

Implantable Ventricular Assist Devices (VAD)

8.20

Policy 8.20

EMT/ ADVANCED EMT / PARAMEDIC STANDING ORDERS

Patient Care Goals

- Rapid identification of, and interventions for, cardiovascular compromise in patients with VADs
- Rapid identification of, and interventions for VAD-related malfunctions or complications

Indications

- Adult patients that have had an implantable ventricular assist device (VAD) including Left Ventricular Assist Device (LVAD), right ventricular assist device (RVADs); and biventricular-assist devices (BiVADs) and have symptoms of cardiovascular compromise
- Patients with VADs that are in cardiac arrest
- Patients with VADs that are experiencing a medical or injury-related event not involving the cardiovascular system or VAD malfunction

Contraindications

- Adult patients who do not have a VAD in place.

Assessment:

- Assess for possible pump malfunction
 - Assess for alarms
 - Auscultate for pump sound “hum”
 - Signs of hypoperfusion including pallor, diaphoresis, altered mental status
- If the VAD pump has malfunctioned:
 - Utilize available resources to troubleshoot potential VAD malfunctions and to determine appropriate corrective actions to restore normal VAD function:
 - Contact the patient’s VAD-trained companion, if available,
 - Contact the patient’s VAD coordinator, using the phone number on the device
 - Check all the connections to system controller
 - Change VAD batteries, and/or change system controller if indicated
 - Have patient stop all activity and assess for patient tolerance
 - Follow appropriate cardiovascular condition-specific protocol(s) as indicated

Treatment and Interventions:

- Manage airway as indicated
- Cardiac monitoring
- IV Access
- Acquire 12-lead EKG
- If patient is experiencing VAD-related complications or cardiovascular problems, expedite transport to the medical facility where VAD was placed if patient’s clinical condition and time allows
- If patient has a functioning VAD and is experiencing a non-cardiovascular-related problem, transport to a facility that is appropriate for the patient’s main presenting problem without manipulating the device

Protocol Continues

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Treatment and Interventions - continued:

- If patient has a functioning VAD and is experiencing a non-cardiovascular-related problem, transport to a facility that is appropriate for the patient's main presenting problem without manipulating the device
- If patient is in full cardiac arrest
 - CPR should NOT be performed if there is any evidence the pump is still functioning. The decision whether to perform CPR should be made based upon best clinical judgment in consultation with the patient's VAD-trained companion and the VAD coordinator (or medical control if VAD coordinator unavailable). CPR may be initiated only where:
 - You have confirmed the pump has stopped AND troubleshooting efforts to restart it have failed, AND
 - The patient is unresponsive and has no detectable signs of life

PEARLS

- You do not need to disconnect the controller or batteries in order to defibrillate or cardiovert
- You do not need to disconnect the controller or batteries in order to acquire a 12-lead EKG
- Flow though many VAD devices is not pulsatile and patients may not have a palpable pulse or accurate pulse oximetry
- The blood pressure, if measurable, may not be an accurate measure of perfusion.
- Ventricular fibrillation, ventricular tachycardia, or asystole/PEA may be the patient's "normal" underlying rhythm. Evaluate clinical condition and provide care in consultation with VAD coordinator
- The patient's travel bag should accompany him/her at all times with back-up controller and spare batteries
- If feasible, bring the patient's Power Module, cable and Display Module with patient to the hospital
- All patients should carry a spare pump controller with them
- The most common cause for VAD alarms are low batteries or battery failures
- Although automatic non-invasive blood pressure cuffs are often ineffective in measuring systolic and diastolic pressure, if they do obtain a measurement, the MAP is usually accurate
- Other VAD complications:

• Infection	• Arrhythmias	• CHF
• Stroke / TIA	• Cardiac Tamponade	• Aortic Insufficiency
• Bleeding		

Protocol Continues

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Key Documentation Elements

- Information gained from the VAD control box indicating any specific device malfunctions
- Interventions performed to restore a malfunctioning VAD to normal function
- Time of notification to and instructions from VAD-trained companion and/or VAD Coordinator

Performance Measures

- Identify and mitigate any correctable VAD malfunctions
- Perform CPR for patients in cardiac arrest when indicated

Resources:

Recommended Unit Resource: Print EMS Guide for Mechanical Circulatory Support Organization and place in all ambulances (40 pages). This guide has excellent information and trouble shooting guidance for VAD devices that patients could have out in the public. Access the resource guide at: <http://www.mylvad.com/sites/mylvadrp/files/Field%20Guides%20Master%20Document.pdf>.

Download onto your ambulances laptops the "MyLVAD Hospital Locator App



References:

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