



CLINICAL GUIDELINE	
Intraosseous Needle: Insertion and Care	
Scope (Staff):	Medical Staff
Scope (Area):	NICU KEMH, NICU PCH, NETS WA
<p align="center">Child Safe Organisation Statement of Commitment</p> <p>The Child and Adolescent Health Service (CAHS) commits to being a child safe organisation by meeting the National Child Safe Principles and National Child Safe Standards. This is a commitment to a strong culture supported by robust policies and procedures to ensure the safety and wellbeing of children at CAHS.</p>	

This document should be read in conjunction with this [DISCLAIMER](#)

Background

This route of rapid vascular access in the term and preterm infant can be used to provide rehydration, correct hypotension, hypoperfusion and hypoglycaemia in infants where central or peripheral venous/arterial access has failed.

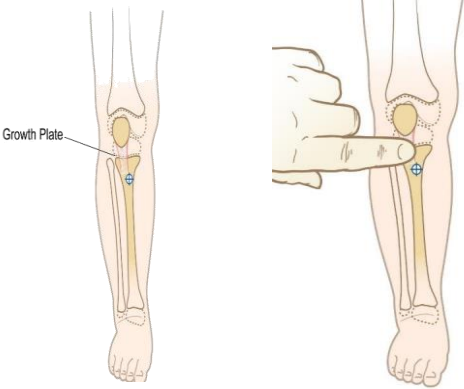
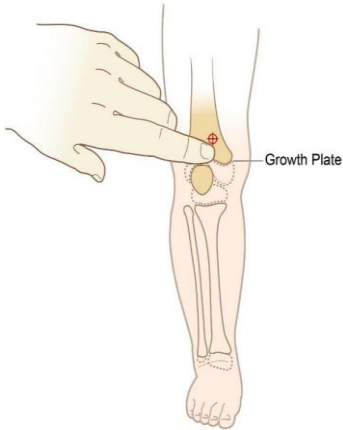
Indication

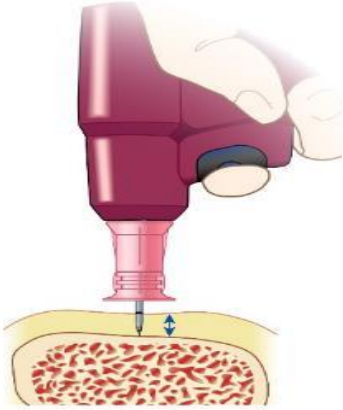
To provide emergent vascular access in the collapsed/shocked neonate, where peripheral or umbilical venous access has been unsuccessful or considered inappropriate.

Key Points

- Medications and fluids can be administered in the same dosage as those given via the IV route.
- This procedure is scoped for medical staff that have been deemed competent.
- This is an aseptic procedure.

Procedure: Insertion	
Procedure Specific Equipment	Additional Information
<ul style="list-style-type: none"> • EZ-IO Power Driver[®] • EZ-IO 15mm (Pink) Needle Set • EZ-Stabilizer[™] • EZ-Connect[®] 	<ul style="list-style-type: none"> • 25mm (blue) needles available in PCC for bigger babies. Both needles can be used in babies $\geq 3\text{kg}$ • See Appendix below for pictorial reference
Other Equipment	
<ul style="list-style-type: none"> • Dressing pack • Sterile gloves • 10ml syringe for aspiration 	<ul style="list-style-type: none"> • 10ml syringe & 0.9% NaCl for flush • Chlorhexidine 1% or Povidine 10%

Procedure: Insertion	
Steps	
<p>1. Select site for insertion: Proximal Tibia</p>  <p>Or Distal Femur</p> 	<ul style="list-style-type: none"> • Anteromedial flat surface, approximately 1 cm below and medial to the tibial tuberosity • Approximately 1 cm proximal to upper border of patella and approximately 1-2 cm medial to midline. • Distal tibia (antero-medial surface) is an alternate site but cannot be used if proximal tibia has already been accessed.
<p>2. Prepare equipment and insertion site.</p>	<ul style="list-style-type: none"> • Open equipment onto sterile field. Prime EZ-Connect[®] and connect pink needle set to EZ-IO Power Driver[®] • Ensure appropriate needle size is selected. • Identify insertion site and clean skin as per aseptic technique protocol.
<p>3. Insert needle</p>	<ul style="list-style-type: none"> • Stabilise insertion site and drill with moderate steady pressure till a loss of resistance is felt. Stop drilling as needle is now in medullary space. • Stabilise hub then remove driver and stylet. Aspirate marrow with syringe; a sample can be used for culture, bedside blood sugar [NOT on gas machine] and lab samples if

Procedure: Insertion	
Steps	
	<p>lab aware of sample type.</p> <ul style="list-style-type: none"> • NB: when needle set is pushed through the skin and touched periosteum, at least 55mm (1 black line), must be visible outside the skin. Needle is too short otherwise and needs to be changed for a longer one. However, the pink needle is almost universally appropriate for neonates.
<p>4. Secure</p>	<ul style="list-style-type: none"> • Secure the hub with EZ-Stabilizer™ and attach primed EZ-Connect. Proceed to flush with 2-5mls of 0.9% NaCl. • IO is fit for use as central intravascular access
<p>5. Document</p>	<ul style="list-style-type: none"> • Document the insertion of IO access in patient notes.
<p>Important Points:</p> <ul style="list-style-type: none"> • Consider local anaesthetic if analgesia is required, as infusions can be painful stimuli. • Monitor closely for extravasation. If this does occur, obtain alternative access as soon as possible. • Other devices such as butterfly or LP needles may need to be considered in preterm babies. 	

Procedure: Removal	
Steps	
<ol style="list-style-type: none"> 1. Disconnect infusions and remove EZ-Connect® 2. Lift and remove EZ-Stabilizer™ 3. Attach 10ml Leur-lock syringe to hub of catheter 4. Withdraw catheter by applying traction whilst rotating syringe and catheter clockwise. Do not rock or bend catheter 5. Place occlusive dressing over site 	

Related CAHS internal policies, procedures and guidelines

CAHS

- [Aseptic Technique](#)

Neonatology

- [Aseptic Technique in the NICU](#)
- [Resuscitation: Neonatal](#)
- [Resuscitation Medication and Fluids](#)
- [Resuscitation Algorithm for the Newborn](#)

References

[Victorian Agency for Health Information; Better Safer Care Victoria; Maternity & Newborn Clinical Network; Intraosseous Needle Insertion for Neonates](#)


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(96); 489-92, 1992 Dec

Useful resources

Arrow EZ-IO Intravascular Access Needles. Instructions for Use

<https://www.teleflexvascular.com/files/ifu/8088.pdf>

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

Document Owner:	Neonatology		
Reviewer / Team:	Neonatal Coordinating Group		
Date First Issued:	October 2020	Last Reviewed:	12 th October 2020
Amendment Dates:		Next Review Date:	12 th October 2023
Approved by:	Neonatal Coordinating Group	Date:	27 th October 2020
Endorsed by:	Neonatal Coordinating Group	Date:	
Standards Applicable:	NSQHS Standards:  Child Safe Standards: 1, 10		

Printed or personally saved electronic copies of this document are considered uncontrolled



Healthy kids, healthy communities

Compassion

Excellence

Collaboration

Accountability

Equity

Respect

Neonatology | Community Health | Mental Health | Perth Children's Hospital

Appendix 1: Insertion Equipment Pictorial List



EZ-IO Power Driver[®]



EZ IO 15mm (Pink) needle set

*25mm (Blue) needles available in PCC for bigger babies



EZ-Connect[®]

*Prime with 0.9% NaCl



EZ-Stabilizer[™]