

A Quick Reference Guide to Troubleshooting of Medium to Long Term CVAD's in Hospital

Community Staff contact the hospital for advice, should any of the following problems arise

Presenting Problem	Possible Causes	Interventions
Problems with the functioning of the CVAD device 1A Unable to withdraw blood or sluggish flow	Mechanical Occlusion due to <ul style="list-style-type: none"> – kinked or twisted catheter – indents, kinks, – closed clamps, – occluded needle free connector due to clot or debris internally – Sutures or securing device too tight / pinching the catheter – Catheter tip adhered to vessel wall – Catheter migration – Displacement of HUBER needle position in Port /TIVAD 	<ul style="list-style-type: none"> • Perform catheter checks for mechanical occlusion & resolve • Change needle free connector as required • Measure external catheter length, compare with previous measurements. • If catheter migration suspected – Do NOT use the catheter and escalate to the medical team. • Examine the insertion site for tracking, extravasation. • Check TIVAD /Port- confirm HUBER needle position • Ask patient to try different body positions or manoeuvres as follows: change position - sit forward, lie on back, lie down on their side. Lift their arm up above their head. Take a deep breath and cough <p>A) <u>Blood return following manoeuvres</u></p> <ul style="list-style-type: none"> • Withdraw 3-5 mls of blood • Immediately flush the catheter with sodium chloride 0.9% for injection 10mls. Continue to use the CVAD as normal.
1B Unable to withdraw blood but able to flush the catheter with no resistance	Catheter Occlusion (partial or complete) <ul style="list-style-type: none"> – Thrombotic occlusion due to formation of intra-luminal fibrin or clot or extraluminal due to a fibrin tail or sheath – Drug precipitation due to incompatible medications antibiotics, lipid residue due to TPN, incompatible medications – Catheter displacement 	<p><u>B). Blood Return Absent</u></p> <ul style="list-style-type: none"> • Attempt to flush the CVAD with Sodium Chloride 0.9% 10mls for injection (NEVER use force). • STOP flushing if resistance is met. • Attempt to withdraw blood • Refer to PWO** <p><u>Blood Return Still Absent – can flush catheter</u></p> <ul style="list-style-type: none"> • Escalate promptly to medical team to review. Do NOT use the catheter until investigated <p>Medical interventions may include:</p> <ul style="list-style-type: none"> • Instillation of prescribed thrombolytic agent (as per local protocol) to dwell and lock in catheter lumen as per protocol. Check for blood return. • Blood return is absent, repeat thrombolytic prescription and increase dwell time as per protocol. <p>Blood return still absent</p> <ul style="list-style-type: none"> • Chest x-ray or linogram to confirm catheter tip position • Review the requirement for the central catheter and other venous access.
1C Unable to withdraw blood Unable to flush the CVAD (Total Catheter occlusion)		<p>C.) Unable to withdraw Blood or Flush the catheter (Total catheter occlusion)</p> <ul style="list-style-type: none"> • Escalate promptly to the medical team. • Medical Interventions as for 1B • Removal and replacement of CVAD if central access continues to be required
<p align="center">Refer to Persistent Withdrawal Occlusion (PWO) algorithm</p>		

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Phlebitis Pain and discomfort at insertion /exit site with or without discharge. Other symptoms of suspected infection Redness, swelling, tenderness at insertion site, tracking along the vein, tachycardia chills, malaise	Secondary to 1. Infection 2. Mechanical irritation of the vein due to poor securement, tissue damage 3. Chemical due to irritant medications and solutions Sensitivity to catheter materials Due to – Non- adherence to (ANTT) principles – Non- compliance with a closed infusion system. – Inappropriate catheter securement	<ul style="list-style-type: none"> Escalate to the medical team Obtain wound swab from insertion site for culture sensitivity. Ensure catheter is secure; dressing is dry, clean and intact Monitor temperature, NEWS 2 every 4 hours Reassess site at least daily, using a standard phlebitis assessment tool Strict ANTT during all access care and dressing change Consider prescribed topical anti-inflammatory cream or heat packs in the absence of infection Ensure irritant drugs and infusions are diluted and administered appropriately and at correct rate.
		If evidence of systemic infection or Catheter related blood stream infection (CRBSI) medical intervention should include: <ul style="list-style-type: none"> Activation of Sepsis 6 Blood cultures (peripherally first and then each lumen from medium to long term CVAD's. Administration of antibiotics, IV fluids as prescribed In the presence of CRBSI, CVAD will most likely need removal, provided there is an alternative venous access Long term CVAD's maybe treated with antibiotic lock Catheter tip should be sent for culture and sensitivity on removal.
Fluid leakage at insertion site and dressing	<ul style="list-style-type: none"> Internal catheter fracture or rupture Extravasation Thrombosis Rapid fluid infusion Forceful flushing Tear or hole in the catheter Loose connection 	Stop Infusion. Do NOT use the catheter Place a label over the site - Do NOT use the catheter <ul style="list-style-type: none"> Immediately clamp above a visible fracture to prevent air embolism Escalate immediately to the medical team Increase frequency of NEWS 2 recordings and monitor insertion site closely Cover catheter site with an occlusive transparent dressing. NEVER use scissors or a sharp instrument near a CVAD to remove tape or dressing Medical investigations and Intervention may include <ul style="list-style-type: none"> Chest x ray to verify tip position, Ultrasound Referral to interventional radiology CVAD device may need removed and replaced.

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Swelling in the region of the CVAD - chest, arm, neck shoulder bruising	<ul style="list-style-type: none"> Catheter misplacement /migration Extravasation – catheter tip not in vein Thrombosis 	<ul style="list-style-type: none"> Stop Infusion. Do NOT use the CVAD until catheter tip position confirmed and problem resolved Place sticker over the CVAD – Do not use Escalate immediately to the medical team Monitor the site closely, increase NEWS 2 recordings Measure arm circumference (PICC) and external length of STC. Compare with previous measurements. <p>Medical investigations and interventions may include:</p> <ul style="list-style-type: none"> Chest x-ray to confirm catheter tip position and or ultrasound Removal of CVAD device.
Increase or decrease in external length of the catheter Exposed Dacron cuff on a Skin Tunnelled catheter (STC)	<ul style="list-style-type: none"> Catheter not adequately secured with dressing, securement device or sutures Increase in thoracic pressure e.g. severe coughing, vomiting, extreme physical activity 	<ul style="list-style-type: none"> Stop Infusions. DO NOT attempt to reinsert catheter back into the vein or use the CVAD until catheter tip position confirmed and problem resolved Place sticker over the CVAD – Do NOT use Escalate promptly to the medical team Check line security; dressing, securement device, sutures Compare measurements of the external catheter length with insertion and maintenance readings <p>Medical investigations and interventions may include:</p> <ul style="list-style-type: none"> Chest x ray to verify catheter tip position. Catheter maybe re positioned, removed or replaced if central venous access required.
Continuous backflow of blood into the catheter	<p>Fault in the catheter or flushed incorrectly</p> <p>Catheter misplacement /migration</p>	<ul style="list-style-type: none"> Flush the catheter using the correct flushing technique If backflow continues, escalate promptly to the medical team for review Check x ray or linogram maybe required Continue to monitor closely
Accidental Catheter removal	<p>Vigorous exercise</p> <p>Cuff Failure with (STC)</p>	<ul style="list-style-type: none"> Immediately apply digital pressure to insertion site to stop the bleeding for at least 5 minutes with sterile gauze swabs. Escalate to the medical team for review of requirement for venous access Apply occlusive dressing over the site, leave for 72 hours Educate the patient on what to do should CVAD accidentally fall out whilst in hospital and the community.

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Consider Air Embolism if the following symptoms occur Sudden onset of Chest pain, dyspnoea, hypotension, tachycardia, anxiety, collapse, altered mental status, wheeze	An air embolus can enter the venous system at any stage during catheter insertion, care maintenance and removal.	Rapid recognition of patients deteriorating clinical status using systematic A-E assessment <ul style="list-style-type: none">• Emergency escalation to the medical team. If signs of haemodynamic or respiratory compromise call cardiac arrest team 2222• Immediately check integrity of catheter for fractures, cracks, disconnections and prevent further air entry• Stop further air entry by clamping catheter above fracture.• Lie patient in left lateral position head down• Administer oxygen 100/%.• Ongoing continuous monitoring and assessment of vital signs NEW2 and cardiac rhythm.• Attempt to aspirate residual air from the catheter Medical Intervention may include Intensive care monitoring /intubation and ventilation Removal of the CVAD

For further information please refer to the document
Potential Complications Associated with Central Vascular Access Devices available
on NHSL intranet Vascular Access website