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Purpose

To ensure Registered Nurses and Midwives are guided by and adhere to best practice in the management of CVADs.

The CVAD Resource Book (Ref.3022) is used as a resource for the management of complications associated with CVADs.

Policy

Staff competent in the management of Central Venous Access Devices (CVADs) will adhere to this policy and complete the CVAD Resource Book (Ref.3022) and the associated endorsement requirements for Registered Nurses and Midwives to ensure best practice adherence. For the Neonatal Unit staff please refer to your local operational procedure documents concerning the care and maintenance of CVADs.

Please Note: Midline Catheters are not considered to be CVADs. They are described as peripheral lines. Policy and procedure relating to Midline catheters can be found in the Peripheral IV Policy.

Scope

CDHB 2nd Level Certificated Registered Nurse (RN) /Registered Midwife (RM), Anaesthetic Technicians and Registered Medical Practitioners.

Note: ICU & the Neonatal Unit are exempt from using the CVAD Insertion & Management Form C270118 & CVAD Management Continuation Form C270119 mentioned within this policy.

Associated documents

- [Central Vascular Access Devices Resource Book](#)
- [CVAD Insertion & Management Form C270118](#)
- [CVAD Management Continuation Form C270119](#)
- Central Venous Catheter Insertion Manual – Radiology Specific (Ref. 3254)
- [Portacath Nursing Resource Staff Contacts](#)
- [HealthLearn](#)

1 Insertion of CVADs

- All CDHB Peripherally Inserted Central Catheters (PICC), tunnelled PICCs(TPICC), tunnelled Hickman® and CICC, tunnelled dialysis catheters and apheresis catheters are inserted in Interventional Radiology (IR) at Christchurch hospital.
- Peripherally Inserted Central Catheters,TPICCs and CICC are inserted in IR by Credentialed PICC nurse inserters who have the appropriate endorsement IVTC18 or advanced endorsement IVTC19.
- The Medical Officer must order patient insertion via telephone or written referral to IR in normal working hours.
- Implantable ports must be inserted by a vascular surgeon in operating theatre or Interventional Radiology Consultant in Interventional Radiology.
- Non Tunnelled CVC's must be inserted by a competent Medical Officer in ED, ICU or by an Anaesthetist in theatre all of which must be familiar with the rationale for the use of non-tunnelled versus tunnelled catheters.
- SecurAcath sub cutaneous suture less device will provide securement for all PICCs.(excluding Child Health)

2 Endorsement/Certification

- To obtain 2nd Level endorsement it is a prerequisite to:
 - Obtain the mandatory First Level Intravenous Therapy Certification within the Medication and Fluid Foundation Programme.
 - Expected to manage CVAD's in the current clinical practice area
 - Recertification is 3 yearly – this involves full recertification - test and practical assessment

- There are two endorsements for CVAD
 - Non Implanted Devices i.e. PICC/,Non-Tunnelled CVC/Tunnelled CVCs and Tunnelled PICCs
 - Implanted Devices i.e. Implantable ports – Chest or Arm
- The Registered Nurse/Midwife/Anaesthetic Technicians must successfully complete 2nd Level endorsement **before** commencing management of the implanted and/or non-implanted central venous access devices within their scope of practice.
- Many NZ regions have reciprocal endorsement requirements which allow for transferability of 2nd level endorsement between Health Care Providers.
- **Exception:** Where a nurse/midwife moves to an area that requires endorsement in Portacath management where that nurse/midwife has endorsement in only non-implanted devices. The nurse/midwife must complete the endorsement requirements for implanted devices.

3 Procedural Considerations

3.1 Checking and Identification requirements

All Checks and Identification will be performed as per the CHDB Roles and Responsibilities Policy, Fluid and Medication Manual the CDHB Checking Procedure and the CDHB Patient Identification Policy, Clinical Manual.

with a either:

2 x 2nd Level IV Endorsed RN/RM

OR

1 x 1st Level IV Endorsed RN/RM with a 2nd Level IV Endorsed RN/RM

Exception:

BN Year Three/Part B (Transition to RN Practice)

Or BN/MHealSc students (Transition to RN Practice).

Where the student is practicing in an area with a significant number of CVAD's where they have no opportunity to gain experience using a peripheral IV cannula.

They can prepare, and double independent check with a 2nd Level endorsed RN under the direct direction of the level 2 endorsed nurse. I.e. No administration scope.

3.2 Use of Electronic Infusion Devices

- CVAD infusion therapy must be via an electronic infusion pump in the hospital setting.
- This enables the safe administration of the therapy by:
 - Maintaining positive pressure to reduce the risk of catheter occlusion.

- Reduce the risk of air inadvertently entering the line.

Exception:

- Outpatients/Community CVAD infusions where the nurse will remain with the patient for the entire medication/fluid infusion.
- Community Child Health where the parent/caregiver has been educated on operating specific infusion pumps (e.g. elastomeric pumps) to deliver therapies for conditions such as Cystic Fibrosis).
Please note: these are non-electronic infusion pumps.

3.3 Paediatric Procedural Considerations

Manipulation of a child's CVAD can cause distress. Refer to Child Health e-Guidelines for information around preparing children and their parents' caregivers for procedures.

[Child Health E Guidelines](#)

3.4 Maintenance and Care

- The staff member must maintain hand hygiene principles and aseptic non touch technique (ANTT) as per policy
- The device and site must be checked at least once every 8 hours or:
 - Prior to administration of medications, fluids and flushes
 - During administration of vesicant drugs
 - During dressing changes
 - Prior to the change of positive displacement devices
- The device **must** be checked for blood return before administering medication. This is a catheter flow function assessment.
- Blood aspiration should be free flowing during this assessment. If not, refer to the [CVAD occlusion algorithm](#)

Please note: Sodium Chloride 0.9% 10 mL pre and post flushes do not require **prescribing** (refer to the CVAD Resource Book for flushing requirements). Refer to section below.

3.5 CVAD 'locking' requirements

		Adults			Paediatrics (0-15 years)		
		Solution	Volume	Frequency (When not in use)	Solution	Volume	Frequency (When not in use)
C A T H E T E R T Y P E	PIC TPICC & Midline	0.9% Sodium Chloride	10 mL	Inpatient= daily Outpatient= weekly	0.9% Sodium Chloride	10 mL	Inpatient= daily Outpatient= weekly
	CVC Short-term (Non tunnelled)	0.9% Sodium Chloride	10 mL	Following intermittent infusions, additionally flush all unused lumens daily.	50 Units / 5 mL Heparinised 0.9% Sodium Chloride	< 1 year 0.5 mL ≥ 1 year 2 mL	Following intermittent infusions and weekly
	Hickman CICC (per lumen)	0.9% Sodium Chloride	10 mL	Inpatient= daily Outpatient= weekly	50 Units / 5 mL Heparinised 0.9% Sodium Chloride	< 1 year 0.5 mL ≥ 1 year 2 mL	Following intermittent infusions
					500 Units / 5 mL Heparinised 0.9% Sodium Chloride	< 1 year 0.5 mL ≥ 1 year 2 mL	Weekly
	Groshong	0.9% Sodium Chloride	10 mL	Inpatient= daily Outpatient= weekly	0.9% Sodium Chloride	10 mL	Inpatient= daily Outpatient= weekly
	Implanted port	0.9% Sodium Chloride	10 mL	Following intermittent infusions	500 Units / 5 mL Heparinised 0.9% Sodium Chloride	2 mL	Following intermittent infusions and monthly intervals when not in use.
0.9% Sodium Chloride		10 mL	When access needle removed and at 3 monthly intervals				

3.6 IV giving sets

Please Note: An IV giving set that is in use to infuse fluid or medication via a peripheral IV cannula must be disconnected and discarded and not reconnected to a newly inserted or existing CVAD. Reconnecting the

existing IV giving set poses a risk for infection which compromises the patient, CVAD and the prescribed treatment.

3.7 Documentation of maintenance and care

- The nurse / midwife must record the following assessment, management and intervention details of the CVAD in the CVAD Insertion & Management Form/CVAD Management Continuation Form.
 - Dressing, Securement Device and Positive Displacement Device (PDD) changes i.e. the date completed.
 - Last date and time of catheter flushed.
 - PICC's – external catheter measurement. To be measured against the initial documented external measurement at the insertion of the PICC. (Insertion form). Any variation – refer to the [PICC tip migration poster](#). for guidance.
 - **Please Note:** Where a SecurAcath is used to stabilise a PICC, the length of this device measures 2 cm.
 - Tunnelled catheters: observe for 'cuff' migration at exit site which indicated catheter has migrated 2cms and will need to be reviewed/ removed.
 - Implantable ports – the gauge and length size of the non-coring needle to be used.
- Additionally the aforementioned forms must reflect any variation in management and care including:
 - Complications with the CVAD including patency, signs of infection, migration or any patient adverse effects.
 - Complications with therapy.
 - Complications with the dressing/securement device.
 - Non compliance with correct dressing application

Please Note: Additional information must be document in the patient's clinical progress notes.
- **Note:** For adverse skin reactions please refer to the [CVAD Dressing Flow Chart for Skin Reactions](#).
- All interventions and outcomes of the above bullet points
- Note the CVAD Insertion & Management Form C270118 & CVAD Management Continuation Form C270118 will be filed in the clinical record under Procedure. For each subsequent admission where care/management for the same catheter is to continue the same form should be used until the form is complete.

For further information please refer to documentation requirements within the [CVAD Resource Book](#)

3.8 Blood Sampling & Blood Cultures

- The discard method must be used for obtaining blood samples from a CVAD.
- Where blood cultures are required the discard blood must be used for this purpose. This is an aseptic procedure. Refer to [CLAB guidelines](#).

- The correct order of draw for blood collection tubes must be adhered to, to prevent additive contamination.
- Where patients receive parenteral nutrition, blood samples are to be taken peripherally, unless the patient is venous compromised, is a child, or it is clinically indicated. It is recommended that where the CVAD must be used the blood sampling is to occur between bags.

Please note: The accuracy of blood samples can be altered when blood is drawn from silicone catheters. Some drugs can leach into the silicone e.g. Tobramycin

4 CVAD Removal

- All Children requiring removal of Hickman catheters or Implantable ports will have this carried out by the paediatric surgical team under general anaesthesia.
- Tunnelled catheters must be removed under local anaesthetic by appropriately trained Medical Officers.
- Implantable ports must be removed by the Vascular Surgeon /Registrar under sedation.
- CICC (adults) may be removed by CVAD endorsed staff
- Non-tunnelled CVC, TPICC's and PICC's are removed by CVAD endorsed RN/RM staff.
- Dialysis catheters are removed by renal specialty staff, medical Officers/Anaesthetists.
- For removal procedures refer to the [CVAD Resource Book](#)

5 Complications of CVADs

Refer to the [CVAD Resource Book](#) on signs, symptoms and management of these complications

- Infection
- Occlusion
 - Thrombotic
 - Non Thrombotic
 - Mechanical
 - “Pinch off” syndrome
- Deep Vein Thrombosis
- Catheter Migration
- Mal Position /Vessel erosion
- Cardiac Tamponade
- Air Embolism
- Phlebitis (PICC associated)
- Lymph vessel damage /leaking at insertion site

6 PICC Nurse Inserters Endorsement

- The Registered Nurse must meet the criteria laid out in the CVC Nurses Insertion Manual (ref no.3254 associated document section)
- The Registered Nurse PICC inserter must have achieved IVTC18 or IVTC19 (advanced) endorsement, and have completed the CDHB credentialing process.
- Re-credentialing is 3 yearly.
- Practice is evaluated through audit and a database of credentialed RN's maintained.

Measurement and Evaluation

- CVAD management will be audited using approved audit tools on a regular basis determined by the Vascular Access Nurse Consultant / Nurse Manager and from the advice of the Regional IV Advisory Group.
- Action planning to improve compliance with standards will be the responsibility of the Nurse Manager with the assistance of the Nurse Consultant Vascular Access
- Catheter related bacteraemia incidences, Incident reporting / Root Cause Analysis related to CVAD therapy management will be reviewed 6 monthly to reassess practice changes.

References

- Infusion Therapy Standards of Practice (2016). The role of the registered nurse in the insertion of external jugular peripherally inserted central catheters and external jugular peripheral intravenous catheters. *Vol39, No1S*
- Chopra V, et. al. (2015) The Michigan Appropriateness Guide for Intravascular Catheters (MAGIC): Results from a Multispecialty Panel Using the RAND/UCLA Appropriateness Method. *Annals of Internal Medicine; Vol. 163 No.6 (Suppliment. 15 September 2015*
- Infusion Nurses Society. (2010) Infusion Nursing: An Evidence –Based Approach 3rd Edition. Saunders
- Centres for Disease Control. (2011). Guidelines for the prevention of intravascular catheter-related infections.
<http://www.cdc.gov/hicpac/guidelineMethod/guidelineMethod.html>. Weinstein SM: Plummer's principles & practice of intravenous therapy, ed8, Philadelphia, 2007, Lippincott Williams& Wilkins
- MZ Seddon 2011. <http://journal.nzma.org.nz/journal/124-1339/4791/>
- http://www.cdc.gov/nhsn/PDFs/pscManual/4PSC_CLABScurrent.pdf

(please refer to the [CVAD Resource Book](#) for a more comprehensive list)

Policy Owner	Professional Development Unit Nurse Consultant Vascular Access
Policy Authoriser	Executive Director of Nursing & Chief Medical Officer
Date of Authorisation	11 April 2018

Appendix A - CVAD Dysfunction Algorithm

