Title: Intraosseous Device – Management and Removal (Adult and Paediatric)	☒ **Policy** ☒ **Procedure** ☐ **SOP**
Category: Patient Care **Sub-category:** Patient Related: Patient Care	**Distribution:** All Patient Care Areas
Endorsed: EVP, Patient Experience and Chief Nursing Executive, VP, Cancer Care Services, North West Region **Signature**:	**Approval Date:** Feb. 5, 2013 **Reviewed/Revised Date:** Jan. 4, 2022 **Next Review Date**: Jan. 4, 2025

1. PURPOSE

Guide Physicians, Registered Nurses (RN) in the management and removal of intraosseous devices in the adult and paediatric patient.

2. POLICY STATEMENT

Intraosseous (IO) access can be utilized in infants, children, and adults when rapid vascular access is required for emergent administration of essential medications/intravenous fluids where other methods of vascular access (peripheral or central) are not feasible. Intraosseous access provides access to the non-collapsible, high vascular marrow of long bones. IO access is meant to be temporary and must be removed as soon as other venous access is obtained or within 24-hours of insertion.

IO access will not be used if the following contraindications exist:

- Fracture or crush injury of the targeted bone
- Previous orthopedic procedures near insertion site (prosthetic limb or joint)
- Congenital deformity or history of osteogenesis imperfecta or osteoporosis
- IO within the past 24 to 48 hours in the targeted bone
- Infection at the insertion site
- Inability to locate landmarks or excessive tissue over the insertion site
- Patient less than 3-kg

Bone marrow samples obtained from an IO line are not suitable for routine laboratory studies at TBRHSC.

3. SCOPE

Insertion of an IO needle is the physician's responsibility.

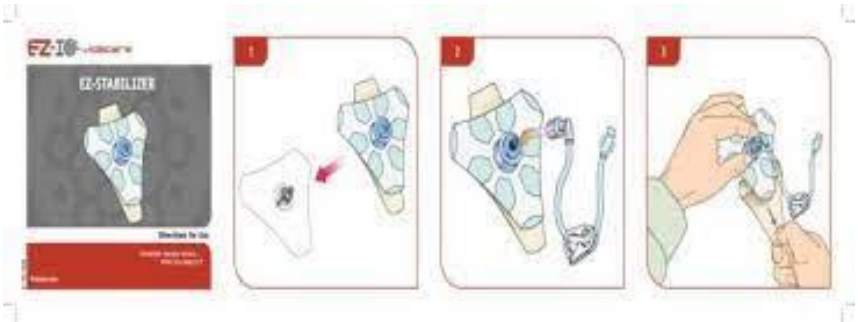
4. INTRAOSSEIOUS DEVICE STABILIZATION

4.1 Use of the EZ-Stabilizer™ is strongly recommended for all EZ-IO® insertions.

i. Place Stabilizer over Catheter Hub.

ii. Attach a primed EZ-connect® extension set to the Hub, firmly secure by twisting clockwise.

4.2 Attach EZ-Stabilizer™ dressing by pulling the tabs to expose the adhesive and adhere to skin.



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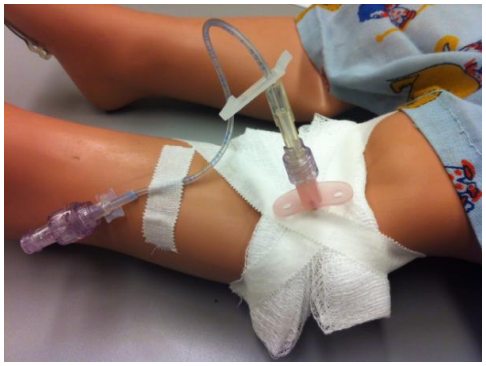
4.3 For IO devices incompatible with the EZ-Stabilizer™, secure the IO needle as recommended by the manufacturer and apply a sterile occlusive dressing.



5. CARE AND MAINTENANCE

5.1. Most intravenous (IV) medications, blood products, or IV fluids can be administered safely by the IO route; however, myonecrosis has been reported with the infusion of hypertonic saline solution via the IO route. Collaborate with the pharmacist to determine appropriateness of IO route as required.

5.2. The onset of action for medications is similar to that of IV medications; however, administration via the IO route may result in lower serum concentrations versus the IV route for the following medications: ceftriaxone, chloramphenicol, phenytoin, tobramycin, and vancomycin.

5.3. Medication will be administered via the IO route in **peripheral strength** for the proper mixing of medications per the parenteral manual.

5.4. A syringe should not be directly attached to the hub of the IO needle because it could cause dislodgement and extravasation resulting in loss of the IO site. Extension set must be used.

5.5. Obtain a physician order for pain management in the conscious/awake patient. Administration of fluids and medications will cause discomfort to the patient.

5.6. Proper placement of the IO device is confirmed by aspirating slightly for visual confirmation of bone marrow (not always seen) and blood, assessment of the needle position and flushing with saline (0.9% Sodium Chloride) (5-10 mL for adults; 2-5 mL infant/child). Slight resistance to the manual flush will be felt but does not indicate incorrect placement. If swelling or infiltration is observed, notify the most responsible physician (MRP).

5.7. IV fluids and/or blood products must be administered using an infusion pump or a pressure bag at 300 mm Hg.

5.8. If medication is given, a 5–10 mL preservative free saline flush will be used between medications.

5.9. Assess site for potential complications: extravasation, dislodgement of IO, compartment syndrome, bone fracture, pain related to the infusion of medications/IV fluids, and infection.

5.10. The patient cannot have an MRI with an IO in place.

6. INTRAOSSEOUS DEVICE REMOVAL

6.1 Ensure patient and family/partner in care understand procedure and questions are answered.

6.2 Wash hands; put on clean gloves.

6.3 Stop continuous infusion and/or remove tubing.

6.4 Remove tape and dressing around the IO needle.

6.5 Attach a 5–10 mL sterile luer-lock syringe (to act as a handle and to cap the open IO port).

6.6 Grasp syringe and continuously rotate clockwise while gently pulling the catheter out (maintain a 90-degree angle to the bone). Do not rock or bend during removal.

6.7 Dispose of IO needle into the sharps container.

6.8 Apply gentle pressure on the insertion site until bleeding stops; apply an adhesive bandage.

6.9 Remove gloves; wash hands.

6.10 Document.

7. DOCUMENTATION

Extension of Emergency Notes (CS-240)
PCS – IV Assessment
PCS – ICU IO

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- Location, size, and type of IO needle placed
- Date and time of placement and clinician placing IO needle
- Assessment of IO needle insertion site
- Leakage of fluids at insertion site (if applicable)
- Perfusion distal to insertion site
- Ability to flush needle and ease of flushing
- Condition of leg posterior to needle
- Fluids, medications, and blood products administered via the IO needle
- Removal of IO needle
- Patient and family/partner in care education
- Comfort assessment and any specific interventions provided
- Unexpected outcomes and related treatment

8. REFERENCES

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