



OLD DOMINION EMERGENCY MEDICAL SERVICES ALLIANCE

Pediatric 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



OLD DOMINION EMERGENCY MEDICAL SERVICES ALLIANCE

Pediatric Cardiovascular Emergencies – BLS

Cardiac Arrest – Unknown Rhythm

OVERVIEW:

During cardiac arrest, there is no effective pumping activity, pulse, or blood pressure.

Most commonly, the rhythms that cause pulseless arrest are ventricular fibrillation, ventricular tachycardia, pulseless electrical activity, or asystole.

The ECG of ventricular fibrillation shows a fine to coarse zigzag pattern without discernible P waves or QRS complexes.

Ventricular fibrillation/ventricular tachycardia is most commonly seen in patients with severe ischemic heart disease and is the most frequently encountered rhythm in sudden cardiac death in adults.

Defibrillation is required to stop VF / VT. It constitutes the most important aspect of therapy for VF/VT. The sooner the shocks are given, the more likely they are to be successful.

In the Pediatric Population – the most common cause of Cardiac Arrest is poor Ventilation/Respiratory Problems that are not quickly corrected.

It is imperative Pediatric Respiratory Issues are quickly identified and corrected to prevent Cardiac Arrest.

Goal: to restore Pulse of at least 60 bpm or greater and Respiratory rate of 30 or greater as soon as possible, Rapid ALS, Rapid Transport.



OLD DOMINION EMERGENCY MEDICAL SERVICES ALLIANCE

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



OLD DOMINION EMERGENCY MEDICAL SERVICES ALLIANCE

Student Can demonstrate the following competencies without prompting and can explain the clinical reasoning for each listed below:

1. Demonstrates proper assessment techniques / Physical skills.
 - a. Scene Survey
 - b. HPI – Complete
 - c. Signs and Symptoms
 - d. SAMPLE
 - e. OPQRST
 - f. MOI – NOI
 - g. Pulse Ox
 - h. AED
 - i. Need for ALS.
 - j. Primary Assessment
 - i. XABCDE Format
 - k. Life Threat Bleeding
 - i. Assessment
 - ii. Correction
 - l. Airway
 - i. Assessment
 - ii. Correction
 - m. Breathing
 - i. Assessment
 - ii. Correction
 1. Ventilate at a rate of least 30 per min.
 2. Proper volume/Device
 3. Pulse Ox at least 94%
 - n. Circulation
 - i. Assessment
 - ii. Correction
 1. Need for CPR.
 - a. At least 100 Compressions a Minute

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



OLD DOMINION EMERGENCY MEDICAL SERVICES ALLIANCE

- b. Single Rescuer Ratio
 - c. Two or more Rescuers Ratio
 - d. AED as soon as possible
 - i. Apply
 - ii. Follow prompts.
 - e. Reevaluate every 2 minutes for Signs of life.
 - i. Repeat the Entire CPR process until properly relieved or transfer of care has occurred.
2. Demonstrates the following skills.
- a. Proper Physical Exam
 - i. Head to toe format
 - ii. All major body parts/systems
 - iii. Vital Signs / Documentation
 - b. Frequently assess for Signs of life
 - c. Proper CPR skills to current AHA Standards
 - d. Pulse Ox Measurement
 - e. Oxygen/Ventilation based on Assessment.
 - f. Demonstrates the appropriate transport mode and destination.
 - g. Transport as soon as safe to do so to the proper destination.

The above is a very abbreviated summary of the Protocol.

For the complete Protocol, please review the appropriate Protocol as published by ODEMSA.



OLD DOMINION EMERGENCY MEDICAL SERVICES ALLIANCE

Pediatric Cardiovascular Emergencies – BLS

Newborn/Neonatal Resuscitation

OVERVIEW:

Most newborns will require only warmth, stimulation, and occasionally some oxygen after birth.

That treatment is recommended before attempting the more aggressive interventions of positive-pressure ventilation (PPV) and chest compressions.

Remember that a newborn’s cardiac output is rate-dependent.

Bradycardia usually is the result of hypoxia.

Once the hypoxia is corrected, the heart rate may spontaneously correct itself.

A “newborn” is defined as within one month of age post-delivery.



OLD DOMINION EMERGENCY MEDICAL SERVICES ALLIANCE

Student Can demonstrate the following competencies without prompting and can explain the clinical reasoning for each listed below:

1. Demonstrates proper assessment techniques / Physical skills.
 - a. Scene Survey
 - b. HPI – Complete
 - c. Signs and Symptoms
 - d. SAMPLE
 - e. OPQRST
 - f. MOI – NOI
 - g. Pulse Ox
 - h. AED
 - i. Need for ALS.
 - j. Primary Assessment
 - i. XABCDE Format
 - k. Life Threat Bleeding
 - i. Assessment
 - ii. Correction
 - l. Airway
 - i. Assessment
 - ii. Correction
 1. If obvious obstruction to spontaneous breathing or requires PPV
 - a. Gently Suction via Bulb Syringe – Mouth then Nostrils
 2. If meconium staining present
 - a. Baby has strong respiratory effort and Heart Rate at or above 100 bpm – **Do Not Suction**
 - b. If the baby does not meet the above vital signs
 - i. Immediate Suction of the Mouth then Nose until clear – must ventilate in 20 seconds or less
 - ii. Immediate ventilation at proper Rate per Current AHA guidelines
 - iii. Prepare for CPR.



OLD DOMINION EMERGENCY MEDICAL SERVICES ALLIANCE

iv. ALS

- m. Breathing
 - i. Assessment
 - ii. Correction
 - 1. Ventilate at a rate of least 30 per min.
 - 2. Proper volume/Device
 - 3. Pulse Ox at least 94%
- n. Circulation
 - i. Assessment
 - ii. Correction
 - 1. Need for CPR.
 - a. At least 100 Compressions a Minute
 - b. Single Rescuer Ratio
 - c. Two or more Rescuers Ratio
 - d. AED as soon as possible
 - i. Apply
 - ii. Follow prompts.
 - e. Reevaluate every 2 minutes for Signs of life.
 - i. Repeat the Entire CPR process until properly relieved or transfer of care has occurred.
- o. If meconium is not present
 - i. Rub the Back vigorously but gently.
 - ii. Simultaneously begin drying and warming
- p. Keep Baby Warm and Dry
- q. APGAR 1 Minute
- r. APGAR 5 Minute
- s. Frequent Evaluation of Respiratory Rate/Effort
 - i. Heart Rate 100 bpm or above but poor Respiratory Effort
 - 1. Ventilate with proper Tidal Volume to have chest rise only
 - 2. Rate of at least 40 to 60 min
 - 3. NO Oxygen**
 - ii. Heart Rate less than 100 and Poor Respiratory Effort
 - 1. Ventilate with proper Tidal Volume to have chest rise only



OLD DOMINION EMERGENCY MEDICAL SERVICES ALLIANCE

2. Rate of at least 40 to 60 min
 - 3. NO Oxygen at this time**
 4. After 90 seconds – Reevaluate.
 - a. No Increase in Heart Rate
 - i. Oxygen is to be used.**
 - iii. Heart Rate less than 60**
 - 1. Begin CPR as noted above**
2. Demonstrates the following skills.
- a. Proper Physical Exam
 - i. Head to toe format
 - ii. All major body parts/systems
 - iii. Vital Signs / Documentation
 - b. Frequently assess for Signs of life
 - c. Proper CPR skills to current AHA Standards
 - d. Pulse Ox Measurement
 - e. Oxygen/Ventilation based on Assessment.
 - f. Demonstrates the appropriate transport mode and destination.
 - g. Transport as soon as safe to do so to the proper destination.

The above is a very abbreviated summary of the Protocol.

For the complete Protocol, please review the appropriate Protocol as published by ODEMSA.



OLD DOMINION EMERGENCY MEDICAL SERVICES ALLIANCE

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 – **Pediatric Cardiovascular Emergencies – BLS - Cardiac Arrest – Newborn/Neonatal Resuscitation**

Student's Name and Signature – date below:

_____ Date _____
Printed Name Signature

FTO's Name and Signature – date below:

_____ Date _____
Printed Name Signature



OLD DOMINION EMERGENCY MEDICAL SERVICES ALLIANCE

Pediatric Cardiovascular Emergencies – BLS

Tachycardia with a Pulse

OVERVIEW:

Tachycardia is an abnormally fast rhythm of the heart.

It is most commonly caused by a reentry mechanism that involves an accessory pathway or the AV conduction system.

SVT is the most common tachyarrhythmia producing cardiovascular compromise during infancy.



OLD DOMINION EMERGENCY MEDICAL SERVICES ALLIANCE

Student Can demonstrate the following competencies without prompting and can explain the clinical reasoning for each listed below:

1. Demonstrates proper assessment techniques / Physical skills.
 - a. Scene Survey
 - b. HPI – Complete
 - c. Signs and Symptoms
 - d. SAMPLE
 - e. OPQRST
 - f. MOI – NOI
 - g. AED
 - h. Need for ALS.
 - i. Pulse Ox
 - j. End Tidal CO₂
 - k. Obtain 12 lead EKG.
 - l. IV Access
 - m. Primary Assessment
 - i. XABCDE Format
 - n. Life Threat Bleeding
 - i. Assessment
 - ii. Correction
 - o. Airway
 - i. Assessment
 - ii. Correction
 - iii. Immediate ventilation at proper Rate per Current AHA guidelines
 - iv. Secure Airway
 - v. Prepare for CPR.
 - vi. ALS
 - p. Breathing
 - i. Assessment
 - ii. Correction
 1. Ventilate at a rate of least 30 per min.

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



OLD DOMINION EMERGENCY MEDICAL SERVICES ALLIANCE

2. Proper volume/Device
 3. Pulse Ox at least 94%
 - q. Circulation
 - i. Assessment
 - ii. Correction
 1. Need for CPR.
 - a. At least 100 Compressions a Minute
 - b. Single Rescuer Ratio
 - c. Two or more Rescuers Ratio
 - d. AED as soon as possible
 - i. Apply
 - ii. Follow prompts.
 - e. Reevaluate every 2 minutes for Signs of life.
 - i. Repeat the Entire CPR process until properly relieved or transfer of care has occurred.
 - r. Frequent Evaluation of Respiratory Rate/Effort
 - i. Heart Rate 100 bpm or above but poor Respiratory Effort
 1. Ventilate with proper Tidal Volume to have chest rise only.
 2. Rate of at least 40 to 60 min
 - ii. Heart Rate less than 100 and Poor Respiratory Effort
 1. Ventilate with proper Tidal Volume to have chest rise only.
 2. Rate of at least 40 to 60 min
 3. After 90 seconds – Reevaluate.
 - iii. **Heart Rate less than 60**
 1. **Begin CPR per AHA PALS**
2. Demonstrates the following skills.
 - a. Proper Physical Exam
 - i. Head to toe format
 - ii. All major body parts/systems
 - iii. Vital Signs / Documentation
 - b. Frequently assess for Signs of life
 - c. Proper CPR skills to current AHA Standards
 - d. Pulse Ox Measurement

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



OLD DOMINION EMERGENCY MEDICAL SERVICES ALLIANCE

- e. Oxygen/Ventilation based on Assessment.
- f. Demonstrates the appropriate transport mode and destination.
- g. Transport as soon as safe to do so to the proper destination.

The above is a very abbreviated summary of the Protocol.

For the complete Protocol, please review the appropriate Protocol as published by ODEMSA.



OLD DOMINION EMERGENCY MEDICAL SERVICES ALLIANCE

Pediatric Cardiovascular Emergencies – BLS

Bradycardia with a Pulse

OVERVIEW:

Bradycardia is the most common dysrhythmia in the pediatric population.

Bradycardia, in pediatric patients, typically is the result of some form of respiratory depression and initial treatment should be directed to ensuring that the patient is breathing adequately and providing supplemental oxygenation and ventilation as needed.

Since the etiology of bradycardia is usually hypoxemia, initial management is ventilation and oxygenation while perfusion is maintained with chest compressions in children with a heart rate of less than 60 beats per minute.

Symptomatic bradycardia is defined in pediatrics as hypotension or other signs and/or symptoms of poor perfusion, with a (relative to age) bradycardia.

Most pediatric bradycardia is hypoxia-related and will usually respond to oxygenation.



OLD DOMINION EMERGENCY MEDICAL SERVICES ALLIANCE

Student Can demonstrate the following competencies without prompting and can explain the clinical reasoning for each listed below:

1. Demonstrates proper assessment techniques / Physical skills.
 - a. Scene Survey
 - b. HPI – Complete
 - c. Signs and Symptoms
 - d. SAMPLE
 - e. OPQRST
 - f. MOI – NOI
 - g. AED
 - h. Need for ALS.
 - i. Pulse Ox
 - j. End Tidal CO₂
 - k. Obtain 12 lead EKG.
 - l. IV Access
 - m. Primary Assessment
 - i. XABCDE Format
 - n. Life Threat Bleeding
 - i. Assessment
 - ii. Correction
 - o. Airway
 - i. Assessment
 - ii. Correction
 - iii. Immediate ventilation at proper Rate per Current AHA guidelines
 - iv. Secure Airway
 - v. Prepare for CPR.
 - vi. ALS
 - p. Breathing
 - i. Assessment
 - ii. Correction
 1. Ventilate at a rate of least 30 per min.

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



OLD DOMINION EMERGENCY MEDICAL SERVICES ALLIANCE

2. Proper volume/Device
3. Pulse Ox at least 94%
- q. Circulation
 - i. Assessment
 - ii. Correction
 1. Need for CPR.
 - a. At least 100 Compressions a Minute
 - b. Single Rescuer Ratio
 - c. Two or more Rescuers Ratio
 - d. AED as soon as possible
 - i. Apply
 - ii. Follow prompts.
 - e. Reevaluate every 2 minutes for Signs of life.
 - i. Repeat the Entire CPR process until properly relived or transfer of care has occurred.
 - r. Bradycardia with a pulse is noted.
 - i. Symptomatic
 1. Not Symptomatic
 - a. Search for the underlying cause
 - b. Ensure proper ventilation/breathing.
 - c. Supplement with oxygen with proper rate/device per AHA PALS guidelines
 2. Symptomatic or Heart rate less than 60 bpm
 - a. Need for CPR.
 - i. At least 100 Compressions a Minute
 - ii. Single Rescuer Ratio
 - iii. Two or more Rescuers Ratio
 - iv. Reevaluate every 2 minutes for improved heart rate.
 1. Repeat Entire CPR process until properly relived or transfer of care has occurred.
 2. If cardiac arrest occurs – refer to Pediatric Cardiac Arrest Protocol
 - s. Frequent Evaluation of Respiratory Rate/Effort

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



OLD DOMINION EMERGENCY MEDICAL SERVICES ALLIANCE

- i. Heart Rate 100 bpm or above but poor Respiratory Effort
 1. Ventilate with proper Tidal Volume to have chest rise only.
 2. Rate of at least 40 to 60 min
- ii. Heart Rate less than 100 and Poor Respiratory Effort
 1. Ventilate with proper Tidal Volume to have chest rise only.
 2. Rate of at least 40 to 60 min
 3. After 90 seconds – Reevaluate.
- iii. Heart Rate less than 60**
 - 1. Begin CPR per AHA PALS**
2. Demonstrates the following skills.
 - a. Proper Physical Exam
 - i. Head to toe format
 - ii. All major body parts/systems
 - iii. Vital Signs / Documentation
 - b. Frequently assess for Signs of life
 - c. Proper CPR skills to current AHA Standards
 - d. Pulse Ox Measurement
 - e. Oxygen/Ventilation based on Assessment.
 - f. Demonstrates the appropriate transport mode and destination.
 - g. Transport as soon as safe to do so to the proper destination.

The above is a very abbreviated summary of the Protocol.

For the complete Protocol, please review the appropriate Protocol as published by ODEMSA.



OLD DOMINION EMERGENCY MEDICAL SERVICES ALLIANCE

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