



## CLINICAL PRACTICE GUIDELINE

Guideline coverage includes NICU KEMH, NICU PMH and NETS WA

# Intraosseous Needle: Insertion and Care

This document should be read in conjunction with the [Disclaimer](#)

To provide an alternative route for rapid vascular access in the term and preterm infant during resuscitation. This route can be used to provide rehydration, correct hypotension, hypoperfusion and hypoglycaemia in infants where central or peripheral venous /arterial access has failed or is impossible due to poor perfusion in the shocked infant or in one who has suffered a cardiac or respiratory arrest. Medications and fluids can be administered in the same dosage as those given via the IV route.

## Key Points

- The insertion of intraosseous needles is performed by medical staff who have been deemed competent and it is a sterile aseptic procedure.
- The initial choice of IV fluid should be discussed but usually the fluid varies according to the gestational age of the infant:

<b>≤27 weeks</b>	5% glucose.
<b>&gt; 27-34 weeks</b>	7.5% glucose, 1/5 normal saline.
<b>&gt; 34 weeks</b>	10% glucose.

## Equipment

- Dressing pack and sterile scissors
- Chlorhexidine 1% Solution or Povidine-iodine 10% Swab for all infants ≤ 27 weeks gestation
- 15-18g spinal or intraosseous needle/18g butterfly or intraosseous needle (preterm)
- 3 way tap/needleless short extension
- 1 mL, 2 mL, 5 mL syringe
- Drawing up needle
- Normal saline 0.9%
- Lignocaine 0.5%
- Tegaderm/Steri-strips

## Procedure

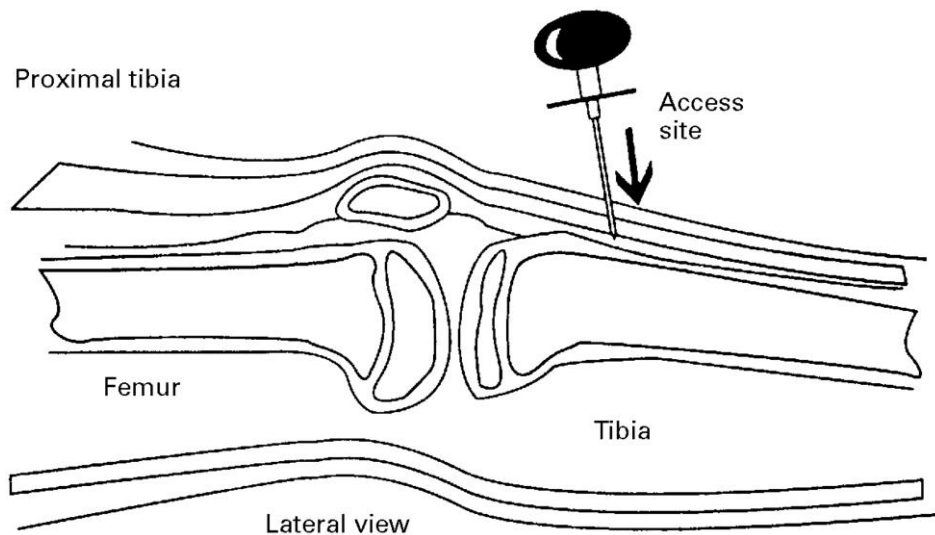
1. Clean the skin as per protocol and if time allows administer local anaesthetic.
2. Puncture the skin 10mm distal to the tibial tuberosity with the intraosseous needle/butterfly at an angle of 60-90 degrees aimed slightly towards the foot (see [diagram below](#)).

3. A screwing or to-and-fro motion is required to further insert the needle and allow easy insertion into bony material and into the intraosseous space.
4. An abrupt loss of resistance is felt when the marrow is entered and blood and marrow are easily aspirated.
5. Flush needle and connect short extension tubing, 3 way tap and giving set.
6. Place steristrips around needle to support it and prevent accidental removal then place tegaderm around needle first cutting a split with sterile scissors.
7. Begin infusion.



An 18 gauge butterfly needle inserted into the left upper tibia in an oedematous preterm infant.

**Reference: Lake and Emerson. Arc. Dis. Child and Neonatal Ed. 2003.**



Appropriate placement of the intraosseous infusion needle on the medial surface, distal to tibial tuberosity.

**Reference: Ellemunter et al. Intraosseous lines in preterm and full term infants. Arc. Dis. Child and Neonatal Ed 1990**

## Documentation

- Document in the progress notes the procedure and reason for the procedure.
- Document on the observation chart:

- Date and time the needle was inserted.
- The position of the needle and the condition of the needle site every hour.

## Complications



- Osteomyelitis and skin Infections.
- Skin Necrosis.
- Subcutaneous Abscess.
- Fat Embolus.
- Fractures and Injury to the epiphyseal growth plate.
- Compartment Syndrome - due to prolonged infusion.
- Extravasation due to incomplete penetration of the cortex.

## References

1. Boon JM. Gorry DL. Meiring JH. Finding an ideal site for intraosseous infusion of the tibia: an anatomical study. *Clinical Anatomy*.16(1):15-8, 2003
2. Ellemunter H. Simma B. Trawoger R. Maurer H. Intraosseous lines in preterm and full term neonates. 80(1):74-77. 1999 Jan.
3. Lake W. Emmerson AJB. Use of a butterfly as an intraosseous needle in an oedematous preterm infant. *Archives of Disease in Childhood Fetal and Neonatal Edition*. 88 F409 2003
4. Zabala Arguelles JI. Maranon Pardillo R. Gonzalez Serrano P. Serina Ramirez C. Main Vascular access in situations of extreme urgency: intraosseous infusion. *Anales Espanoles de Pediatria*. 37(6); 489-92, 1992 Dec

## Related WNHS policies, procedures and guidelines

Infection Prevention Manual - [Aseptic Technique](#)

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