

University of Iowa Adult and Pediatric Intraosseous Iodinated Contrast Injection Guidelines

This is a work in progress. This is a guideline for Radiology staff in UIOWA

Indication: (IO) lines are used for rapid access for administration IV contrast in critically ill patients without any other intravenous access. These guidelines are based on most common IO device (EZ-IO, 15G (variable lengths) and FAST1 device for sternum) used in UIHC

Placement of IO needle and catheter: Tibia, humerus or sternum is done by the clinical team.

Humerus is the preferred site for IV contrast as it allows higher achievable flow rates when compared to tibial access.

Pediatric patient usually have IO placed in lower leg below the knee joint.

Pre-Contrast administration:

Pre -contrast administration injection protocol:

1. Confirm intramedullary placement with a control scan CT scan through the intraosseous device. For humeral IO access the arm will be on the side of the patient and the position of upper extremity may not be changed after confirming the proper positioning of IO device. The needle position must be confirmed appropriate for contrast administration by radiologist prior to injection.
2. Flush intraosseous line with 20 mL of normal saline. If line does not flush easily, do not use.
3. If patient is unconscious, no analgesia is required. If patient is conscious and responsive to pain, 2% preservative- and epinephrine-free lidocaine should be administered just before contrast medium, by the accompanying LIP/RN.

Protocol for Non-sedated:

Adult patient:

Prime EZ-Connect extension set with lidocaine. (Note that priming volume of EZ-Connect is approximately 1.0 mL.)

Slowly infuse lidocaine 40 mg intraosseous over 120 seconds.

Allow lidocaine to dwell in intraosseous space for 60 seconds.

Flush with 5–10 mL of normal saline.

Slowly administer an additional 20 mg of lidocaine intraosseous over 60 seconds.

Pediatric patient:

Usual dose is 0.5 mg/kg, not to exceed 40 mg.

Prime EZ-Connect extension set with lidocaine. (Note that priming volume of EZ-Connect is approximately 1.0 mL)

Slowly infuse lidocaine over 120 seconds.

Allow lidocaine to dwell in intraosseous space for 60 seconds.

Flush with 2–5 mL of normal saline.

Slowly administer subsequent lidocaine (half initial dose) intraosseous over 60 seconds.

Contrast administration: Hand-inject pre-warmed contrast agent directly into intraosseous line hub using same volume as would be used with power injector in adults. Contrast agent is injected over 1 minute or as tolerated. Total contrast volume in children up to 1.5ml /kg. The vascular phase of these scans will be of parenchymal phase and not arterial quality.

Flush intraosseous line with 20 mL of normal saline and then immediately perform scan per usual protocol.

Please note the above mentioned EZ-IO device has stainless steel parts and is not MRI compatible. For any other device check MR compatibility