

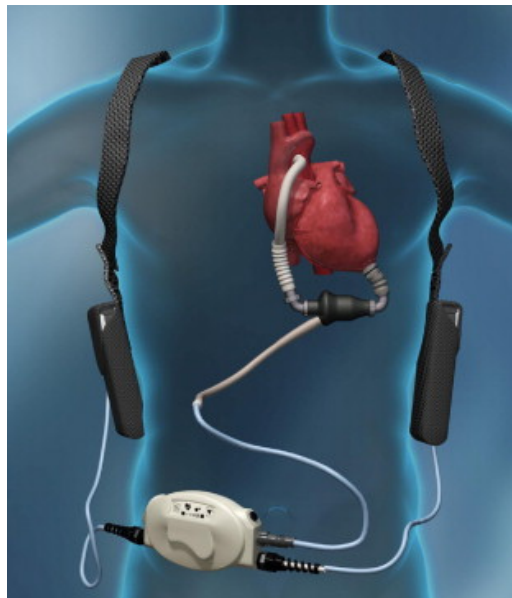


Ventricular Assist Devices (LVAD)



Escambia County, Florida - ALS/BLS Medical Protocol

A ventricular assist device is a mechanical pump that is used to support heart function and blood flow in people who have weakened hearts. The device takes blood from the lower left chamber of the heart and helps pump it to the body and vital organs just as a healthy heart would.



This protocol applies to the management of all patients who have a left ventricular assist device (LVAD) implanted. **CAUTION MUST be used in treating these patients due to the surgically implanted device.**

This protocol is written in a different format due to these patients needing a different style of treatment.

Basic Life Support


- Establish patent airway.
- Supplemental oxygen if any respiratory signs or symptoms are present.
- Listen to heart sounds. In a functioning device you should hear a continuous whirling sound.



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- Locate the device usually found at the patient's waist. Look at the controller and identify which device is in place. Locate the colored sticker and match this to the color coded EMS guide found in the Medical protocol appendices.
- Using this guide, intervene appropriately based on the type of alarm and device.
- Record and monitor vital signs.

In a majority of these patients a pulse will not be palpable. This occurs because the LVAD unloads the ventricle in a continuous fashion and therefore the aortic valve may not open with each contraction.

A manual blood pressure may not be obtainable, but with an automated cuff you will be able to obtain a pressure with a narrow pulse pressure. Your treatment of the patient will be based on the mean arterial pressure. In these patients, the normal range for mean arterial pressure is greater than 60 and less than 90.

Pulse oximetry may not be accurate due to the continuous flow nature of the LVAD.

- If the patient is unconscious, unresponsive to stimuli, and pulseless listen to the patient's chest. If you hear the whirling sound of the LVAD, **DO NOT PERFORM CPR.**

The LVAD device has been surgically placed into the left ventricle and CPR could dislodge this device, causing death. If you cannot hear the device then CPR should be performed per cardiac arrest protocol.


- Record blood glucose level if any weakness, altered mental status or history of diabetes as per existing protocol.
- Nothing by mouth, unless patient is known diabetic with hypoglycemia and is able to self-administer oral glucose, or a glucose containing beverage.
- **Above all else please remember that these patients, along with their families, have been well trained in the care of themselves and their devices. LISTEN TO THEM!**



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- Call the number on the device for the LVAD coordinator on call, ASAP.
- Patients always carry a “backup bag” which contains 2 extra fully charged batteries, and a second controller. Please make sure to always bring this emergency backup equipment with them to the hospital.

Advanced Life Support

If advanced airway/ventilation management is needed, perform these interventions:

- Perform cardiac monitoring
- Evaluate a 12 lead ECG if chest pain or ischemic equivalent symptoms (i.e. abdominal pain above the umbilicus, nausea, dizziness, chest tightness or shortness of breath.)
- If patient meets STEMI criteria on 12 lead ECG, follow Protocol.
- Dysrhythmia's should be treated in accordance with appropriate Dysrhythmia Protocol after verification of a functioning device.
- For conscious electrical cardioversion, the patient may be sedated.
- Record and monitor continuous O2 saturation, sometimes not obtainable with LVAD patients. In addition you may utilize End Tidal Co2 capnography.
- IV normal saline, KVO or IV lock.
- If evidence of dehydration, bolus 250 ml of Normal Saline with a max of 500 ml of NS until patient is normotensive, ($=$ or > 65 MAP).

If patient shows signs of Congestive Heart Failure (crackles on auscultations of lungs, JVD or peripheral edema) withhold fluid bolus.


- If hypoglycemic follow Protocol.
- If patient suffering from severe nausea or vomiting, follow Protocol.



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- Transport these patients to the closest LVAD center. **Bring the significant other or caretaker if possible to act as an expert on the device, especially if the patient is unconscious or unreliable.**
- **Minimize on scene time when possible.**


Please refer to the LVAD EMS guide located in the appendix for further information on field care of these devices.



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