2020 PALS Study Guide

BLS : BLS is the foundation of ACLS and PALS

- Infant and child 1-rescuer BLS sequence **Page 15**
- Infant and child 2-rescuer BLS sequence **Page 20**
- Use of AED for infants and children **Page 18**
- How to determine “next actions” **Page 17**
- **Pediatric BLS Algorithm for Healthcare Providers (Single Rescuer) Page 14**
- **Pediatric BLS Algorithm for Healthcare Providers (2 or more Rescuers) page 21**

Recognizing and Managing Cardiac Arrest : You should be able to recognize cardiopulmonary arrest immediately and begin CPR within 10 seconds

- Life Threatening Problems: **Page 73**
- Arrest Rhythms **Pages 77-79**
- **Flowchart: Summary of High-quality Components for BLS Providers Page 81**
- Monitoring CPR Quality **Page 82**
- Defibrillation **Page 85**
- **The initial dose for Defibrillation is a range of 2-4 joules/kg**
- **Table: Pediatric Cardiac Arrest Medications pages 86-87**
- **Pediatric Cardiac Arrest Algorithm Page 89**

• **Upper Airway Obstruction:** Stridor (typically inspiratory), increased respiratory rate and effort

Managing Arrhythmias :

Flowchart: Pediatric Bradycardia with a Pulse Algorithm page 244

Table: Treatment of Bradycardia Causes Page 248

Flowchart: Pediatric Tachycardia with a Pulse Algorithm page 257

Rhythm Recognition Review pages 290-293

Post Cardiac Arrest Care:

Table: General Recommendations for Post Cardiac Arrest Care
pages 264-265

Respiratory Issues : Hypoxia is the most common cause of Bradycardia!

- Identifying Respiratory Problems by Severity (mild, severe, impending respiratory arrest) **Page 117**
- Identifying Respiratory Problems by Type **Pages 119-121**

• **Upper Airway Obstruction:** Stridor (typically inspiratory), increased respiratory rate and effort

• **Lower Airway Obstruction:** Barking cough, Hoarseness, Wheezing (typically expiratory) Prolonged expiratory phase, increased respiratory rate and effort

• **Lung Tissue Disease:** Grunting, Crackles, Decreased Breath Sounds, increased respiratory rate and effort

• **Disordered Control of Breathing:** Variable rate and depth of ventilations, variable air movement. Seen in postictal, increased ICP, and overdose patients

- **Flowchart: Recognizing Respiratory Problems Page 122**
- Managing Respiratory Arrest and Failure **Pages 123-140**
- **Flowchart: Managing Respiratory Emergencies Page 141**

Systematic Approach to the Seriously Ill or Injured Child:

Review and understand the components of the Pediatric Assessment Triangle (P.A.T) **page 37**

Capillary Refill and BP **Page 57**

Use caution when interpreting pulse ox readings **Page 52**

AVPU: Disability **Page 60**

Chart: Pediatric GCS : Page 61

Chart: AVPU Scale and GCS Equivalents Page 62

Primary Assessment: Exposure **Page 63**

Chart: Normal Heart Rates by Age Page 53

Chart: Normal Respiratory Rates by Age Page 46

Chart: Normal Blood Pressures by Age Page 46

Chart: Definition of Hypotension by SBP and Age Page 46

**The Hypotensive Formula for Children 1-10 Years of age, is:

SBP less than 70mmHg + (child's age in years x 2) mmHg

Signs of poor perfusion:

- Temperature: Cool extremities
- Altered mental state: Continue decline in consciousness/responsiveness
- Pulses: Weak pulses
- Skin: Paleness, mottling (patchy appearance), and later cyanosis (turning blue)

Recognizing Shock:

Hypovolemic Shock:

- Non-hemorrhagic
- Hemorrhagic

Distributive Shock:

- Septic
- Anaphylactic
- Neurogenic

Cardiogenic Shock:

- Brady/Tachy Arrhythmias
- Other:
  - CHD
  - Myocarditis
  - Cardiomyopathy
  - Poisoning

Obstructive Shock:

- Ductal Dependent Lesions
- Tension Pneumothorax
- Cardiac Tamponade
- Pulmonary Embolism

Flowchart: Recognizing Shock **Page 188**

Read: "Critical Concepts: IO Access" **Page 192**

Read: "Critical Concepts: Fluid Resuscitation" **Page 193**

**** If your pediatric patient has a delayed cap refill time, you should consider IO access instead of an IV****

Chart: Monitoring in Circulatory Emergencies **Page 193**

Flowchart: Managing Shock Page 222

Read Pages 171-187

- Compensated Shock **Page 171**
- Hypotensive Shock **Page 172**
- Hypovolemic Shock **Page 174**
- Distributive Shock **Page 175**

Know the Elements of High-Performance Team Dynamics:

Pages 105-108

1. Clear Roles and Responsibilities
2. Knowing Your Limitations
3. Constructive Interventions
4. Knowledge Sharing
5. Summarizing and Reevaluating
6. Closed-Loop Communication
7. Clear Messages
8. Mutual Respect

REMEMBER!

- Children run at their maximum consumption of O2 and glucose at all times. They have very little store of either.

- Assess your pediatric patient to ensure they are:
    - **Pink = Adequate Circulation:** They shunt to the core when decompensating. Are hands and feet mottled? Are you no longer getting a good waveform on their peripheral sat monitor?
    - **Warm = Normothermic:** Kids will burn through their glucose trying to regulate their body temperature. Profound fevers should be treated and reassessed, and trauma patients should have a blanket.
    - **Sweet = Check Glucose!** Kids will frequently burn through their glucose when trying to compensate for poor circulation and extremes in body temperature.

- When Assessing the child remember your **S.A.M.P.L.E** assessment:
    - **S**: Signs and Symptoms
    - **A**: Allergies
    - **M**: Medications
    - **P**: Past Medical History
    - **L**: Last Oral Intake
    - **E**: Events leading up to presentation

- And remember to **V.O.M.I.T** on your patient when reassessing:
    - **V**: Vitals
    - **O**: Oxygen
    - **M**: Monitor
    - **I**: IV
    - **T:** Treatment and/or Testing
      (Note: ACLS Testing is usually 12-Lead, while PALS is usually Glucose)

How to use the H's and T's.

THE 6 H's and 5 T's – POTENTIALLY REVERSIBLE CAUSES

You must use these on all cardiac arrests and near cardiac arrests.

H's	T's
· **Hypovolemia**	· **Tablets (drug OD, accidents)**
· **Hypoxia**	· **Tamponade (cardiac)**
· **Hydrogen ion – acidosis**	· **Tension pneumothorax**
· **Hyperkalemia / Hypokalemia**	· **Thrombosis, coronary (ACS)**
· **Hypothermia**	· **Thrombosis, pulmonary (embolism)**
· **Hypoglycemia and other metabolic disorders**	· **Trauma**

Hypovolemia (is this pt hypovolemic?)

1. Look for obvious fluid/blood loss.
2. Secure IO/IV access
3. Give fluid bolus's and reassess
4. Check mark for hypovolemia☐

Hypoxia (is this person hypoxic?)

1. Confirm chest rise and bilateral breath sounds with each ventilation
2. Check O2 source (trace from bag to flowmeter) 2.
3. Check mark for hypoxia ☐

Hydrogen Ion Acidosis (is this pt acidotic?) (Respiratory or metabolic?)

1. Respiratory acidosis ensure adequate ventilation (don't hyperventilate!)
2. Metabolic acidosis give sodium bicarbonate
3. Check mark for acidosis ☐

Hyper /Hypokalemia (is there any evidence hyper/hypokalemia in this pt?)

1. For elevated S-T's and tall peaked T waves (hyperkalemia) give calcium chloride 10ml of 10% over 5 minutes
2. Hypokalemia, flat Twaves, U waves? give potassium 20mmol
3. Magnesium 5ml 50% solution (10mmol /over 30mins)
4. If no signs of hyper/hypokalemia move to the next H
5. Checkmark for hyper/hypokalemia☐

Hyper/Hypothermia (take a temp)

1. If too hot, cool down
2. If too cold, warm up
3. If normothermic or mildly hypothermic go to the next H.
4. Check mark for Hyper/hypothermia ☐

Hypo/Hyperglycemia

1. Accu-check and correct if needed.
2. If normoglycemic move to the T's

Checkmark for Hypo/hyperglycemia ☐

Tablets (drug OD, accidents)

1. Support circulation while you find an antidote or reverse drug. (poison control)
2. If no drug OD suspected, move on to the next T.

Check mark for tablets ☐

Tamponade (chest trauma, chest malignancy, recent central line insertion, JVD, narrow pulse pressure, electrical alternans etc…)

1. Pericardial centesis

If no history or ruled out move on to the next T and check mark for Tamponade ☐

Tension Pneumothorax (chest asymmetry, tympani, diminished breath sounds, high peak pressures, JVD, tracheal deviation, severe respiratory distress etc…)

1. Vent tension in chest
2. Support ventilation and oxygenation with BVM and intubate as necessary
3. If no history or ruled out move on to the next T and check mark for pneumothorax ☐

Thrombosis (coronary or pulmonary)

1. Consider fibrinolysis for suspected coronary or pulmonary embolus.
2. CPR is not a absolute contraindication for fibrinolysis.
3. If no history or ruled out move on to the next T and check mark for thrombosis☐

Trauma

1. Inspect body completely. Remove all clothes.
2. Secure airway
3. Control external bleeding with tamponade while concurrently delivering volume with isotonic crystalloids and blood products.
4. Look for internal bleeding (tap the abdomen if suspicious for internal bleed)and take to OR within a couple of minutes.
5. If no history or ruled out move on to the next check mark for trauma ☐
6. Etc…