I. **PURPOSE:**
   A. To provide guidelines for a patient's follow-up care in conjunction with the patient’s local community care team including the cardiologists, primary care physicians, thrombosis team, and cardiac rehab. To provide guidelines for communications between the patient’s local providers and the University of Utah Cardiac Mechanical Support Team / VAD Team.

II. **GUIDELINES:**

A. Clinic Visits
   1. Patient should be seen in the patient’s local cardiology clinic within 1-2 weeks of patient’s return home. As appropriate for patient, patient to be seen initially weekly and then progress to monthly. After 6-month post device implant, patient to be seen every 2-3 months. After 1-year post device patient to be seen every 3–6 months. Frequency of appointments may change based on patient’s condition. Appointment records requested to be fax to the VAD Team at (801)585-5685.
   2. Patient’s primary care physicians will be notified when the patient is discharged home and follow up appointment made with them, as appropriate.
   3. If appropriate, patient to be established with local thrombosis team for Coumadin management and follow-up with team as appropriate. University of Utah Thrombosis Service will communicate with patient’s local team and VAD Team and arrange transfer of care.

B. Driveline Dressing changes
   1. Patient to continue sterile driveline dressing changes for duration of LVAD therapy. Dressing change frequently and type to be determined by VAD Team. No changes to frequency or type of dressing unless approved by VAD Team. Patients are either placed on **daily** sterile gauze dressing change or a **3 times/week** sterile Tegaderm foam dressing change based on patient’s individual needs. If patient is showering daily, the dressing must be changed **daily**.
   2. Driveline exit site should be monitored at every clinic visit for S&S of infection. Important warning signs include: reported driveline pull, increased redness, increased tenderness, fever of unknown origin, and drainage appearance change. VAD Team to be notified immediately for any suspicion of driveline infection. Call 801-581-2121 and ask for VAD Coordinator on call.

C. Echocardiograms (TTE)
   1. Patient should have an echocardiogram (TTE) done every 6 months for first year after implant and then annually as appropriate for patient or as patient’s condition necessitates.
   2. Echocardiogram imaging is a useful tool in evaluation of device function, monitoring cardiac function and monitoring cardiac structural changes. Particular device assessments include; assessing positioning of the inflow cannula (located in LV apex), doppler velocities across the inflow and outflow (located at either the ascending or descending aorta depending on device type), degree of unloading (as assessed by the frequency of AV opening and the degree of chamber dilatation) and monitoring for development of AI. Please fax all ECHO reports to (801) 585-5685.
D. Lab Draws
   1. INR checks, as appropriate, will be scheduled and followed by local thrombosis service, local PCP, local cardiologist or University of Utah Thrombosis Service. Patients may be referred to a local Coumadin clinic to assist in monitoring proper anticoagulation specific to their device. Patient will have INR monitored as appropriate: biweekly, weekly or every other week. Strongly recommended that INR checks should not be less frequent than every other week.
   2. Recommended labs at every clinic visit to include but not limited to: BMP, CBC, PT/INR, LDH, and BNP.

E. Cardiac Rehabilitation
   1. Patients will continue to participate in an exercise program post discharge, as appropriate.
   2. If Cardiac Rehabilitation is not available to the patient, an exercise program should be developed and reviewed with the patient and the VAD team.

F. Contact with the VAD Coordinator
   1. The VAD Coordinator will contact the patient, as appropriate, to review the following:
      a. Weights
      b. BP’s (if applicable)
      c. Pump parameters
      d. Temperature
      e. Driveline appearance
      f. Equipment issues
   2. Records and results of any medical appointments should be faxed to the VAD Coordinator including, but not limited to:
      a. Labs
      b. Heart Failure Cardiologist
      c. Echo results
      d. Electrophysiologist
      e. Primary Care Provider
      f. Endocrinologist
      g. Nephrology
      h. Infectious Disease
      i. Dental
      j. All other medical testing
   3. VAD Team will fax records and results of University of Utah medical appointments to patient’s local care providers including but not limit to:
      a. Labs
      b. Clinic notes
      c. Echo results
      d. Inpatient and discharge notes
      e. Any requested medical testing
   4. Contacting VAD Coordinator
      a. 24-hour on-call VAD coordinator contacted by calling the hospital operator at (801)581-2121 and ask for the “VAD Coordinator on-call to be paged.”
      b. VAD office at (801)585-3188 Monday- Friday 8:00am to 4:30pm
      c. Patients and caregivers instructed to call the hospital operator 801-581-2121 to have the VAD Coordinator on-call paged for urgent issues.

G. Medications
   1. Notification to the VAD Team of any cardiac or non-cardiac medication changes made by a physician other than the VAD team to ensure continuity of care.
2. Per the VAD Discharge instructions, the patient is aware of their responsibility to inform the VAD Coordinator of appointments with other healthcare providers and all medication changes ordered by such providers.

3. Antibiotics
   a. In general, preoperative and post-operative prophylactic antibiotics are recommended with all invasive dental and surgical procedures to prevent septicemia, endocarditis, and device infections in VAD patients. Refer to the ACC/AHA 2008 Guideline Update on Valvular Heart Disease: Focused Update on Infective Endocarditis. http://circ.ahajournals.org/content/118/8/887

4. Diuretics
   a. Diuretics should be used carefully in the VAD patient and VAD flows should be monitored to ensure that the patient is not being overly diuresed or dehydrated.

5. Anticoagulation
   a. Anticoagulation should be closely monitored for the life of the VAD. If a patient is required to be off anticoagulation for a procedure, VAD team should be notified prior to changes, and proper transitioning agents such as low molecular weight heparin (LMWH) and heparin should be instituted, as appropriate.

6. The use of any medication should be carefully monitored to ensure no interaction with the patient’s anticoagulation, other medications, or kidney and liver functions.

H. Driving
1. Patients will not be allowed to drive until approval by the VAD physician.

I. Routine Health Maintenance
1. The following tests/procedures to be done on all VAD patients yearly, or as deemed appropriate or recommended by physician.
   a. Routine OBGYN follow up
   b. Mammogram – refer to American Cancer Society Guidelines
   c. Stool for occult blood
   d. Colonoscopy – refer to American Cancer Society Guidelines
   e. 24-hour urine for creatinine clearance and protein (and microalbumin if diabetic).
   f. ECHO, EKG, CXR, and urinalysis.
   g. Dermatology screening.
   h. Ophthalmology screening
   i. Thyroid studies
   j. Prostate specific antigen

REFERENCES: