Ventricular Assist Devices

Signs and Symptoms

- Weakness
- Anxiety
- Signs of poor perfusion
- Patient may not have a palpable pulse
- Patient may not have a blood pressure

Differential

- VAD suspected related emergency
- Non-VAD related emergency

WARNINGS

! Vital Signs are an unreliable tool on VAD patients. Circulatory status should rely on assessment of LOC, Skin Color & Temperature, ETCO2 and Capillary Refill.

! Do NOT initiate CPR compressions without consulting the VAD guide.

Care: Adults and Pediatrics

B E I P

Follow general directive #3, Orders for all Patients.

Use VAD guide to confirm VAD type.

Contact Medical Control early for treatment and destination decisions. Have VAD Guide readily available to review treatment plan with medical control.

Assess VAD operation by listening over the apex of the heart. Assess the VAD for battery/power status.

E I P

Start an IV of **Normal Saline** at a KVO rate

I P

Initiate cardiac monitoring

History

VAD implantation for one of the following purposes:

- **Bridge to transplant** — VAD is used to support patients with heart failure until a suitable donor heart can be found for a heart transplant.
- **Bridge to recovery** — VAD is used to support the patient's circulation until the native heart recovers sufficiently, at which time the VAD can be removed.
- **End destination therapy** — VAD is used to support the heart failure patient's circulation for the rest of their life.

! Absent Blood Flow

E I P

Do not delay chest compressions if VAD Guide allows for CPR.

Ventilate with 100% Oxygen Initiate VAD Guide BLS resuscitation measures.

B E I P

Consult with Medical Control for medication and treatment options, destination determination.

! Inadequate Blood Flow
Hypo-perfusion (unrelated to VAD)

E I P

Give **Normal Saline** 500ml IV Bolus.

Consult Medical Control for medication and treatment options, destination determination.

Other VAD Related Emergency

B E I P

Refer to VAD Guide for VAD specific management.

Consult Medical Control for medication and treatment options, destination determination.

P

- Consider conference call between Medical Control and patient's VAD coordinator.

E

- See VAD Field Guide for which devices utilize a hand pump to keep the device running.

A

- Stabilize the VAD's cannula, hoses, and tubes — prevent from pulling on the components during transport.

R

- Keep spinal immobilization straps under the VAD cables/device to avoid possible disconnection.

L

- It is not uncommon for VAD patients to be pulseless and be stable with adequate perfusion so you can not rely solely on checking for a pulse or pulse oximetry. $ETCO_2$ monitoring should be used to determine the presence of perfusion.

S

- VADs are volume/preload dependent devices; establish IV as soon as practical.
- Use overall appearance and level of consciousness to steer your assessment and decision-making.
- All devices require batteries or AC power at all times.
- When dealing with a traumatic event, evaluate for damage to the VAD device and be suspicious for possible "internal" damage, consider a VAD capable/Level 1 Trauma Center.
- Bring ALL backup power sources/extra batteries with the patient including their PBU (power base unit) with the Heartmate II and Heartmate XVE devices.
- A "low flow" alarm is common when VAD patients are in a low volume state and are showing signs of hypo-perfusion.
- Patients may still have some native heart function and may display an unstable EKG rhythm while the LVAD is providing their circulatory support.
- Look for other causes of unresponsiveness e.g. diabetic/OD/trauma.