



## ACMC LVAD Guide

**Current types: HeartMateII (old&new controllers), HMIII, HeartWare, Jarvik2000, DuraHeart**  
**Refer to specific device information**

**Indications:** AHA/ACC stage D and NYHA class IV heart failure. Implanted LVADs are typically either Destination Therapy (not eligible for heart transplant) or Bridge to Therapy (awaiting heart transplant). Very rarely will implanted LVADs be used as Bridge to Recovery therapy (heart may recover when given the opportunity to “rest”).

**Contraindications:** RV failure (may receive bivard instead); multi-organ failure; lack of caregiver support, others per physician specification. Patients and their families go through extensive screening before LVAD placement – this is not an emergently placed device.

**Insertion:** Typically via sternotomy, rarely via thoracotomy. Apex of heart is inflow site, aorta is outflow site.

**Complications:** Bleeding, return to OR, neurologic events, right heart failure → bivard, driveline infection, hepatic/renal dysfunction, hemolysis, pump thrombosis, respiratory failure, arrhythmias, A/V malformations (GIB and nose bleeds very common).

### Need to Know:

- \*Devices are preload dependent, afterload sensitive – right heart failure is complication of increased LV flow
- \*Arrhythmias will affect output and need to be treated aggressively
- \*The driveline is the patients’ life line – avoid tension, kinks, catching on anything
- \*Programmed flows are only changed by VAD coordinators, MDs, CVICU RNs with orders to do so.
- \*TRENDS are most important – ensure sending RN provides a few hours of trends and goals.

**Main concerns in transport:** consider *reason* we are transporting them. Are they requiring heart transplant/pump replacement? Or are we just bringing them to their implant center for battery/controller issues or driveline infection? Do they have other health care needs and just happen to have an LVAD?

### \*Recent implant

May still have invasive monitoring in place (art line, PA catheter) and may still be very critically ill (intubated, nitric oxide, chest tubes, etc). HF/CTS physicians will have tight parameters for drip rates&hemodynamic goals.

### \*Distant implant

Patient/caregiver will likely be your resident expert on the device. If possible, always allow primary caregiver to accompany on transport.

**Power Sources:** Either AC power or batteries. Battery life and sequence of depletion are device specific.

**\*PATIENT SUPPLIES NEEDED: patient should always have in their possession the following:**

- Extra controller – ensure this is programmed for same flow as primary controller
- Extra batteries
- Battery module

**\*ASSESSMENT:**

- \*√ blood pressure by arterial line or manual cuff w/doppler @ brachial artery (first sound you hear is the MAP).
- \*Radial is secondary doppler BP site.
- \*Patient may be pulsatile, however usually not. Pulses are dopplered and often sound like constant flowing.
- \*Continuous flow devices will present with a “whirling” sound when heart sounds are auscultated.
- \*Acceptable MAP parameters: typically 70-90 or per heart failure physician direction. Note trends.

**TROUBLESHOOTING:**

- \***IF PUMP STOPS: ensure no loose connections → change batteries → change controller → call VAD coordinator.**
- \***ALARMS: alarms are device specific – refer to accompanying reference material or contact VAD coordinator.**

**RESUSCITATION:**

- \***VF/VT ∅ Pulse:** Typically NO CPR. Defibrillation and ACLS drugs OK. Keep pads away from pump pocket
- \***Asystole/PEA:** Typically NO CPR. Defibrillation and ACLS drugs OK. Keep pads away from pump pocket
- \*Arrhythmias, hypotension, respiratory distress, altered LOC, etc: **Treat patient!**

**Things to consider:**

- Low flow+high CVP: consider RV failure, pHTN, volume overload.
- Low flow+low CVP: consider VOLUME
- High flow+high PI+high pump power: consider pump thrombus