	Treatment Protocol	4403
	Effective April 1, 2018	**Expires** March 31, 2019
Policy: **Mechanical Circulatory Support Devices**	Approval: Medical Director **Reza Vaezazizi, MD**	Signed
Applies To: **PSP, EMT, AEMT, PM, MICNH, BHP, EMS System**	Approval: REMSA Director **Bruce Barton**	Signed

PURPOSE

The purpose of this protocol is to describe the medical orders that EMS personnel must follow during care of the mechanical circulatory support device patient. These medical orders are performed under medical direction by the Riverside County EMS Agency (REMSA) Medical Director through this written/ standing order. These medical orders may also be provided, modified, and/ or supervised by the mobile intensive care nurse (MICN) and/ or base hospital physician (BHP) through on-line (remote verbal order) or on-scene procedure authorization. The REMSA Medical Director is responsible and accountable for medical control of the EMS system. Each MICN and BHO is responsible and accountable for medical direction given to EMS personnel.

MECHANICAL CIRCULATORY SUPPORT

VAD and TAH differences

Ventricular Assist Device	Total Artificial Heart
Usually pulseless	Pulsatile
ECG shows native heart rhythm	ECG is meaningless since there is no heart
Do not use NTG	Use NTG for systolic blood pressure >140 mmHg
May perform chest compressions for a cardiac rhythm of VFib, VTach, or asystole	No compressions on TAH patients
You may cardiovert, externally pace, or defibrillate	Do **NOT** cardiovert, externally pace, or defibrillate
Must auscultate the left upper quadrant of the patient's abdomen for the "hum" of the VAD	The TAH's Freedom Driver is audible without a stethoscope, making a "galloping" type of sound
Usually have an ICD	Do not have an ICD
May be able to obtain a Mean Arterial Pressure (MAP) using a Doppler de4vice only. Normal sphygmomanometer will not work. MAP should be from 70 – 85 mmHg	Blood pressure is obtainable utilizing a normal sphygmomanometer.

Enter from the Universal Patient Treatment Protocol
For specific Emergency Stabilization or Patient Management of **Ventricular Assist Devices**

PSP | EMT | AEMT | PM

Pertinent Findings

Environment	History	Physical	Differential
Trained caregiver *Back-up power* *Power module* *Battery pack* *Control unit* *Percutaneous cable (Driveline)* *System Controller or Freedom Driver*	*Ventricular Assist Device (VAD)* *Right, left, or bilateral heart failure* *RVAD, LVAD, or BiVAD* *May be "bridge to transplant" therapy* *May be "destination" therapy* *May be "bridge to recovery" therapy* *Implantable cardioverter-defibrillator (ICD)* *VAD Coordinator's contact information*	*Continuous flow pump:* *Heard over apex, but no pulse* *Mean BP may be auscultated as continuous bruit*	*Power failure* *Mechanical failure* *Bleeding* *Dehydration* *Thrombosis* *Infection* *Other medical* *Other trauma*

Emergency Stabilization, Patient Management or Patient Disposition

Contact VAD Coordinator and base hospital as soon as possible to give them time to contact the VAD/MCS Coordinator
VAD/MCS Coordinator will assist the base hospital to troubleshoot the equipment
Advise base hospital of implanting hospital
For patients from outside of the area, the VAD Coordinator from Loma Linda University Medical Center will be the default VAD Coordinator.
VAD Coordinator cannot provide online medical direction.

Assist family and/or caregiver to troubleshoot VAD for disconnection, power or mechanical failure

Provide patient care as directed by the REMSA Treatment Protocols with these exceptions:
TAH patients shall not receive compressions, defibrillation, external pacing or cardioversion.

PSP | EMT | AEMT | PM

Do not assist with or give aspirin and/or nitroglycerin

Contact a single REMSA authorized base hospital (BH) in all ventricular assist device (VAD) patients:
Give report, Describe any advance directive (DNR/POLST/DNR medallion)

The BH will determine treatment and destination while considering the VAD coordinator's recommendations

EMT | AEMT | PM

Volume replacement is the first-line therapy in the pre-load dependant VAD patient

Treat preload disruptive malignant dysrhythmias (i.e. Ventricular Tachycardia and Ventricular Fibrillation) aggressively if symptomatic. Consider sedation for any electrical therapy if patient is conscious.

Perform chest compressions on ***VAD patients only***, in the following circumstances:
patient is unconscious, apneic, and showing VT, VF, or asystole on cardiac monitor
patient is apneic, with cyanosis, cardiac monitor shows perfusing rhythm but capillary refill is > 3 sec.

You may cardiovert, defibrillate or externally pace a VAD patient.

AEMT | PM

B


B
Return to Universal Patient Treatment Protocol
For continuing Scene Management, Emergency Stabilization, Patient Disposition, or Patient Management
FR
EMT
AEMT
PM
***** ***** Base Hospital Orders ***** *****
Initiate, repeat, or modify standing orders within scope of practice
As ordered
Assess, clarify, monitor, treat within scope of practice, and determine or change disposition and/or destination
As ordered
Mode of transport is an operational decision
EMT
AEMT
PM