

Skill Station

Intraosseous Access

Objective

- Demonstrate proper technique to gain intraosseous vascular access with an intraosseous (IO) device.

Reference

- *PHTLS: Prehospital Trauma Life Support*, 10th ed.

Evaluation

- Verify the accuracy of the student's ability to correctly gain intraosseous vascular access with an IO device.

Equipment

- IO device—1
- Betadine/alcohol prep—1 per student
- Syringes—1 per student
- Saline—1 per student
- Extension tubing—1 per student
- Tape—1 roll per student
- IO device trainer—1 per student

Instructor Guidelines

1. Ensure that each student has all required materials.
2. Read the objective and the evaluation statement to students.

Performance Steps

Indications for use:

- For adult and pediatric patients (for up to 24 hours) – any time vascular access is difficult to obtain in life-threatening, emergent, or medically necessary situations

Contraindications for use:

- Fracture of the targeted bone
- Previous, significant orthopedic procedures at the insertion site (e.g., a prosthetic limb or joint)
- IO in the targeted bone within the past 48 hours
- Infection at the area of insertion
- Excessive tissue or absence of adequate anatomical landmarks

1. The student verbalizes and/or demonstrates standard infection control precautions and proper body substance isolation procedures.
2. The student verbalizes indications and contraindications (see above).
3. The student gathers and prepares equipment.
4. The student verbalizes at least two anatomic sites (adult and pediatric).
 - a. For responsive patients, the student should consider an anesthetic agent.
5. The student identifies and cleanses the insertion site.
6. The student ensures the needle set and driver are seated.
7. The student removes the needle safety cap from the device.
8. The student positions drill and needle at a 90-degree angle to the selected bone.
9. The student ensures that the needle rests against the bone with at least 5 mm of a visible catheter.
10. The student engages driver trigger and applies firm, steady, downward pressure until entering the medullary space (decreased resistance).
11. The student holds the hub in place while removing the power driver.
12. The student removes stylet and confirms the catheter's stability.
13. The student attaches extension set to hub's Luer lock.
14. The student aspirates blood/bone marrow to confirm correct placement.
15. The student flushes with 5 mL of normal saline.
16. The student stabilizes and monitors the site for signs of displacement and/or complications.
17. The student attaches IV tubing and set the flow rate.
18. The student verbalizes removal:
 - a. The student attaches the syringe to the IO catheter and removes by applying traction with clockwise twisting, taking care not to rock or bend the catheter.
 - b. The student appropriately disposes of sharps.

Critical Criteria

- The student ensured 5 mm of catheter remained visible after needle touches bone.
- The student selected an appropriate insertion site.
- The student flushed the catheter with 5 mL of normal saline.
- The student used a safe technique.
- The student ensured all sharps were safely and properly disposed.
- The student ensured insertion site remained free from contamination (or contamination was corrected).