

# Procedure

## Management of Compromised Central Venous Access Device (CVAD)

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<b>Executive sponsor</b>	Executive Director Nursing Services			<b>Effective date</b>	07/12/2023
<b>Author/custodian</b>	Nurse Practitioner - Vascular Assessment and Management Service			<b>Review date</b>	01/12/2027
<b>Supersedes</b>	3.0				
<b>Applicable to</b>	All Children's Health Queensland (CHQ) clinical staff according to their scope of practice				
<b>Authorisation</b>	Executive Director Clinical Services				

### Purpose

Children requiring long term central venous access frequently have insults to their central venous access device (CVAD) that potentially compromise the integrity of the catheter. It is imperative that attempts to preserve the existing catheter are optimised through rapid assessment, escalation and management of any presenting threat. This procedure describes the immediate medical management for various situations that compromise the integrity of the CVAD.

1. Accidental disconnection of needleless access device (NAD), 3-way tap, administration or infusion set from
  - a. Centrally Inserted CVAD
  - b. Peripherally Inserted Central Catheter (PICC)
  - c. Totally Implanted Venous Port Device (TIVPD)
2. Management of fractured tunnelled cuffed CVC (tc-CVC)

### Scope

This procedure applies to all Children's Health Queensland (CHQ) clinical staff according to their scope of practice.

### Objectives

- The patient will have safe medical management of their catheter to reduce the risk of complication requiring catheter removal and replacement.
- Appropriate medical management is provided, with consideration of antimicrobial stewardship.

- The clinician will assess the patient's need for alternative intravenous access during medical management of a compromised CVAD.
- The clinician will ensure patient safety while minimising physical discomfort, pain and negative psychological responses associated with the procedure.
- All associated documentation is completed and maintained.
- Any near misses or adverse events are documented in the Clinical Incident Reporting System (Riskman).



**ALERT – If catheter fracture occurs during standard business hours notify:**

- CN – Vascular Assessment and Management Service (VAMS) when available or
- Safety CNC
- Medical officer for treating team



**ALERT – If catheter fracture occurs outside standard business hours notify:**

- Safety CNC
- On call medical officer
- VAMS via email – [VAMS@health.qld.gov.au](mailto:VAMS@health.qld.gov.au)



**ALERT**

- Early intervention for a fractured tunnelled cuffed central venous catheter results in the greatest chance of catheter salvage with minimal clinical disruption to the patient.

## Procedure

**(1a) Immediate nursing management of a CVAD (excluding TIVPD) that has been compromised due to accidental disconnection of needleless access device (NAD), 3-way tap, administration or infusion set**

- Clamp the CVAD - if the catheter clamp is not able to be used, an alternative clamp such as gauze and artery forceps should be used
- Note: Some catheters have an internal pressure activated safety valve (PASV) and will not require a clamp in this situation
- If fluids are infusing, stop administration and disconnect line
- When the NAD has become disconnected, use aseptic non-touch technique (ANTT<sup>®</sup>) to clean the exposed catheter hub and place a new NAD [CHQ-WI-03458 Central Venous Access Device \(CVAD\) Accidental Disconnection](#)
- When the NAD remains insitu, but the 3-way tap, administration or infusion set has become disconnected use aseptic non-touch technique (ANTT<sup>®</sup>) to prepare new administration or infusion set [CHQ-WI-03458 Central Venous Access Device \(CVAD\) Accidental Disconnection](#)

**(1b) Immediate nursing management of a TIVPD that has been compromised due to accidental disconnection of needleless access device (NAD), 3-way tap, administration or infusion set**

- Clamp the extension tubing attached to the TIVPD needle.
- Stop infusing fluids

- Remove compromised TIVPD needle and re-needle as per [CHQ-WI-03460 Totally Implanted Venous Port Device \(TIVPD\) - Needling](#)
- Where the NAD remains insitu, discard the previous administration set and fluids. Using appropriate ANTT® prepare a new administration set as per [CHQ-WI-03458 Central Venous Access Device \(CVAD\) Accidental Disconnection](#)

### (2) Immediate nursing management of a fractured tunnelled cuffed central venous catheter (tc-CVC)

- Clamp the portion of the catheter still attached to the patient - if the catheter clamp is not able to be used an alternative clamp such as gauze and artery forceps should be used.
- If fluids are infusing, stop administration and disconnect line as per [CHQ-WI-03458 Central Venous Access Device \(CVAD\) Accidental Disconnection](#).
- Using aseptic non-touch technique (ANTT®) clean the damaged portion of the catheter (this might present as a catheter split or complete separation of distal portion of catheter) that is still attached to the patient with 2% Chlorhexidine & 70% alcohol and seal the damaged portion of the catheter with an occlusive, transparent, sterile dressing.
- As per alerts above, notify the CN – VAMS or Safety CNC, and the Medical Officer for the treating team or on call medical officer if out of hours.

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**ALERT – Tc-CVC's are the only CVADs used at this hospital that are repairable:**



- If another device such as PICC, midline or nt-CVC fractures the catheter **MUST** be removed as soon as possible to avoid additional complication such as infection. This includes multi-lumen catheters, where only one lumen is damaged. It is not appropriate to continue using the undamaged lumen/s.
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(3) Immediate medical management of CVAD that has been compromised due to accidental disconnection of needleless access device (NAD), 3-way tap, administration or infusion set and a fractured tunnelled cuffed central venous catheter should be as per flow chart below and managed when required in consultation with Infectious Diseases medical team.

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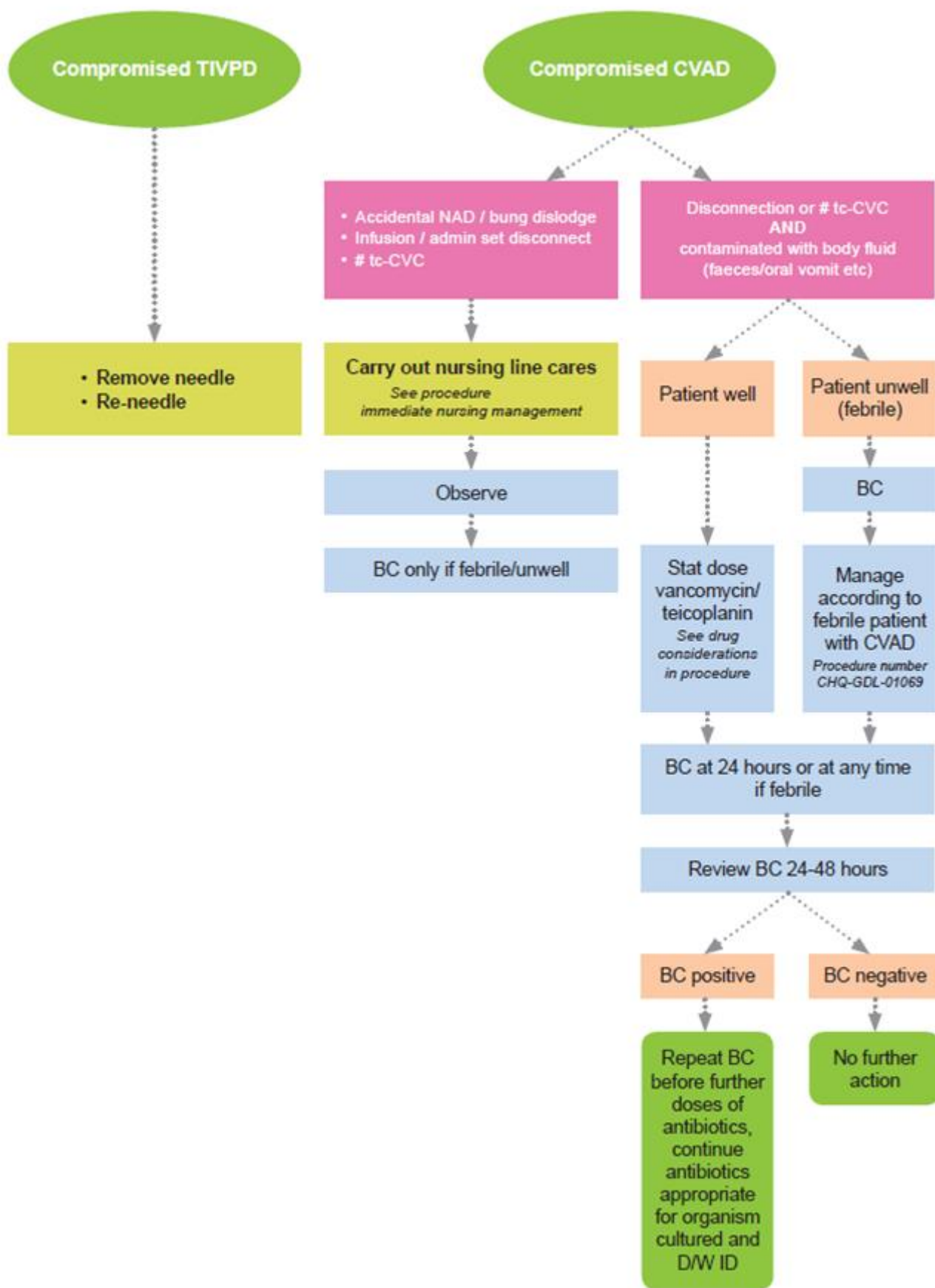
**ALERT**

Antibiotic prophylaxis should not routinely be given for line disconnections or fractured catheters.



There is recent evidence that fractured and repaired central venous catheters **do not** have an increased risk of infection and there is no evidence that routine antibiotic prophylaxis after fracture repair decreases CVC infection rate. Antibiotics are suggested only where serious concern around potential for CVAD infection for example when disconnected or fractured and soiled or contaminated with bodily fluids.

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Flowchart: Nursing and Medical considerations for management of compromised TIVPD or CVAD

Empiric Antibiotic: STAT DOSE ONLY. Not always required; on individual assessment

Either

- Vancomycin (15 mg/kg IV, maximum 500 mg, as a single dose)
- OR
- Teicoplanin (10 mg/kg IV, maximum 400 mg, as a single dose)
  - for patients with a documented adverse drug reaction/allergic reaction to vancomycin (e.g. Severe redman syndrome despite slow infusion over more than 3 hours; anaphylaxis)



#### ALERT

- **Vancomycin and teicoplanin are restricted antibiotics. ID approval required if more than one dose is required.**
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## Supporting Documents

### Authorising Policy and Standard/s

- [Guidelines for the Prevention of Intravenous Catheter-Related Infections 2011 \(CDC\)](#)
- [National evidence-based guidelines for preventing healthcare-associated infection \(EPIC\)](#)
- [Cancer Nurses Society of Australia \(CNSA\)](#)
- [Registered Nurses' Association of Ontario \(RNAO\)](#)
- [Infusion Nurses Society 2016](#)

### Procedures and work instructions

- [CHQ-WI-03458 Central Venous Access Device \(CVAD\) Accidental Disconnection](#)
- [CHQ-WI-03460 Totally Implanted Venous Port Device \(TIVPD\) - Needling](#)
- [CHQ-WI-03462 Needleless Access Device or Administration Set Change on Venous Access Device](#)
- [CHQ-GDL-01069 Fever in a Child with Central Venous Access Device](#)
- [CHQ-GDL-01060 Use of Taurolidine Lock Solution](#)
- [CHQ-GDL-01065 Antibiotic Lock Therapy](#)
- [CHQ-PROC-63505 Hand Hygiene](#)
- [ieMR Quick Reference Guide CVAD Documentation](#)
- [CHQ Procedure 01035 Antimicrobial Restriction Procedure](#)
- [CHQ Antimicrobial Restriction list](#)
- [CHQ-PROC-62111 Procedural Pain - Non-Pharmacological Management](#)
- [CHQ-PROC-00303 Pharmacological Procedural Pain Management](#)

## Acronyms

ANTT	Aseptic non-touch technique
BC	Blood culture
CHQ	Children's Health Queensland
CN	Clinical Nurse
CNC	Clinical Nurse Consultant
CVAD	Central Venous Access Device
CVC	Central Venous Catheter
CVL	Central venous line
ID	Infectious Diseases
IEMR	Integrated electronic medical record
IMPS	Infection Management and Prevention Service
IV	Intravenous
NAD	Needleless access device
NP	Nurse Practitioner
nt-CVC	Non tunnelled Central Venous Catheter
PASV	Pressure activated safety valve
PICC	Peripherally inserted central catheter
PIVC	Peripherally inserted venous cannula
PSQC	Patient Safety and Quality Committee
Tc-CVC	Tunnelled cuffed Central Venous Catheter
TIVPD	Totally Implanted Venous Port Device
VAMS	Vascular Assessment and Management Service
WI	Work instruction
QCH	Queensland Children's Hospital

## Consultation

Key stakeholders who reviewed this version:

- Nurse Practitioner, Vascular Assessment and Management Service
- Clinical Nurse, Vascular Assessment and Management Service
- Nurse Educator group
- Director, Infection Management and Prevention Service, Immunology and Rheumatology
- Director of Anaesthesia
- Fellow, Infection Management and Prevention Service
- Pharmacist Advanced – Antimicrobial Stewardship

- Safety CNC
- Clinical Nurses
- Director, Surgical Services
- Oncology
- Gastroenterology

## References

1. [Central venous catheter repair is not associated with an increased risk of central line infection or colonization in intestinal failure pediatric patients.](#) McNiven C, Switzer N, Wood M, Persad R, Hancock M, Forgie S, Dicken B.J.J *Pediatr Surg.* 2016 Mar;51(3):395-7.
2. [Fractured pediatric central venous catheters - Repair or replace?](#) Zens T, Nichol P, Leys C, Haines K, Brinkman A. *J Pediatr Surg.* 2019 Jan;54(1):165-169.

## Audit/evaluation strategy

Level of risk	Medium
Strategy	<ul style="list-style-type: none"> <li>• Regular review of clinical incident reports on Riskman</li> <li>• Monitor the incidence of catheter related bloodstream infection:             <ul style="list-style-type: none"> <li>– Table at Patient Safety and Quality Committee (PSQC)</li> </ul> </li> <li>• All wards will complete 10 audits per month             <ul style="list-style-type: none"> <li>– Review of clinical practice</li> <li>– Compliance with Daily Assessment documentation</li> <li>– Compliance with documentation in ieMR</li> </ul> </li> </ul> <p>Feedback and recommendations from audit to be provided to VAMS and Divisional Nursing Director.</p>
Audit/review tool(s) attached	Nil
Review date	
Review responsibility	NUM – individual clinical units
Key elements / Indicators / Outcomes	<ul style="list-style-type: none"> <li>• Number and type of clinical incidents related to management of intravenous vascular access devices</li> <li>• Incidents of catheter related bloodstream infection</li> <li>• Observed compliance with procedure and work instructions</li> </ul>

## Procedure revision and approval history

Version No.	Modified by	Amendments authorised by	Approved by
1.0 26/09/2013	NP – Vascular Assessment and Management Service	Divisional Director, Critical Care	General Manager Operations
2.0 26/09/2019	NP – Vascular Assessment and Management Service	Divisional Director, Critical Care Medicines Advisory Committee (CHQ)	Executive Director Clinical Services
3.0 17/02/2023	NP – Vascular Assessment and Management Service	Divisional Director, Critical Care	Executive Director Nursing Services
4.0 01/12/2023	NP – Vascular Assessment and Management Service	Divisional Director, Critical Care	Executive Director Nursing Services

<b>Keywords</b>	Compromised Central Venous Access Device, Intravenous Vascular Access Device, insertion, 03450, CVAD, CVC, CVL, CVAD, central line, NAD, PICC, Midline, PIVC, TIVPD, dressing, VAMS, 03455
<b>Accreditation references</b>	National Safety and Quality Health Service Standards (1-8): Standard 1: Governance for Safety and Quality in Health Service Organisations, Standard 3: Preventing and Controlling Healthcare-Associated Infection, Standard 4: Medication Safety