



OLD DOMINION EMERGENCY MEDICAL SERVICES ALLIANCE

Adult Cardiovascular Emergencies – BLS

SERVING THE CITIZENS, EMS AGENCIES, ACUTE CARE HOSPITALS AND LOCAL GOVERNMENTS IN VIRGINIA PLANNING DISTRICTS 13,14,15 AND 19

7818 E. Parham Road, Suite 911 • Richmond, VA 23294
PHONE: 804-560-3300 • FAX: 804-560-0909 • www.odemsa.vaems.org



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Adult Medical Chest Pain – BLS

Suspected Cardiac

OVERVIEW:

Non-traumatic chest discomfort is a common pre-hospital patient complaint. It always should be considered life-threatening until proven otherwise.

The discomfort may be caused by acute myocardial infarction (AMI) or angina pectoris, which is a sign of inadequate oxygen supply to the heart muscle.

Risk factors that increase the likelihood of heart disease include > 50 years of age, history of hypertension, diabetes mellitus, hypercholesterolemia, smoking, and strong family history of coronary artery disease.



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1. Demonstrates proper assessment techniques.
 - a. HPI – Complete
 - b. Signs and Symptoms
 - c. SAMPLE
 - d. OPQRST
 - e. MOI – NOI
 - f. Primary Assessment
 - i. XABCDE Format
 - g. Need for ALS.
 - h. Determine Relevant Differentials based on Assessment.
 - i. Obtain 12 lead EKG
 1. ACUTE MI Message
 1. ALS
 2. ASA PO – **Must Be Chewed**
 - j. Can demonstrate knowledge of the importance of obtaining ED drugs usage in at least the previous 24 hours and **potential lethal response to NTG admin.**
 - k. **Contradictions to ASA admin.**
2. Demonstrates the following skills.
 - a. Proper 12 lead placement.
 - b. Obtaining 12 lead EKG in 10 minutes or less of patient side.
 - c. Request ALS.
 - d. Demonstrates knowledge of ACUTE MI message on 12 Lead.
 - e. Demonstrates the appropriate transport mode and destination.
 - f. Transport as soon as safe to do so to the proper destination.
 - g. Proper Admin of ASA.
 - h. Proper Admin of NTG

The above is a very abbreviated summary of the Protocol.



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Student's and FTO's signatures below signify that the student has demonstrated sufficient working knowledge and can perform such competency and has had the opportunity to ask and has had all questions and answers provided to their level of comfort.

Competency – ODEMSA – Regional Protocols – Medical – **Chest Pain** – BLS

Student's Name and Signature – date below:

_____ Date _____
Printed Name Signature

FTO's Name and Signature – date below:

_____ Date _____
Printed Name Signature



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Adult Medical – BLS

ST Elevation Myocardial Infarction (STEMI)

OVERVIEW:

Prompt diagnosis and treatment offers the greatest potential benefit for myocardial salvage in the first hours of STEMI; and early, focused management of unstable angina and NSTEMI reduces adverse events and improves outcome.

Thus, it is imperative that healthcare providers recognize patients with potential ACS in order to initiate the evaluation, appropriate triage, and management as expeditiously as possible; in the case of STEMI, this recognition also allows for prompt notification of the receiving hospital and preparation for emergent reperfusion therapy.

Potential delays to therapy occur during 3 intervals: from the onset of symptoms to patient recognition, during prehospital transport, and during emergency department (ED) evaluation.



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 - d. OPQRST
 - e. MOI – NOI
 - f. Primary Assessment
 - i. XABCDE Format
 - g. Need for ALS.
 - h. Determine Relevant Differentials based on Assessment.
 - i. Obtain 12 lead EKG.
 - i. ACUTE MI Message
 1. ALS
 2. ASA PO – **Must Be Chewed**
 3. If Ground Transport greater than 45 minutes
 - a. Helicopter Transport
 - j. Can demonstrate knowledge of the importance of obtaining ED drugs usage in at least the previous 24 hours and **potential lethal response to NTG admin.**
 - k. **Contradictions to ASA admin.**
2. Demonstrates the following skills.
 - a. Proper 12 lead placement.
 - b. Obtaining 12 lead EKG in 10 minutes or less of patient side.
 - c. Request ALS.
 - d. Demonstrates knowledge of ACUTE MI message on 12 Lead.
 - e. Demonstrates the appropriate transport mode and destination.
 - f. Transport as soon as safe to do so to the proper destination.
 - g. Proper Admin of ASA.
 - h. Proper Admin of NTG



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Competency – ODEMSA – Regional Protocols – Medical – **ST-Elevation Myocardial Infarction (STEMI)** – BLS

Student's Name and Signature – date below:

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Printed Name Signature

FTO's Name and Signature – date below:

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Printed Name Signature



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Adult Medical – BLS

Pulmonary Edema/CHF/Heart Failure

OVERVIEW:

Heart failure is generally divided into left ventricular failure and right ventricular failure. Left ventricular heart failure is the inability of the left ventricle to adequately move blood into the systemic circulation. In left ventricular failure, an imbalance in the output of the two sides of the heart occurs.

The left ventricle is unable to move all the blood delivered to it from the right side of the heart. Left ventricular followed by left atrial pressure rises and is transmitted back to the pulmonary circulation. When the pressure in the pulmonary vessels becomes too high, blood serum is forced into the alveoli, resulting in pulmonary edema.

In right ventricular heart failure, the right side of the heart fails to function as an adequate pump, which leads to back pressure which leads to backpressure into the venous circulation. This is most commonly caused by left heart failure, which subsequently progresses to right heart failure. The patient's symptoms should assist in determining left versus right heart failure, or both.

Signs of left-sided heart failure include rales/crackles, tachypnea while right-sided failure will create JVD, ascites, and peripheral edema.

The management goal of patients with HF involves decreasing cardiac workload by reducing both preload and afterload.

If SBP less than 100 mmHg, see Cardiogenic SHOCK protocol.



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 - f. Primary Assessment
 - i. XABCDE Format
 - g. Need for ALS.
 - h. Determine Relevant Differentials based on Assessment.
 - i. Obtain 12 lead EKG.
 - i. ACUTE MI Message
 1. ALS
 2. ASA PO – **Must Be Chewed**
 3. If Ground Transport greater than 45 minutes
 - a. Helicopter Transport
 - j. Position for Transport in Semi-Fowlers
 - k. CPAP – 5-10 cmH₂O PEEP
 - l. Can demonstrate knowledge of the importance of obtaining ED drugs usage in at least the previous 24 hours and **potential lethal response to NTG admin.**
 - m. **Contradictions to ASA admin.**
2. Demonstrates the following skills.
 - a. Proper 12 lead placement.
 - b. Obtaining 12 lead EKG in 10 minutes or less of patient side.
 - c. Request ALS.
 - d. Demonstrates knowledge of ACUTE MI message on 12 Lead.
 - e. Demonstrates the appropriate transport mode and destination.
 - f. Transport as soon as safe to do so to the proper destination.
 - g. Proper Admin of ASA.
 - h. Proper Admin of NTG



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Medical – Hypotension/Shock (Non-trauma) (Cardiogenic Shock) – BLS

OVERVIEW:

Shock is often defined as a state of inadequate tissue perfusion.

This may result in acidosis, derangements of cellular metabolism, potential end-organ damage, and death.

Early in the shock process, patients are able to compensate for decreased perfusion by increased stimulation of the sympathetic nervous system, leading to tachycardia and tachypnea.

Later, compensatory mechanisms fail, causing a decreased mental status, hypotension, and death.

Early cellular injury may be reversible if definitive therapy is delivered promptly.



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 - e. MOI – NOI
 - f. Primary Assessment
 - i. XABCDE Format
 - g. Need for ALS.
 - h. Determine Relevant Differentials based on Assessment.
 - i. Obtain 12 lead EKG.
 - i. ACUTE MI Message
 1. ALS
 2. ASA PO – **Must Be Chewed**
 3. If Ground Transport greater than 45 minutes
 - a. Helicopter Transport
 - j. Can demonstrate knowledge of the importance of obtaining ED drugs usage in at least the previous 24 hours and **potential lethal response to NTG admin.**
 - k. **Contradictions to ASA admin.**
2. Demonstrates the following skills.
 - a. Proper 12 lead placement.
 - b. Obtaining 12 lead EKG in 10 minutes or less of patient side.
 - c. Request ALS.
 - d. Demonstrates knowledge of ACUTE MI message on 12 Lead.
 - e. Demonstrates the appropriate transport mode and destination.
 - f. Transport as soon as safe to do so to the proper destination.
 - g. Proper Admin of ASA.
 - h. Proper Admin of NTG
 - i. Non-Cardiac Obvious causes of Shock

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Medical – Abdominal Aortic Aneurysm/ Dissection (Aortic Dissection and AAA) – BLS

OVERVIEW:

Aortic Aneurysms (AA) are a degenerative and progressively slow process where the walls of the aorta weaken and expand due to the systemic pressures of the circulatory system.

The formation of aneurysms can be attributed to atherosclerosis, infection, trauma, hypertension, and inherited disorders.

AAs generally form in the abdominal section of the aorta and present with weak or absent pulses in the lower extremities, cooler temperatures in the lower extremities, a central abdominal mass that can sometimes have pulsations, and abdominal and/ or back pain.

If the aneurysm ruptures, the chance of survival is very low and requires immediate surgical intervention.

Aortic Dissections usually occur in the thoracic cavity when the aortic intima is torn away, exposing the media layer.

The pulse pressure from the systemic circulation then begins to dissect the two layers of the aortic wall and creates a false lumen or pouch in the wall of the aorta.

Conditions associated with the formation of an aortic dissection include:

- hypertension
- Marfan's Syndrome
- aortic valve abnormalities
- immune disorders
- atherosclerosis
- patients in the third trimester of pregnancy



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1. Demonstrates proper assessment techniques.
 - a. HPI – Complete
 - b. Signs and Symptoms
 - i. Weak/Absent pulses
 - ii. Abdominal mass – possible pulsatile
 - iii. Chest/Back pain
 - iv. Tearing sensation
 - v. Tachycardia
 - vi. Hypertension/Hypotension
 - c. SAMPLE
 - d. OPQRST
 - e. SAMPLE
 - f. OPQRST
 - g. MOI – NOI
 - h. Primary Assessment
 - i. XABCDE Format
 - i. Need for ALS.
 - j. Determine Relevant Differentials based on Assessment.
 - k. Non-Cardiac Obvious causes of Shock
2. Demonstrates the following skills.
 - a. Proper 12 lead placement.
 - b. Obtaining 12 lead EKG in 10 minutes or less of patient side.
 - c. Request ALS.
 - d. Demonstrates knowledge of ACUTE MI message on 12 Lead.
 - e. Demonstrates the appropriate transport mode and destination.
 - f. Transport as soon as safe to do so to the proper destination.
 - g. MOI – NOI

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Cardiac Arrest – Pulseless – Not Breathing – BLS

OVERVIEW:

Cardiac arrest can be caused by Ventricular Fibrillation (VF), pulseless Ventricular Tachycardia (VT), Pulseless Electric Activity (PEA), and Asystole.

The foundation of successful goal of BLS treatment of Cardiac Arrest:

- High-quality CPR,
- Rapid placement of AED
 - For VF / pulseless VT, attempted defibrillation as soon as possible.
- Application of Mechanical CPR Device if possible.

For victims of witnessed VF arrest, early CPR and rapid defibrillation can significantly increase the chance for survival to hospital discharge.



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 - c. SAMPLE
 - d. OPQRST
 - e. SAMPLE
 - f. OPQRST
 - g. MOI – NOI
 - h. Primary Assessment
 - i. XABCDE Format
 - i. Need for ALS.
 - j. Determine Relevant Differentials based on Assessment.
2. Demonstrates the following skills.
 - a. Proper CPR using Current AHA Standards
 - b. AED Placement
 - c. Request ALS.
 - d. Demonstrates the appropriate transport mode and destination.
 - e. Transport as soon as safe to do so to the proper destination.
 - f. MOI – NOI



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3. If ROSC is achieved
 - a. Proper 12 lead placement.
 - b. Obtaining 12
 - c. Request ALS.
 - d. Demonstrates knowledge of ACUTE MI message on 12 Lead.
 - e. Demonstrates the appropriate transport mode and destination.
 - f. Transport as soon as safe to do so to the proper destination.

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Competency – ODEMSA – Regional Protocols – **Cardiac Arrest – Pulseless – Not Breathing** – BLS

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Printed Name Signature

FTO's Name and Signature – date below:

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ECMO for Cardiac Arrest – BLS

OVERVIEW:

Out-of-hospital cardiac arrest in the U.S. has a mortality rate greater than 90% and results in excess of 300,000 deaths per year.

Many of those who do survive, suffer significant neurologic morbidity.

Some patients may benefit from Extracorporeal Membrane Oxygenation (ECMO) intervention.

Minimizing out-of-hospital time is one key factor which may translate to improvements in survival.

Not all facilities offer this therapy and not all patients can qualify.

Despite potentially an increase in transport time, bypassing facilities for ECMO may provide improvements in outcome.

The foundation of successful goal of BLS treatment of Cardiac Arrest:

- High-quality CPR,
- Rapid placement of AED
 - For VF / pulseless VT, attempted defibrillation as soon as possible.
- Application of Mechanical CPR Device if possible.



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 - e. MOI – NOI
 - f. Primary Assessment
 - i. XABCDE Format
 - g. Need for ALS.
 - h. Determine Relevant Differentials based on Assessment.
2. Demonstrates the following skills.
 - a. Proper CPR using Current AHA Standards
 - b. AED Placement
 - c. Request ALS.
 - d. Demonstrates the appropriate transport mode and destination.
 - e. Transport as soon as safe to do so to the proper destination.

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LVAD Patient Management - BLS

OVERVIEW:

Left Ventricular Assist Device (LVAD) is a surgically implanted mechanical pump that augments the left ventricular function. The degree of augmentation is patient-specific. Depending on the level of augmentation, the patient may have a palpable pulse and a blood pressure; others may have no discernable pulse or an abnormal blood pressure. Cardiac arrest in patients on mechanical support with cardiac circulatory devices such as LVAD and TAH is a new phenomenon brought about by the increased use of this therapy in patients with end-stage heart failure.

The American Heart Association scientific statement highlights the recognition and treatment of cardiovascular collapse or cardiopulmonary arrest in an adult or pediatric patient who has a ventricular assist device or total artificial heart.

The research performed by the AHA has not found any indication that CPR in these patients will cause harm. As such, it is recommended that CPR be given to all patients when indicated.



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 - f. Primary Assessment
 - i. XABCDE Format
 - g. Need for ALS.
 - h. Determine Relevant Differentials based on Assessment.
2. Demonstrates the following skills.
 - a. Proper CPR - based on assessment.
 - b. Obtain 12 lead EKG.
 - c. Request ALS.
 - d. Demonstrates the appropriate transport mode and destination.
 - e. Transport as soon as safe to do so to the proper destination.
 - f. MOI – NOI
 - g. Restart/Troubleshoot LVAD
 - h. Contact the patient's LVAD coordinator as soon as possible via 24 hr. Emergency Contact phone number.
 - i. Determine the patient's LVAD center for transport destination.

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