



Jackson Hole Fire/EMS Operations Manual

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Title: **Procedure Guidelines:
Intraosseous Infusion**

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INTRAOSSIOUS INFUSION (Procedure Guidelines)

SCOPE OF PRACTICE

All EMT-Intermediates and Paramedics shall operate within their authorized Scope of Practice as limited to those skills and medication approved for use by the Physician Medical Director and Physician Task Force on Pre-Hospital Care as approve and authorized by the Wyoming Board of Medicine

INDICATIONS:

1. Peripheral IV cannot be established easily and patient's condition requires immediate vascular access for fluids or medications
2. Adult catheter : > 35 kg or 16 years of age
Pediatric catheter: 3-39 kg (approx. 7-86 lbs)
Large Adult catheter: Humeral head placement or obese patient

MEDICATIONS:

All intravenous fluids and medications approved for administration intravenously can be administered through an intraosseous line.

SITE LOCATIONS:

- Proximal tibia
- Distal tibia
- Humeral head

CONTRAINDICATIONS:

- Fracture of the bone through which you intend to gain IO access
- Previous orthopedic procedures (IO within 24 hours, knee replacement) (*consider alternate site*)
- Pre-Existing Medical Condition (*tumor near site or peripheral vascular disease*)
- Infection at insertion site (*consider alternate site*)
- Inability to locate landmarks (*significant edema*)

CONSIDERATIONS:

1. Flow rates: Due to the anatomy of the IO space you will note flow rates to be slower than those achieved with IV catheters.
 - Ensure the administration of a 10 ml rapid bolus (flush) with a syringe
 - Use a pressure bag or pump for continuous infusions
2. Pain: Insertion of the IO in conscious patients causes mild to moderate discomfort and is usually no more painful than a large bore IV. Visceral pain develops once infusion of fluids begins.
3. **STANDING ORDER for 60 mg (3 ml) of 2% Lidocaine for pain once in adults. Pediatric patients should receive 0.5 mg/kg, if no contraindications exist.**
 - Discontinue fluid/medication administration prior to administering lidocaine and wait 15 seconds prior to restarting.
 - Consider requesting orders for additional administrations of Lidocaine to manage pain as needed.

PRECAUTIONS:

The IO is not intended for prophylactic use.

EQUIPMENT:

EZ-IO™ Driver (or other IO device)
EZ-IO™ Needle Set
Chlorascrub Swab
Extension Set or EZ-Connect™
10 ml Syringe of Normal Saline (or suitable sterile fluid)
Tape or Gauze
Pressure Bag

PROCEDURE:

(If the patient is conscious, advise them of the EMERGENT NEED for this procedure and obtain informed consent.)

1. Wear approved BSI
2. Determine IO Indications and rule out Contraindications
3. Locate insertion site:
 - a. **Pedi:** One-finger width below the tibial tuberosity then medial along flat aspect of the tibia. If no tibial tuberosity is present – the needle should be inserted two finger widths below the patella and then medial along the flat aspect of the tibia.
 - b. **Proximal tibia:** Find the tibial tuberosity and insert the IO 2 cm inferior and medial, on the flat anteromedial aspect of the tibia.
 - c. **Distal tibia:** Find the medial malleolus and insert IO one finger width above.
 - d. **Humeral head:** Place patient supine and adduct the patient's arm so that their hand is resting on their umbilicus. Firmly palpate the humeral shaft, progressing superiorly until the greater tubercle is palpated. Insert IO slightly anterior to the lateral midline of the arm at the greater tubercle. **This site is easily dislodged with shoulder movement, so consider securing patient's arm with a sling.**
4. Cleanse insertion site using aseptic technique
5. Stabilize extremity and insert EZ-IO™ needle set through skin until contact with bone is made.

6. Verify that 5 mm mark on catheter is visible. If not, select longer IO needle and return to step #3.
7. Activate drill with constant drill speed and apply moderate, steady pressure against bone.
8. Stop when you feel the “pop” or when desired depth has been obtained.
9. Remove EZ-IO™ Driver from needle set while stabilizing catheter hub
10. Remove stylet from needle set, place stylet in shuttle or sharps container
11. Connect primed EZ-Connect™
12. Flush or bolus the EZ-IO™ catheter with 5-10 ml of normal saline using a 10 ml syringe. Prior to flush, consider the aspiration of a small amount of blood prior to any fluid.
No flush=No flow
13. Consider Lidocaine if semi-conscious patient or significant pain response.
14. Place a pressure bag on solution being infused where applicable
15. Begin infusion
16. Dress site, secure tubing and **apply wristband**
17. Monitor EZ-IO™ site and patient condition
18. When administering medications via the IO route delivery should be followed with a 10mL flush of NS.