

Clinical Guidance

**Intraosseous Access- an
insertion guideline.**

Summary

One-page insertion guideline, including anatomical site, needle size selection and circumstances when local anaesthesia may be considered with care.

Document Detail	
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Related Documents	
Keywords	Difficult intravenous access
<p>This clinical Pathway was produced by NECTAR hosted by Newcastle Upon Tyne Hospital Trust. To be used by nurses, doctors, ACCPs and ambulance staff to refer to in the emergency care of critically ill children. This guideline represents the views of NECTAR and was produced after careful consideration of available evidence in conjunction with clinical expertise and experience. The guideline does not override the individual responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient.</p>	

Change History		
Date	Change history Details	Approved By

Key points. All intravenous medications can be given via io route. Consider io route as CENTRAL access and infuse inotropes accordingly. Remove as soon as sufficient peripheral/central access achieved.

Needle choice



Pink=Neonate
<3kg. 15mm
needle

Blue=≥3kg. 25mm
needle

Yellow=≥40kg.
45mm needle

Contraindications

- Clear infection/burn at insertion site
- Proximal ipsilateral fracture
- Other bony pathology e.g. osteogenesis imperfecta
- Prosthesis within target bone
- Bony landmarks un-identifiable (e.g. due to excess tissue)
- Ipsilateral vascular injury

Distal femur <6years old

2-3cm above patella, slightly medial to midline (avoids patella tendon)



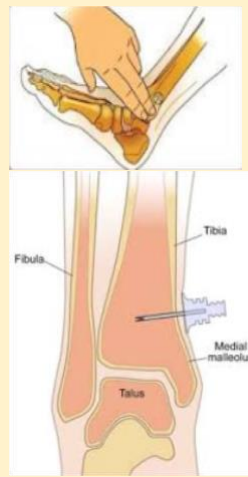
Proximal Tibia

Preferred site- due to thin skin layer and broad surface area
Anteromedial surface of tibia, 2-3cm below tibial tuberosity (minimises damage to epiphysis)



Distal Tibia>6years old

2-3cm above medial malleolus



Proximal Humerus>6 years old

With elbow adducted and across chest, palpate proximal humeral head- insert at base of greater tubercle(insert at 45 degrees to bone)



Insertion guide

1. Explain procedure to patient/family
2. Wash hands, apply PPE and position patient
3. Identify appropriate insertion site
4. Select appropriate needle size and prime extension tubing with 0.9% sodium chloride and attach to 3 way tap
5. If awake patient, administer up to 1-2mls lignocaine 1-2% around insertion site area
6. Palpate insertion site whilst holding/restraining limb
7. Clean insertion site with 2% Chlorhexidine swab
8. Ensure needle secured safely to IO driver, then remove safety cap from needle
9. Position needle and device at 90-degree angle to bone (45-degree if humeral head approach), then gently push until needle tip touches bone
10. Squeeze device trigger and apply steady, gentle downward pressure until bony cortex penetrated (a sudden loss of resistance will be felt once medullary space entered)
11. Remove driver, stylet and confirm correct placement (needle should feel firm within medullary cavity)
12. Aspirate bone marrow (not always possible). Alert path lab to sample type. Send for desired tests
13. If awake patient, slow flush with lignocaine 1-2% (see below box).
14. Flush with 2-5mls 0.9% sodium chloride
15. Secure with appropriate dressing
16. Infusions may need pressure bag or higher pressure than iv route. Monitor io limb very carefully to beware extravasation
17. Attach IO armband to patient limb, with time and date of IO insertion

IO route Lignocaine- EXTREME CAUTION REQUIRED

For analgesia from infusions in pain responsive patients
Preservative and adrenaline free 1% or 2% lignocaine only
0.5mg/kg (max 20mg)
Slow administration over ~2 minutes via IO
Wait for 1 minute to allow infiltration into IO space
Flush with 2-5mls 0.9% normal saline
Repeat if needed but at half first dose

References:

- Southampton Oxford Retrieval Team (SORT). Paediatric Intraosseous insertion at a glance. 2019.
- EZ-IO- Intraosseous needle insertion in children. Guideline and procedure. Hunter New England Local Health District, New South Wales. June 2021. Version 1.
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