

Review Renew ACLS

American Heart Approved Site

Study Guide PALS Course Reference Companion Workbook

Based on AHA PALS Provider Manual 2015

This is an Aid and is now way
intended to replace your PALS
Provider Manual.

Initial Impression

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Consciousness	Level of Consciousness (unresponsive, irritable, alert)
Breathing	Increased work of breathing, absent, or decreased respiratory effort, or abnormal sounds heard without auscultation
Color	Abnormal skin color, cyanosis, pallor, or mottling.

- 1) If a child is unresponsive and not breathing (only gasping) you should shout for help, or activate emergency response and Pulse check for 5-10 sec.

- 2) If there is no pulse start CPR beginning with Chest Compressions 100-120/min. 1 and a half - 2cm in depth. Switch every 2 min.

- 3) When a pulse is present provide Rescue Breathing; a breath every 6 sec.

- 4) In children with heart rates < 60/min and signs of poor perfusion, you should
 - a. Provide rescue breathing only
 - b. Provide compressions and ventilations - **initiate CPR**
 - c. Seek expert consultation
 - d. None of the above the heart rate is normal for most sick children.

Evaluate

Primary Assessment	ABCDE approach: Airway, Breathing, Circulation, Disability, Exposure
Secondary Assessment	History, and focused physical exam
Diagnostic	Labs, Chest X rays, other advanced tests
Environmental Dangers	Is the scene safe for out of hospital settings, always consider this before assessing.

Identify

	Type	Severity
Respiratory	<ul style="list-style-type: none"> • Upper/lower airway obstruction • Lung Tissue Disease • Disordered Control of Breathing 	Respiratory Distress Respiratory Failure
Circulatory	<ul style="list-style-type: none"> • Hypovolemic shock • Distributive shock • Cardiogenic shock • Obstructive shock 	Compensative Shock Hypotensive Shock

Intervene

On the basis of your assessment intervene with the appropriate actions within your scope of practice.

List Interventions:

- a) Position for Patent Airway
- b) Activate Emergency Response
- c) Start CPR
- d) Code Cart/Monitor
- e) Place the child on the monitor & pulse oximeter
- f) Administer Oxygen
- g) Support Ventilation
- h) Start Medications/Fluids (nebulizer, treatment, IV/IO access)

Airway

Assessment

- a) Look for Air Movement
- b) Listen for Air Movement

Maintainable: able to move air with adjustment. While performing head-tilt chin lift/jaw thrust airway becomes patent. Suction to relieve any airway obstruction.

Not maintainable: not able to move air Attempt head tilt/jaw thrust - if no relief of obstruction - indication for advanced airway.

Breathing

Rate, Effort, Chest Expansion, Lung Sounds

AGE	BREATHS/min
Infant < 1year	30-60
Toddler 1-3 year	24-40
Preschooler 4-5 year	22-34
School age 6-12 year	18-30
Adolescent 13-18 years	12-16

Tachypnea occurs as a response to:

- a) Fever
- b) Pain
- c) DKA
- d) Sepsis
- e) CHF, Severe Anemia, congenital heart defects

Bradypnea occurs due to

- a) Muscle Fatigue
- b) CNS Injury
- c) Infection
- d) Hypothermia
- e) Medications

Apnea is the cessation of breathing for 20 sec. or more.

Increases Respiratory Effort: Define

Nasal Flaring - Dilation of Nostrils (nasal flaring) early signs of resp. distress

Retractions- inward movements of chestwall, neck, sternum on inspiration.

Head bobbing- Lifting chin and extending neck on inspiration/chin fall on expiration

Grunting - _____

Causes of decreased Chest Expansion or Symmetry:

- a) **Decreased Effort during breathing**
- b) **Obstruction - Tongue/FBAO (Foreign Body Airway Obstruction)**
- c) **Atelectasis**
- d) **Pneumothorax, Hemothorax, Pleural Effusion, Mucous Plugging**

Lung Sounds

Causes

Stridor – Coarse high pitch breathing typically heard on inspirations...Tx. epinehrine	Upper Airway Obstruction is critical requires immediate intervention. Causes: edema from allergic reaction, post extubation
Grunting – Short low pitch sound heard during exhalation over a partially closed glottis. Compensation creates back pressure to keep small airways open.	Tissue Disease, airway, alveolar collapse, Pneumonia Pulmonary contusion, ARDS, CHF, Pulmonary Edema.
Gurgling – Bubbling sound on inspiration or exhalation	Secretions, Vomit, blood. Tx: Suctioning
Wheezing – High or low pitched whistling heard most on expiration	Asthma, Bronchiolitis, FBAO, Partial Airway obstruction
Crackles – Rales, on inspiration Fluid accumulation within the alveolar	Pneumonia, pulmonary edema, atelectasis, interstitial lung disease

Circulation

Heart Rate

Age	Awake Rate	Mean	Sleeping Rate
Newborns – 3 months	85-205	140	80-160
3 months – 2 years	100-190	130	75-160
2 years – 10 years	60-140	80	60-90
>10 years	60-100	75	50-90

Pulses

<i>Central</i>	<i>Peripheral</i>
Femoral Brachial (Infants) Carotic (children) Axillary	Radial Dorsalis Pedis Posterior Tibial

Skin Color and Temperature

Color	Characteristic	Causes
Pallor <ul style="list-style-type: none"> • Paleness • Cold • Stress • cardiogenic shock 	Pale color of the lips mucous membrane, mouth, tongue, palms, soles	<ul style="list-style-type: none"> • Anemia • hypothermia • Hypovolemia
Mottling Patchy discoloration	Varied distribution of color	<ul style="list-style-type: none"> • Hypoxemia • Hypovolemia • Shock • vasoconstriction • irregular supply of oxygen
Cyanosis <ul style="list-style-type: none"> • Peripheral • Central • Acrocyanosis 	Bluish Discoloration	<ul style="list-style-type: none"> • Peripheral Shock • CHF • PVD

Blood Pressure

Hypotension

Age	Systolic Blood Pressure
Term Neonates (0-28days)	< 60mmHg
Infants (1-12months)	< 70mmHg
Children (1-10years 5 th blood pressure)	< 70 + (age in years x 2)
Children > 10 years	< 90mmHg

Shock

Shock – Inadequate delivery of oxygen and nutrients to the tissues relative to tissue metabolism.

Hypovolemic Distributive shock	20 ml/kg (may repeat PRN)	Over 5-10 min.
Cardiogenic (nonpoisoning)	5-10 mL/kg bolus (repeat PRN)	Over 10-20 min.
DKA with compensated shock	10 – 20 mL/Kg over 10-20min.	Over 1hour
Poisonings	5-10 mL/Kg (repeat PRN)	Over 10-20 min.

Capillary refill, if prolonged (>2 seconds), may indicate shock, measure blood pressure early.

Shock can be categorized into two categories based upon severity

- Compensated Shock: Normal systolic BP, decreased level of consciousness, cool extremities with delayed capillary refill, and faint or non-palpable distal pulses
- Hypotensive Shock: Hypotension with signs of shock

Disability – assessment of neurologic function

Signs of cerebral hypoxia

Sudden and Severe	Subtle and gradual
Decreased Level of Consciousness	Confusion Decreased Level of Consciousness
Loss of Muscular Tone	Irritability
Generalized Seizures	Lethargy
Pupil Dilation	Agitation

To rapidly evaluate cerebral cortex function, use the VPU pediatric Response Scale. Used to rate child's level of consciousness.

A lert

V oice

P ain

U nresponsive

Glascow Coma

Mild 13 -15

Moderate 9-12

Severe 3-8

P upil

E qual

R ound

R eactive

L ight

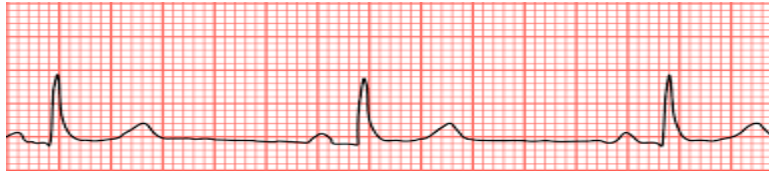
Eight Elements of Effective Team Dynamics

1. Closed-loop communication
2. Clear Messages
3. Clear Role and responsibilities
4. Knowing one's limitations
5. Knowledge sharing
6. Constructive intervention
7. Reevaluation and summarizing
8. Mutual respect

Six Resuscitation Team Roles

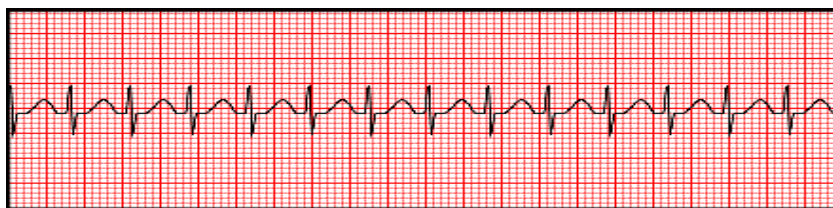
1. Team Leader
2. Airway
3. IV/IO
4. Compressor
5. Monitor/defibrillator
6. Observer/Recorder

Bradycardia



1. Oxygen first
2. CPR if HR is < 60 bpm
3. Epinephrine 0.01mg/kg IV/IO (1:10,000; 0.1ml/kg) is the first drug of choice for bradycardia in children
4. Atropine 0.02 mg/kg IV/IO (Minimum dose: 0.1mg; maximum total dose for children: 1mg) may be given. Small doses of atropine may cause paradoxical bradycardia in small doses which is why epinephrine is generally used. However, atropine may be used if bradycardia is due to increased vagal tone or primary AV block.

Tachycardia with Pulse (SVT)

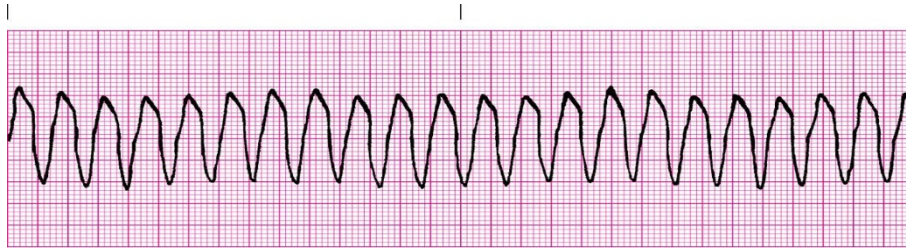


Stable – Narrow QRS Regular Rhythm Supraventricular Tachycardia

1. Try Vagal maneuvers
2. Adenosine 0.1mg/kg (maximum doses 6mg, 2nd dose 12mg)

RAPID IVP (2 syringe technique) Note: A brief period of asystole may follow the injection

WIDE QRS (VT with pulse)



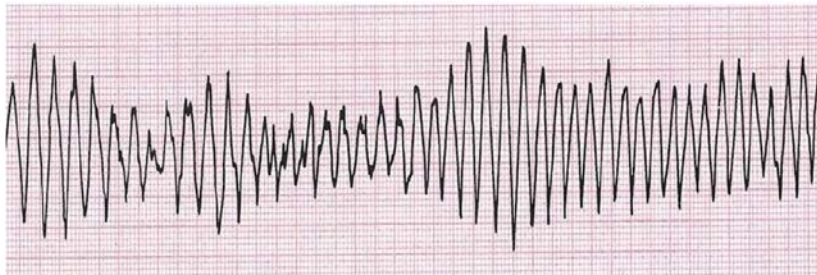
Stable

Treatment: Amiodarone 5mg/kg IV over 20 to 60 minutes

Or Procainamide 15mg/kg IV over 30 to 60 minutes • May need synchronized Cardioversion

Unstable with a pulse - SYNCRONIZED CARDIOVERSION

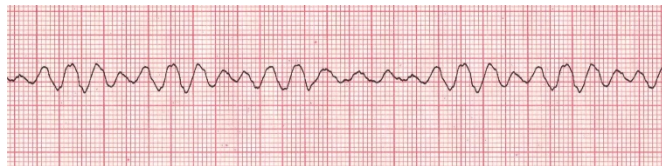
WIDE QRS (torsades de points)



Treatment: Magnesium load with 25 – 50 mg/kg over 10 minutes

Pulseless Arrest includes:

1. Ventricular Fibrillation



Treatment:

- Defibrillate(shock) 

First shock is at 2J/kg, next shock 4J/kg, ...max 10J/kg

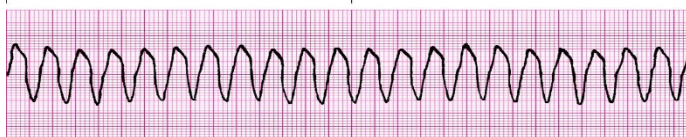
CPR (beginning with Chest Compressions) 30:2

Rhythm/Pulse check q 2min. for 5-10 sec.

Drug: Epinephrine: IV/IO .01mg/kg (0.1mL/kg 1:10,000 concentration) q 3-5 min.

Amiodarone: IV/IO 5mg/kg bolus during cardiac arrest.

2. Pulseless Ventricular Tachycardia



Treatment:

- Defibrillate(shock) 

– First shock at 2J/kg, next shock 4J/kg, ...max 10J/kg

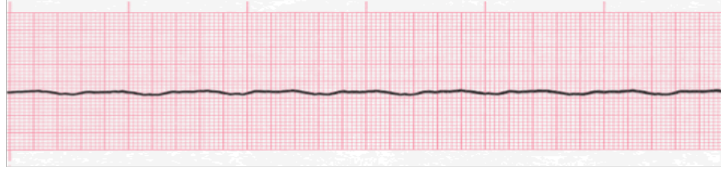
CPR (beginning with Chest Compressions) 30:2

Rhythm/Pulse check q 2min. for 5-10 sec.

Drug: Epinephrine: IV/IO .01mg/kg (0.1mL/kg 1:10,000 concentration) q 3-5min.

Amiodarone: IV/IO 5mg/kg bolus during cardiac arrest

3. Asystole



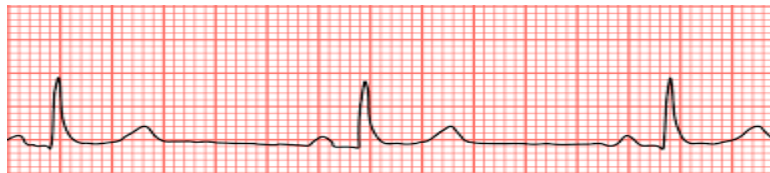
CPR (beginning with Chest Compressions) 30:2

Rhythm/Pulse check q 2min. for 5-10 sec.

Drug: Epinephrine: IV/IO .01mg/kg (0.1ml/Kg 1:10,000 concentration) q 3-5min.

No shock, no antiarrhythmic.

4. Pulseless electrical activities



CPR (beginning with Chest Compressions) 30:2

Rhythm/Pulse check q 2min. for 5-10 sec.

Drug: Epinephrine: IV/IO .01mg/kg (0.1ml/Kg 1:10,000 concentration) q 3-5min.

No shock, no antiarrhythmic.