



THE TELEFLEX
ACADEMY



MC-006381rev2.1

Arrow® EZ-IO® Intraosseous Vascular Access System

Intraosseous Access: Landmarking Deep Dive



Speaker Biography

Name of speaker

- Highlights

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

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. 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.

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

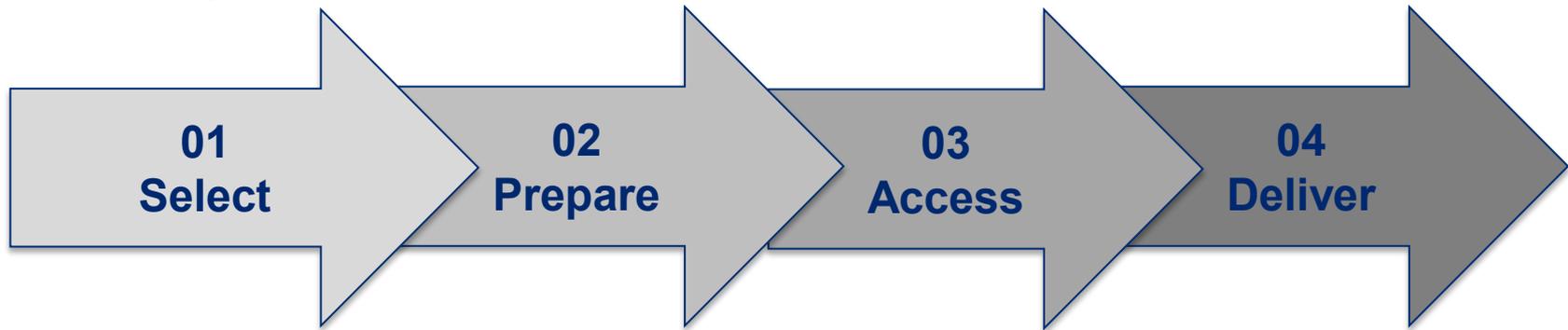
Contraindications

- 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



Arrow® EZ-IO® Intraosseous Vascular Access System

Four easy steps:



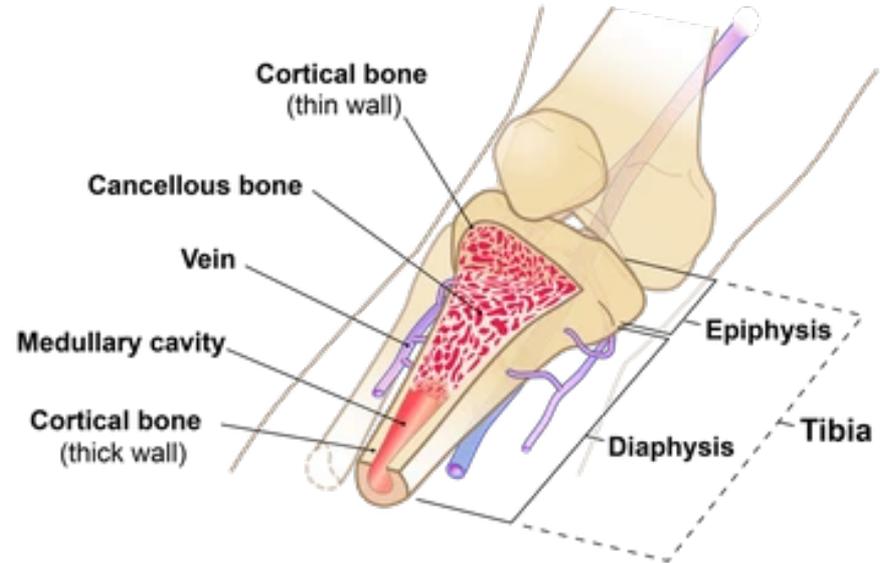
THE TELEFLEX
ACADEMY

Anatomy and Physiology



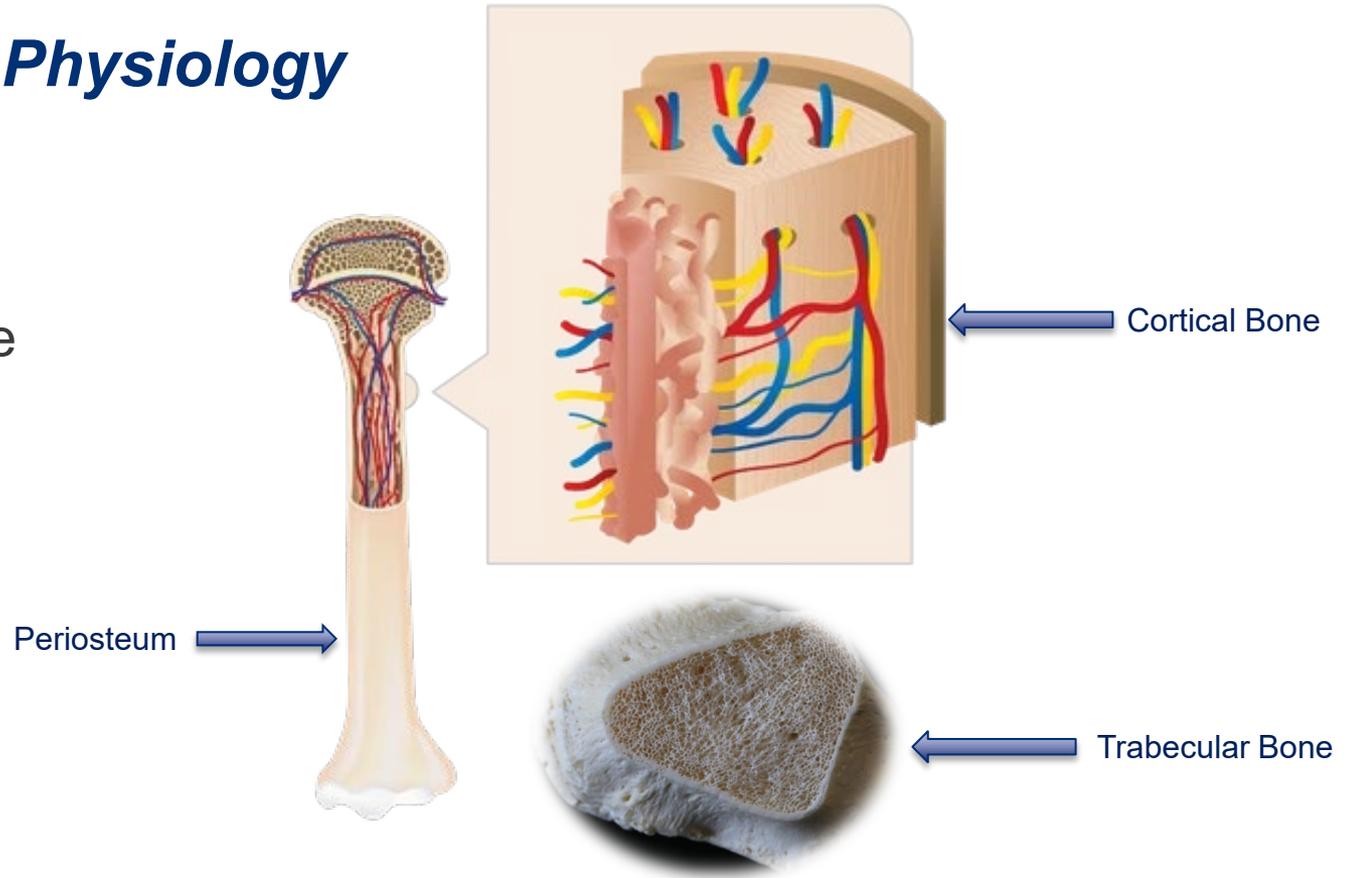
Anatomy and Physiology

- Epiphysis
 - End of bone
- Metaphysis
 - Between epiphysis and diaphysis
 - Includes epiphyseal plate
- Diaphysis
 - Bone shaft



Anatomy and Physiology

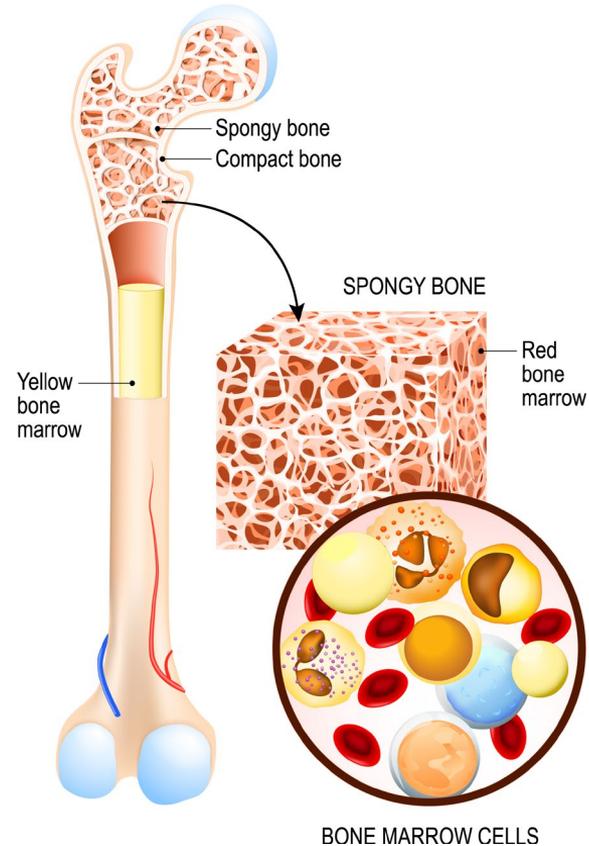
- Periosteum
- Cortical bone
- Trabecular bone



Anatomy and Physiology

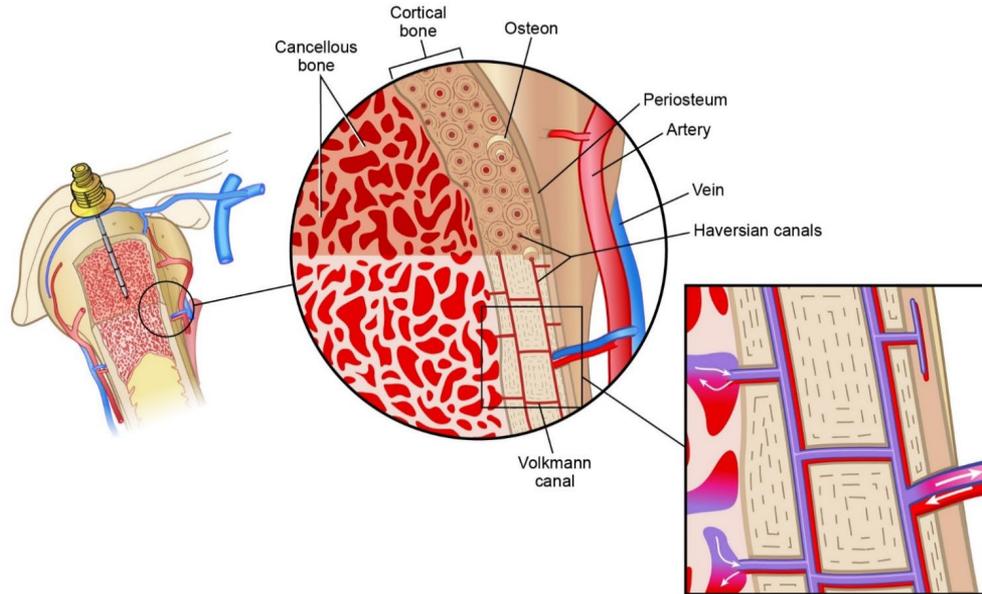
- Red Marrow
 - Red Blood Cells
 - Fluids and medications easily exchanged

- Yellow Marrow
 - Fat
 - Not supported by continuous blood flow

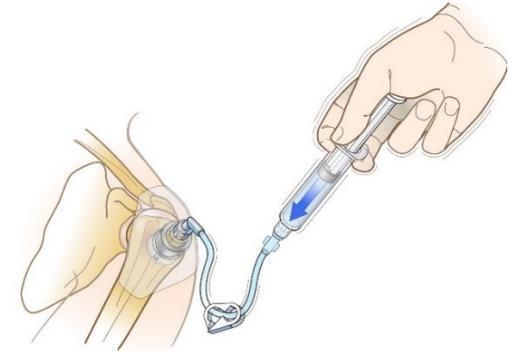


Anatomy and Physiology

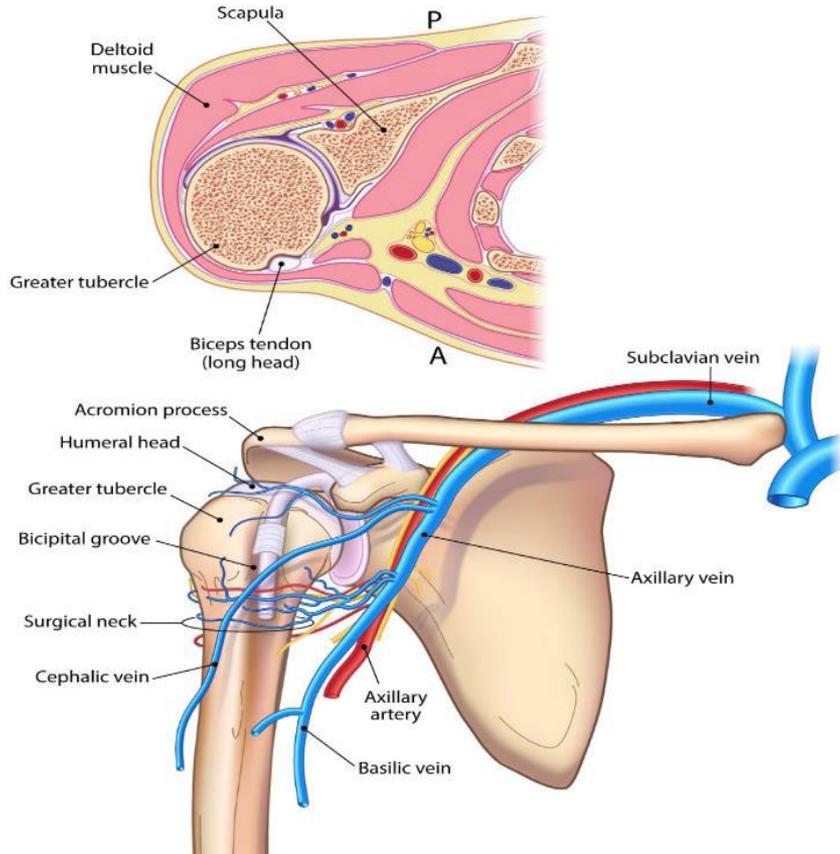
Highly vascular, non-collapsible access



Tip: Rapid flush to
displace marrow



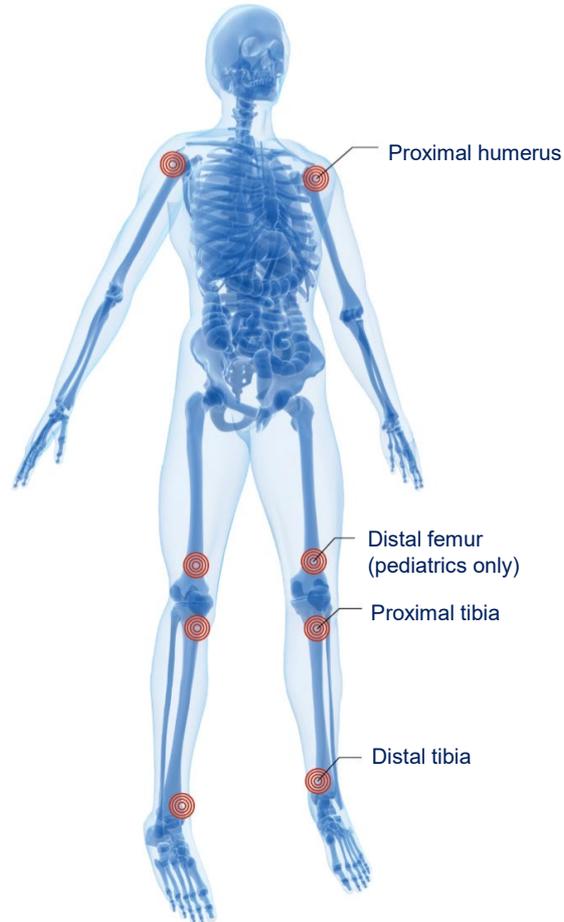
Real-time Fluoroscopy - Human Model



Insertion Site Identification



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

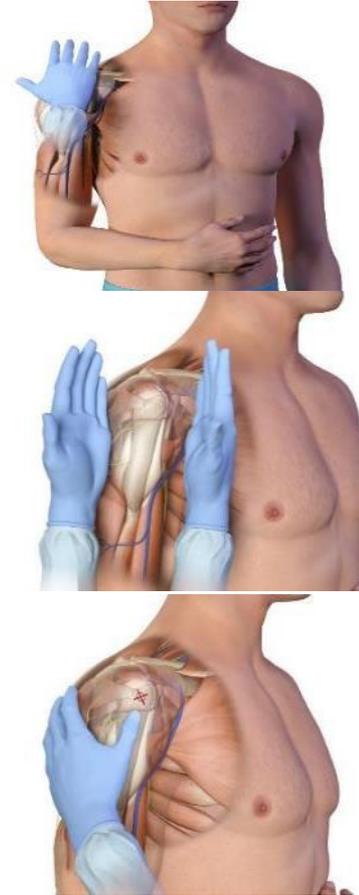
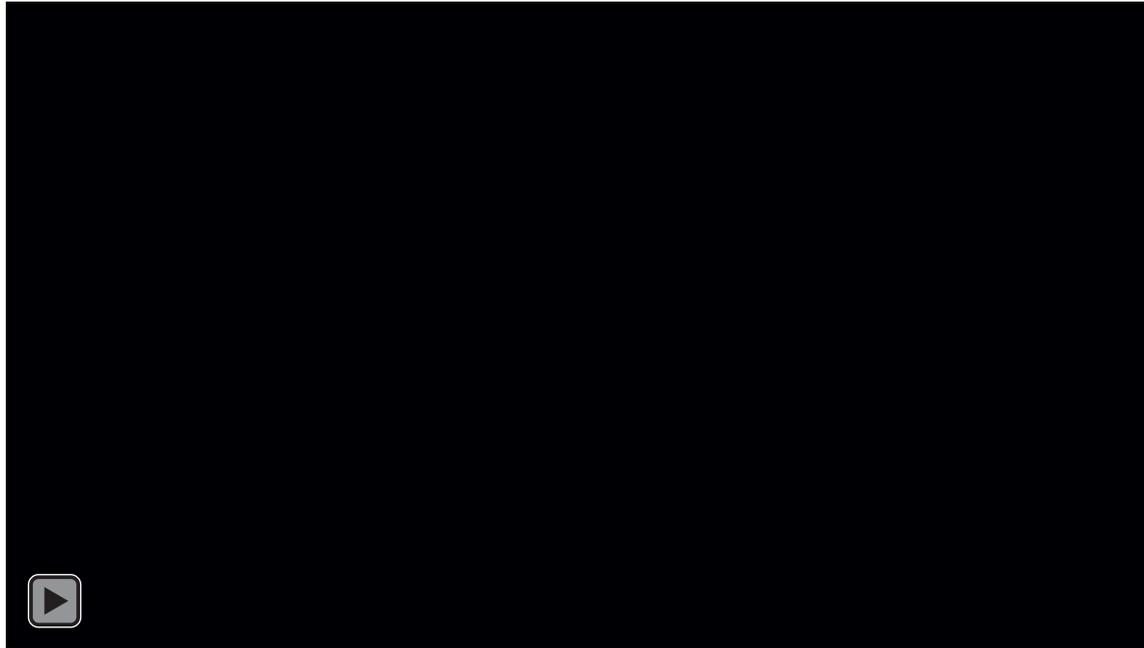
- Flow rates average 1.0 L/hr. under pressure^{3†}

*Based on adult proximal humerus data

†Based on adult proximal tibia data

‡Compared to EZ-IO® System tibial insertions

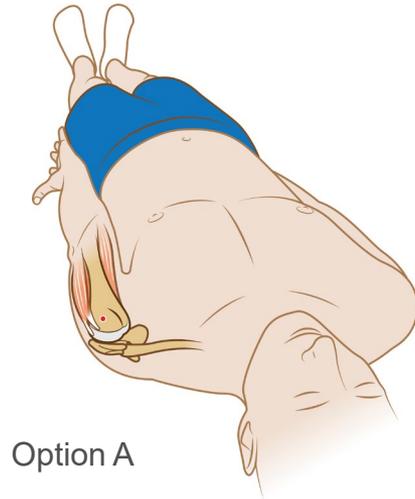
Proximal Humerus Site Identification



Positioning for Proximal Humerus Site Identification

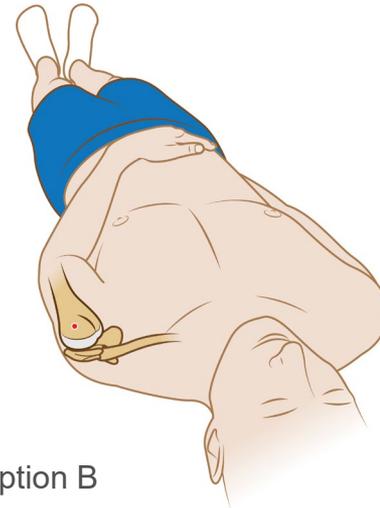
Using either method below, adduct elbow to rotate humerus internally

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



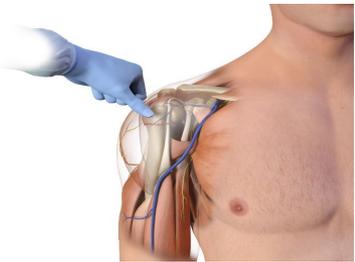
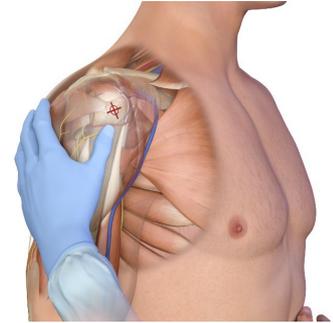
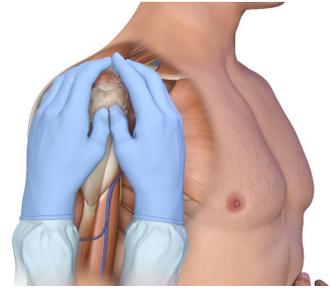
OR

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



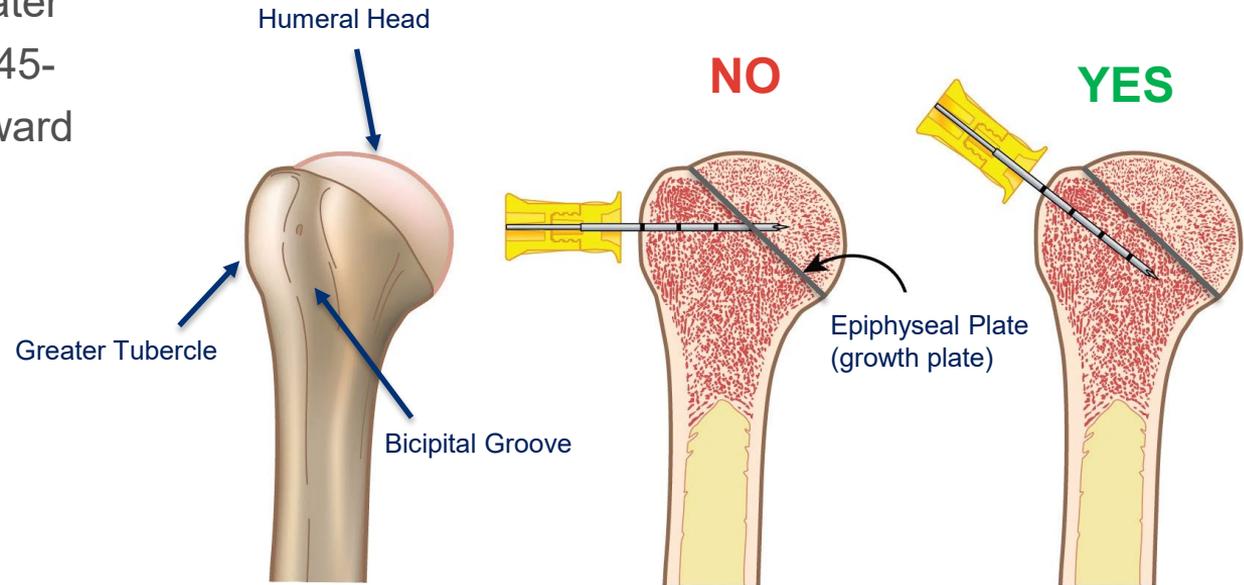
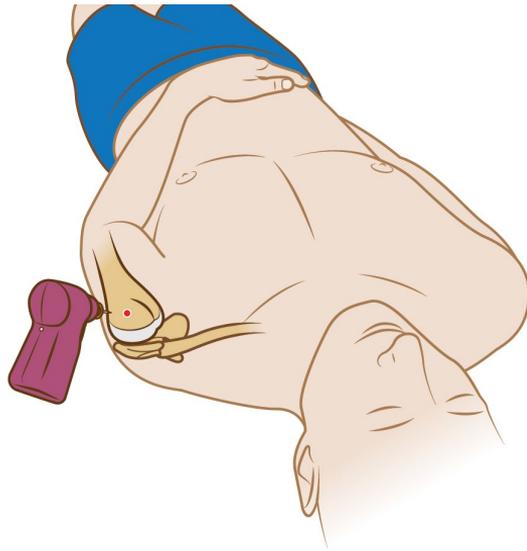
Proximal Humerus Landmarking

1. Palpate the surgical neck of the proximal humerus
 - It will feel like a golf ball on a tee – the spot where the “ball” meets the “tee” is the surgical neck
2. The insertion site is on the most prominent aspect of the greater tubercle, 1-2 cm above the surgical neck



Proximal Humerus Insertion Angle

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



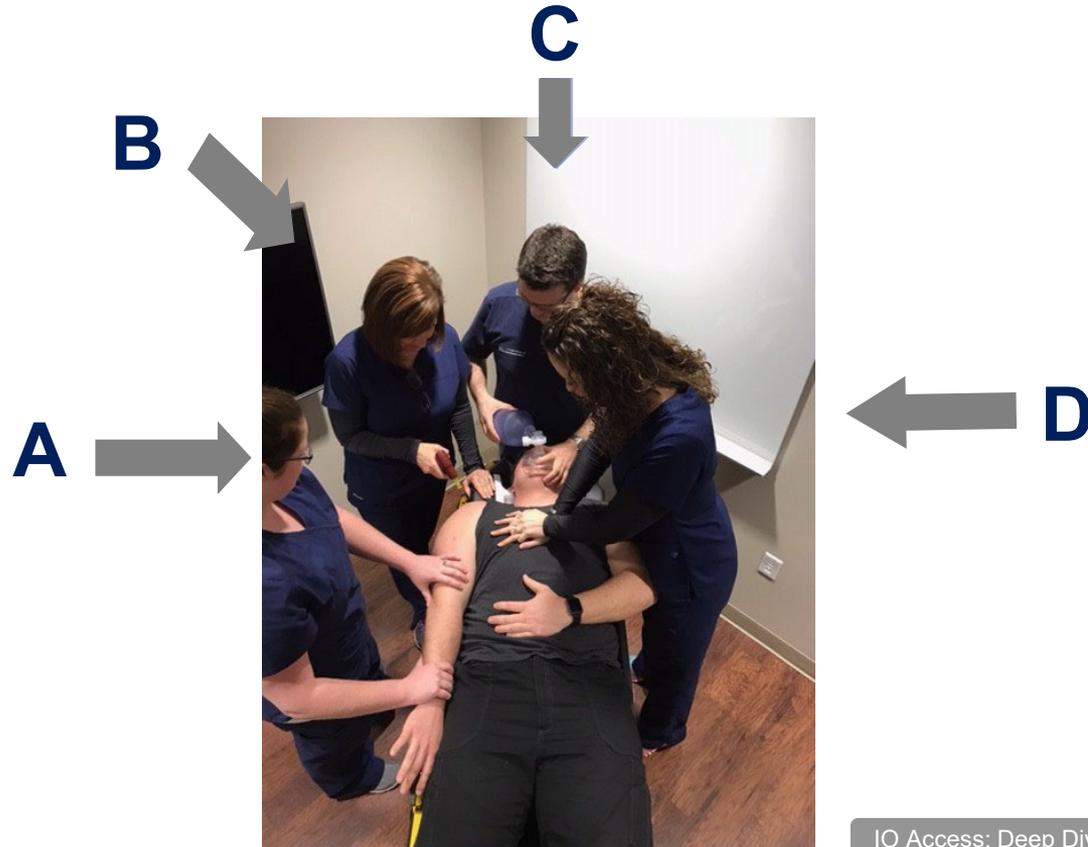
Proximal Humerus Landmarking



Proximal Humerus Landmarking



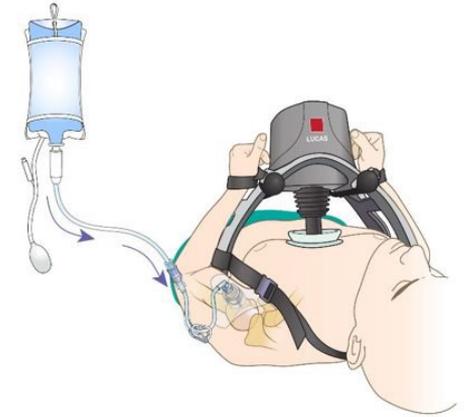
Myth: "There is not enough space at the head of the bed."



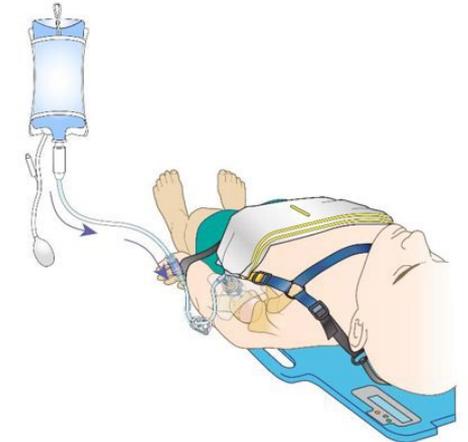
Proximal Humerus IO Access and Mechanical CPR Devices

- Properly position arm and landmark for insertion
- Immobilize arm with IO vascular access
 - Arm should remain adducted
 - Maintain appropriate stabilization; if mechanical CPR device has arm straps, these may be used to secure arms
 - Ensure Arrow® EZ-Stabilizer® Dressing is utilized
- Use caution when lifting or rolling patient
 - Avoid rolling to side where IO access is in place

LUCAS® Chest Compression System

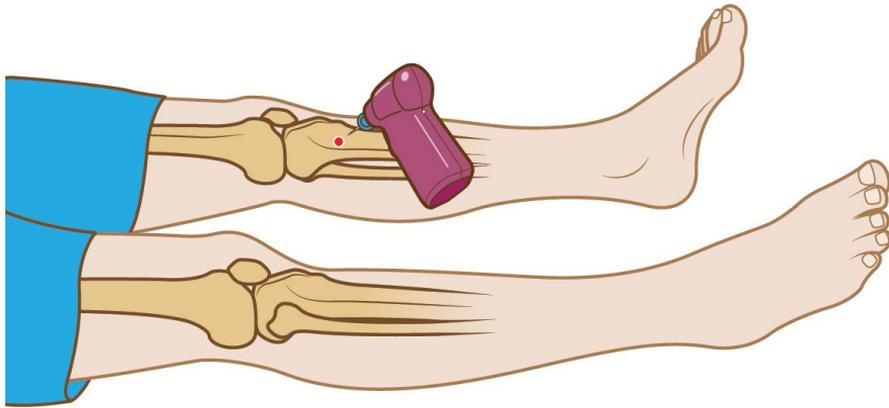


AutoPulse® from ZOLL®

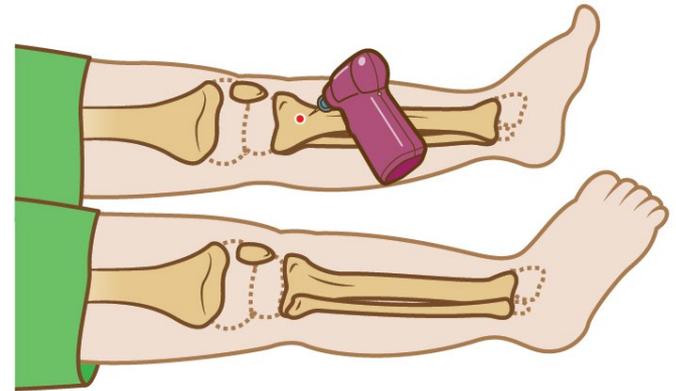


Proximal Tibia Site Identification

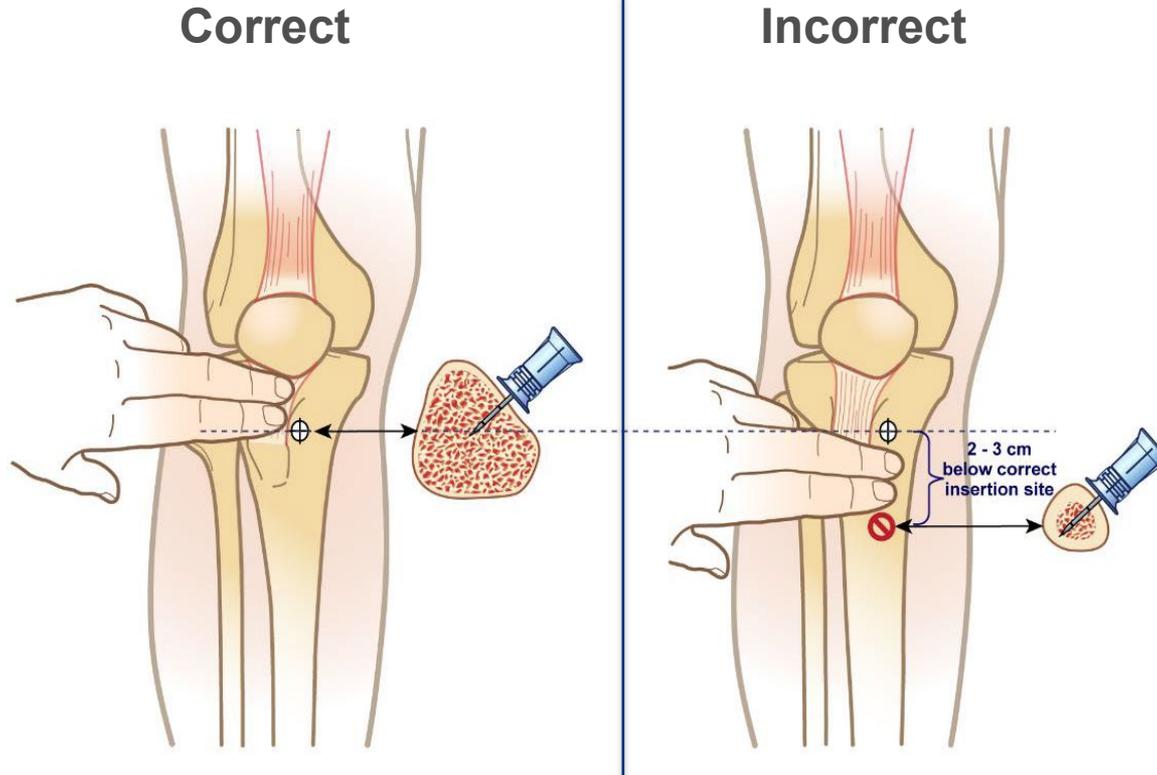
Adult/Older Child



Neonate/Young Child



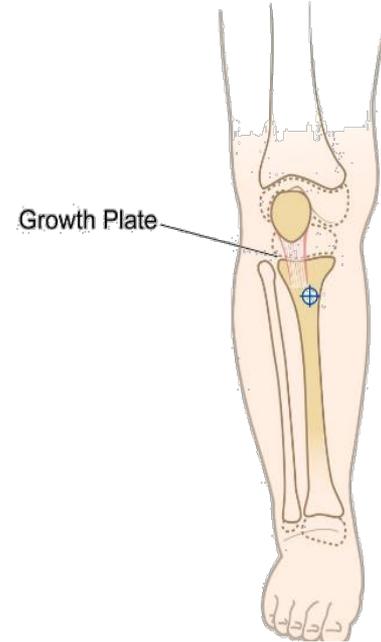
Proximal Tibia Site Identification



Proximal Tibia Site Identification



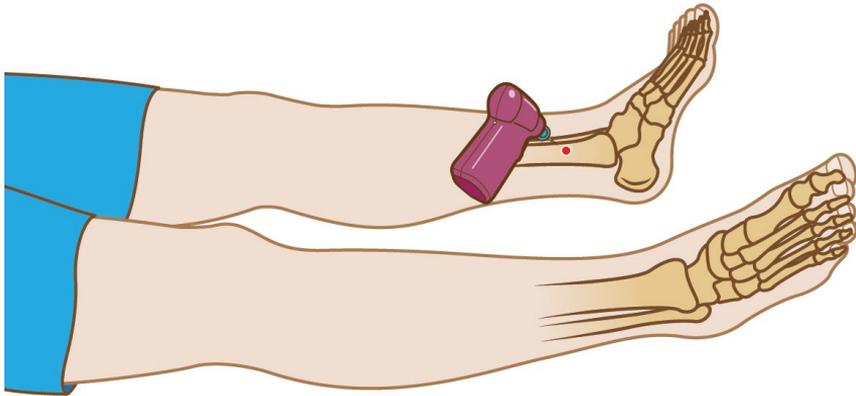
Proximal Tibia Site Identification



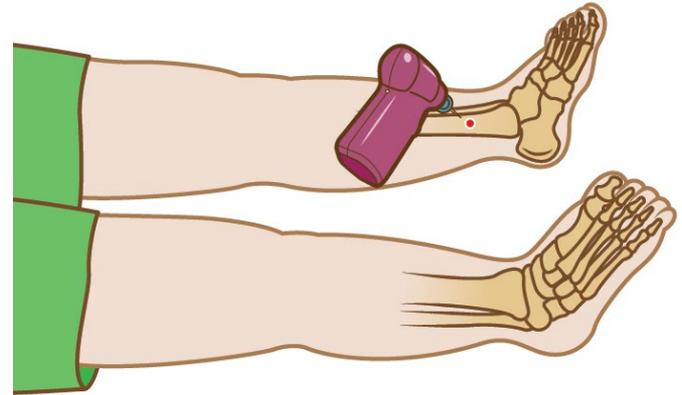
Distal Tibia Site Identification

Insert medially on the flat, center aspect of the bone

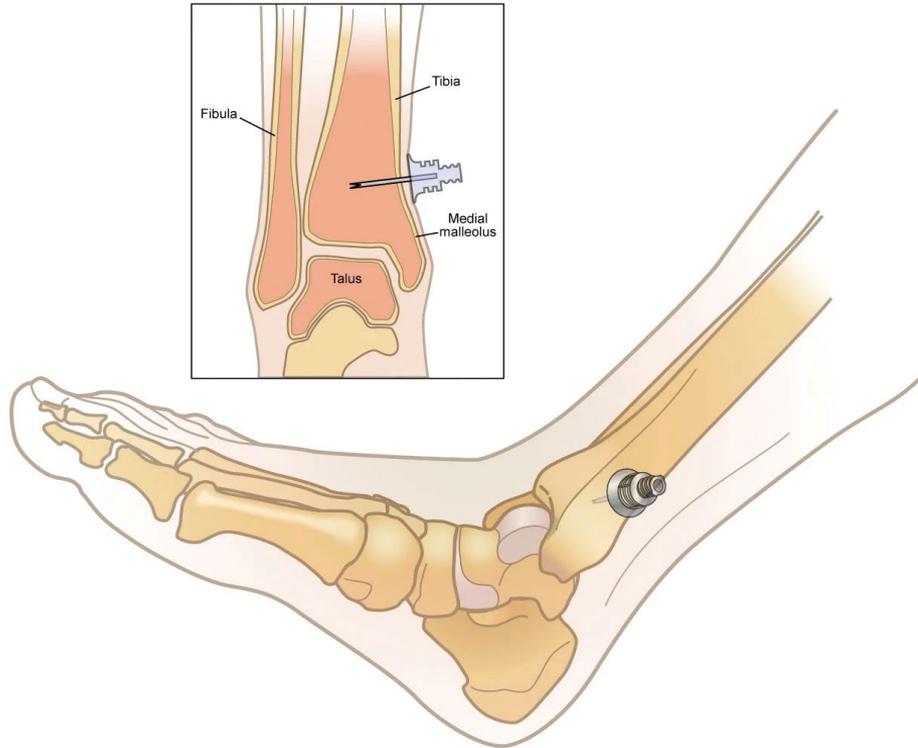
Adult/Older Child



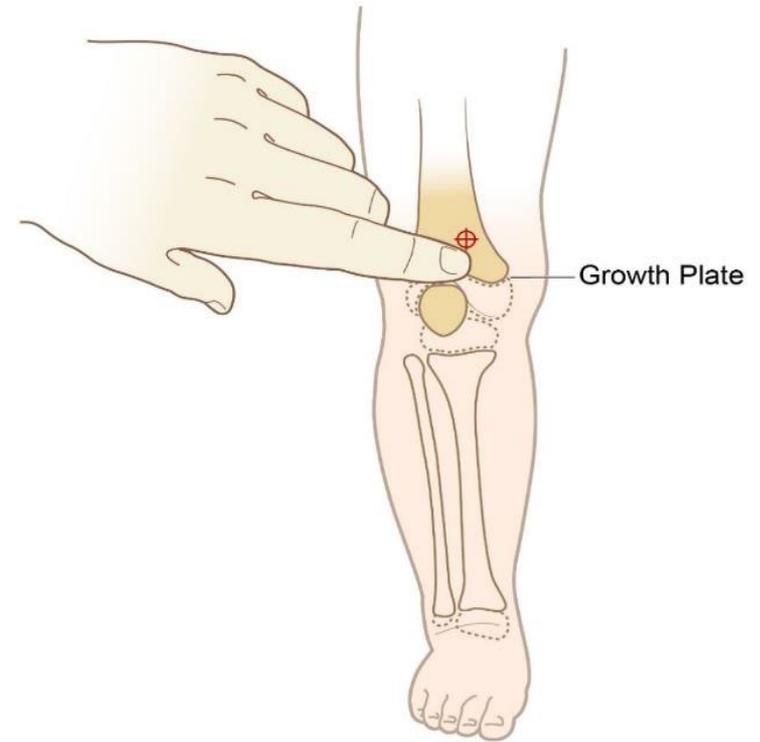
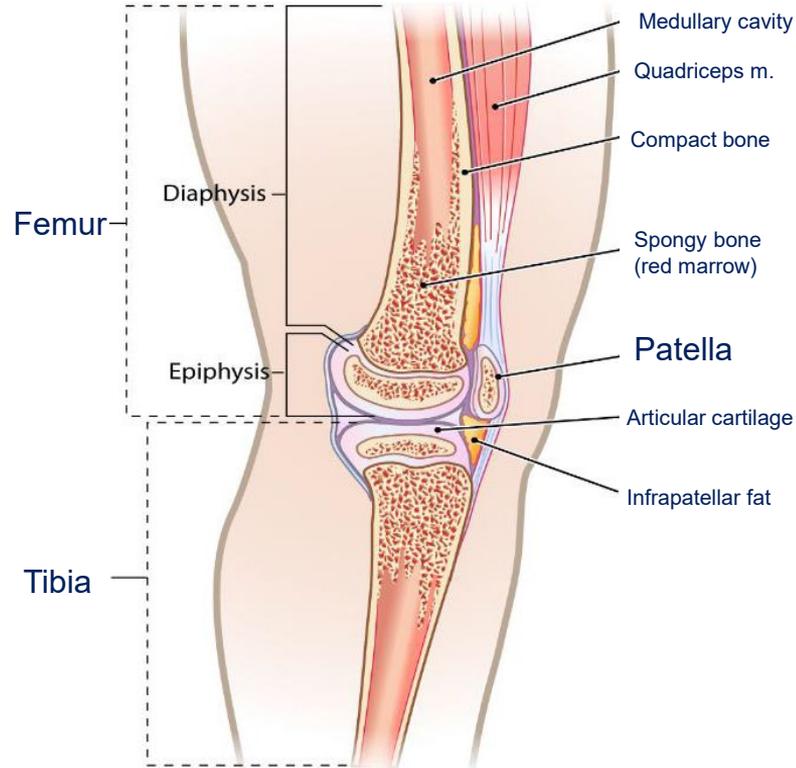
Neonate/Young Child



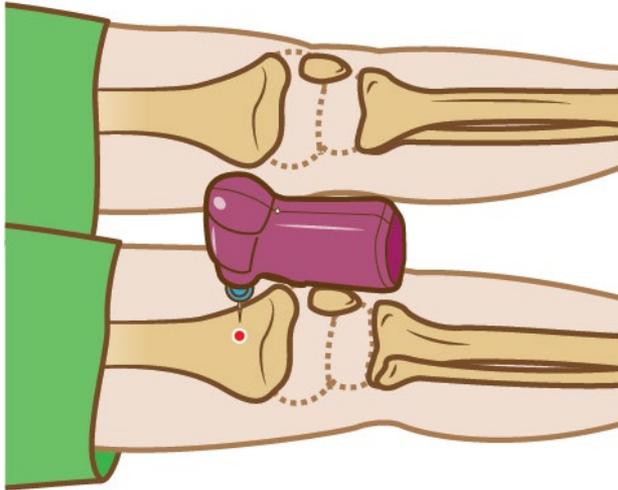
Distal Tibia Site Identification



Distal Femur Site Identification - Pediatrics



Distal Femur Site Identification - Pediatrics



Ensure leg remains immobilized throughout dwell

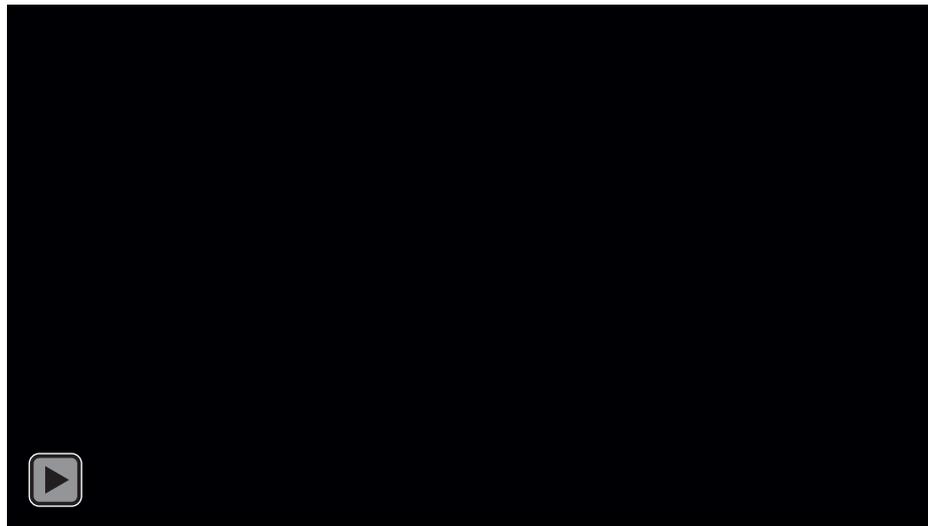
THE TELEFLEX
ACADEMY

Insertion





Insertion Preparation and Technique



Clinical Scenarios

Emergent/urgent situations

Anaphylaxis	DKA	RSI	Shock
Altered LOC	Drug overdose	Resuscitation	SCC
Burns	Dysrhythmias	Seizures	Stroke
Dehydration	ESRD	Sepsis	Trauma

Non-urgent/medically necessary situations; difficult vascular access (DVA)

Analgesia	Chest Pain	Induction	Rescue Line
Antibiotic Therapy	Fluid Management	Metabolic disorders	Sedation



Education Resources

Clinical Education Webpage: www.teleflex.com/ezioeducation

- PowerPoint Download
- Bibliography

Teleflex Academy: www.teleflex-academy.com

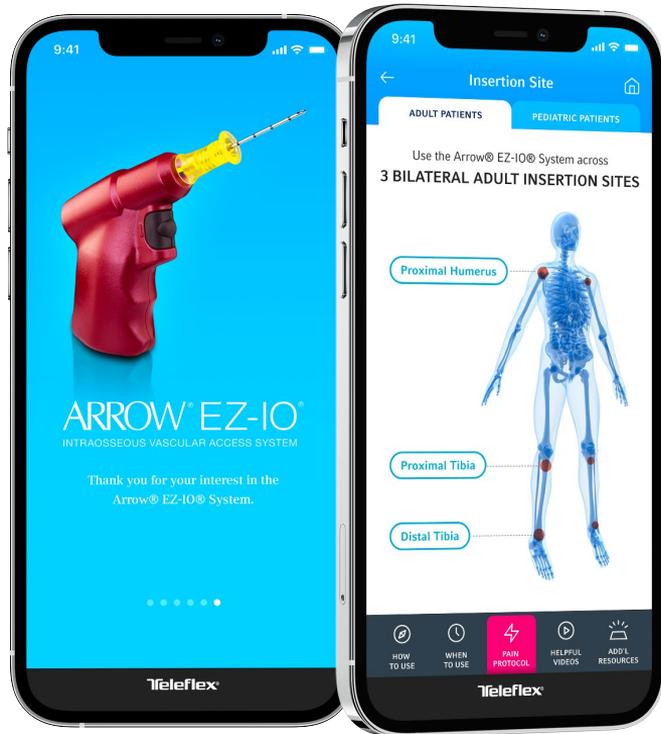
- Online learning module with quiz and certificate

Cadaveric Lab Program: www.teleflex.com/en/procedural-lab-registration

Teleflex Emergency Medicine YouTube Channel: www.teleflex.link/IO-Access

- Testimonials: Patient and Clinician
- Proximal Humerus Fluoroscopy
- Site Identification and Insertion
- Animated
- Alert Patient
- Cadaveric

Connect With Us



24-Hour Clinical Support
888-413-3104

Outside the U.S.
+1.866.479.8500

The Arrow® EZ-IO® System Mobile App

THE TELEFLEX
ACADEMY

Any Questions?

Questions?

This program has been approved by the American Association of Critical-Care Nurses (AACN), for 1.50 CERPs, Synergy CERP Category A, File Number 23230. Approval refers to recognition of continuing education only and does not imply AACN approval or endorsement of the content of this educational activity, or the products mentioned.

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 or contact a Teleflex clinical professional for any detailed questions related to product insertion, maintenance, removal and other clinical education information.

Information in this presentation is not a substitute for the product Instructions for Use.

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.

Teleflex Incorporated 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 Incorporated disclaims all liability for the application or interpretation of this information in the medical treatment of any patient. Any health care provider using this material assumes full responsibility for the medical care and treatment of their patients.

For additional information please visit www.Teleflex.com/EZIO

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, the Teleflex logo, Arrow, EZ-Connect, EZ-IO, and EZ-Stabilizer are trademarks or registered trademarks of Teleflex Incorporated or its affiliates, in the U.S. and/or other countries. All other trademarks are trademarks of their respective owners. © 2022 Teleflex Incorporated. All rights reserved. (08/2022) MC-006381rev2.1

THE TELEFLEX
ACADEMY

Thank You

Thank You