

### Intraosseous Infusion (PIP)

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<b>Approved by:</b>	Paediatric Quality Improvement meeting	
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### Key Amendments

Date	Amendment	Approved by
9 <sup>th</sup> Feb 24	No changes approved at Guideline review day	Paediatric Guideline Review Day

**The following guidance is taken from the Partners In Paediatrics (PIP)**

Intraosseous infusion 2022-24

# INTRAOSSIOUS INFUSION

## INDICATIONS

- Severely ill infants and children when immediate vascular access needed and peripheral access not possible (maximum 2 attempts)
- Cardiac arrest
- allows rapid expansion of circulating volume
- gives time to obtain IV access and facilitates procedure by increasing venous filling

## EQUIPMENT

- EZ-IO drill and needles (<40 kg: 15 mm pink; >40 kg: 25 mm blue) or intraosseous infusion needles for manual insertion on resuscitation trolley
- 5 mL syringe with extension and 3-way tap to aspirate and confirm correct position
- 10 mL sodium chloride 0.9% flush
- 20 or 50 mL syringe to administer fluid boluses
- Infusion fluid

*For manual insertion, infiltrate skin with lidocaine 1% 1–2 mL [maximum dose 3 mg/kg (0.3 mL/kg)] if patient responds to pain*

## PROCEDURE

### EZ-IO

1. Locate landmarks
2. Aseptic non-touch technique: clean site
3. Choose appropriate size needle and attach to drill magnetically
4. Hold drill and needle at 90° to skin surface and push through skin without drilling, until bone is felt
5. Push drill button and drill continuously and push until there is loss of resistance – there is a palpable give as needle breaches the cortex
6. Remove drill and unscrew trocar
7. If possible aspirate the marrow
8. Attach pre-prepared connection tube
9. Secure needle (with EZ-IO fixator if available)
10. If awake, give lidocaine 1% (preservative free) 0.5 mg/kg (0.025 mL/kg) over 2 min through IO, leave 1 min then flush with sodium chloride 0.9% 2 mL
11. Proceed with required therapy

### Preferred sites

**Avoid fractured bones and limbs with fractures proximal to possible sites**

### Proximal tibia

- Identify anteromedial surface of tibia 1–3 cm below tibial tuberosity
- Direct needle away from knee at approximately 90° to long axis of tibia

Figure 1: Access site on proximal tibia – lateral view

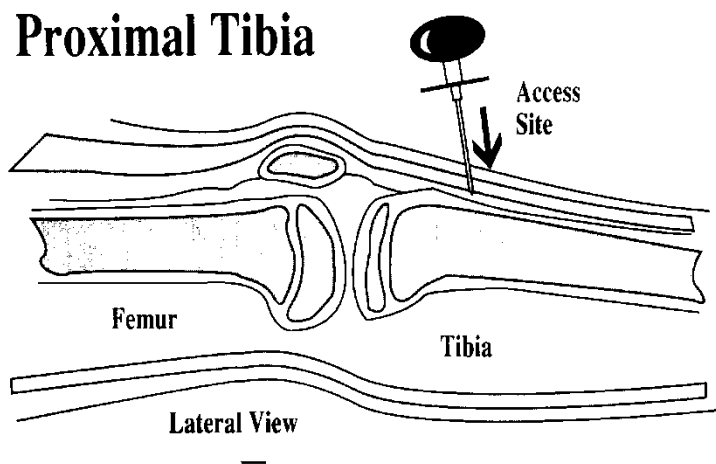
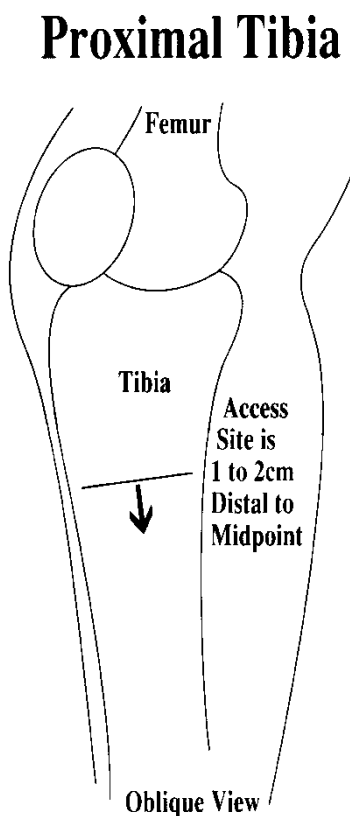


Figure 2: Access site on proximal tibia – oblique view

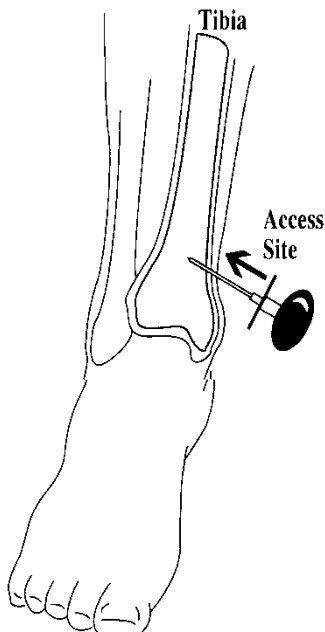


**Distal tibia**

- Access site on medial surface of tibia proximal to medial malleolus

Figure 3: Access site on distal tibia

## Distal Tibia



### **Distal femur**

- If tibia fractured, use lower end of femur on anterolateral surface, 3 cm above lateral condyle, directing needle away from epiphysis

## COMPLICATIONS

- Bleeding
- Infection
- revert to central or peripheral venous access as soon as possible
- Compartment syndrome
- observe and measure limb circumference regularly
- palpate distal pulses and assess perfusion distal to IO access site
- Pain from rapid infusion: give lidocaine 1% 0.5 mg/kg over 5 min