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PATIENT CARE OBJECTIVES

This policy outlines measures that shall be implemented to reduce the risk of infectious and non-infectious complications in any adult with a VAD, including but not limited to a peripheral intravenous line (PIV); single lumen, multi-lumen, tunneled, total parenteral nutrition (TPN) line; implantable port; peripherally inserted central catheter (PICC); cuffed catheter (Hohn); dialysis or hemapheresis catheter. Arterial catheters are further addressed in the Nursing Practice and Organization Manual.

RESPONSIBILITIES

JHMI/JHH/JHU physicians, nurses and clinical support staff

- Personnel must follow the requirements of the policy.

Supervisor/Department Manager

- Communicate policy contents to personnel; ensure personnel competency and compliance with the policy.

Department of Hospital Epidemiology and Infection Control (HEIC)

- Act as a resource for questions.


PROCEDURES

1.0 Training

- 1.1 Personnel who insert, remove, or manipulate VADs shall undergo training and demonstrate competency. Refer to Appendix 1: Nursing Scope of Practice for details concerning who shall be permitted to perform VAD procedures.
- 1.2 Medical and nursing staff who insert central VADs shall complete a training module available online at www.hopkins-heic.org.
- 1.3 Whenever possible, the experienced staff of the specialized Vascular Access Team (VAT) shall be utilized for inserting VADs, changing dressings, and drawing blood from central VADs.
- 1.4 Medical and Affiliate Staff members shall not insert central VADs unless granted the delineated clinical privilege to do so.

2.0 Site and Catheter Selection

- 2.1 The preferred insertion site for peripheral VADs is the upper extremities. Individual placing line (Operator) shall avoid pre- or post-operative sites, areas that are edematous, injured or damaged, and the arm on the same side as a past or potential mastectomy or dialysis fistula (exception shall be made for diagnostic purposes, e.g. fistulogram). VADs shall not be inserted in lower extremities unless there is clinical documentation of why all other peripheral VAD options are unacceptable. RNs in the Cardiovascular Diagnostic Lab (CVDL) may insert IVs for lower extremity venograms.
- 2.2 Twenty gauge or smaller catheters should be used for most PIVs. If a **16 gauge or** larger is required for a procedure or in the operating room, it shall be changed to a smaller gauge after the procedure unless an order is written for it to remain in place. A minimum 20-gauge catheter is required for infusion of PPN.
- 2.3 The subclavian vein is the preferred site for non-tunneled central venous access; however, patient-specific factors (e.g., renal failure, coagulopathy, anatomic deformity or cardiothoracic surgery), operator skill, and relative risk of mechanical complications (e.g., subclavian vein stenosis, bleeding, pneumothorax), shall also be considered and shall guide site selection.
- 2.4 A central venous catheter with the minimum number of ports or lumens essential for the management of the patient shall be used.
- 2.5 A single lumen VAD is preferred for TPN administration. If inserting a dedicated TPN line is not feasible, one port of an existing multi-lumen catheter may be designated for TPN by physician order. The Parenteral/Enteral Support Service (PESS) where available, shall place a single lumen VAD for TPN administration or shall designate one port for TPN administration. A PICC or Hohn is strongly recommended for patients in whom more than one to six weeks of vascular

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access is anticipated. Hohn catheters should be removed or changed after 6 weeks due to dissipation of the antimicrobial in the cuff.

- 2.6 A tunneled catheter or an implanted port is strongly recommended for patients in whom more than 6 weeks of vascular access is anticipated.


3.0 Insertion

- 3.1 An order by an authorized prescriber is required to insert a VAD that shall not be inserted by a physician, nurse practitioner or physician assistant. Routine PIV site changes are covered by the original authorized prescriber's order.
- 3.2 Good hand hygiene with hospital-approved soap and water or waterless alcohol-based cleanser is required before VAD insertion. A surgical scrub is required before insertion of tunneled catheters, implanted ports, and permanent dialysis or hemapheresis catheters.
- 3.3 Sterile technique is required for central VAD insertion.
- 3.4 Tunneled VADs, implanted ports, and permanent dialysis/pheresis catheters shall only be placed in CVDL or the operating room (OR).
- 3.5 Except in acute, life threatening situations, the operator and assistant shall use full barriers during central VAD insertion, regardless of where in the hospital the procedure is performed, including:
 - 3.5.1 Cap
 - 3.5.2 Mask
 - 3.5.3 Sterile gown
 - 3.5.4 Sterile gloves
 - 3.5.5 Large sterile patient drape so the guide wire does not extend beyond the sterile field.
- 3.6 Central VADs placed in emergent situations shall be removed as soon as it is medically feasible. Chlorhexidine gluconate 2% in 70% isopropyl alcohol swabs (Chloraprep) is the antiseptic of choice for central and arterial VAD insertion; 1% tincture of iodine is the preferred alternative if a patient is intolerant to chlorhexidine (10% povidone iodine is a less acceptable alternative).
- 3.7 An alcohol swab may be used for PIV insertion.
- 3.8 All non-tunneled central VADs shall be sutured in place. Steri-strips shall be used to secure PICCs.
- 3.9 Unused ports of multilumen central catheters shall be flushed, capped, and clamped.
- 3.10 Confirmation of proper placement by chest x-ray or fluoroscopy is required for all central VADs with the exception of femoral lines. The VAD shall be flushed and capped, or kept open with a physiologic solution at 10cc/hr or less pending confirmation. (In emergency situations or in the OR, proper placement may be judged based on hemodynamic assessment until a chest x-ray can be obtained.) In the case of TPN line replacement, D₁₀W shall be infused at 10cc/hr until placement is confirmed.

4.0 Site Assessment

- 4.1 Patients shall be encouraged to report any changes in their catheter site or any new discomfort to their healthcare provider.
- 4.2 A nurse shall assess VAD sites not in continuous use, at least daily.
- 4.3 A nurse shall assess VAD sites connected to a gravity volume controller/infusion pump at least every 8 hours for signs of infiltration, phlebitis or infection; including pain, redness, swelling, induration, disruption of flow, or lack of blood return. If gauze dressing is being utilized, assess for phlebitis and infection at time of dressing change. A nurse shall assess VAD sites in use but not connected to a gravity volume controller/infusion pump at least every 2 hours for the same signs (see section 5.0 for dressing change recommendations).
- 4.4 If a localized infection is suspected at the VAD insertion site or tunnel, the physician shall be informed and a bacterial and/or fungal culture of the site sent if ordered.
- 4.5 Phlebitis shall be graded based on the following criteria:

Grade	Clinical Criteria
0	No Symptoms
1	Erythema at access site with or without pain
2	Pain at access site with erythema and/or edema

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3	Pain at access site with erythema and/or edema Streak formation Palpable venous cord
4	Pain at access site with erythema and/or edema Streak formation, Palpable venous cord > 1 inch in length Purulent drainage

5.0 Dressing Changes

- 5.1 Good hand hygiene with hospital-approved soap and water or waterless alcohol-based cleanser is required before catheter site care.
- 5.2 Chlorhexidine gluconate 2% in 70% isopropyl alcohol (ChlorPrep) is the antiseptic of choice for central and arterial VAD site care; 1% tincture of iodine is the preferred alternative if a patient is intolerant to chlorhexidine (10% povidone iodine is a less acceptable alternative).
- 5.3 A semi-permeable polyurethane sterile transparent dressing in the appropriate size shall be used for all VADs. A peripheral IV dressing shall be changed when the site is rotated. A central dressing shall be changed every 7 days or when it becomes damp, loose, soiled, or if the patient develops problems at the site that require further inspection. **Exception:** For patients who have skin breakdown or oozing, an occlusive gauze dressing may be used, and changed when soiled or every 24 hours. Gauze dressings may also be used for patients who do not tolerate a semi-permeable transparent dressing, and changed when soiled or every 48 hours. Central VAD dressing change is a sterile procedure and is located in the Nursing Practice and Organization Manual, IV Therapy: Central Venous Access Device, Procedure for changing dressing, #341-343 (<http://www.insidehopkinsmedicine.org/nursing/cnp/341-CVADdsg.html>, <http://www.insidehopkinsmedicine.org/nursing/cnp/342-CVADgauze.html>).
- 5.4 For new tunneled central VADs (e.g. Hickman, Groshong), a nurse shall assess the site and dressing when the patient returns from OR/CV DL and shall dress the site with a gauze dressing changed daily until the site is no longer oozing, then switch to Sorbaview changed every 7 days as in 5.2.
- 5.5 TPN line dressings shall be changed weekly and as necessary. Where available, the VAT shall perform all TPN line dressings. For patients receiving TPN, the dressing change after showering shall be coordinated ahead of time with the VAT.
- 5.6 For patient showering, the site, catheter and connecting devices shall be covered with an impermeable dressing and the dressing shall be changed immediately after the shower.
- 5.7 Dialysis catheter dressings must be changed at least 3 times/week (example: M-W-F or T-Th-S). Refer to Dialysis Catheter Dressing Change Procedure.
 - 5.7.1 Dialysis staff shall perform dressing changes on active dialysis lines with each treatment.
 - 5.7.2 The VAT will perform dialysis dressing changes on patients who do not have dialysis treatments 3 times/week or who have loose or soiled dressings on general acute care units (exception Pediatrics and Oncology).
 - 5.7.2.1. The patient's nurse must post the patient for a dialysis catheter dressing change on the VAT Request Board.
 - 5.7.3 ICU/IMC, Oncology and Pediatrics nurses are responsible for performing dialysis catheter dressing changes on patients who do not have dialysis treatments 3 times/week or who have loose or soiled dressings.
- 5.8 Topical antibiotic ointment or cream shall not be used as prophylaxis on insertion sites, with the exception of hemodialysis catheters.

6.0 Lines

- 6.1 Unused ports shall be flushed, capped, and clamped (where a clamp is present on the VAD). Refer to "Blood Draws and Flushes" section for flush solution and frequency.
- 6.2 Implanted ports shall be re-accessed within a sterile field using a new Huber needle every 5 days; the tubing and dressing shall be changed at that time.

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- 6.3 Hemodialysis VADs shall not be opened, flushed or used by non-dialysis staff except in a life-threatening emergency or when ordered by the Nephrology attending or fellow, and the nursing staff have received specialized training.
- 6.4 When a VAD is no longer needed for dialysis or pheresis, it should be removed. If it is the sole available access, it may be used and the MD must write orders specific to the management of this line including volume and concentration of heparin, if needed, and dressing change procedure to be followed (i.e. VAD dressing change or dialysis catheter dressing change).
- 6.5 Except in a life-threatening emergency, TPN lines shall be used exclusively to administer TPN and shall not be accessed for any other reason (e.g., blood draws, piggybacking meds or other fluids.) On oncology units, compatible medication is sometimes piggybacked with TPN. Where available, the VAT shall troubleshoot all TPN-designated lines (e.g., leaks, occlusions, disconnects).
- 6.6 Declotting issues are addressed in the Nursing Practice and Organization Manual, IV Therapy: Troubleshooting/Declotting Central Venous Access Devices, #340-W.

7.0 Tubing

- 7.1 All administration sets other than those used for TPN or blood infusions (see Blood and Blood Components, Nursing Practice & Organizational Manual, Section II: Clinical Volume, # 306 or <http://www.insidehopkinsmedicine.org/nursing/cnp/306blood.html>), shall be changed and labeled every 96 hours. Administration sets include the path from the spike of tubing entering the fluid container to the hub of the VAD (i.e., infusion pump cassettes, transducers, y-connectors, filters, and Clave adaptors), however, a short extension tube may be connected to the catheter and may be considered a portion of the catheter to facilitate aseptic technique when changing administration sets.
- 7.2 TPN/PPN with or without lipid admixture administration sets shall be changed every Mon-Wed-Friday. Lipid administration sets shall be changed daily. When lipids are administered as piggyback to TPN, the TPN administration set shall be changed daily or at completion of lipid infusion. No extension tubing, stopcocks or clave adaptors shall be used on TPN tubing.
- 7.3 A new administration set and fluid shall be used when a VAD is re-sited.
- 7.4 Stopcocks shall only be used when it is necessary to balance a central VAD, and stopcocks shall not be hooked together. Stopcocks shall be capped when not in use.
- 7.5 In order to minimize the risk of contamination, manipulation of the VAD system shall be kept to an absolute minimum. Injection ports, hubs, and clave adaptors shall be cleaned with a 70% alcohol swab before accessing the system.
- 7.6 All VAD administration set tubing shall be primed and inspected for the presence of air and air eliminated before use.
- 7.7 All intermittent infusion set tips shall be capped with a sterile cap when not in use. A new sterile cap shall be placed with every use.
- 7.8 All connections shall be luer locked.
- 7.9 If VAD tubing becomes disconnected, the connecting port shall be cleaned with a 70% alcohol swab and new tubing attached at the clave connection.
- 7.10 An in-line filter (last connector before reaching the patient) shall be used for adult patients who have potential or proven central cardiac shunt and for medications specified by the physician or pharmacist.

8.0 Fluids and Additives

- 8.1 Except in the operating room and in emergency situations, all central VAD fluids shall be administered by infusion pump. An infusion pump is recommended for peripheral IV fluids. Refer to departmental guidelines for a list of specific fluids or medications that require an infusion pump.
- 8.2 Non-tunneled triple lumen catheters in oncology patients require at least 10cc/hr infusion through each lumen and are not heparin-locked. For all other adult patients, a 10cc/hr infusion through at least one lumen is recommended.

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8.3 For PICCs, the total infusion rate shall not exceed the following:

Size Catheter	Infusion Rate Limit
2.0 French	100-125 cc/hr
3.0 French	400-450 cc/hr
4.0 French	700-750 cc/hr
5.0 French	>750 cc/hr

- 8.4 The distal port of multi-lumen central VADs shall be used for blood transfusions, colloid fluid, high volume fluid administration or CVP monitoring.
- 8.5 VAD fluids shall be changed every 24 hours, except pressure monitoring flush solutions, which shall be changed as necessary, at least every 96 hours.
- 8.6 TPN shall be administered through a designated VAD, or through a port designated exclusively for hyperalimentation. PPN may be infused through a peripheral or central VAD.
- 8.7 A weaning period is necessary for all TPN infusions (does not include PPN). If TPN runs out, is not available, or the TPN line becomes dysfunctional, D₁₀W shall be infused at the previously ordered TPN rate. A blood glucose level shall be checked 1 hour after D₁₀W is started.
- 8.8 Patients transferred from other institutions with TPN may continue TPN or D₁₀W infusion until evaluated by PESS or their oncology physician. Home cycled TPN patients may bring 1 bag of home TPN to use on their first night of admission.
- 8.9 Patients receiving TPN shall have their intake and output, blood glucose, and weight monitored according to physician order, at least daily.
- 8.10 Anyone adding medication to VAD fluids shall affix a label listing the name and concentration of the additive, date, time and his/her initials. Do not write on the plastic bag.

9.0 Blood Draws and Flushes

- 9.1 Blood return shall be checked on all central VAD lumens daily and more frequently if the patient is receiving medication that is caustic to the vein (see Interdisciplinary Clinical Practice Manual, Vesicant Administration: Monitoring and Management of Extravasation, MDU003, <http://www.insidehopkinsmedicine.org/icpm/MDU003-vesicant.pdf>).
- 9.2 A syringe no smaller than 10cc shall be used to flush any VAD.
- 9.3 Blood may be drawn from peripheral VADs inserted and labeled exclusively for blood drawing (e.g., Coronary Care Unit for CPK curve).
- 9.4 Blood may be drawn from central VADs by individuals with specialized training.
- 9.4.1 On general care units (exception Oncology and Pediatrics) central line blood sampling should be performed by the VAT whenever possible.
- 9.4.2 Blood cultures should not be obtained from central lines routinely. Central lines should be used for blood cultures only if adequate blood cultures cannot be obtained peripherally.
- 9.4.3 If ordered by the Nephrology attending or fellow, Hemodialysis VADs may be used for blood draw (Refer to Dialysis Blood Drawing Procedure).
- 9.4.3.1. Any individual who draws blood from a hemodialysis catheter must have specialized training.
- 9.4.3.2. VAT, where available, shall draw blood from a hemodialysis catheter on non-ICU/IMC units.
- 9.5 Blood shall not be sampled from lumens infusing PPN/TPN. Exception: physician order in RARE instances where another lumen is not available and peripheral blood sampling is not appropriate.
- 9.6 Blood may be drawn from the distal port (largest) of central VADs, ensuring all other lumens are clamped. The first 6cc of blood shall be discarded and the lumen shall be flushed with 10cc bacteriostatic 0.9% Normal Saline Solution (NSS) after sampling if the line is in continuous use.


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9.7 When not in continuous use, saline and heparin shall be used in VAD lumens according to the following schedule:

VAD	Volume to aspirate before use	Always flush with NSS first, then proceed to Heparin flush:		
		NSS	Heparin	Frequency
PIV saline lock	Check for “flash” of blood prior to infusion or flush. Withdraw and discard 2 mL prior to blood specimen collection.	2 mL NSS	_____	After each use, at least q 8 h.
PICC	Check for “flash” of blood (or otherwise verify catheter placement in the vessel) prior to infusion or flush. Withdraw and discard 6 mL prior to blood specimen collection.	10 mL NSS each lumen	6 mL Heparin 10 units/mL each lumen	After each use, at least daily.
			At discharge if not used daily, flush PICC:	
			2 mL Heparin 1000 units/mL each lumen	Weekly
Short-term CVC (single or multi-lumen)	Check for “flash” of blood prior to infusion or flush. Withdraw and discard 6 mL prior to blood specimen collection.	10 mL NSS each lumen	6 mL Heparin 10 units/mL each lumen	After each use, at least q 8 h..
Tunneled or cuffed central VAD (Hohn, Hickman, Groshong)	Check for “flash” of blood prior to infusion or flush. Withdraw and discard 6 mL prior to blood specimen collection.	10 mL NSS each lumen	6 mL Heparin 10 units/mL each lumen	After each use, at least daily.
Port* *Call VAT when a patient with a port is admitted or scheduled for discharge.	Withdraw and discard 6 mL prior to initial access or blood specimen collection. Check for “flash” of blood prior to infusion or flush.	20 mL NSS	6 mL Heparin 10 units/mL	After each use, at least daily.
Port* –deaccessing (needle removal)	Check for “flash” of blood prior to flush.	20 mL NSS	6 mL Heparin 100 units/mL	Monthly

9.8 When not in continuous use, certain VAD devices shall be flushed with NSS and then “locked” with a heparin solution (**withdrawn before use**) to prevent clotting according to the following schedule:

VAD	Volume to aspirate before use	NSS	Heparin Lock	Frequency			
Hemapheresis catheters	Withdraw and discard 6 mL prior to blood specimen collection, medication infusion, or saline flush.	10 mL NSS, each lumen followed by heparin lock	Heparin lock 1000 units/mL, volume according to catheter size:	Oncology patients: BID			
			<table border="1"> <thead> <tr> <th>Catheter size:</th> <th>Volume</th> </tr> </thead> <tbody> <tr> <td>1.8 - 1.9</td> <td>2 mL</td> </tr> <tr> <td>2.2 - 2.3</td> <td>2.5 mL</td> </tr> </tbody> </table> each lumen	Catheter size:	Volume	1.8 - 1.9	2 mL
Catheter size:	Volume						
1.8 - 1.9	2 mL						
2.2 - 2.3	2.5 mL						

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Hemodialysis catheters(HD)	Withdraw and discard 6 mL prior to blood specimen collection, medication infusion, or saline flush.	10 mL NSS flush, each lumen followed by heparin lock	Heparin lock with 1 mL heparin 5000 units/ mL mixed with 1 or 1.5 mL NSS according to catheter size to make: <table border="1" data-bbox="925 499 1172 625"> <thead> <tr> <th>Catheter size:</th> <th>Volume</th> </tr> </thead> <tbody> <tr> <td>1.8 - 1.9</td> <td>2 mL</td> </tr> <tr> <td>2.2 - 2.3</td> <td>2.5 mL</td> </tr> </tbody> </table> each lumen *ICU Patients routinely receive NSS flush only for HD catheters. A specific order must be written for heparin flush.	Catheter size:	Volume	1.8 - 1.9	2 mL	2.2 - 2.3	2.5 mL	Post-dialysis by dialysis staff, at least 3 times per week.
Catheter size:	Volume									
1.8 - 1.9	2 mL									
2.2 - 2.3	2.5 mL									

10.0 Removal and Replacement

- 10.1 A physician order is required to discontinue a VAD.
- 10.2 Only personnel who have demonstrated competency may remove a VAD following specific departmental policies. The removal of a tunneled VAD is a medical act.
- 10.3 Peripheral VADs shall be routinely re-sited every 96 hours or sooner if signs of phlebitis or infection develop.
- 10.4 Central VADs shall not be routinely replaced, but the need for access shall be reviewed daily and the catheter shall be removed as soon as central access is no longer needed.
- 10.5 Central VAD catheter exchange over a guide wire is an acceptable technique for replacing a malfunctioning catheter, changing a multi-lumen to a single lumen catheter, or exchanging a pulmonary artery catheter for a central venous catheter when invasive monitoring is no longer needed and there are no signs of line infection. A new set of sterile gloves shall be worn prior to handling the new catheter.
- 10.6 If there are signs of infiltration or infection at the insertion site or tunnel, or if the patient has a VAD-associated bacteremia, removing the catheter is strongly suggested.
- 10.7 Use of large-caliber temporary VADs, such as introducers/sheath devices (e.g. Cordis), is limited to the ICU, IMC, ED, OR, PACU and CVDL
- 10.8 Central VAD tips shall be cultured if the patient has signs of VAD-associated bacteremia (i.e., site infection or unexplained fever).
- 10.9 Patients with a non-tunneled VAD in place on admission shall have the site assessed by a member of the VAT and if the date of insertion is not known or the site is infiltrated or infected, it shall be removed and a new line inserted at another site within 24 hours.
- 10.10 VADs inserted under non-sterile conditions during an emergency shall be re-sited within 24 hours.
- 10.11 If a central VAD is accidentally removed, pressure shall be applied to the site and a physician shall be notified as soon as possible.

11.0 Documentation

- 11.1 An authorized prescriber shall write orders for the following:
 - 11.1.1 Insert or discontinue VAD
 - 11.1.2 Type of IV fluids and rate of administration
 - 11.1.3 Heparin flush, if necessary.
- 11.2 Insertion shall be documented on the medical record, including gauge and type of VAD, anatomical site, date and time of insertion, and name of operator.
- 11.3 A physician shall document confirmation of central VAD placement, including anatomical location, on the medical record.

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- 11.4 Dressing changes shall be documented on the nursing flow sheet and on a label applied to the dressing.
- 11.5 A nurse shall document VAD site assessment on the medical record every 8 hours and with each dressing change.
- 11.6 VAD flushes shall be documented on the Medication Administration Record (MAR) and the nursing flow sheet, except in Oncology where VAD flushes shall be documented on the Patient Data Flow Sheet or Critical Pathway form.
- 11.7 Reportable conditions, actions taken, and patient response shall be documented on the patient record, including the following:
 - 11.7.1 Accidental removal*
 - 11.7.2 Absence of blood return in a central VAD unresolved after troubleshooting*
 - 11.7.3 Disconnect with blood loss*
 - 11.7.4 Infiltration*
 - 11.7.5 Breach of policy*
 - 11.7.6 Suspected air or catheter embolism
 - 11.7.7 Persistent pain at the insertion site or in the shoulder on the same side of the VAD
 - 11.7.8 Infection
 - 11.7.9 Burning along the VAD tunnel while flushing or during infusion
 - 11.7.10 Pain or ringing in the ears while flushing or during infusion
 - 11.7.11 Swelling/edema
 - 11.7.12 Resistance to flushing or infusion, distended veins on the same side as the VAD
 - 11.7.13 Suspected blood clot
 - 11.7.14 Bleeding at the site
 - 11.7.15 Unsecured VAD, (i.e., broken sutures).
- 11.8 *A Record of Event Form shall be completed for 11.7.1 through 5, as well as for evidence of grade 2 or greater phlebitis, or excessive bleeding/drainage.

12.0 Post-discharge Care

- 12.1 Patients being discharged with a VAD shall have documented home care arrangements made prior to discharge or a continuum of care treatment plan documented.
- 12.2 The home care coordinator or Home Support Services, a branch of PESS, shall be notified prior to patient discharge, to assist with home VAD Therapy.

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<http://www.insidehopkinsmedicine.org/nursing/cnp/340VADdeclot.html>
- Blood and Blood Components, #306
<http://www.insidehopkinsmedicine.org/nursing/cnp/306blood.html>

DEVELOPER

- Hospital Epidemiology and Infection Control Department

SPONSOR

- Medical Care Evaluation Committee

COMMUNICATION AND EDUCATION

This policy shall be communicated to the appropriate JHHS personnel via the following channels:

- Departmental Physician Advisors shall present the policy to their respective Performance Improvement Committees.
- A copy of the policy shall be distributed to all policy manual holders within each clinical department and the policy shall be posted on the JHH intranet in the Interdisciplinary Clinical Practice Manual.
- A self-study slide presentation is mandatory for all medical and nursing personnel who insert central VADs.
- A self-study slide presentation shall be mandatory for all nursing personnel who care for central VADs.
- Educational materials (posters, nursing web-based applications, and in-service sessions) shall be used to communicate the policy.
- This policy will be placed in the Interdisciplinary Clinical Practice Manual on the JHH Intranet site <http://www.insidehopkinsmedicine.org/icpm>. Paper distributions will be made to the Functional Unit Nursing offices in the event of web access difficulty.

KEY WORDS: Vascular access device (VAD), blood stream infection (BSI), catheter, intravenous lines (IV), central lines.

REVIEW CYCLE	▪ Three (3) years	MEDICAL BOARD	Approval Date: 4/16/03 Effective Date: 6/16/03
VICE PRESIDENT FOR MEDICAL AFFAIRS			

Date:			