

INTRAOSSEOUS - MANUAL

1. Level: AEMT, Paramedic, RN (special training required)
2. Purpose: To provide rapid intravascular access
3. Indications:
 - 3.1. The IO is indicated in any patient 3-39 kg in extremis that requires vascular access where you are unable to obtain peripheral IV access after two attempts or 90 seconds with one or more of the following conditions:
 - 3.1.1. Cardiac arrest (in the setting of cardiac arrest, an IO may be initiated without first attempting a peripheral IV)
 - 3.1.2. Patients in extremis that requires vascular access for time-critical medication and/or fluid bolus administration, when you are unable to obtain a peripheral IV access after two attempts or 90 seconds. The following indications require medical control consultation and should only be considered after other interventions have been provided.
 - 3.1.3. Life-Threatening Opiate Overdose—If Naloxone IN/IM has been ineffective and IV access cannot be established.
 - 3.1.4. Status Epilepticus—If Midazolam IN/IM has been ineffective and IV access cannot be established.
 - 3.1.5. Hypoglycemia—Administration of Dextrose 50% or D5W when Glucagon IM/IN has been ineffective and IV access cannot be established.
 - 3.1.6. Critical 2nd and 3rd degree burns or multi-systems trauma patients requiring fluid resuscitation when IV access cannot be established.
 - 3.1.7. Other patients requiring immediate vascular access for medication and/or fluid bolus administration when medications via the IN/IM route have been ineffective.
4. Contraindications:
 - 4.1. Patients < 3 kg or > 40 kg
 - 4.2. Previous attempt on same leg
 - 4.3. Extremity that is compromised by vascular disease, bone disease, obvious trauma or overlying skin or bone infection
 - 4.4. Conscious with stable vital signs
5. Procedure:
 - 5.1. **Take appropriate infection precautions** (use PPEs).
 - 5.2. Gather and assemble necessary equipment (IO needle, alcohol preps, 10 cc syringe, NS, tape, and bandaging materials).
 - 5.3. Set up IV solution set.
 - 5.4. Draw 5 cc of NS into the syringe.
 - 5.5. Select extremity for puncture.
 - 5.6. Identify landmark
 - 5.6.1. Palpate the inferior aspect of the patella.
 - 5.6.2. Measure one finger width below the patella to find the tibial tuberosity (bony prominence of the superior tibia).
 - 5.6.3. Measure one finger width medially from the tibial tuberosity to find the correct IO PD insertion site. This should be a flat aspect of the medial superior tibia.
 - 5.6.4. Prepare the IO needle. Confirm that the seal is intact before using and do not use the needle if the seal is broken.
 - 5.6.5. Cleanse the area with alcohol swab.

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- 5.7. Spin the needle guard 1/2 the way down the needle to prevent too deep a puncture or bending the needle. Stabilize the leg and insert the IO device.
- 5.8. Prep the skin with alcohol; penetrate the skin until you reach the bone (use 90° angle for approach).
- 5.9. Use a firm and twisting motion to introduce the needle into the bone.
- 5.10. A "give" or lack of resistance will be felt when the medullary canal is entered.
- 5.11. **Dispose of the sharps in an appropriate container.**
- 5.12. Attach the 10 cc syringe of NS using the adapter and aspirate bone marrow to verify placement.

NOTE: Bone marrow may not be aspirated, but if the fluid flows in with no evidence of infiltration the IO needle is correctly placed.

- 5.13. Connect the IV fluid to the port. The bag may need to be pressured to facilitate flow of the fluid.
- 5.14. Spin the needle guard down to the skin to help stabilize the needle. Do not indent the skin since this will retract the needle from the bone.
- 5.15. Secure the needle.
- 5.16. Observe the site for infiltration or extravasation.