When a VAD Goes Bad
Assessing and Managing LVADs

Gathering of Eagles XIX
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159 Implantation Centers approved by CMS

Barnes-Jewish Hospital approved 10/27/2003

- One of the oldest implantation centers

- 300 implants currently

- Only 9 live within the city limits of St. Louis
What about Procedures?

* Defibrillation – Yes
* Pacing – Yes
* CPR – Only if absolutely necessary
http://www.mylvad.com/medical-professionals/ems
WHEN THE HOSPITAL
LET'S PARAMEDICS DO THE X RAYS
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LVADs Gone Bad & LifeVests Messed

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City of Miami & Key Biscayne Fire Rescue
So what else can go wrong?

- Don’t get tunnel vision
- Even with complex device, the commonest things are still the commonest
- So start the basics, take a deep breath and think
Case 1: Bad VAD?

- 55 yr old man with Heartmate II brought to ED unconscious, unresponsive
- No pulse
- ED started CPR & ACLS
- No change at 30 minutes
- **Glucometer check = 10**
- Autopsy: ruptured aortic VAD connection
Case 2: Bad VAD?

- 50 yr old man with HeartMate II unconscious, unresponsive, no pulse
- CPR & ACLS by EMS and ED
- No ROSC
- Autopsy:
  - Massive upper GI bleed
  - Ruptured aortic VAD connection
Suspected Cardiac Arrest with VAD:

TEAM WORK

- Airway/breathing
- Assess rhythm, ETCO2, glucose, skin perfusion
- Start IVF
- Help hysterical spouse to help you
- Call VAD Coordinator
- LISTEN to spouse and VAD coordinator
- LISTEN for machinery sound
- Try electronic BP check
- Last: CHEST COMPRESSIONS—is Autopulse band safer??
Case 3: Bad VAD???
What is this?

- 57 yr old man unconscious, no pulse
- wearing device that says “Life Vest”
- EMS starts CPR, agonal rhythm
- Hysterical wife: “It makes his heart pump.”
- EMS stops chest compressions
- A&B, glucose check, IV, epi, Fluid bolus
- Electronic BP: 194/34
- ETCO2: 40
- “Rescue 2 to JMH: we are bringing a VAD patient...”
Life Vest™

- External defibrillator worn under clothes
- Senses rhythm, releases gel onto skin
- Gives warning to patient who then triggers the shock
- Bridge to implanted defibrillator:
  - For VF survivor with new stent
  - For low EF CHF patient during trial of medical therapy
- **DO NOT CUT THESE OFF. IF YOU TAKE VEST OFF, PUT ON YOUR DEFIB PADS.**
Our MFR patient:

- Wife later said “he jumped up, ripped off the vest and collapsed”

**ELECTRONIC NIGHTMARE:**
- Unclear medical device
- Miscommunication by hysterical witness
- Monitor gave 3 BP readings and good ETCO2 numbers
Complex medical devices

- EMS education
- High risk, complex skill, RARELY IF EVER used
- Need clear and SHORT algorithms for EMS
- Need “just in time” info on EMS laptop or quick link
If you want to know more

- VADs: Mecham CC: PEC 2013; 17:223-229
- VADs: EMS Guide from Mechanical Circulatory Support Organization
- Life Vest: www.zoll.com