



GUIDELINE

Intraosseous Access

Scope (Staff):	All Emergency Department Clinicians
Scope (Area):	Emergency Department

This document should be read in conjunction with this DISCLAIMER
<http://kidshealthwa.com/about/disclaimer/>

Intraosseous Access

Pre-Procedure

- The IO space functions as a non-collapsible vein
- The emissary veins of the IO space absorb all parenteral medication, crystalloid fluids and/or blood products – which move quickly into the central circulation
- Complications are minor and infrequent
- Blood taken from the IO needle can be sent for most laboratory investigations except full blood count
- It is possible to do group and hold/cross match, blood cultures and blood glucose level
- Biochemical results may be slightly inaccurate
- Ensure all blood sent to lab are clearly labelled **IO blood sample**
- All medications and fluids which would normally be given intravenously can be given via intraosseous route

Indications

- Cardiopulmonary arrest
- Any critical emergency when a peripheral venous cannulation site is unobtainable within 90 seconds
- Oral, transmucosal, intramuscular or inhalation routes are not adequate to meet the patients needs for fluids and/or medications

Contraindications

- Fractures: do not place an IO below a fracture site, use the other limb
- Open injury: avoid placement of an IO below any open injury on an extremity, use other limb

- Infection at potential site: use alternative site

Preparation

Equipment

For Manual Intraosseous Needle Insertion	For Mechanised Intraosseous Needle Insertion
<ul style="list-style-type: none"> • There are a range of commercially IO needles available <ul style="list-style-type: none"> ◦ PMH ED has 3.0 cm in length only available in Resus • Alcohol swabs or Povidone-Iodine solution • 10ml syringe for aspiration • 10ml syringe with 0.9% saline for flush • 3 way extension tap • A pair of clean gloves 	<ul style="list-style-type: none"> • IO insertion device • Use the 15mm needle (pink) for 3 – 40 kg patient • Use the 25mm needle (blue) for > 40 kg patient • Alcohol swab or Povidone-Iodine solution • 10ml syringe for aspiration • 10ml syringe with 0.9% saline for flush • 3 way extension tap • A pair of clean gloves • EZ-Connect connection (comes with needle)

Procedure

Positioning and technique

Identification Of Entry Site	
<ul style="list-style-type: none"> • The best site in children is the anteriomedial aspect of the tibia. 2-3cm below the tibia tuberosity, anterior medial side 	
<ul style="list-style-type: none"> • Alternative sites are: <ul style="list-style-type: none"> ◦ Distal femur – 2-3cm above the patella, in the midline 	
<ul style="list-style-type: none"> ◦ Distal tibia – above the medial malleolus at the ankle 	
Procedure for Manual Intraosseous Needle Insertion	Procedure for Mechanised Intraosseous Needle Insertion

<ul style="list-style-type: none"> • Use aseptic technique • Clean skin at chosen site, allow to dry. Stabilise the leg. • Infiltrate with 1% lignocaine if child is conscious and time permits • Insert the IO at 90° angle to the skin, passing deep into the bone via a 'twisting' motion • A "pop" may be felt as the needle passes through the bone cortex into the marrow cavity • Remove the inner stylet from the needle • Confirm the position and proceed with infusion • Observe for complications 	<ul style="list-style-type: none"> • Use aseptic technique • Clean skin at chosen site, allow to dry. Stabilise the leg. • Infiltrate with 1% lignocaine if child is conscious and time permits • Attach compatible IO needle to end of device (magnetic attachment). Pierce the skin with the IO needle until it touches the bone surface with a gentle push. • Check that at least one black line is visible on the needle. If no black line visible, the needle may not be long enough to reach the medullary space. • Squeeze the trigger, guiding the needle into the bone • You may feel a "give" as the needle enters the bone marrow cavity - at this point release the trigger • Detach the needle from the device • Remove the inner stylet from the needle • Confirm position and proceed with infusion • Observe for complications
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Post-Procedure

Confirm success

By:

- Aspirating marrow contents
- Infusing 10ml of 0.9% Saline without significant resistance

Once position confirmed:

- Attach a 3 way extension tap
- Infuse injections through the 3 way tap side port
- Connect IV fluids through the other 3 way port
- IV fluids may need to be infused under pressure or bloused via a 20ml syringe
- Secure IO in place
- Observe for complications

Complications

- Extravasation of the IO needle
- Dislodgement
- Compartment syndrome
- Bone infections
- Bone fracture

Aftercare

- Do not use IO access for greater than 24 hours
- To Remove IO:
 - Remove extension set from needle hub and attach a 5-10ml sterile syringe with standard luer lock to act as a handle and cap the open IO port

- Grasp syringe and continuously rotated clockwise while gently pulling the needle out
- Maintain 90° angle to the bone
- **Do not rock or bend the needle during removal**

More




Tags

access, arrest, blood, cardiac, femur, fluid, intraosseous, intravenous, io, iv, medication, needle, shock, shut down, tibia, unstable, vein

References

- PMH ED Guideline – Intraosseous Access: Updated July 2014
- *Advanced Paediatric Life Support, Australia & New Zealand: The Practical Approach*, 5th Edition Published October 2012, available at www.apls.org.au
- EZ-IO Product Information – available at www.vidacare.com/EZ-IO

This document can be made available in alternative formats on request for a person with a disability.

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