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Title:	Educational Advisory: Left Ventricular Assist Devices		
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The Regional Emergency Medical Advisory Committee (REMAC) of New York City is responsible to develop, approve and implement prehospital treatment and transport protocols for use within the five boroughs of the City of New York. The Regional Emergency Medical Advisory Committee (REMAC) of New York City operates under the auspices of Article Thirty of the New York State Public Health Law.

Although, Left Ventricular Assist Devices (LVAD or VAD) are now in their third generation, it is only now that they are becoming more common and pre-hospital care providers are coming into contact with patients that have this device implanted. In order to help EMS personnel identify and understand LVADs, and therefore provide appropriate care to this type of patient, REMAC has prepared this Educational Advisory.

Please refer to the next page for a brief explanation of LVADs.

Current and Updated Protocols can be accessed at the Regional EMS Council website:
www.nycremsco.org.

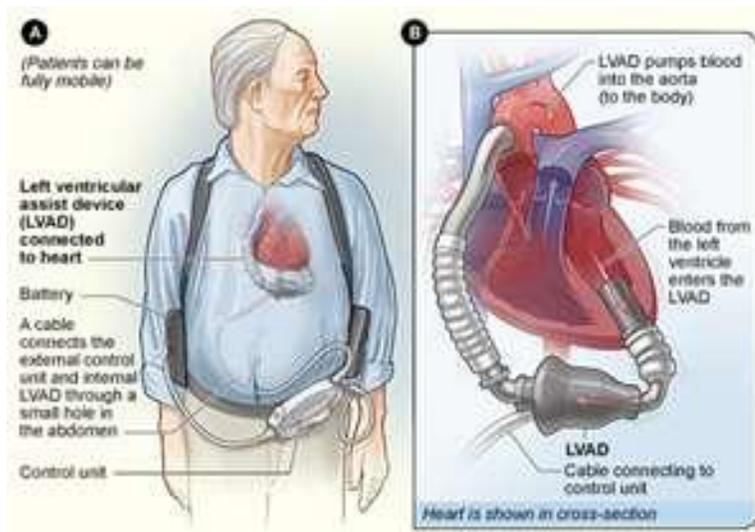
Owners/operators of Ambulance and ALS First Response Services providing prehospital medical treatment within the five boroughs of the City of New York are responsible to provide copies of the NYC REMAC Prehospital Treatment Protocols to their personnel, and to ensure that Service Medical Directors and EMS personnel are informed of all changes/updates to the NYC REMAC Prehospital Treatment Protocols.

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Chair, Regional Emergency Medical Advisory Committee of New York City

THE REGIONAL EMERGENCY MEDICAL SERVICES COUNCIL OF NEW YORK CITY, INC.

Educational Advisory: Left Ventricular Assist Devices (LVADs)

The Left Ventricular Assist Device is used for patients with failing hearts. It is a mechanical device that continuously pumps blood from the left ventricle into the aorta into the systemic circulation.



A tube is surgically placed at the apex of the left ventricle. This tube is connected to the LVAD pump, which moves blood to the aorta via another tube. From the aorta, blood moves into the systemic circulation.

The LVAD pump is embedded in the abdominal cavity, and has a connection to an external Control Unit and power source through a small incision in the abdominal wall. The patient will be wearing the LVAD Control Unit on a belt. The power source is usually a plug in, but can also be connected to a battery source.

The LVAD device was FDA approved in the US in 2010 and is approved for 3 clinical situations:

1. "**Bridge to Transplant**" for those patients awaiting a heart transplant
2. To "**rest**" a damaged left ventricle after a surgical procedure, or major heart attack.
3. "**Destination Therapy**" for those who have severe end stage heart failure, but are not candidates for a heart transplant

Some of the crucial points for patients with this device are:

1. Since the pump is a continuous pump, the patient may not have a pulse despite adequate perfusion
2. EKG may show any rhythm – even V-Fib, and the patient may be fully awake with full mental capacity.
3. Blood pressures may be inaccurate.
4. Chest compressions should NOT be performed on these patients because it will tear/disrupt the tube and cause major bleeding into the chest cavity. Unless a valid DNR or MOLST Form is present, provide supportive ventilations as indicated.
 - If an LVAD patient is unresponsive, it may not be for a lack of circulation. Consider other causes.
5. These patients are on anti-coagulation therapy so are susceptible to bleeding.
6. Because there is a connection from within the body to out, they are prone to infection – which is one of the main problems for these patients (up to 25% of patients get infections according to some of the literature).

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7. Nitrates should be used with caution, if at all.
8. Most family members have access to a 24-hour LVAD coordinator (usually a nurse – who also has access to a cardiovascular surgeon and cardiologists).

Facilities within our region that are LVAD centers are:

- Mount Sinai Medical Center (Heartmate II)
- NY Presbyterian/Cornell Hospital (Heartmate II)
- Montefiore Medical Center (Heartmate II)
- Maimonides Medical Center (Heartmate II)
- New York University Langone Medical Center (Heartmate II)

NOTE: On Line Medical Control (OLMC) should be contacted and advised of any encounters with patients having LVADs.

OLMC physicians will grant permission for such a patient to be transported to an LVAD Center, even if the transport time is prolonged

There are many online sources for LVAD training online. One such training video can be found at <http://www.thoratec.com/videos/mp-mcs.aspx>

EMS Field Guides: <http://www.mylvad.com/ems>