



Continuing Medical Education - News & Information

April 2011 - Volume 17, Issue 4

Multi-Agency Edition

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(bold = new content)

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Journal CME Newsletter

Published monthly

FDNY - Office of
Medical Affairs

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From the Editor

**** 2011 REMAC Protocol revisions take effect July 1 ****

Although normally scheduled for April 1, this year's NYC REMAC protocol update has been changed for July 1 implementation in the field and on certification exams.

Until July 1, only the 2010 protocols are in effect.

Always see nycremsco.org for the current approved protocols.

REMEMBER: the protocols on the street are the protocols on the exam!

Mandatory REMAC Credentialing Fee

A \$25 fee has been instituted by NYC REMAC for all new or recertifying paramedic credentials. On successfully completing a REMAC exam, candidates will receive a temporary letter verifying certification. They will soon after be mailed a memo directly from NYC REMSCO requiring a completed application, proof of NY State paramedic certification, and credentialing fee by money order only. On receipt, a permanent NYC REMAC certification card will be issued.

Please direct inquires on this process to NYC REMSCO at 212-870-2301

REMAC Exam Study Tips

REMAC candidates have difficulty with:

- * Epinephrine use for peds patients
- * 12-lead EKG interpretation
- * ventilation rates for peds & neonates

REMAC Written exams are approximately:

- | | |
|------------------|-----------------------|
| 15% Protocol GOP | 40% Adult Med. Emerg. |
| 10% BLS | 10% Adult Trauma |
| 10% Adult Arrest | 15% Pediatrics |

Certification & CME Information

- *Of the 36 hours of Physician Directed Call Review CME required for REMAC Refresher recertification, at least 18 hours must be ACR/PCR Review (which may include QA/QI Review). The remaining 18 hours may include ED Teaching Rounds and OLMC Rotation.*
- **Failure to maintain a valid NYS EMT-P card will invalidate your REMAC certification.**
- **By the day of their refresher exam all candidates must present a letter from their Medical Director verifying fulfillment of CME requirements. Failure to do so will prevent recertification.**
- **FDNY paramedics, see your ALS coordinator or Division Medical Director for CME letters.**
- **CME letters must indicate the proper number of hours, per REMAC Advisory # 2000-03:**
 - 36 hours - Physician Directed Call Review
 - ACR Review, QA/I Session (**minimum 18 hours of ACR/QA review**)
 - Emergency Department Teaching Rounds, OLMC Rotation
 - 36 hours - Alternative Source CME - **Maximum of 12 hours per venue**
 - Online CME
 - Lectures / Symposiums / Conferences
 - Journal CME
 - Clinical rotations
 - Associated Certifications:
BCLS / ACLS / PALS / NALS / PHTLS

REMAC Refresher Written examinations are held monthly, and may be attended up to 6 months before your expiration date. See the exam calendar at the end of this Journal. To register, call the Registration Hotline @ 718-999-7074 by the last day of the month prior to your exam.

REMAC Quarterly Written and Oral examinations are held every January, April, July & October. Registration is limited to the first 50 applicants. See the exam calendar at the end of this journal.

REMAC CME and Protocol information is available, and suggestions or questions about the newsletter are welcome. Call 718-999-2671 or email swansoc@fdny.nyc.gov

REMSCO: www.NYCREMSCO.org
NYS/DOH: www.Health.State.NY.US

Online CME: www.EMS-CE.com www.MedicEd.com
www.EMCert.com www.WebCME.com
www.EMINET.com

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 - EMS Fellows
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 - Dr. Jessica Van Voorhees 718-999-0364
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FDNY OLMC Physicians and ID Numbers

Alexandrou, Nikolaos	80282	Isaacs, Doug	80299
Asaeda, Glenn	80276	Jacobowitz, Susan	80297
Barbara, Paul	80306	Jameson, Angus	80309
Ben-Eli, David	80298	Kaufman, Bradley	80289
Cox, Lincoln	80305	Munjal, Kevin	80308
Freese, John	80293	Schenker, Josef	80296
Giordano, Lorraine	80243	Schneitzer, Leila	80241
Gonzalez, Dario	80256	Schoenwetter, David	80304
Hansard, Paul	80226	Silverman, Lewis	80249
Hegde, Hradaya	80262	Soloff, Lewis	80302
Hew, Phillip	80267	Van Voorhees, Jessica	80310
Huie, Frederick	80300		

April 2011 Journal CME Article

LVADS: LEFT VENTRICULAR ASSIST DEVICES

“I’m Telling You – I Don’t Have a Pulse.”

INTRODUCTION

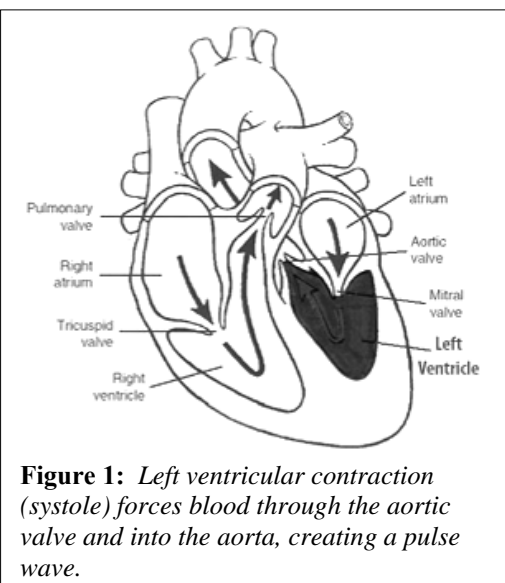
Can you imagine a situation in which a patient may actually say this to you? Is it really possible that someone whose heart is not producing a pulse can actually get enough blood to their brain to still be conscious? And isn’t the newest push from the American Heart Association in the 2010 Guidelines that chest compressions should be started if a pulse cannot be detected within 10 seconds?

There exists a small but growing population of patients for whom this scenario is reality – and it is so every day of their life. These patients have had a device inserted to assist their failing hearts, and because of the way this device works, they go through life without a palpable pulse. And they also present specific challenges for EMS providers that are critical to recognize.

In this month’s CME article, we will discuss left ventricular assist devices (LVADs), describe the patient population for whom they are used, explain the physiology of these devices, and suggest strategies for dealing with these patients.

WHY DO WE NEED A PULSE?

Before we talk about how it is possible for these patients to go through life without a pulse, let’s first talk about why the rest of us need a pulse to live. And to do that, we need to turn our attention back to the basics of circulation.



The primary goal of the circulatory system is to deliver oxygen and nutrients to the cells of the body and to transport carbon dioxide (CO₂) and other waste products so that they may be removed from the body. In order to do all of these things, the circulatory system must move our blood and the cells that it contains through the small channels (capillaries) that lie close to every cell in our body. So keeping that in mind, let’s describe this using an analogy that may help to make sense of all of this.

First, compare the delivery of oxygen and nutrients and the removal of waste to the flow of water in your home. When you turn on a faucet, shower, or hose, the water flows from that spot does so because it is being pushed along by more water and pressure in the system of small pipes in your house that feed into them. That pressure is created by larger amounts of water and higher amounts of pressure in the larger pipes running beneath the streets and ground further from your home. And the water pressure in those pipes is created by the huge amount of water stored high above the ground (water towers) and the force of gravity pushing water into the system. So if the

large amounts of pressure generated by these towers were to fail, water would cease to flow in pipes throughout your home.

Similarly, the blood moving through your capillaries is pushed along by the blood and pressure in the small arterioles that feed into them. That pressure is created by larger amounts of blood and higher pressures in the larger arteries running through the body but further from the cells that the blood needs to reach. And the blood pressure in those arteries is created by the muscular contraction of the left ventricle that creates the force necessary to push blood forward into the aorta. And just like the water system, if the pressure generated by the left ventricle were to fail, the flow of blood would cease in the capillaries throughout your body.

Now we all know that the heart works by contracting and relaxing. During contraction (systole), the left ventricle builds up a large amount of pressure until it exceeds the patient's systolic blood pressure. At that point, the pressure within the ventricle pushes open the leaflets of the aortic valve and pushes a small volume of blood (the stroke volume) into the aorta (see Figure 1). This wave of blood that is pushed forward causes a pressure wave that moves along the aorta, into the arteries, down through the arterioles, and into the capillaries, moving the blood along through the circulatory system. And it is this wave of forward moving blood that we feel when we palpate a patient's pulse.

To use a visual analogy, put your hand into a sink or basin of water, move it to one edge of the container, and curl your fingers toward your palm to create a tube-like structure with your hand, as if you were preparing to roll dice. With your hand beneath the water, quickly and forcefully squeeze your hand (as if you were squeezing a sponge) so that you force the water that was between your palms and fingers out toward your thumb. If you did it correctly, you should see a ripple (or wave / pulse) of water that moves along the basin toward the other sides. Now squeeze your hand only slightly and notice how small the wave becomes and that the water on the opposite side barely moves. This is similar to what your heart tries to do with each contraction – to do so strongly enough that each contraction causes blood to move throughout the body.

If the strength of the contraction generated by the left ventricle decreases, the amount of blood that the ventricle can force into the aorta and the pressure with which it does so will both decrease. This will result in a smaller pressure wave (a weaker pulse) and will slow the movement of blood through the capillaries. As a result, the patient's cells (and organs and body) will experience the reduced delivery of oxygen and nutrients and the accumulation of carbon dioxide and waste products – a condition that we all know as shock.

So in order for us to survive, because of the way our heart works, we require a pulse to continue the flow of blood throughout our body. But when you get down to the level of the capillaries, it is merely the movement of blood that is required. So long as the blood and cells continue to move through the capillary, the exchange of oxygen, carbon dioxide, nutrients, and waste will continue.

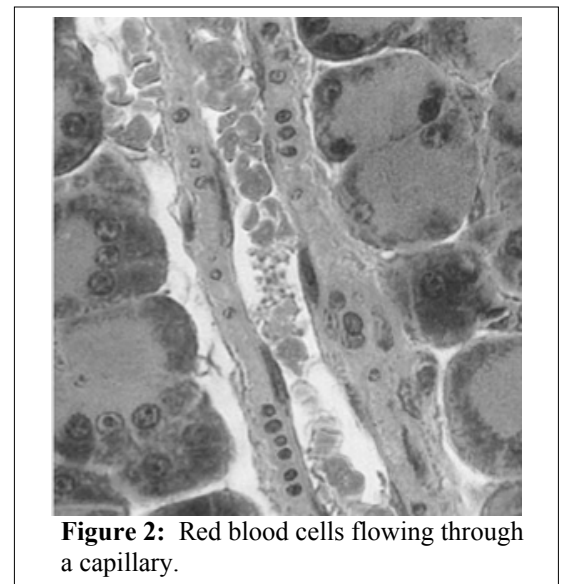


Figure 2: Red blood cells flowing through a capillary.

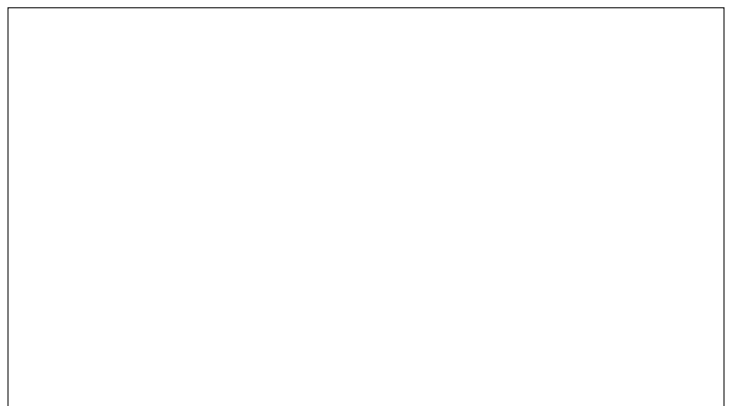
COULD WE SURVIVE WITHOUT A PULSE?

If you allow for one very big “if”, the answer is actually yes. Despite centuries of thought to the contrary, a pulse is not actually a requirement for human life. All we require is a constant flow of blood through our capillaries that will ensure that critical delivery of oxygen and nutrients and the removal of carbon dioxide and waste. And if we could somehow produce this without having to generate a pulse, we could certainly survive.

For the vast majority of us, this isn’t possible. Our hearts contract to move blood and that produces a pulse. But for a few patients whose hearts are so badly failing that they require support to survive, there is a device that can work in place of their failing heart. And it turns out that the most useful of these devices continues the movement of blood throughout the body without generating a pulse. These machines, named for what it is that they do, are called ventricular assist devices (VADs) and the one that can take the place of the failing left ventricle is therefore called a left ventricular assist device (or LVAD).

WHAT IS AN LVAD?

The left ventricular assist device (or LVAD) that you are likely to encounter is an implanted machine that supports the circulatory system by in essence standing in for the failing (or failed) left ventricle. One end of the device is inserted into the left ventricle, the other is inserted into the aorta, and a motor that lies somewhere in the middle provides the mechanical pressure that pushes the blood to the rest of the body (Figure 3).



LVADs are not new devices. In fact, the first successful use of such a device was described in 1966 when Dr. DeBakey and his colleagues used an LVAD to support a patient following cardiac surgery until the patient’s heart was healthy enough for the patient to survive without the device. But as you can see, this first use was a fairly primitive device. The infection rates with these devices were high, the support for the machine required the

patient to remain in the hospital, and the other complications (machine failure, blood clots) caused the devices to be useful only on a short-term basis.

The other interesting thing about these early LVADs is that they were designed with the thought that a pulse was necessary for life. So the devices and their supporting items included a compressor that actually generated a pulse wave (and a palpable pulse). Unfortunately, the compressor and valves and other parts required for such a design meant that the devices were more likely to fail and had a high likelihood of developing potentially fatal blood clots.

Since then, and particularly in the past 20 years, LVAD design and safety has improved significantly. Eventually, LVADs were



Figure 4: *First patient to survive after cardiac surgery requiring LVAD support.*

developed as implantable devices (unlike the one shown in Figure 4) so that the tubing and motor are all contained within the patient's body, leaving only an external wire (drive line) that connects to the external batteries (Figure 5).

The other major advance for these devices was the realization that a pulse was not necessary, eliminating the need for valve and compressors in the LVAD. Today's LVADs instead use electromagnetic pumps that provide continuous blood flow from the left ventricle to the aorta. Rather than pumping the blood, they have an internal motor that spins ~9,000 times per minute and generates a continuous flow of blood. (Back to the water analogy, put your hand back in the water but extend only one finger and spin it in a small circle as fast as you can – notice the water still moves along the opposite side, even though there are no significant waves being produced.) These devices are smaller (less than 0.2 lbs), prone to less device failure, less likely to cause blood clots, and are silent. But because they produce continuous blood flow instead of pulsatile flow, the result is that the patient has no pulse.

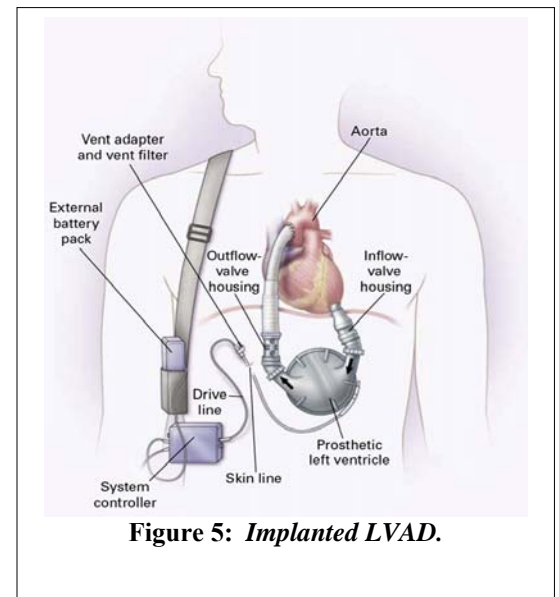


Figure 5: Implanted LVAD.

WHO HAS AN LVAD?

There are three groups of patients for whom an LVAD may be implanted. The first group is those who need temporary support for their left ventricle. This group includes patients in whom a viral infection of the heart (myocarditis) caused the left ventricle to fail, patients who suffer a myocardial infarction with resulting cardiogenic shock, and patients who experience heart failure following cardiac surgery. For this group, an LVAD may be inserted for the days to weeks necessary for the patient to recover from the underlying condition.

The second group is patients whose congestive heart failure is so severe that they require heart transplantation. Most of these patients will wait for 3-6 months on LVAD support until receiving their heart transplant, and for this reason the LVAD use is termed a “bridge” to transplant. And because of the newer LVAD technologies, these patients can now be discharged from the hospital while they await their transplant.

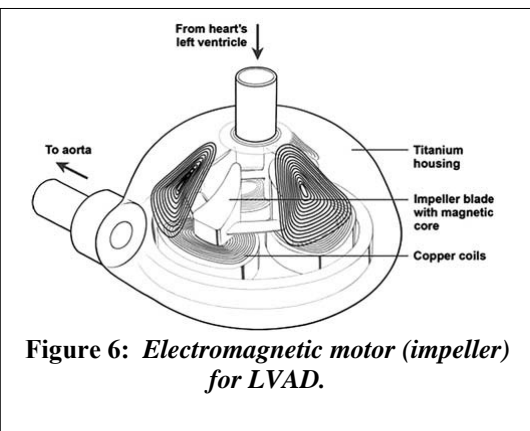


Figure 6: Electromagnetic motor (impeller) for LVAD.

The final group, which is a new but rapidly growing group, consists of patients with end-stage heart failure who do not qualify for transplant and have failed standard medical therapy. For these patients, such as former Vice President Richard Cheney, the implantation of the LVAD is considered permanent and is commonly referred to as “destination” therapy. The potential growth of this group is considerable when you consider that there are approximately 2,000 heart transplants each year in this country and yet over 100,000 patients with end-stage heart failure.

SO WHY SHOULD YOU CARE?

As many of you know, this is a question that I always ask myself (and you) when considering a topic or teaching point in a lecture and the same applies here. Are these devices important to know about just because the patient might be talking but not have a pulse? No. That's pretty cool, but there is more to it.

The implantation of an LVAD changes more about the patient than just causing the absence of a pulse - it changes their physiology and their response to medical conditions. And in some cases, it changes the approach that we have when managing their emergencies. And it may even cause you to need to contact OLMC in order to not use our protocols which, for these patients, could be harmful.

BLS APPROACH TO LVADS

As soon as you have identified that the patient is an LVAD recipient with any medical complaint, request ALS assistance. Like any patient, the initial assessment of an LVAD patient begins with the ABCs. Airway and breathing emergencies should be treated in the same way as you would for any other patient. Circulation, on the other hand, is where things start to change.

Since the initial circulatory assessment of an LVAD patient is not likely to find a pulse, it is important to use other means of assessment including blood pressure and mental status. Despite the absence of a pulse, most LVAD patients will have a detectable blood pressure of 70-80mmHg. Differentiating between the systolic and diastolic pressure may be impossible since, particularly with the newer devices, there may no systole. Regardless of the pulse and blood pressure, the patient's mental status may provide a reliable assessment of the patient's circulation with altered mental status suggesting lowered perfusion.

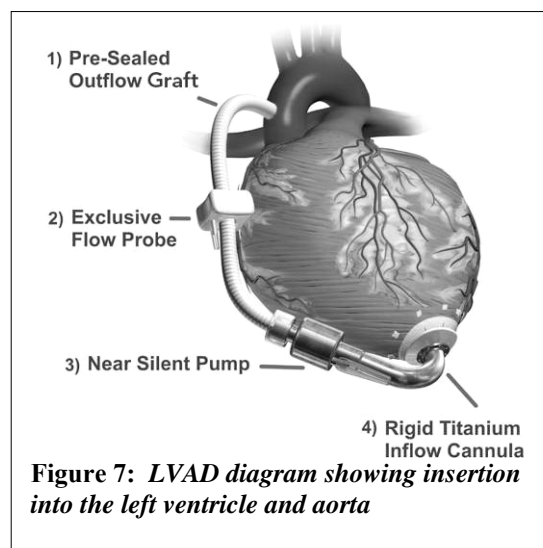
If a patient's mental status is altered, or if they are complaining of weakness or dizziness, this may be the only sign of impaired circulation. And because the LVADs require blood flow to the left ventricle (and then the device) in order to maintain circulation, measures should be taken to improve blood return to the heart. Specifically, the patient should be placed in a supine or even Trendelenburg position.

If the patient is unconscious and a blood pressure cannot be detected, immediately apply an AED using the usual pad placement, but do not begin chest compressions. (Because the LVAD is inserted directly into the left ventricle and into the aorta, performing chest compressions could dislodge either insertion and cause fatal internal hemorrhage.)

Immediately after applying the AED, analyze the patient's heart rhythm and defibrillate, if instructed by the AED. The act of defibrillation will not affect the device but may help to restore blood flow into the left ventricle and allow the LVAD to restore circulation.

If the AED does not advise you to shock the patient, immediately contact on-line medical control (OLMC) for further instructions. Only with direction for OLMC should chest compressions be initiated.

Once the ABCs have been assessed, prepare the patient for transport. If ALS is not immediately available, begin transport as described below. If the patient is complaining of chest pain, nitroglycerin should not be



administered without contacting OLMC. All other injuries and emergencies on a BLS level should be treated according to REMAC protocols.

ALS APPROACH TO LVADS

The ALS approach to the LVAD patient similarly begins with the assessment of the ABCs. ALS airway management remains the same for these patients.

Respiratory emergencies differ only in that CPAP, if available, is contraindicated because of the patient's baseline hypotension and the likelihood that the CPAP will increase intrathoracic pressure, result in reduced preload, and worsen the patient's circulatory status by impeding the LVAD function. Similarly, acute pulmonary edema (which can occur in these patients as a result in pulmonary vascular pressures) management will be limited to supplemental oxygen since diuretics, nitrates, morphine, and benzodiazepines may worsen perfusion via their affects on blood pressure and preload. OLMC should be contacted immediately for guidance when dealing with any such patient.

Circulatory assessment and management are initially identical to BLS care, including the use of an ALS defibrillator and withholding chest compressions. In addition, symptomatic hypoperfusion (the weak and dizzy patient or a patient with a history that suggests hypovolemia – diarrhea, vomiting, decreased oral intake) should be treated with aggressive IV fluid hydration and, if need, vasopressor (dopamine) support after consultation with OLMC. Chest pain assessment and management should progress as per protocol, except for the administration of nitrates which would be contraindicated.

Even if the patient is conscious, any cardiopulmonary symptoms or nonspecific complaints should be evaluated, including an assessment of cardiac rhythm. Because the LVAD continues to circulate blood even in the setting of an arrhythmia, patients with persistent ventricular fibrillation (who were awake and talking) have been described. Ventricular dysrhythmias should be treated as per protocol with only slight modification (and OLMC contact).

Ventricular fibrillation should always be treated with defibrillation, but keep in mind that the patient may still be conscious and require sedation (for which there is time if the LVAD is continuing to generate sufficient perfusion to keep them awake). For ventricular tachycardia, because the patient's blood pressure is always low



Figure 8: Insertion of the LVAD in the OR (left ventricular tube in place, aorta being opened for insertion)

and the pulse not detectable, vital signs cannot be used as a marker of “unstable” ventricular tachycardia. Instead, mental status should be used to assess the patient's perfusion status. If awake, antiarrhythmics (such as amiodarone or magnesium) may be used, but if the patient is unconscious or semi-conscious, they should be considered unstable and treated with cardioversion (not defibrillation). Similarly, symptomatic supraventricular tachydysrhythmias should be treated, particularly as they may compromise preload and the function of the LVAD, but will require OLMC contact and an assessment of mental status as a surrogate marker for being stable or unstable.

On further assessment, remember that the use of a pulse
page 9 of 14

oximeter requires adequate blood flow, so measurements may be unreliable in the LVAD patient. Basic assessment of oxygenation (mental status, presence or absence of cyanosis, anxiety) should be used instead.

All other ALS emergencies may be treated as per REMAC protocol, but if there is any concern, OLMC should be contacted so that a treatment plan can be discussed with the OLMC physician.

TRANSPORT DECISIONS

Unless the patient's airway is unmanageable, the patient should be transported to the hospital where the LVAD placement was performed. Because these devices require special knowledge, the facility where it was placed will always be best suited for the management of these patients. If the patient's device was not placed in New York City, OLMC can help to coordinate transport to the nearest appropriate facility.

SUMMARY

The science of medicine is advancing at an amazing pace, and devices such as LVADs are certain to become more common as technologies are developed to help extend the lives of patients with previously labeled "end-stage" or "terminal" disease states. An understanding of these devices, the changes that they produce in the human body and the resulting implications for prehospital care are essential to the timely and appropriate management of the general and device-specific emergencies for which you may be called. And, as always, if faced with an uncertain situation, OLMC is available as a resource for discussing and developing a management plan for these patients and their devices.

Written by: **JOHN FREESE, MD**
 MEDICAL DIRECTOR
 FIRE DEPARTMENT OF NEW YORK

References

- Saito S, Nishinaka T, and Westaby S. Hemodynamics of chronic nonpulsatile flow: implications for LVAD development. *Surg Clin North Am.* 2004; 84(1): 61-74.
- Westaby S. Ventricular assist devices as destination therapy. *Surg Clin North Am.* 2004; 84(1): 91-123.
- Kherani AR and Oz MZ. Ventricular assist devices to bridge to transplantation. *Surg Clin North Am.* 2004; 84(1): 75-89.
- Daneshmand MA and Milano CA. Surgical treatments for advanced heart failure. *Surg Clin North Am.* 2009; 89(4): 967-99.
- Niemann JT and Squire B. Implantable Cardiac Devices. *Rosen's Emergency Medicine: Concepts and Clinical Practice, 7th Edition.* Mosby Elsevier. Philadelphia, PA. 2010.

CME JOURNAL 2011_J0 04: LVAD QUIZ

1. *Which of the following is false regarding LVAD patients?*
 - a. LVADs may be placed temporarily following a myocardial infarction or infection of the heart.
 - b. LVADs may be placed permanently for heart failure patients who do not qualify for transplant.
 - c. LVADs may be placed temporarily for heart failure patients awaiting transplant.
 - d. LVADs produce a pulse by activating the left ventricle (left ventricle activation devices).
 - e. LVADs are an initial contraindication to performing chest compressions.

2. *If presented with an LVAD patient who is unresponsive and not breathing, which of the following actions should occur first?*
 - a. Initiate chest compressions.
 - b. Apply an AED.
 - c. Contact OLMC.
 - d. Open the airway.
 - e. Begin BVM ventilation.

3. *Which of the following is correct about the circulatory system?*
 - a. A pulse is required to move blood through the capillaries.
 - b. Blood flow in the capillaries allows for the delivery of oxygen and the removal of CO₂.
 - c. The heart is capable of circulating blood without contracting.
 - d. Increased pressure in the aorta prevents blood flow in the smaller arteries.
 - e. It is during diastole that the left ventricle produces the pressure necessary to produce a pulse.

4. *When treating an LVAD patient who is complaining of chest pain, which of the following is correct regarding medication administration?*
 - a. Aspirin should never be given due to a significant risk of bleeding.
 - b. Nitroglycerin should be withheld unless OLMC orders that it be given.
 - c. Oxygen should only be given if the patient is cyanotic.
 - d. No modification is necessary, and the patient should be treated per REMAC protocols.
 - e. No care should be administered until ALS arrives to assess the patient.

5. *Which of the following is the most accurate means of assessing an LVAD patient's circulation?*
 - a. Pulse
 - b. Blood pressure
 - c. Signs
 - d. Symptoms
 - e. Mental status

6. *Which of the following is correct regarding ventricular dysrhythmias in LVAD patients?*
 - a. Ventricular fibrillation should be treated with defibrillation.
 - b. Ventricular tachycardia should always be treated with defibrillation.
 - c. Amiodarone and other antiarrhythmics have no role in the treatment of LVAD patients.
 - d. Blood pressure remains an accurate measure of being stable or unstable.
 - e. Sedation will never be required prior to cardioversion.

7. *All of the following are false regarding the use of CPAP in LVAD patients except:*
 - a. CPAP may be useful for the management of acute pulmonary edema.
 - b. CPAP may reduce preload through its effects on intrathoracic pressure.
 - c. CPAP may improve ability of the LVAD to maintain perfusion.
 - d. CPAP is the only acceptable treatment for pulmonary edema in the LVAD patient.
 - e. CPAP may be useful for LVAD patients who do not respond to nitrates.

8. *Which of the following medications would not be contraindicated in the management of pulmonary edema in an LVAD patient?*
 - a. morphine
 - b. nitroglycerin
 - c. oxygen
 - d. furosemide
 - e. benzodiazepines

9. *Which of the following is false regarding chest compressions for an LVAD patient?*
 - a. In consultation with OLMC, chest compressions may be provided.
 - b. Chest compressions may dislodge the LVAD and cause fatal hemorrhage.
 - c. Chest compressions should not be initiated immediately for an LVAD patient in cardiac arrest.
 - d. Chest compressions are unnecessary because a patient with a functional LVAD cannot arrest.
 - e. Rhythm analysis and defibrillation should precede the possible use of chest compressions.

10. *LVAD patients, when possible, should always be transported to:*
 - a. the nearest 911-receiving facility
 - b. the nearest PCI facility
 - c. the nearest hospital with cardiothoracic surgery
 - d. the nearest LVAD store
 - e. the hospital where their LVAD was implanted

Journal CME Credit Answer Sheet

Based on the CME article, place your answers to the quiz on this answer sheet.

Respondents with a minimum grade of **80%** will receive **1 hour** of Online/Journal CME.

Please submit this page **only once**, by one of the following methods:

- FAX to 718-999-0119 or
- MAIL to FDNY OMA, 9 MetroTech Center 4th flr, Brooklyn, NY 11201

Contact the Journal CME Coordinator at 718-999-2790:

- three months before REMAC expiration for a report of your CME hours.
- for all other inquiries.

Monthly receipts are not issued. You are strongly advised to keep a copy for your records.

Note: if your information is illegible, incorrect or omitted you **will not** receive CME credit.

check one: EMT Paramedic _____
other

Name

NY State / REMAC # or "n/a" (not applicable)

Work Location

Phone number

Email address

**Submit answer sheet by
the last day of this month.**

April 2011 CME Quiz		
1.		Required for BLS & ALS providers
2.		
3.		
4.		
5.		
6.		Required for ALS providers only
7.		
8.		
9.		
10.		

Citywide CME – April 2011

Sessions are subject to change without notice. Please confirm through the listed contact.

Boro	Facility	Date	Time	Topic	Location	Host	Contact
BK	Kingsbrook	TBA	TBA	TBA: call to inquire →	ED Conference Room	Dr Hew	Manny Delgado 718-363-6644
	LICH	5/5	1200-1500	Call Review RSVP →	Avram Conference Room "G"	Dr Vlasica	Aaron Scharf 718-780-1859
		6/7	0900-1200	Call Review RSVP →	Avram Conference Room "A"		
	Lutheran	4 th Wed	1730-1930	Call Review RSVP →	Call for location →	Dr Chitnis	Dale Garcia 718-630-7230 dgarcia@lmcmc.com
MN	NY Presbyterian	TBA	TBA	TBA: call to inquire →	Weill Cornell Campus A-950	Dr Ewy	RSVP: ssamuels@nyp.org Ana Doulis 212-746-0885 x2
	NYU School of Medicine	TBA	TBA	TBA: call to inquire →	Schwartz Lecture Hall 401 E 30 Street	TBA	Jessica Kovac 212-263-3293
QN	FDNY-BOT	Cancelled until further notice		---	---	---	---
	NYH Queens	Thursdays	0800-0900	Call Review/Trauma Rounds	East bldg, courtyard flr	Dr Sample	Mary Ellen Zimmermann RN 718-670-2929
	Mt Sinai Qns	last Tues	1800-2100	Lecture or Call Review	25-10 30 Ave, conf room	Dr Dean	Donna Smith-Jordan 718-267-4390
	Parkway Hosp	3 rd Wed	1830-2130	Call Review	Board Room, 1st flr		pabruzzo@capitolhealthmgmt.com
	Queens Hosp	2 nd Thurs	1615-1815	Call Review	Emergency Dept		718-883-3070
4 th Thurs							
SI	RUMC	5/5	1400	Call Review/Protocol Update	MLB conf room	Dr Ben-Eli	William Amaniera 718-818-1364

2011 NYC REMAC Examination Schedule

Month	<u>REMAC Refresher Exam</u> (Written only - CME letter required)		<u>REMAC Quarterly Exam - \$100 fee</u> (Written & 3 Orals Scenarios)			NYS/DOH Written Exam
	Registration Deadline	Exam Date (on Wednesdays)	Registration Deadline	Written @18:00	Orals @09:00	
January	12/31/10	1/19/11	Thursday 1/6/11	Thursday 1/20/11	Thursday 1/27/11	1/20/11
February	1/31/11	2/23/11				
March	2/28/11	3/23/11				3/24/11
April	3/31/11	4/20/11	Thursday 4/7/11	Thursday 4/21/11	Tuesday 4/26/11	
May	4/30/11	5/25/11				5/20/11
June	5/31/11	6/22/11				6/16/11
July	6/30/11	7/20/11	Thursday 7/7/11	Thursday 7/21/11	Thursday 7/28/11	
August	7/31/11	8/24/11				8/18/11
September	8/31/11	9/21/11				
October	9/30/11	10/26/11	Thursday 10/6/11	Thursday 10/20/11	Tuesday 10/25/11	
November	10/31/11	11/16/11				11/17/11
December	11/30/11	12/21/11				12/15/11

The **REMAC Refresher Written examination** is offered monthly for paramedics who meet CME requirements **and** whose REMAC certifications are either current or expired **less** than 30 days. To enroll, call **718-999-7074** before the register registration deadline above. Candidates may attend an exam no more than 6 months prior to expiration. Refresher exams are held at 07:00 or 18:00 hours at FDNY-EMS Bureau of Training, Fort Totten, Queens.

The **REMAC Quarterly Written & Orals examination** is for initial certification, **or** for inadequate CME, **or** for certifications expired **more** than 30 days. Registrations **must** be postmarked by the deadline above. Email swansoc@fdny.nyc.gov for instructions. You are encouraged to **register at least 30 days** prior to the exam - seating is limited. The exam fee as above is by **money order only**. The Quarterly is held at FDNY-EMS Bureau of Training, Fort Totten, Queens.