



## Venous and Arterial Access & Fluid Management on NETS Retrievals

<b>Scope (Staff):</b>	Nursing and Medical Staff
<b>Scope (Area):</b>	NETS WA

### Child Safe Organisation Statement of Commitment

CAHS commits to being a child safe organisation by applying the National Principles for Child Safe Organisations. This is a commitment to a strong culture supported by robust policies and procedures to reduce the likelihood of harm to children and young people.

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

### Aim

To provide information to the NETS Team on intravascular access and fluid management during NETS retrievals.

### Risk

Inadequate intravascular access and inappropriate fluid management may lead to adverse events such as inability to deliver adequate fluids/ medications in critically unwell neonates.

### Venous Access

- Peripheral IV's will be sufficient for most neonates
- Venous access is desirable for all transported neonates and **essential** for all ventilated neonates.
- Ensure the cannula is patent and well secured prior to departing from the referral hospital. Keep the insertion site visible to allow for observation of insertion site. Document date/time of insertion, location of device and PIVAS score.

[See NICU Guideline: Peripheral Intravenous Cannula \(PIVC\) Insertion and Management](#)

## Umbilical Lines

Insertion of umbilical lines is a **surgical aseptic technique**. The umbilical vein can easily be cannulated during the 1<sup>st</sup> week of life. Insertion of central lines on retrieval requires an assessment of benefits of insertion vs a prolonged scene time and delays on retrieval. **ALWAYS** discuss with the NETS Consultant prior to insertion.

Umbilical access is preferable in:

- Shocked neonates in whom peripheral IV insertion is difficult.
- Critically unwell neonates requiring multiple infusions of inotropes/ calcium/sodium bicarbonate and/or frequent blood gases.
- Neonates with cardiac conditions requiring prostaglandins.
- Neonates requiring high concentration of glucose (>12.5% **must** be infused through a central line).
- Extreme preterm infants (<26 weeks or <800g).
- HIE where the neonate is undergoing therapeutic hypothermia
- Confirm line position by CXR/AXR - AP and lateral before use:
  - UAC: High T6-T9 (preferred position). Low L3–L4
  - UVC: Between diaphragm and left atrium T8-T9. See the following neonatal clinical guidelines:
- [Umbilical, Arterial](#)
- [Venous Catheters](#)
- [Central Line Imaging for Neonates: Radiographic Views, Acceptable Line Positions](#)

In an emergency, insert pre flushed UVC under aseptic technique 3-5cm until blood draws back freely. Secure the catheter in place by suturing through the skin of the umbilical stump and fixing with brown tape. Ensure insertion site is visible on retrieval to ensure there is no bleeding/ dislodgement.

Fluids and medications may be given via the UVC prior to X-ray confirmation at the discretion of the attending retrieval Doctor.

When inserting an UAC take note of any skin blanching, bruising of limbs, toes, or buttocks prior to, during and following the procedure with documentation of same.

**NEVER** advance an umbilical catheter further into the vessel once the initial sterile field has been broken.

### Heparinising infusion fluid for umbilical catheters

- Centrally inserted catheters require heparin added to the infusion fluid to maintain patency of line. Dose = Heparin Sodium 0.5 units / mL of fluid

- **Preparation:** Add 250 units of Heparin Sodium (1000units / mL) to 500mL bag of base fluid = 0.5 units/mL Draw up 50mls fluid into syringe for infusion.
- Fluids administered via umbilical catheters should be prepared using an **aseptic technique**
- For dual lumen central lines **BOTH LUMENS** must have fluid infusing.

## Intraosseous Access

- Intraosseous (IO) are rarely used in neonates as umbilical venous access is usually obtainable. It is used in emergency situations when intravenous access cannot be secured in a timely fashion.
- Fluids and Medications can be administered at the same doses as when given through an IV.
- Alert the laboratory if samples are obtained from the intraosseous as some parameters may be unreliable e.g., WBC/platelets.

See [Intraosseous Needle: Insertion and Care](#)

## Fluid Management

**This is a quick reference guide for transportation purposes only. The type and volume of fluid depends on the gestational age and disease process.**

See [Nutrition: Volume and Nutritional Requirements](#) for more details.

### Maintenance fluids

- Neonates  $\geq 35$  weeks require 60-80mL/kg/day on day 1.
- Preterm neonates 27 to 34+6 weeks require 80-100mL/kg/day on day 1.
- Extreme Preterm neonate's  $\leq 27$  weeks require 100-120mL/kg/day due to increased insensible fluid losses

**Recommended glucose percentages are as follows:**

Gestation	Glucose %
$\leq 27$ weeks	5% Glucose
$>27$ weeks	10% Glucose

- Glucose requirements for term neonates is: 4-6 mg/kg/min
- Glucose requirements for preterm neonates is: 6-8 mg/kg/min.

## Neonates with HIE


- Fluid restrict to 40-50mL/kg/day. These neonates may require higher percentage concentrations of glucose due to increased metabolic demand. See [HIE Guideline](#).
- Avoidance of hypoglycaemia is more important than fluid restriction. See [Hypoglycaemia Guideline](#) and [NETS WA Resuscitation and Infusions Calculator](#).
- Glucose requirements higher than 12.5% **must** be infused via central line.

## Neonates with shock

- Normal saline 0.9% is used for fluid expansion for neonates who present with shock at 10mL/kg/dose with the option to repeat if necessary.
- If the neonate requires repeated boluses (>20mL/kg) consider other fluids e.g., O NEG blood (ideally CMV negative), or inotropes **after discussion with NETS consultant**.
- For patients who are known to have acute blood loss e.g., Abruption, foetal-maternal haemorrhage give O NEG blood (ideally CMV negative) at 10-20mL/kg. See NETS WA Guideline [Sepsis and Shock](#) for further detail.

Related CAHS internal policies, procedures and guidelines
<p>Neonatology Guidelines</p> <ul style="list-style-type: none"> <li>• <a href="#">Intraosseous Needle: Insertion and Care</a></li> <li>• <a href="#">Central Line Imaging for Neonates: Radiographic Views, Acceptable Line Positions</a></li> <li>• <a href="#">Umbilical Arterial Catheter: Insertion Management and Removal</a></li> <li>• <a href="#">Umbilical Venous Catheter: Insertion Management and Removal</a></li> </ul>

This document can be made available in alternative formats on request.

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