Any PRINTED version of this document is only accurate up to the date of printing 24-Nov-15. Saskatoon Health Region (SHR) cannot guarantee the currency or accuracy of any printed policy. Always refer to the Policies and Procedures site for the most current versions of documents in effect. SHR accepts no responsibility for use of this material by any person or organization not associated with SHR. No part of this document may be reproduced in any form for publication without permission of SHR.

**Definitions:**

This policy applies to insertion of all central venous catheters (CVC’s).

**CVC:** A venous access device whose tip dwells in the superior or inferior vena cava.

**CLABSI:** A Central line associated blood stream infection (CLABSI) is a primary blood stream infection (BSI) in a patient that had a central line within the 48-hour period before the development of a BSI and is not bloodstream related to an infection at another site.

1. **PURPOSE**

   1.1 To minimize the risks of central line-associated bloodstream infections and other complications associated with the insertion of central venous catheters.

2. **POLICY**

   2.1 All licensed staff assisting with the insertion of CVC’s will be educated in CVC care and prevention of CLABSI.

   **Note:** *Central line-associated bloodstream infection (CLABSI) continues to be one of the most deadly and costly hospital-associated infections...”*  
   [http://www.ihi.org/explore/CentralLineInfection/Pages/default.aspx](http://www.ihi.org/explore/CentralLineInfection/Pages/default.aspx)

   2.2 An all-inclusive catheter insertion bundle should be utilized for all CVC insertions. See Appendix A.

   2.3 Insertion is performed using maximal sterile barrier technique

   2.3.1 A sterile gown and gloves, a mask & cap are to be worn by all personnel directly involved in the insertion procedure. Circulating staff need to wear a cap and mask within 1 meter of the sterile field.
2.3.2 Patient to be covered with a full body sterile drape

Note: If a CVC is changed over an existing line using a guidewire, steps need to be taken to maintain sterile technique.

2.4 All personnel involved must perform hand hygiene before gloving and after removing gloves.

2.5 A 2% chlorhexidine-based antiseptic must be used for skin preparation. Providone-iodine may be used if patient allergic to chlorhexidine.

Note: The antiseptic solution must be allowed to dry prior to making the skin puncture.

2.6 Placement must be confirmed by chest X-ray prior to accessing. CVP pressure monitoring set may be connected prior to the X-ray. In an emergency situation, access may be confirmed by the presence of blood return.

2.7 CVC site must be dressed with a semi-permeable transparent dressing.
   - Exception: A gauze dressing must be applied if drainage is anticipated (diaphoresis, bleeding or oozing). Gauze to be changed q24hr and if visibly soiled.

2.8 A needleless adapter is attached to all unused lumens of a central venous catheter.
   - Exception: Hemodialysis catheters will have a male-female luer lock plug (AKA= dead-ender)

3. PROCEDURE

3.1 Collect supplies:
   - Central venous catheter insertion supplies as per Appendix A
   - Sterile gloves: will need one pair for each staff member directly involved with the line insertion
   - Central venous catheter: see Appendix A for SKU number to order product

3.2 The Physician will

3.2.1 Obtain verbal consent and prescribe any medications as needed during the procedure

3.2.2 Indicate optimal positioning of the patient depending on the site of insertion

3.2.3 Suture/secure the CVC in place following insertion

3.2.4 Cleanse insertion site with 2% chlorhexidine-based solution following insertion, allow to dry, apply dressing.

3.2.5 Connect needleless adaptors to each unused lumen.

3.2.6 Flush and lock unused lumen(s) as per protocol

3.2.7 Order X-ray to confirm placement

3.2.8 Prescribe IV solution and rate to commence after x-ray verification of the catheter tip location.

3.2.9 Prescribe heparin flush to lock CVC ports after accessing.
3.2.10 Document procedure on Central Venous Catheter record. See Appendix B.

3.3 The assisting staff will:

3.3.1 Assist in positioning the patient as directed depending on the site of insertion.
   - **Jugular/Subclavian** - Place the patient in slight trendelenburg or flat, remove head of the bed (optional). May place rolled towel between scapulae.
     
     **Note:** This position distends the vein for easier insertion and decreases the risk of venous air embolism.
   - **Femoral** - Place patients flat.

3.3.2 Assist the physician as required with catheter insertion.

3.3.3 Administer medications as ordered.

3.3.4 Prepare CVP monitoring system for short term CVC where applicable ie.connect pressure monitoring line to distal lumen.

3.3.5 Review and complete insertion checklist with physician throughout procedure. See Appendix C.

3.3.6 Document:
   - Record date, time, catheter type (single, multi-lumen), site, physician inserting catheter and patient’s tolerance in the progress notes
   - Any medications used during the procedure on appropriate record.
   - Label all IV tubings with date and time to be changed.

3.3.7 Report
   - Report to physician any signs or symptoms of complications of insertion:
     - Dyspnea, cardiac arrhythmias, hematoma, excessive bleeding
     - Pressures outside ordered/normal parameters

4. REFERENCES


CVC insertion Bundle

Collect:

I. **Insertion supplies**

One for each person directly involved with CVC insertion

- Masks
- Cap
- Protective eye wear
- Sterile gowns
- Sterile gloves
- Chlorhexidine 2%/isopropyl alcohol ie.Chloroprep
- Full drape
- CVP insertion tray SKU#510014
- Local anaesthetic Xylocaine 1% without Epinephrine
- 3 ml syringe (for administration of local)
- 18g blunt fill needle
- 25 gauge safety needle
- 10 ml syringe of normal saline (one to flush/lock each lumen)
- Sterile gauze (4x4)
- 2-0 silk
- Scalpel blade
- Needle driver
- Semi-permeable transparent or gauze dressing
- Chlorhexidine 2% prep stick
- Needleless adapter(s) as required
- Protective pad (to place under patient to keep bedding dry)
- Sterile sleeve for the ultrasound (- will be with located with the equipment)

II. **Sterile gloves**: will need to obtain one size for each staff member involved in placing the central line

III. **Central line**

- Triple lumen 7Fr x 16cm SKU # 88617
- Triple lumen 7Fr x 20cm SKU # 83383
- Percutaneous Sheath Introducer 8.5Fr SKU # 62403
- Hemodialysis catheter
  - 11.5Fr x 13.5cm SKU # 63056
  - 11.5Fr x 19.5cm SKU # 46797
  - 13.5Fr x 24cm SKU # 200538
- PICC: ______
  - single lumen (4fr) SKU # 30932
  - double lumen (5fr) SKU # 30934
  - triple lumen (6fr)

Maximal Barrier precautions

Utilization of a catheter insertion checklist has been shown to reduce the incidence of Central Line associated blood stream infections (CLABSI)
Central Venous Catheter Record

Date:_____________________ Time: ________________  Unit line placed

Procedure:  □ New Line  □ Rewire

Site: □ Right  □ Left  □ Internal Jugular  □ Subclavian  □ Femoral

Procedure note:

- Type of line
  □ Triple lumen 7Fr x 16cm  □ PICC: _____
  □ Triple lumen 7Fr x 20cm
  □ Percutaneous Sheath Introducer 8.5Fr
  □ Hemodialysis catheter
    □ 11.5Fr x 13.5cm  □ 11.5Fr x 19.5cm  □ 13.5Fr x 24cm
  □ Other ______________________________________

- Conditions
  □ Ultrasound guidance  □ Local anesthetic
  □ Chlorhexidine based prep  □ Trendelenberg position

- Maximal barriers
  □ Hat, mask sterile gown & gloves  □ Full body drape

- Post procedure note
  □ CXR reviewed  □ Pneumothorax  □ Hematoma
  □ Bleeding  □ Arterial puncture

Time spent performing procedure ___________min

Observed by: ______________________________ Signature: ______________________

Assisted by: ______________________________

Document at time of removal:

CVC removed: _____________________________ ___________________________

Date/time  signature

White copy: Chart  Yellow copy: Unit Manager
Central Venous Catheter: Insertion checklist:

Utilization of a catheter insertion checklist has been shown to reduce the incidence of Central Line Associated Blood Stream Infections (CLABSI)

Assistant to complete this checklist following insertion of the line.

<table>
<thead>
<tr>
<th>Set up supplies to allow maximum barrier precautions</th>
<th>Check on completion</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Wash hands. Jewellery to be removed</td>
<td></td>
</tr>
</tbody>
</table>
| 2. Sterile glove and gown, mask & cap are to be worn by all personnel directly involved in the insertion procedure.  
  • Circulating staff within 1 meter of the sterile field need to wear a cap and mask. |                     |
| 3. Procedural site cleansed with 2% chlorhexidine based solution |                     |
| 4. Drape in sterile fashion using a large drape       |                     |
| 5. Ultrasound used to visualize vessel                |                     |
| 6. Line sutured in place,                             |                     |
| 7. Insertion site cleansed, dressing applied          |                     |
| 8. Lumens flushed/locked                              |                     |
| 9. Chest X-ray following insertion                    |                     |

Provide this yellow sheet to the Unit Manager following insertion