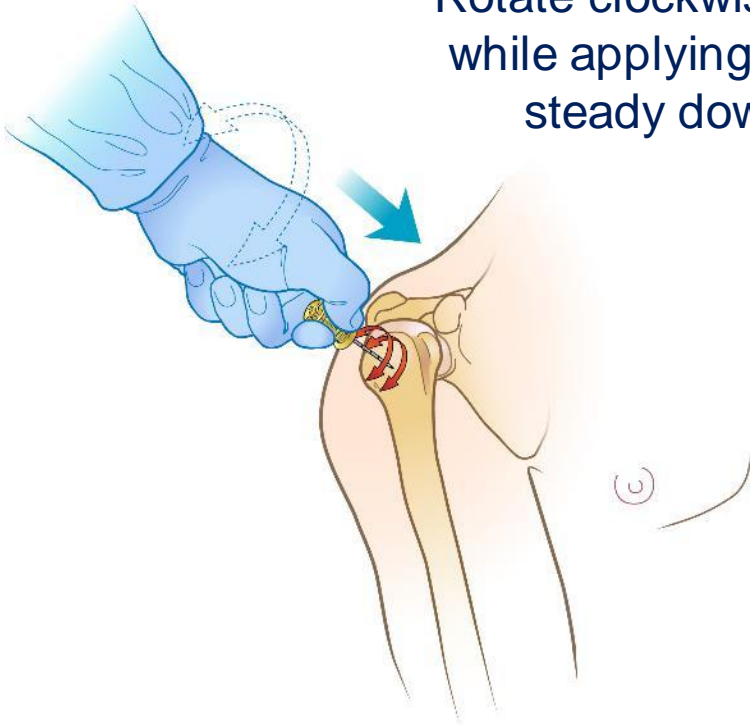
Ensure leg remains immobilized throughout dwell

Driver



Manual Insertion

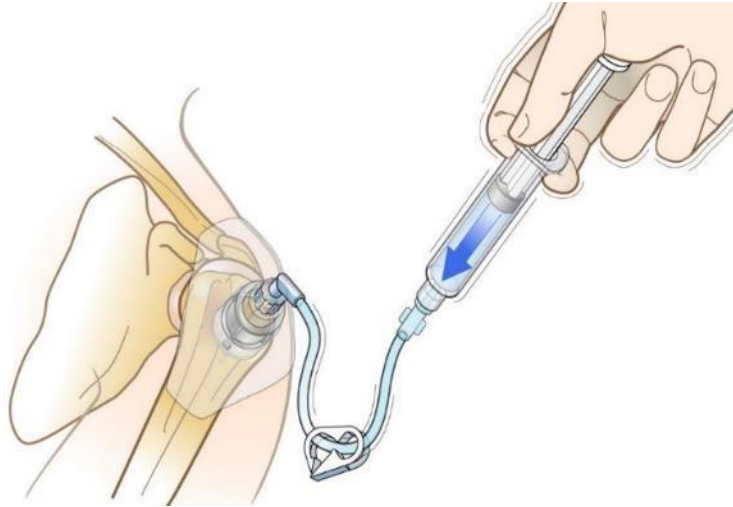
Rotate clockwise/counter-clockwise
while applying gentle to moderate,
steady downward pressure



Flush

Adults: 5-10 mL

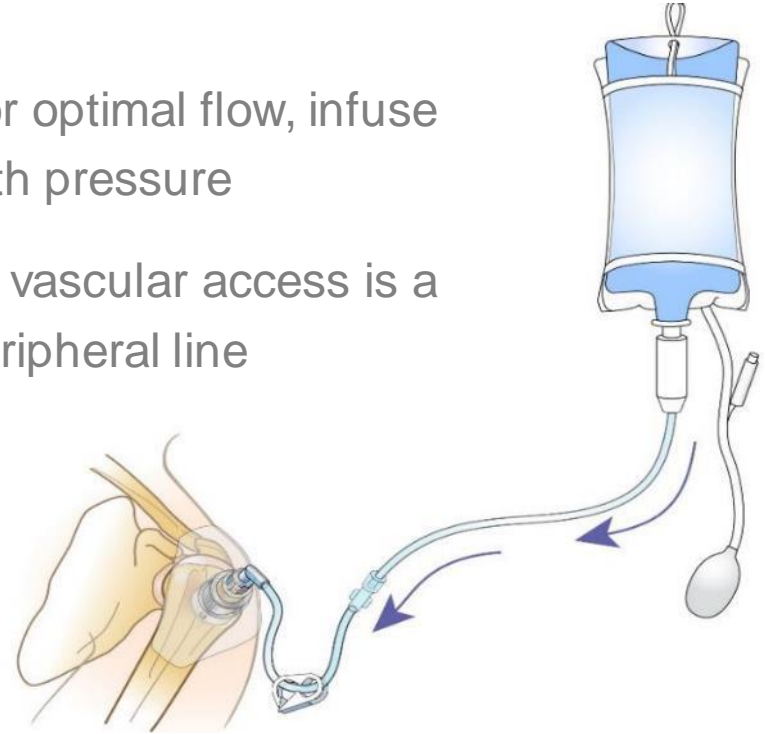
Infants and Small Children: 2-5 mL



Infusion and Medications

For optimal flow, infuse with pressure

IO vascular access is a peripheral line



IO Infusion Pain Management

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

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 0.5mg/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

Slowly infuse lidocaine (half of initial dose) over 60 seconds

4

Attach extension set primed with normal saline and flush

Repeat PRN. Consider systemic pain control for patients not responding to IO lidocaine
≥ 4 min total time

DISCLAIMER: Observe cautions/contraindications for lidocaine, confirm dose per institution. 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 Incorporated. The information provided is a summary of information found in the cited reference materials. This information is not intended to be a substitute for sound clinical judgment or your institution's treatment protocols.

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For additional information please visit www.eziocomfort.com.

Key Concepts: Arrow® EZ-IO® System

THE TELEFLEX
ACADEMY

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