



When a VAD Goes Bad

Assessing and Managing LVADs

Gathering of Eagles XIX

February 17, 2017

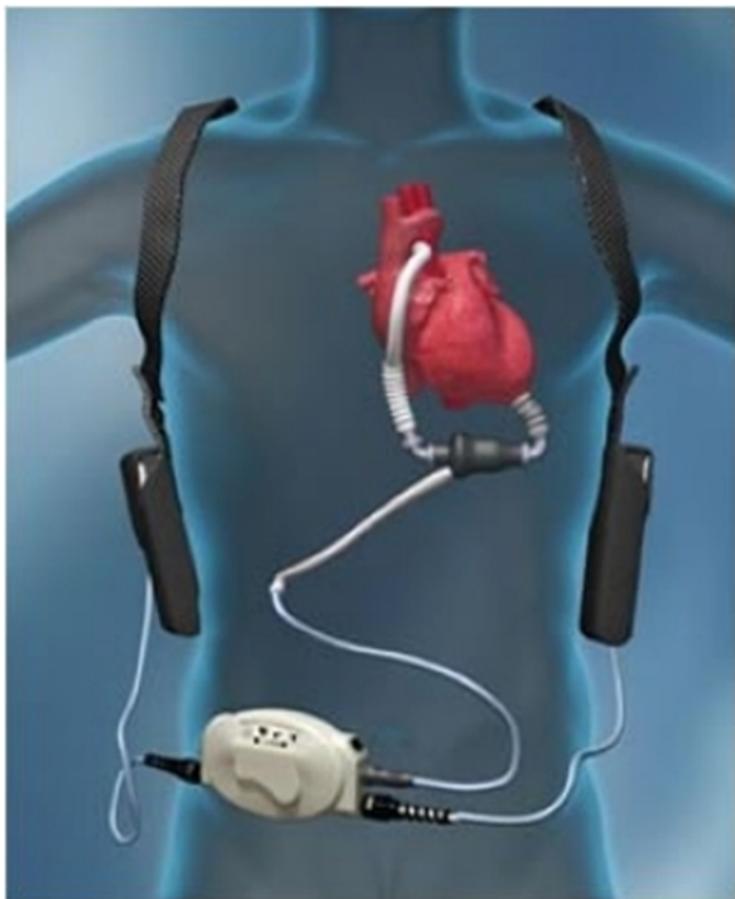
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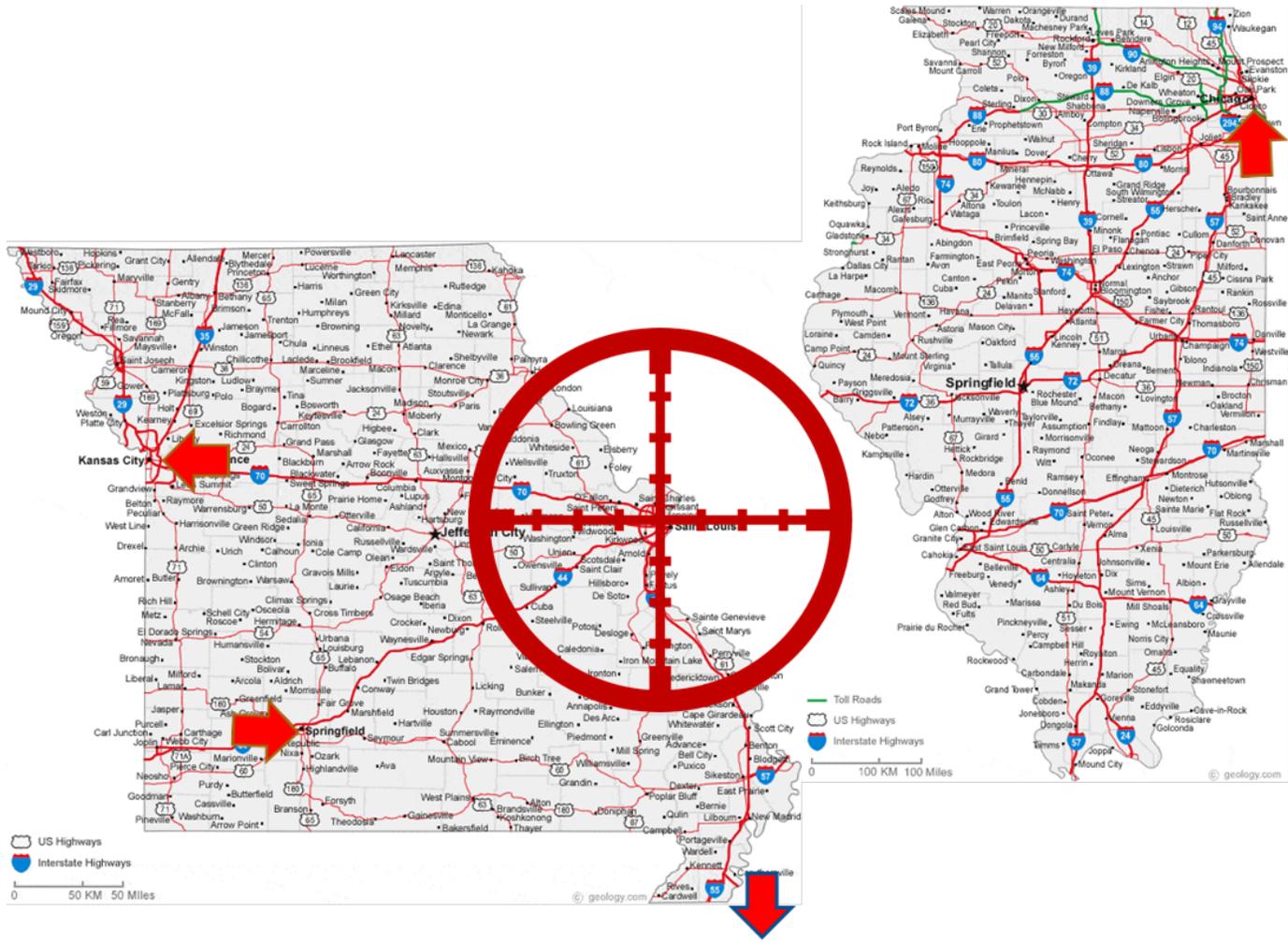




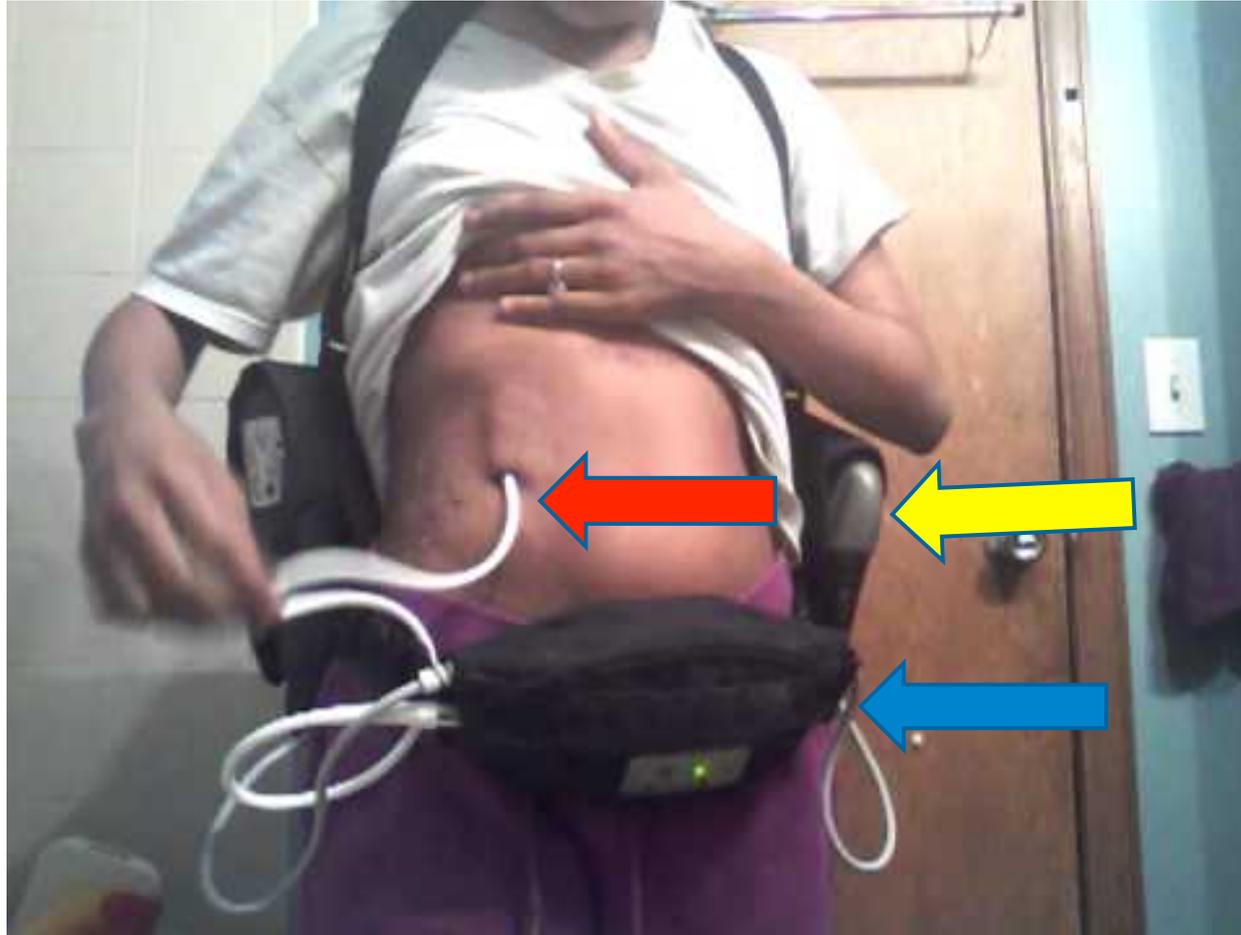


- * 159 Implantation Centers approved by CMS
- * Barnes-Jewish Hospital approved 10/27/2003
 - ▶ One of the oldest implantation centers
- * 300 implants currently
 - ▶ Only 9 live within the city limits of St. Louis















What about Procedures?

- *Defibrillation – Yes
- *Pacing – Yes
- *CPR – Only if absolutely necessary



<http://www.mylvad.com/medical-professionals/ems>

EMS Guide January 2016/17



M ECHANICAL
C IRCULATORY
S UPPORT
O RGANIZATION

This guide is produced by MCSO –
The Mechanical Circulatory Support Organization
It is produced by VAD Coordinators from some of
the largest and most successful VAD Implantation
hospitals in the US. It has been vetted by experts
on VADS in Air Medical Transport and EMS. It
should not replace the operator manual as the
primary source of information.

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LVADs Gone Bad & LifeVests Messed



Kathleen Schrank, MD, FACEP, FACP
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??

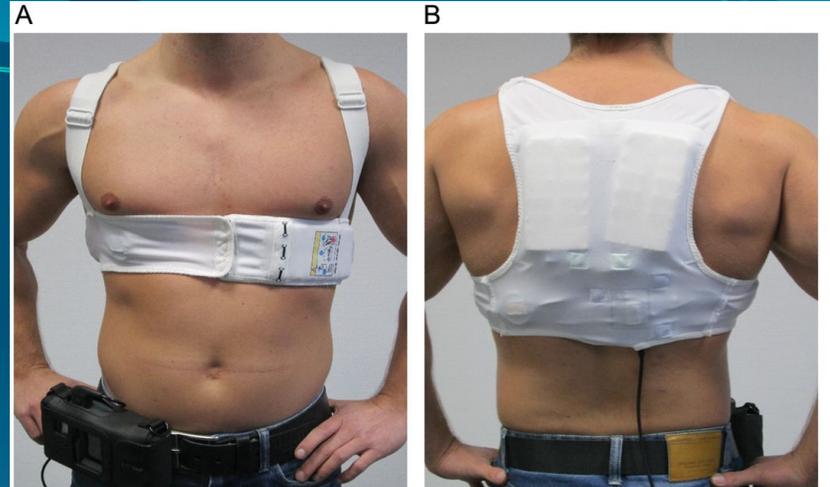
Case 3: Bad VAD???

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**