

Asepsis protocol for percutaneous central venous catheter insertion and central venous line maintenance in NICU

Protocol Responsibilities and Authorisation

Department Responsible for Protocol	NICU
Document Owner Name	Arun Nair
Document Owner Title	Neonatologist NICU
Sponsor Title	Clinical Director NICU
Sponsor Name	David Bouchier
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Protocol Review History

Version	Updated by	Date Updated	Description of Changes
3	Arun Nair	Oct 2016	None

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1. Overview

1.1 Purpose

Percutaneous Central Venous (CV) Catheterisation is a procedure fraught with high risk for developing blood stream infection with its attendant complications, including death. At Waikato Hospital Newborn Intensive Care Unit (NICU), on average 90 - 100 CV lines are inserted every year. Nearly 70% of babies with birthweight below 1000 grams would need CV line insertion. This document outlines the current evidence-based protocol for insertion and maintenance for CV line in the unit with the aim of restricting, if not eliminating, the risk of blood stream infection.

INDICATIONS FOR CVL:

1. Prolonged Parenteral Nutrition
2. Long-term IV drug therapy
3. Administration of hyperosmolar IV fluids
4. Limited IV access

BUNDLE OF CARE FOR INSERTION OF CENTRAL VENOUS CATHETER:

The procedure must be performed by trained professionals only. Trainee nurse practitioners and registrars should be supervised by trained professionals during the procedure.

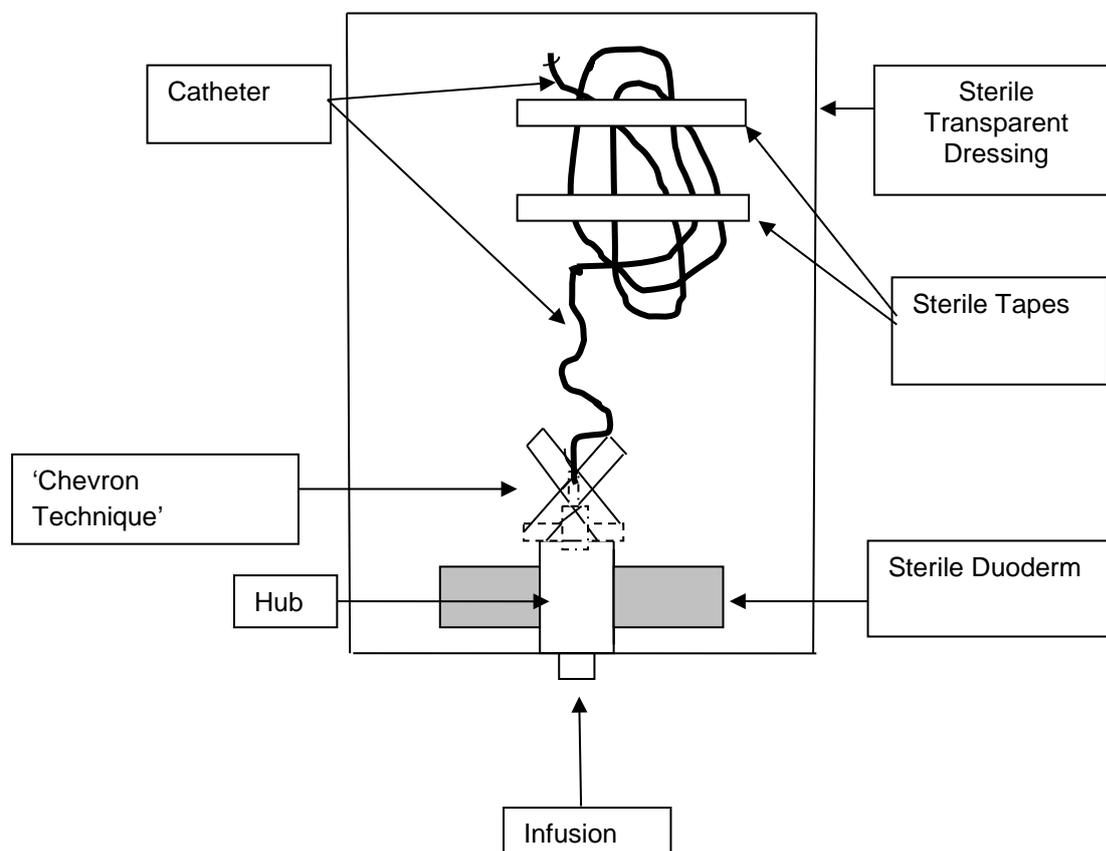
The order of the steps is as follows:

1. Use door signs and screens to minimize traffic during line insertion and line changes.
2. Identify the vein for insertion before commencing the procedure. Measure the length of catheter from the point of skin entry to the desired point in the great vessel.
3. Wear cap and mask.
4. Hand wash: Use the antiseptic soap solution to wash hands as per the hospital hand hygiene recommendations.
5. Dry hands with the sterile towel provided within the sterile gown pack.
6. Wear a sterile gown and get it secured adequately behind your back.
7. Wear sterile gloves
8. Use the single use 2% Chlorhexidine gluconate (CHG) swab for skin asepsis. Gently dab onto the area of skin using the applicator for 30 seconds. Allow it to dry before commencing the procedure.
9. Use sterile drapes and sterile tourniquet.
10. After insertion of the Central Venous Catheter to the pre-measured length, secure it at skin insertion site with sterile tape and cover with sterile gauze until radiographic confirmation of the position of the tip. (*If there is an undue delay in getting the xray confirmation, then secure the line as described below and if the line needs adjustment, re-do the dressing using asepsis precaution((steps 1 – 5).*)
11. After this, remove the gauze and clean the skin with sterile water and dry thoroughly.

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12. Loosely coil the excess length of the catheter and secure it with more sterile tapes. Secure the neck of the hub to the skin with a sterile tape using 'Chevron' technique, well away from the coils of catheter, as shown in the figure:



13. Now apply sterile transparent dressing over the area making sure that the entire length of the catheter, the sterile tapes and the hub are covered. To prevent skin breakdown, place a skin barrier (duoderm) under the hub. (Note: If sterile gauze is used as skin barrier, the dressing will need changing every 48 hours).

BUNDLE OF CARE FOR CENTRAL VENOUS LINE MAINTENANCE:

- A. Every time the C V catheter site is accessed for dressing change, adjustment of line or infusion set change, it has to be done aseptically following the steps 1 to 5 as mentioned above for the insertion bundle. (Do not access the C V Line through the port holes for this purpose, open the incubator lid fully)
- B. For infusion set change, clean the hub and the smart site extensions and with 2% CHG in 70% alcohol using single use swabs generously, taking care that the solution does not drip on to the skin of the baby. **Allow to dry before touching again.**
- C. Use sterile drapes and non-touch technique for preparation, priming and connection of infusion set as described in the nursing protocol manual.

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- D. Change the infusion set delivering lipid or medication infusions (except insulin) every 24 hours.
- E. For TPN (starter & regular) or clear fluids (saline, insulin or dextrose), the infusion set needs changing only after 72 hours.
- F. If the line is accidentally broken into or used for emergency without the prescribed asepsis precautions mentioned above, consider removal of the catheter or if not possible to remove, then administer a dose of vancomycin through the catheter and replace the infusion set as soon as possible within the next 24 hours.
- G. Lipid Solution should be changed every 24 hours. (refer D)
- H. TPN solution should be changed every 72 hours. Electrolytes may be added to a burette using sterile technique PRN during 72 hour hang time of clear TPN fluids.
- I. Inspect the C V Catheter insertion site for soiling, redness or any signs of focal infection every shift. Document the status of the catheter insertion site on the shift assessment sheet promptly. Dressing needs changing if soiled, dirty or the edge of the dressing is lifting. *(If there is suspicion of local or systemic infection consider prompt removal of the catheter after discussion with the consultant in charge).*
- J. If the catheter needs to be kept for antibiotics or for any other purpose, use saline or dextrose infusion at a minimum rate of 1 ml/hour through the CV Line. Change the infusion set every 72 hours. *(Do not use TPN or Lipids solutions for this purpose)*

CV catheter insertion and line changes are high risk procedures and due care must be taken to avoid contamination of the area, by following general aseptic principles all the time. It is strongly recommended that the staff involved are not interrupted. All other staff and members of the public should keep away from the area during the procedure.

REFERENCES

1. Guidelines for the prevention of Intravascular catheter related infections: Pediatrics 2002 Vol.110 No.5
2. Strategies to prevent Central line- Associated blood stream infections in acute care hospitals. SHEA/IDSA Practice recommendation. Infection Control and Hospital Epidemiology 2008 Vol. 29, Supplement 1
3. Epic2: National Evidence-based Guideline for preventing Healthcare-Associated Infections in NHS Hospitals in England: Journal of hospital infection 2007 65S, S1–S64
4. Catheter-related Bloodstream Infection Project(NQIP) MOH- Guidance on Preventing CV Catheter-related BSI for New Zealand Hospitals 2009
5. Percutaneous CV Catheterisation. Chapter 31. Atlas of Procedures in neonatology III Ed Lippincott Williams & Wilkins 2002
6. Antiseptic Skin Preparation- First line use of 2%CHG/70% Alcohol for all age group. Clinical guideline: Great Ormond Street Hospital for children UK.
7. Aseptic non-touch technique – RBP. Clinical Practice Manual, Starship Children’s Health, ADHB

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