

Pre-Course Requirements

The PALS course now requires a mandatory **Precourse Self-Assessment and Precourse Work** with a passing score of at least 70%. Students may take the self-assessment as many times as needed. Please bring your Certificate of Completion with you to the PALS class or email in advance to pretest@expresstraining.com. Instructions for accessing the Precourse Requirements are included in your registration confirmation.

PALS Written Exam

The ACLS Provider exam is 50 multiple-choice questions, with a required passing score is 84%. All AHA exams are now “open resource” which means student may use the PALS manual, study guides, handouts and personal notes during the exam. Using the PALS Provider Manual ahead of time with the online resources is very helpful.

BLS Review for Child and Infant

Assessment Steps for BLS

- Make sure scene is safe
- Tap/shout to check for responsiveness
- Call for help if patient is unresponsive
- Check for pulse and breathing for at least 5 but no more than 10 seconds
- If no pulse (or not sure if there is a pulse) begin CPR
 - If alone and witnessed collapse, immediately activate EMS/AED before CPR
 - If alone and not witnessed, do 2 minutes of CPR before activating EMS/AED

Breaths During CPR

- Compressions to breaths ratio 30:2 if single rescuer
- Compressions to breaths ratio 15:2 with 2 rescuers
- Each breath given over 1 second
- An effective breath will result in visible chest rise
- CPR with ETT: 1 breath every 2-3 seconds with continuous compressions
- Verify ETT placement: waveform capnography

Compressions

- Compress at least one-third the depth of the chest
- Compress at a rate between 100 – 120/min
- Allow for full Chest recoil between compression
- PETCO₂ (intubated) < 10 mmHg indicates poor compressions
- Interruptions in compressions should be < 10 seconds
- Switch compressors every 2 min.

Rescue Breathing

- For a patient who is not breathing or breathing effectively
- Give 1 breath every 2-3 seconds
- Each breath given over 1 second
- An effective breath will result in visible rise/fall of the chest
- Excessive ventilation decreases cardiac output
- Difficulty positioning airway for patency, place NPA or OPA
- OPA Placement = Measure from the corner of the mouth to the angle of the mandible

Effective Team Dynamics

1. Clear roles and responsibilities: Team leader should clearly delegate tasks
2. Knowing your limitation: Stay in scope of practice / ask for a new role if inappropriately assigned
3. Constructive interventions: if someone is about to make a mistake address that team member immediately
4. Knowledge sharing
5. Summarizing and Re-evaluation
6. Closed loop communication: Repeat back the order
7. Mutual respect

Systemic Approach

Initial Impression

- This is a quick “doorway” assessment looking at the child’s Appearance, Work of Breathing, and Circulation
- Is the child in failure or distress?

Primary Assessment

- Airway
- Breathing
- Circulation
- Disability
- Exposure

Secondary Assessment

- Head to Toe Physical
- History: SAMPLE
 - Signs and Symptoms
 - Allergies
 - Medications
 - Past Medical History
 - Last Meal
 - Events leading up to admission

Respiratory

- Grunting, associated with **Lung Tissue Disease**, is an attempt to maintain positive pressure and prevent collapse of the alveoli and small airways. Patient should be evaluated quickly, it may indicate respiratory distress or respiratory failure.
- **Upper Airway Obstructions** usually is associated with abnormal sounds (Stridor, hoarseness,) and increased WOB during the inspiratory phase. Examples include croup, epiglottitis, foreign body, and anaphylaxis.
- **Respiratory Failure** is inadequate Oxygenation or inadequate Ventilation, or both.

Common Respiratory Complications

Upper Airway Obstruction

- Inspiratory Stridor is a common finding
- Foreign Body, Croup, Epiglottitis, Anaphylaxis, Trauma
- VS, oxygen, monitor, IV, CXR, possible blood gas
- Nebulized Epi (Racemic Epinephrine), Steroids
- Keep child calm to prevent situation from worsening

Lung Tissue Disease

- Expiratory Grunting is a common finding
- Crackles often heard on auscultation
- Hypoxemia despite oxygen administration
- Pneumonia
- O₂, monitor, IV, CXR, blood gas, CBC, Cultures
- Antibiotics within first hour, provide supportive care

Lower Airway Obstruction

- Expiratory Wheezing is a common finding
- Asthma, Bronchiolitis
- VS, oxygen, monitor, IV, CXR, possible blood gas
- Bronchodilator (Albuterol)
- Consider CPAP or BiPAP

Disordered Control of Breathing

- Absent or abnormal breathing
- Toxins, poisons, head trauma, seizures
- Ensure adequate oxygen **and** ventilation
- Treat the underlying cause to correct

Shock / Circulatory

- **IO placement** is an acceptable option if IV access cannot quickly be established. Contraindications to IO placement include previous attempts, infection, or crush injury in the same extremity.
- In Shock but BP is acceptable = **Compensated** / BP is unacceptable = **Hypotensive**
 - Acceptable BP is $70 + 2(\text{age in years})$. Example: 4 y/o is compensated if his systolic pressure is greater than 78.

Common Shock / Circulatory Complications

Hypovolemic Shock

- Blood or fluid loss
- Treat with fluid bolus and consider blood products
- Standard bolus: 20cc/kg of Isotonic Crystalloids (NS)
- Deliver bolus over 5 to 10 minutes

Cardiovascular Shock

- Pulmonary edema and possible enlarged heart
- Consult Cardiology / 12 lead / Ultrasound
- Consider smaller/slower boluses if needed (10cc/kg)
- Consider CPAP/BiPAP to mobilize fluids

Obstructive Shock

- Must fix the underlying cause
- Examples: Cardiac Tamponade, Tension Pneumothorax
- Consider CPAP or BiPAP
- Tension Pneumothorax most common = needle decompression and chest tube

Distributive Shock

- More common in individuals with a weak immune system such as cancer patients
- Support oxy and ventilation, support blood pressure
- Antibiotics within the first hour

Cardiac

Rhythms



Normal Sinus Rhythm

Acceptable rate range varies according to age

Sinus Bradycardia

Most common, usually Resp/oxygen related. If patient is compromised and not an immediate Respiratory fix, start CPR. Epi is the first drug for Pediatric patients



Sinus Tachycardia

Response to fever, pain, dehydration, physical exertion. Corrected by treating the underlying cause



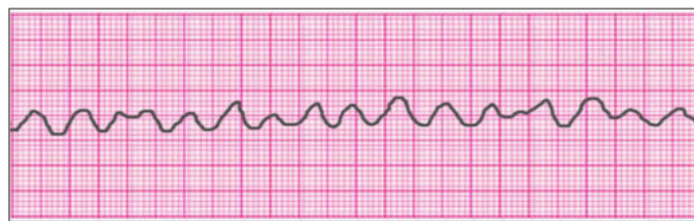
Supraventricular Tachycardia

HR greater than 220 in Infants, and 180 in Children. P wave can be absent or abnormal, rate does not vary with activity. If stable, consider Vagal Maneuvers but do not waste time if unstable. Adenosine or Synchronized Cardioversion



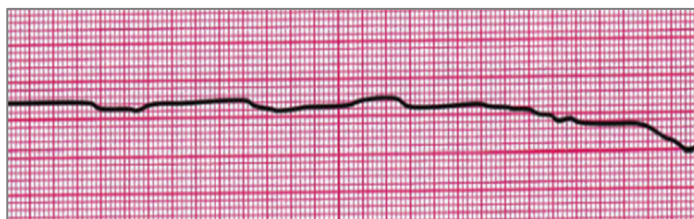
Ventricular Tachycardia

Always verify if pulse is present. If so, use the Tachycardia Algorithm, wide complex. If no pulse, use the Cardiac Arrest Algorithm. Shockable Rhythm (defib), Meds: Epi and Amiodarone (or Lidocaine) if refractory



Ventricular Fibrillation

As with Pulseless V-tach, Shockable Rhythm (defib), Meds: Epi and Amiodarone (or Lidocaine) if refractory



Asystole

High Quality CPR with minimal interruptions. Meds: Epi

PEA: Any Organized Rhythm without a PULSE