

PARAMEDIC TIP SHEET #11: *Intraosseous Cannulation & Infusion*

Indications for Intraosseous Cannulation & Infusion

In most prehospital cases, intraosseous infusion is limited to pediatric patients. Indications are:

- ◆ **Intravenous access is required as in severe shock or cardiac arrest, and**
- ◆ **Peripheral access can not be attained in a few minutes (rule of thumb: Go to IO route after 3 attempts or 90 seconds, whichever comes first), and**

Contraindications include: placement at a fracture site or distal to a fracture site of the extremity; placement at a burn site. A failed attempt in an extremity creates a contraindication for further attempts in the same extremity. Although not a contraindication, placement in a patient greater than 6 years of age poses much greater difficulty.

Methods

The following intraosseous cannulation method assumes that initial care of the patient has already begun.

1. Assemble equipment including: 16 ga. IO or bone marrow aspiration needle; antiseptic pads (alcohol and/or betadine); and, large luer-lock syringe preferably with an extension set or IV fluid preferably with an extension set and pressure bag.
2. Locate the site. The most common site is the tibial plateau. This is found by first palpating the tibial tuberosity. Then, locate the plateau on the medial aspect of the proximal tibia approximately 1-3 cm below the tuberosity.
3. Prep the site as time permits.
4. Inspect the needle for proper working order and completeness.
5. Grasp the leg near the knee for stabilization, preferably on a firm surface. DO NOT place the hand behind the tibial plateau.
6. Once the landmarks are identified, insert the needle at a 90 degree angle to the plateau. Apply downward pressure using a screwing-type motion.
7. Stop advancing the needle once a sudden decrease in resistance is felt. Remove the stylet from the needle.
8. Attach a syringe containing saline to the needle or attach an extension or IV administration set to the IO needle. Aspirate for the presence of bone marrow (not always seen). Administer a small quantity of saline into the needle to confirm flow without resistance. Look for signs of infiltration.
9. Administer the desired medications and/or fluids. Stabilize the needle as if it were an impaled object. Secure any connecting tubing to avoid having it pull the IO needle out.

Tips

- ◆ Frequently reassess for infiltration or dislodgment of the IO needle.
- ◆ Any drug or fluid that can be administered by the peripheral IV route can be administered by the IO route.
- ◆ Gravity infusion of fluids via the IO route is unlikely to be successful. Use a pressure bag or syringe infusion.
- ◆ IO cannulation in children greater than 6 years of age is often difficult (if not impossible) due to the increased density of the bone and the decreased size of the marrow cavity.
- ◆ Complications include: fat embolism, extravasation of fluid/drug, placement into the growth plate and osteomyelitis.