

MEDICAL PROCEDURES

**INTRAOSSEOUS INFUSION (PEDIATRIC and ADULT)**

**POLICY # 7800**

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I. PURPOSE

Intraosseous cannulation provides a safe and reliable method for rapidly achieving a route for administration of medications, fluids, and blood products in a non-collapsible vascular space.

II. INDICATIONS

- A. One failed attempt at intravenous access or after evaluation of potential IV sites, it is determined that an IV attempt would not be successful and patient meets one of the following criteria;
  - 1. One of the following conditions exists:
    - 1. Cardiac or respiratory arrest, impending arrest, or unstable dysrhythmia
    - 2. Shock or evolving shock, regardless of cause.

III. ABSOLUTE CONTRAINDICATIONS

- A. Fracture or suspected vascular compromise of the selected tibia.
- B. Congenital deformity or history of osteogenesis imperfecta or osteoporosis
- C. Previous IO attempt at the chosen site
- D. Inability to locate anatomical landmarks for insertion.
- E. Patient <3kg

IV. RELATIVE CONTRAINDICATIONS

- A. Skin infection or burn overlying the area of insertion.

V. EQUIPMENT

- A. Povidone-based solution
  - B. IV of NS attached to 250 mL bag in pediatric patients
  - C. IV of NS attached to 1000 mL bag in adult patients
  - D. 10/12 mL syringe filled with normal saline
  - E. Sterile gloves
  - F. Adhesive tape
  - G. EZ Stabilizer
  - H. Pressure bag for IV fluid administration
  - I. Intraosseous needle (suitable up to age 8)
- OR/AND-**
- J. Automated IO insertion device (EZ-IOPD) up to 40 kg
  - K. Automated IO insertion device (EZ-IOAD) if over 40 kg
  - L. Lidocaine 2% for injection

VI. PROCEDURE

- A. Locate and prepare the insertion site. For children, place supine with a rolled towel under the knee, restrain if necessary. Select extremity (if applicable) without evidence of trauma or infection.
- B. Put on gloves and thoroughly prepare the area with the antiseptic solution.

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- C. Locate insertion site:
  - i. In small children (3-12 kg), the tibial tuberosity cannot be palpated as a landmark, so the insertion site is two finger-breadths below the patella in the flat aspect of the medial tibia.
  - ii. In larger children (13-39 kg), the insertion site is located on the flat aspect of the medial tibia one finger breadth below the level of the tibial tuberosity. If tibial tuberosity not palpable, insert two finger-breadths below the patella in the flat aspect of the medial tibia.
  - iii. For adults, proximal or distal tibial sites may be utilized.
    - 1. The proximal tibial site is one finger-breadth medial to the tibial tuberosity.
    - 2. The distal tibial site is 2 finger-breadths above the medial malleolus (inside aspect of ankle) in the midline of the shaft of the tibia.
- D. Stabilize extremity.
- E. Introduce the intraosseous needle at a 90 degree angle, to the flat surface of the tibia.
- F. For manual insertion, pierce the bony cortex using a firm rotary or drilling motion (do not move needle side to side or up and down). A distinct change in resistance will be felt upon entry into the medullary space.
- G. Remove the stylet and confirm intramedullary placement by injecting, without marked resistance, 10 mL normal saline.
- H. Attach IV tubing to the intraosseous hub.
- I. Anchor needle to overlying skin with tape or EZ Stabilizer.
- J. If unable to establish on first attempt, make on attempt on opposite leg, no more than two (2) attempts total.
- K. Monitor pulses distal to area of placement
- L. Monitor leg for signs of swelling or cool temperature which may indicate infiltration of fluids into surrounding tissues.
- M. For adult patients who awaken and have pain related to infusion, slowly administer **SO - LIDOCAINE** 40 mg IO. May repeat dose once at 20 mg LIDOCAINE IO.
- N. For pediatric patients with pain related to infusion, slowly administer **SO - LIDOCAINE** 0.5 mg/kg IO (max dose 20 mg).

VII. POSSIBLE COMPLICATIONS

- A. Local infiltration of fluids/drugs into the subcutaneous tissue due to improper needle placement.
- B. Cessation of the infusion due to clotting in the needle, or the bevel of the needle being lodged against the posterior cortex.
- C. Osteomyelitis or sepsis
- D. Fluid overload
- E. Fat or bone emboli
- F. Fracture

**APPROVAL**



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