

Vents, LVADs, and Hospice Oh My!

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Disclosure: *White, Patrick, M.D.*

Patrick White M.D. has financial interests to disclose.
Potential conflicts of interest have been resolved.

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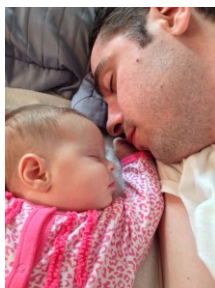
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Objectives

- 1) Identify at least 2 different techniques for conducting a terminal extubation in the home setting
- 2) Describe 3 key elements to successfully discontinuing a LVAD in the home setting



Two Common Types of Terminal Ventilator Weans

Immediate Extubation

- Extubation with no previous decrease in ventilatory assistance and without the breathing tube.
- Some previous studies had indicated better satisfaction and lower rates of complicated grief in patients who died without the endotracheal tube

Terminal Wean

- Extubation procedure with a gradual decrease in the amount of ventilator assistance which could include oxygen level, tidal volume, PEEP, respiratory rate, or initiation of spontaneous breathing with a T-piece
- Other studies had suggested lower symptom burden in patients with a terminal wean and higher family satisfaction

Gerstel E, Engelberg RA, Koepsell T, Curtis JR. Duration of withdrawal of life support in the intensive care unit and association with family satisfaction. 2008; Am J Respir Crit Care Med 178:798-804

Incremental Weaning of Life-Sustaining Therapies

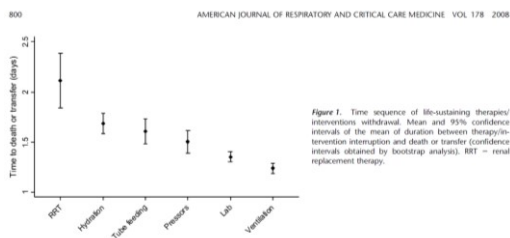


Figure 1. Time sequence of life-sustaining therapies/interventions withdrawal. Mean and 95% confidence intervals of the mean of duration between therapy/intervention interruption and death or transfer (confidence intervals obtained by bootstrap analysis). BRT = renal replacement therapy.

Gerstel E, Engelberg RA, Koepsell T, Curtis JR. Duration of withdrawal of life support in the intensive care unit and association with family satisfaction. 2008; Am J Respir Crit Care Med 178:798-804

Lesson's Learned from Home Terminal Weans



- Over 30 years of nursing experience with the majority in oncology and hospice
- Over 10 years of experience as a Nurse Practitioner
- First home extubation in 2013
- First LVAD deactivation in 2015
- 7 patients weaned off ventilator while on home hospice
- Cared for multiple patients with LVADs in home hospice and assisted with turning off 3 in the home setting.

Role of the Interdisciplinary Team

- Primary or Specialist caring for patient prior to hospice
- Hospice Medical Director
- Nurse Practitioner
- Hospice Nurse
- Hospice Social Worker
- Hospice Chaplain
- Respiratory Therapist

When is the RIGHT time the wean?

- Most important: What is the **Patient's Goal**
 - Example: One patient chose Good Friday
- After goals of care clarified and include all significant others to patient
- IDT Meeting prior to date of wean
- When all MDs are notified, orders received, and Medications/supplies delivered to the home
- When all pertinent staff available
- When patient and family are ready

Diagnoses of Pt's with Recent Vent Weanings

- 4 patients with ALS
- 1 patient with Muscular Dystrophy
- 2 patients with Emphysema

Trilogy



Case Scenario #1

- 67 y/o man with end stage ALS with trach and ventilator dependent at home for the last 14 months.
- He shared with his wife that when he is no longer able to communicate with eyes, not to keep him on the home vent
- Multiple conversations with MSW, Chaplain, personal Pastor, Myself-NP, and RN in the home. Medical Director approved vent wean.
- Present-Medical Director, NP, RN, personal pastor and 2 adult children
- Administered Versed 10 mg and Morphine Sulfate 10 mg subcutaneous every 10 min. Gradually turned the Rate on ventilator

Scenario #1 continued

- Administered Hyoscyamine 0.125 mg sublingual and suctioned trach prior to beginning.
- Administered Versed 10 mg and Morphine Sulfate 10 mg subcutaneous every 10-15 min. Gradually turned the Rate on ventilator after meds given.
- He was weaned off the ventilator over approximately an hour and died peacefully with family at bedside.

Scenario #2 Vent Wean in Home

- 26 y/o on a home ventilator since age 16 due to advanced cystic fibrosis complicated by multiple admissions in the last year due to pneumonia.
- He discussed with PCP, pulmonologist, and family last admission that he does not want to return to the hospital and he enrolled in home hospice with the goal to wean off the ventilator at home with his mother (primary caregiver) present.
- A full IDT meeting discussed the plan and NP confirmed with Pulmonary and PCP patient's intent and they agreed that he was making an informed and rational decision.

Scenario #2 Home Vent Wean

- NP made home visit with patient and mother to review his goals and to discuss how he would be weaned from the vent in the home. His goal was to be totally unresponsive before we started to change vent settings.
- He chose Good Friday to be weaned off the vent.
- Chose to have his private duty nurses (who have cared for him for years) and his mother present
- Medical Director, NP, RN, and hospice chaplain present
- An IV was started and procedure explained to patient and mom again prior to starting.
- Prior to wean he spent time with each of his 3 dogs and then his mom and private duty aides.

Scenario #2 Home Vent Wean

- When he said he was ready, his trach was suctioned and versed 10 mg, Morphine Sulfate 10 mg IVP, anti-cholinergic administered. The versed and morphine were repeated every 10-15 min. x4 doses
- The RR on the ventilator was gradually decreased after he was given each dose of versed/morphine.
- He died peacefully with his mother and private duty aides present at bedside.
- We left the room periodically to give them time with him during the vent wean.

Procedure to Wean Vent in the Home

- Review the plan with patient if alert and family prior to wean and educate on end of life signs
- IV access vs. Subcutaneous access? **My vote is IV**
- Let patient and family spend time saying goodbye
- If trach be sure suction before begin and prn
- Administer 10 mg versed and 10 mg morphine IVP
- Wait 10-15 min. repeat prn
- When patient not responding to verbal or tactile stimuli
- Decrease vent rate setting by 2 and decrease O2 %
- Give family time to adjust and then repeat steps until vent rate at 0 and O2 off.

Procedure to Wean Vent in the Home

- Disconnect the vent tubing from trach or remove the Face Mask if CPAP.
- Continue to support family as patient declines
- May stop breathing immediately if was 100% dependent or may have Cheyne-Stokes. Educate family
- Stay calm and give them time alone with patient if they are comfortable. Let them be the guide
- If any labored breathing or appears in distress repeat Versed 10mg/morphine 10 mg IVP
- RN keeps records of all meds given and times for the EMR.

What is a Left Ventricular Assistive Device?

- LVAD: Left Ventricular Assist Device
- An LVAD is a mechanical circulatory support device that is used to partially or completely replace the function of failing left ventricle
- The goal of LVAD therapy is to pull blood from the failing ventricle and provide flow to the systemic circulation

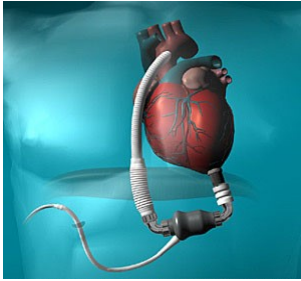
Indications for LVAD

- Bridge to Transplantation (BTT)
 - Nonreversible Left Heart Failure
 - Imminent risk of death
 - Candidate for cardiac transplantation
- Destination Therapy (DT)
 - NYHA Class III/IV heart failure
 - Optimal medical therapy 45 of last 60 days
 - Not candidate for cardiac transplant (age, comorbidities, noncompliance)

Hospice: Why and When

- Complications from LVAD and or Drive line infections no responding to anti-biotics
- Hypercoagulable: clotting effecting LVAD functioning
- Patient wants to die at home vs. hospital

LVAD



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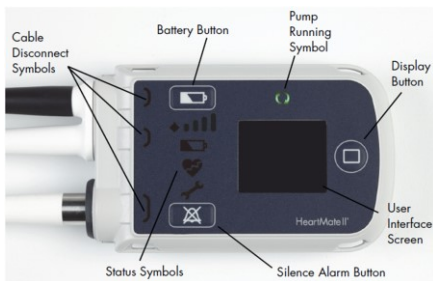
External Components: Power Sources



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Pocket Controller



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Special Considerations Prior to Date

- AICD deactivated?
- Signed DNR order?
- Who does patient want to be present?
- Have adequate Levsin, Morphine, Versed
- IV access? I recommend it!!!
- Review Goals of Care more than once and the day of
- Most patients and family know how to turn off, but.....
- Explain what to expect to patient and family
- PRE-MEDICATE prior to deactivating LVAD!!
- Chaplain or Social Worker available

Steps to deactivate LVAD in the Home



Scenario #3 LVAD deactivation in the home

- 67 y/o man with ischemic cardiomyopathy with EF of 12 %, history of V-Tach, AICD placement, and eventually destination LVAD placement
- Referred to hospice due to drive line infection, sepsis, and clotting. He initially declined hospice and went home on home care.
- NP called emergently due to patient's LVAD alarming every hour for the last 16 hours and patient refused to go to the hospice.
- Cardiologist called and asked to have help deactivating LVAD in the home

Scenario #3 LVAD Deactivation in Home

- Patient's wife had been trained on turning of the LVAD in the home, but was not comfortable
- NP confirmed AICD already activated and patient had a DNR order in the home. Medical Director approved the deactivation in the home
- NP met with the patient, wife, and 4 adult children in the home. Patient alert and oriented and he had discussed turning off the LVAD with family and cardiologist and all in agreement
- NP instructed the procedure and consulted with cardiologist LVAD specialist.

Case scenario #3

- Patient refused to have an IV started and initially he refused to take morphine. NP instructed that once the LVAD is turned of there would be no circulation to give him comfort. He agreed and took morphine 20 mg po
- After 15-20 min. NP with assistance of LVAD coordinator on the phone. Turned off the alarms on the LVAD and then disconnected the drive line from power pack.
- He initially did not show any symptoms, but then had a some signs of deep breaths and NP gave another morphine 20 mg Sublingual.
- Patient died in a matter or 5 minutes with his family at his bedside

Scenario # 3 LVAD deactivation in home

- A Very emotional event for family and can be for the provider
- Very important to de-brief after deactivation of LVAD or ventilator
- Discussion of how the grandchildren were told of grandpas death that afternoon
- Bereavement discussion
- Staff education on LVADs very important

LVADs in Hospice

Circ Heart Fail. 2016; 9(10): 1-11

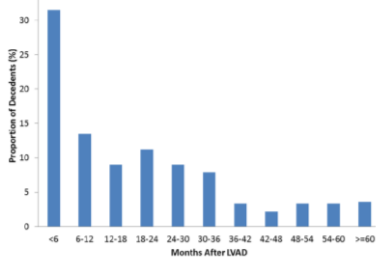


Figure 2. Time from DFE LVAD Implantation to Death Among Decedents
The proportion of decedents that died by months after LVAD implantation is shown. As some patients implanted with DFE LVAD in the study period were still alive at the end of the study period, these proportions do not represent expected survival after DFE LVAD.

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Cause of Death with LVAD

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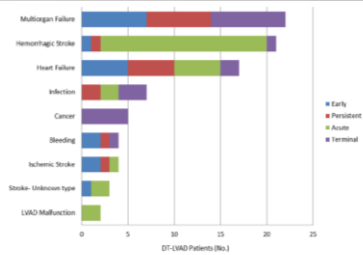


Figure 3. Cause of Death in Patients with DFE LVAD
The number of patients (N, n=10) experiencing various causes of death and their associated clinical course prior to death are shown. The 10 patients with a known clinical course and cause of death are represented.

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Clinician Attitudes Towards LVAD Deactivation

- The majority of cardiologists (60%) believed that LVADs should only be deactivated when death is imminent compared to only 2% of HPM physicians.
- Only 26% of cardiologists vs 92% of HPM physicians felt comfortable ordering elective discontinuation
- 13% of cardiologists believed that LVAD deactivation was the same as either euthanasia or physician-assisted suicide!

McIlvennan CK, Wordingham SE, Allen LA et al. Deactivation of Left Ventricular Assist Devices: Differing Perspectives of Cardiology and Hospice/Palliative Medicine Clinicians. *J Card Fail*. 2017 Sep;23(9):708-712.

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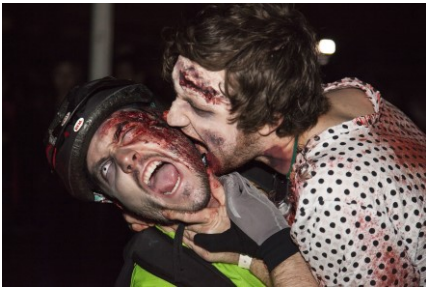
Final Case of Mr. G.

- 60 y/o man with pancreatic cancer
- Gradual decline over 6 months months
- Severe agitation over 48 hours
- Pronounced caregiver fatigue
- Goals for sedation

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Where We Started



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Where We Ended (Thank God)



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Thank You!



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