Pediatric Cardiovascular Emergencies – ALS

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Pediatric Cardiovascular Emergencies – ALS

Cardiac Arrest/Pulseless Arrest

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.

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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. Need for ALS.
    h. Pulse Ox
    i. End Tidal CO_2
    j. Place on Cardiac Monitor/Obtain 12 lead EKG.
    k. IV Access
    l. Primary Assessment
        i. XABCDE Format
    m. Life Threat Bleeding
        i. Assessment
        ii. Correction
    n. Airway
        i. Assessment
        ii. Correction
    o. 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%
    p. Circulation
        i. Assessment
        ii. Correction

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1. Need for CPR.
    a. At least 100 Compressions a Minute
    b. Single Rescuer Ratio
    c. Two or more Rescuers Ratio
    d. AED/Defibrillator as soon as possible
        i. Apply
        ii. Follow Proper PALS Algorithm
    e. Revaluate every 2 minutes for Signs of life.
        i. Repeat the Entire CPR process until properly relived or transfer of care has occurred.
q. Place on Monitor
    i. Refer to the Appropriate Pediatric Cardiac Protocol/Current PALS Algorithm

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.

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Competency – ODEMSA – Regional Protocols – **Pediatric Cardiovascular Emergencies – ALS - Cardiac Arrest/Pulseless Arrest**

Student's Name and Signature – date below:

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Printed Name Signature

FTO's Name and Signature – date below:

_____ _____ Date_____

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Pediatric Cardiovascular Emergencies – ALS

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.

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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 CO_2
    k. Place on Cardiac Monitor/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
            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

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ii. Immediate ventilation at proper Rate per Current AHA guidelines
iii. Prepare for CPR.
iv. ALS

p. 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%

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. Revaluate every 2 minutes for Signs of life.
                i. Repeat Entire CPR process until properly relived or transfer of care has occurred.

r. Place on Monitor
    i. Refer to the Appropriate Pediatric Cardiac Protocol/Current PALS Algorithm

s. If meconium is not present
    i. Rub the Back vigorously but gently.
    ii. Simultaneously begin drying and warming

t. Keep Baby Warm and Dry

u. APGAR 1 Minute

v. APGAR 5 Minute

w. Frequent Evaluation of Respiratory Rate/Effort

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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
    2. Rate of at least 40 to 60 min
    3. **NO Oxygen at this time**
    4. After 90 seconds – Revaluate.
        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.

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Competency – ODEMSA – Regional Protocols – **Pediatric Cardiovascular Emergencies – ALS - Cardiac Arrest – Newborn/Neonatal Resuscitation**

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Pediatric Cardiovascular Emergencies – ALS

Tachycardia with a Pulse

Supraventricular Tachycardia/Atrial Fibrillation

Ventricular 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.

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    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 CO_2
    k. Place on Cardiac Monitor/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.

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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. Revaluate every 2 minutes for Signs of life.
            i. Repeat the Entire CPR process until properly relived or transfer of care has occurred.

r. Place on Monitor-Tachycardia with a pulse is noted
   i. Narrow QRS Complex
      1. Probable Sinus Tachycardia
         a. Search for an underlying cause
      2. Probable SVT
         a. Vagal Maneuvers
         b. IV/IO access
            i. Adenosine per Current AHA PALS guidelines
         c. IV/IO not available or Adenosine not effective
            i. Synchronized Cardioversion per current AHA PALS Guidelines
   ii. Wide QRS Complex
      1. Symptomatic
         a. Synchronized Cardioversion per current AHA PALS Guidelines
      2. Asymptomatic
         a. Adenosine if regular rhythm and monomorphic QRS
         b. Medical Control

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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
    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 – Revaluate.
    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.
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Competency – ODEMSA – Regional Protocols – **Pediatric Cardiovascular Emergencies – ALS - Tachycardia with a Pulse/Supraventricular Tachycardia/Atrial Fibrillation/Ventricular Tachycardia with a Pulse**

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Printed Name Signature

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Pediatric Cardiovascular Emergencies – ALS

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.

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    c. Signs and Symptoms
    d. SAMPLE
    e. OPQRST
    f. MOI – NOI
    g. AED
    h. Need for ALS.
    i. Pulse Ox
    j. End Tidal CO_2
    k. Place on Cardiac Monitor/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.

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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. Revaluate every 2 minutes for Signs of life.
            i. Repeat the Entire CPR process until properly relived or transfer of care has occurred.

r. Place on Monitor-Bradycardia with a pulse is noted.
   i. IV/IO access
   ii. 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. Revaluate every 2 minutes for improved heart rate.
               1. Epinephrine IV/IO per current AHA PALS guidelines
               2. Consider Atropine per age and current AHA PALS guidelines

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3. Consider Pacing
4. Repeat the Entire CPR process until properly relived or transfer of care has occurred.
5. If cardiac arrest occurs – refer to Pediatric Cardiac Arrest Protocol

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
   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 – Revaluate.
   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.

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