

Central Venous Catheter Nursing Guidelines, Cardiac Intensive Care Unit

BLOOD SAMPLING FROM A CENTRAL VENOUS CATHETER (CVC):

This is Aseptic Non-Touch Technique as per trust protocol C026.

Ensure channels are appropriately off to air, reducing the risk of Air Embolism.

Blood Cultures should not be taken from a CVC unless Neutropenic Sepsis is suspected.

Blood specimens taken from a CVC should be taken using the needle free vacutainer system in conjunction with swan-lock needle free connector.

PREPARATION:

Use Aseptic Non-Touch Technique as per trust policy C026.

- Clean tray
- 2% chlorhexidine /70% alcohol wipe
- PPE
- X2, 10 ml syringes (x1 for aspirating line and x1 for flushing with saline)
- Vacutainer system and blood collection bottles
- ABG sampling syringe

PRACTICE:

RATIONALE:

1. Wash hands with liquid soap, strict ANTT procedure, wipe needle free connector with 2% chlorhexidine wipe and allow to air dry for 30 seconds	To minimise cross infection risks
2. Aspirate 3-8 mls of blood into 10 ml syringe and discard (If unable to withdraw blood, if able, ask patient to cough/raise arm/lean forward /turn head; if necessary flush with 2mLs 0.9% sodium chloride for injection, (do not use force) then repeat process) Refer to policy C026 for trouble shooting.	To ensure blood samples are not contaminated To move distal tip of lumen away from the side of the vein as this may be occluding lumen.
3. Withdraw blood samples using vacutainer system and connect correct blood sample tubes , do not use syringes	Closed vacuum needle free extraction systems reduce direct exposure to blood and risk of needle stick injuries and potential clotting of samples
4. Attach pre-heparinised Blood Gas sampling syringe, aspirate 1ml of blood	Prevents clotting of sample and damage to Blood Gas Analyser machines
5. Flush lumen with minimum 10mls 9% sodium chloride, using pulsatile positive pressure technique	Removes potential for clot formation, and causes turbulence in the line/lumen, effective in clearing and maintain patency of lumen
6. Blood bottles should be correctly labelled with patients identity	Patient safety
7. Dispose of contaminated equipment, clean and decontaminate area as per trust policy	Patient safety
8. Wash hands with liquid soap, strict ANTT procedure, wipe needle free connector with 2% chlorhexidine wipe and allow to air dry for 30 seconds	To minimise cross infection risks

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<p>9. Aspirate 3-8 mls of blood into 10 ml syringe and discard (If unable to withdraw blood, if able, ask patient to cough/raise arm/lean forward /turn head; if necessary flush with 2mLs 0.9% sodium chloride for injection, (do not use force) then repeat process) Refer to policy C026 for trouble shooting.</p>	<p>To ensure blood samples are not contaminated To move distal tip of lumen away from the side of the vein as this may be occluding lumen.</p>
<p>10. Withdraw blood samples using vacutainer system and connect correct blood sample tubes , do not use syringes</p>	<p>Closed vacuum needle free extraction systems reduce direct exposure to blood and risk of needle stick injuries and potential clotting of samples</p>
<p>11. Attach pre-heparinised Blood Gas sampling syringe, aspirate 1ml of blood</p>	<p>Prevents clotting of sample and damage to Blood Gas Analyser machines.</p>
<p>12. Flush lumen with minimum 10mls 9% sodium chloride, using pulsatile positive pressure technique</p>	<p>Removes potential for clot formation, and causes turbulence in the line/lumen, effective in clearing and maintain patency of lumen</p>

SAFE REMOVAL OF A CENTRAL VENOUS CATHETER

Air embolism is a rare but serious complication of CVC removal. Air embolism occurs when an open channel exists between the central circulation and the outside environment with a pressure gradient that allows air entry into the circulation. This pressure gradient is greater with the patient in an upright position during inspiration and in hypovolemic states where the central venous pressure is low.

When air enters the venous circulation, it passes through the right side of the heart and into the pulmonary arteries. Small air bubbles can then be absorbed by the circulation and have little or no consequence. The majority of patients will therefore remain asymptomatic or develop minor respiratory symptoms only. Moderate sized air bubbles, can cause pulmonary vascular damage leading to pulmonary hypertension and pulmonary oedema. Whist larger air volumes can cause right ventricular air lock, which can lead to pulmonary failure and death.

In addition, the risk of central venous catheter colonization increases with catheter duration, CVC's should be removed as soon as they are no longer required and their necessity should be reviewed on a daily basis by the 'On-call' duty anaesthetist.

This is an Aseptic Non-Touch Technique as per trust protocol.

PREPARATION:

- Dressing Pack
- Sterile stitch cutter
- 2% chlorhexidine/70% alcohol wipe wipes
- Gauze and Sterile Occlusive dressing
- Clean procedure trolley

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SAFE REMOVAL OF A CENTRAL VENOUS CATHETER (cont.)	
PROCEDURE:	RATIONALE:
1. Explain procedure to patient, including the valsalva manoeuvre and gain consent to remove central line.	To decrease anxiety and increase compliance to ensure safe removal of the central line and prevent complications.
2. Wash hands with liquid soap followed by alcohol gel, and strict ANTT procedure.	Reduces the risk of cross infection
3. Correct position of patient, either flat or low semi fowler position	Aim is to raise central venous pressure above atmospheric pressure reducing the risk of air embolism
4. Remove dressing and sutures, clean insertion/exit site with 2% chlorhexidine wipe	Minimises the risk of infection
5. Ask patient to perform the Valsalva manoeuvre or to breathe in and to breathe out slowly.	This manoeuvre raises interthoracic pressure and reduces the likelihood of air embolism
6. Gently remove the CVC line on expiration, ensure its intact and apply gentle pressure around the exit site using the gauze swab until bleeding has stopped (5 mins)	Ensures stability on removal and reduce fracturing of line, whilst preventing bruising or haemorrhage
7. Cover insertion site with small sterile gauze and occlusive dressing, ensure tight seal	Fibrin tracts can form along the length of the CVC, can be a portal for air entry post removal, also reduces the risk of infection
8. Reposition patient for comfort and monitor site for 30 mins, bed rest during this time	Observe site for haematoma and or re-bleeding
9. Decontaminate hands as per trust policy	Reduces patient harm and cross infection
10. Document procedure. Do not routinely send tip for culture	CVC tips only need to be sent if there is a clinical indication such as unknown septic origin

MANAGEMENT OF CVC LUMEN:

Ideally, one lumen of the CVC should be reserved for CVP monitoring and crystalloid infusion if required. The distal lumen is recommended by the manufacturers, unless it is needed for rapid administration of fluids or for blood products.

T. P.N must be administered via a dedicated lumen to prevent infection. This means not previously used, clean, identifiable, labelled solely for this use.

Care of the insertion site and infection control:

- Record the need for the CVC and ensure this is reviewed daily.
- Observe insertion site at least 3 times per day and every time the line is accessed and document intervention onto Metavision
- Access the CVC in accordance to the care bundle.
- If gauze is used under the occlusive dressing, it should be changed 24 hours or as soon as possible after insertion of the line.
- The dressing should be dated
- Dressing change is an aseptic procedure. A sterile dressing pack MUST be used.
- Clean site with 2% chlorhexidine gluconate in 70% isopropyl alcohol every time the dressing is changed.
- The site should be covered with a moisture permeable IV dressing. Other dressings may be considered according to the patients' skin integrity and clinical conditions.

For additional information see:

Policy for Insertion and Care of Central Venous Catheters and Peripherally Inserted Central Catheters (PICCs) C026 on the Intranet or Metavision.

References

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