**EZ-IO® Distal Tibia Insertion Site Identification - Adult**

Insertion site is located approximately 3cm (2 finger widths) proximal to the most prominent aspect of the medial malleolus. Palpate the anterior and posterior borders of the tibia to assure that your insertion site is on the flat center aspect of the bone.

**EZ-IO® Distal Tibia Insertion Technique – Adult**

* Prepare the site by using antiseptic of your choice
* Use a clean, “no touch” technique
* Remove the needle set cap
* Stabilize extremity
* Aim the needle set at a 90-degree angle to center of the bone
* Push the needle set tip through the skin until the tip rests against the bone
* The 5mm mark must be visible above the skin for confirmation of adequate needle set length
* Gently drill, advancing the needle set approximately 1-2cm after entry into the medullary space or until the needle set hub is close to the skin
* Hold the hub in place and pull the driver straight off
* Continue to hold the hub while twisting the stylet off the hub with counter clockwise rotations
  + The catheter should feel firmly seated in the bone (1st confirmation of placement)
* Place the stylet in a sharps container
* Place the EZ-StabilizerTM dressing over the hub
* Attach a primed EZ-Connect**®** extension set to the hub, firmly secure by twisting clockwise
* Pull the tabs off the EZ-Stabilizer dressing to expose the adhesive, apply to the skin
* Aspirate for blood/bone marrow (2nd confirmation of placement)

**Recommended Anesthetic for Adult Patients Responsive to Pain:**

* Observe recommended cautions/contraindications to using 2% preservative and epinephrine free lidocaine (intravenous lidocaine)



* Confirm lidocaine dose per institutional protocol
* Prime EZ-Connect extension set with lidocaine

*Note that the priming volume of the EZ-Connect is approximately 1.0mL*

* Slowly infuse lidocaine 40mg IO over 120 seconds

Allow lidocaine to dwell in IO space 60 seconds

* Flush with 5 to 10mL of normal saline
* Slowly administer an additional 20mg of lidocaine IO over 60 seconds

Repeat PRN

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

**Adult Unresponsive to Pain**

* Prime EZ-Connect extension set with normal saline
* Flush the IO catheter with 5-10 mL of normal saline
* Connect fluids if ordered and pressurize to 300 mmHg for maximum flow
* Assess for any signs of extravasation/complications

If patient develops signs that indicate responsiveness to pain, refer to section “Recommended Anesthetic for Adult Patients Responsive to Pain”

**EZ-IO® Removal Technique**

* Remove EZ-Connect and EZ-Stabilizer dressing
* Stabilize catheter hub and attach a Luer lock syringe to the hub
* Maintaining axial alignment, twist clockwise and pull straight out

Do not rock the syringe

* Dispose of catheter with syringe attached into sharps container
* Apply pressure as needed, dress per institutional protocol

**Lidocaine dosing recommendations were developed based on the research below. For additional references, research and dosing charts, please visit www.eziocomfort.com**

* Philbeck TE, Miller LJ, Montez D, Puga T. Hurts so good; easing IO pain and pressure. *JEMS* 2010;35(9):58-69\*
* Ong MEH, Chan YH, Oh JJ, Ngo AS-Y. An observational, prospective study comparing tibial and humeral intraosseous access using the EZ-IO. *Am J Emerg Med* 2009;27:8-15\*
* Fowler RL, Pierce A, Nazeer S et al. 1,199 case series: Powered intraosseous insertion provides safe and effective vascular access for emergency patients. *Ann Emerg Med* 2008;52:S152\*
* Paxton JH, Knuth TE, Klausner HA. Proximal humerus intraosseous infusion: a preferred emergency venous access*. J Trauma*. 2009; 67: 606-11\*
* Wayne MA. Intraosseous vascular access: devices, sites and rationale for IO use. *JEMS* 2007;32:S23-5.
* Frascone RJ, Jensen JP, Kaye K, Salzman JG. Consecutive field trials using two different intraosseous devices. *Prehosp Emerg Care* 2007;11:164-71\*
* Fowler R, Gallagher JV, Isaacs SM, et al. The role of intraosseous vascular access in the out-of-hospital environment (resource document to NAEMSP position statement). *Prehosp Emerg Care* 2007;11:63-6
* Miller L, Kramer GC, Bolleter S. Rescue access made easy. *JEMS* 2005;30:S8-18\*
* Davidoff J, Fowler R, Gordon D, et al. Clinical evaluation of a novel intraosseous device for adults: prospective, 250-patient, multi-center trial. *JEMS* 2005;30:S20-3\*
* Gillum L, Kovar J. Powered intraosseous access in the prehospital setting: MCHD EMS puts the EZ-IO to the test. *JEMS* 2005;30:S24-6\*
* Cooper BR, Mahoney PF, Hodgetts TJ, Mellor A. Intra-osseous access (EZIO®) for resuscitation: UK military combat experience. *JR Army Med Corps* 2008;153(4):314-6.
* Hixson R. Intraosseous administration of preservative-free lidocaine. http://www.vidacare.com/files/Hixson-Lidocaine-%20032012.pdf. Accessed November 22, 2013.

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