Quick Summary PALS Sheet 2014

VF/Pulseless VT	Asystole/PEA	Tachycardia	Bradycardia
ABC's • Shock 2J/kg **immediate compressions** • Epi 0.01mg/kg q 4min. • Shock 4J/kg **immediate compressions** • Amio 5mg/kg • Shock 4J/kg **immediate compressions** • Epi 0.01mg/kg q 4min. **Continue pattern** • Lido. 1mg/kg • Mag 25 to 50mg/kg	ABC's • **CPR 5 cycles 2min.** • EPI 0.0 1mg/kg q 4min **or** 0.1ml/kg **CONSIDER CAUSES!!!** For all unstable patients and rhythms **DO NOT DELAY CHEST COMPRESSIONS MORE THAN 10 SECONDS**	ABC's **Unstable Narrow** • Vagal maneuver • Sync. Cardio. 0.5 to 1J/kg then 2J/kg • Adenosine 0.1mg/kg double 2nd dose • Consider consult **Unstable Wide** • Sync. Cardio. 0.5 to 1J/kg • Consider consult **Torsades** • Mag 25 to 50mg/kg over 5-60min	ABC's • HR< 60 with poor perfusion begin CPR • Epi. 0.01mg/kg q 4 min. • Consider consult • If primary AV block Atropine 0.02mg/kg • Consider TCP (very last resort) **CAUSES** **6 H's & 5 T's** **H**ypovolemia **H**ypoxia **H**ydrogen ion **H**ypo/Hyperkalemia **H**ypoglycemia **H**ypothermia **T**oxins **T**amponade (cardiac) **T**ension pneumothorax **T**hrombosis **T**rauma

NEW YORK STATE'S EMERGENCY MEDICAL SERVICES PEOPLE WHO CARE

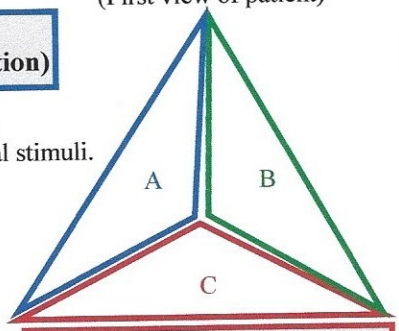
PEDIATRIC ASSESSMENT

EMSC Emergency Medical Services for Children – New York

Updated 2011

General Impression

(First view of patient)



Airway & Appearance (Open/Clear – Muscle Tone /Body Position)

Abnormal: Abnormal or absent cry or speech. Decreased response to parents or environmental stimuli. Floppy or rigid muscle tone or not moving.

Normal: Normal cry or speech. Responds to parents or to environmental stimuli such as lights, keys, or toys. Good muscle tone. Moves extremities well.

Work of Breathing (Visible movement / Respiratory Effort)

Abnormal: Increased/excessive (nasal flaring, retractions or abdominal muscle use) or decreased/absent respiratory effort or noisy breathing.

Normal: Breathing appears regular without excessive respiratory muscle effort or audible respiratory sounds.

Circulation to Skin (Color / Obvious Bleeding)

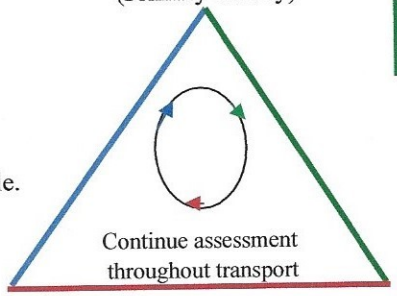
Abnormal: Cyanosis, mottling, paleness/pallor or obvious significant bleeding.
Normal: Color appears normal for racial group of child. No significant bleeding.

Decision/Action Points:

- **Any abnormal findings or life-threatening chief complaint** such as major trauma/burns, seizures, diabetes, asthma attack, airway obstruction, etc (urgent) – proceed to Initial Assessment. Contact ALS if ALS not already on scene/enroute.
- **All findings normal** (non-urgent) – proceed to Initial Assessment.

Initial Assessment

(Primary Survey)



Airway & Appearance (Open/Clear – Mental Status)

Abnormal: Obstruction to airflow. Gurgling, stridor or noisy breathing. **V**erbal, **P**ain, **or U**nresponsive on AVPU scale.

Normal: Clear and maintainable. **A**lert on AVPU scale.

Breathing (Effort / Sounds / Rate / Central Color)

Abnormal: Presence of retractions, nasal flaring, stridor, wheezes, grunting, gasping or gurgling. Respiratory rate outside normal range. Central cyanosis.

Normal: Easy, quiet respirations. Respiratory rate within normal range. No central cyanosis.

Circulation (Pulse Rate & Strength / Extremity Color & Temperature / Capillary Refill / Blood Pressure)

Abnormal: Cyanosis, mottling, or pallor. Absent or weak peripheral or central pulses; Pulse or systolic BP outside normal range; Capillary refill > 2 sec with other abnormal findings.
Normal: Color normal. Capillary refill at palms, soles, forehead or central body ≤ 2 sec. Strong peripheral and central pulses with regular rhythm.

Decision/ Action Points:

- **Any abnormal finding** – Immediate transport with ALS. If ALS is not immediately available, meet ALS intercept enroute to hospital or proceed to hospital if closer. Open airway & provide O_2. Assist ventilations, start CPR, suction, or control bleeding as appropriate. Check for causes such as diabetes, poisoning, trauma, seizure, etc. Assist patient with prescribed bronchodilators or epinephrine auto-injector or administer meds if approved and appropriate.
- **All findings on assessment of child normal** – Continue assessment, detailed history & treatment at scene or enroute.

Normal Respiratory Rate:	
Infant (<1yr):	30- 60
Toddler (1-3yr):	24 -40
Preschooler(4-5yr):	22- 34
School-age(6-12yr):	18 -30
Adolescent(13-18yr):	12 -20

Normal Pulse Rate:	
Infant:	100-160
Toddler:	90-150
Preschooler:	80-140
School-age:	70-120
Adolescent:	60-100

Pulses slower in sleeping child / athlete

Lower Limit of Normal Systolic BP:	
Infant:	>60 (or strong pulses)
Toddler:	>70 (or strong pulses)
Preschooler:	>75
School-age:	>80
Adolescent:	>90

Estimated min.SBP >70 + (2 x age in yr)

This reference card should NOT replace or supersede regional prehospital medical treatment protocols.

4157

Paid for by HRSA Emergency Services for Children State Partnership grant 6H33MC06724

7/2011

APGAR Score

	0 pt	1 pt	2 pts
Appearance	Blue	Pink Body Blue Limbs	All Pink
Pulse	Absent	<100	≥100
Grimace/Reflex	None	Grimace	Cough/Sneeze
Activity	Limp	Some flexion	Active motion
Respirations	Absent	Slow/Irregular	Good

Neonatal Resuscitation

Dry, Warm, Position, Tactile Stimulation
Call for ALS back-up if needed
Suction if airway obstruction or BVM needed

Apnea/Gasping, HR <100 or central cyanosis

BVM @40-60/min with room air. O_2 if sat stays < 95%

HR<60 after 30 sec. BVM

Chest Compressions @ 120/min - 3:1
1/3 to 1/2 chest depth
2 thumb encircle chest or 2 fingers

ALS available & HR <60

Consider intubation
Epinephrine
0.01-0.03mg/kg
IV/IO/ET
1:10,000
q 3-5 min

Glasgow Coma Score

Infants		Children /Adults
Eye Opening		
Spontaneous	4	Spontaneous
To speech/sound	3	To speech
To pain	2	To pain
No response	1	No response
Verbal Response		
Coos or babbles	5	Oriented
Irritable crying	4	Confused
Cries to pain	3	Inappropriate words
Moans to pain	2	Incomprehensible
None	1	None
Motor Response		
Spontaneous	6	Obeys commands
Withdraws touch	5	Localizes pain
Withdraws pain	4	Withdraws pain
Abnormal flexion	3	Abnormal flexion
Abnormal extension	2	Abnormal extension
No response	1	No response

Respiratory or Cardiac Arrest

	Infant	Child	Adol/Adult
VENT RATE Patient with pulses	20/min	12-20/min	12/min
COMPRESS METHOD	Encircle or 2 fingers	1 or 2 hands	2 hands
DEPTH	1/3 (1 1/2 in)	1/3 (2 in)	at least 2 in
COMPRESS RATE(minimum)	100/min	100/min	100/min
C:V RATIO (2 people)	15:2	15:2	30:2

Push HARD & FAST, allow full chest RECOIL!

CPR Notes:

- **Start CPR for cardiac arrest or HR<60 with poor perfusion.**
- **AEDs with pediatric capabilities preferred if patient < 25kg or 55lb (<8 yr old). If unavailable, may use adult AED.**
- **Do not pause CPR for more than 10 sec.for pulse checks, intubation, patient transfer or other reasons. Give medications during CPR whenever possible.**
- **Do not synchronize ventilations/compressions after intubation - ventilate at 8-10/min when no pulses.**
- **After defibrillation, do 2 full minutes of CPR starting with compressions before pulse/rhythm check.**
- **Adolescent/Adult protocols apply to patients with obvious signs of puberty (breast development obvious through clothing, facial hair, etc), acne, adult appearance/size, or visible axillary hair**

Pediatric ALS Guidelines

Asystole or PEA

Start CPR
Intubate if needed to maintain airway.

Epinephrine: 0.01 mg/kg 1:10,000 IV/ IO
0.1 mg/kg 1:1000 ET
Continue Epinephrine q 3-5 min, same dose

Bradycardia

Open airway & ventilate with oxygen.
Intubate if needed to maintain airway and decreased consciousness
Start CPR if HR<60 with poor perfusion.
Epinephrine: 0.01 mg/kg 1:10,000 IV/ IO
0.1 mg/kg 1:1000 ET
Continue Epinephrine q 3-5 min, same dose
Atropine 0.02 mg/kg IV/ IO
0.03 mg/kg ET
minimum dose 0.1 mg
maximum dose 0.5 mg child; 1 mg adol.
Consider transcutaneous pacing as needed.

VF or Pulseless VT

Defibrillate 2j / kg (after 2 min CPR)
Continue CPR, ventilate with O_2;
Intubate if needed to maintain airway,
Epinephrine: 0.01 mg/kg 1:10,000 IV/ IO
(q3-5 min) 0.1 mg/kg 1:1000 ET
Defibrillate 4j / kg; Resume CPR immed.
Amiodarone 5mg/kg IV/IO (pref) *or*
Lidocaine 1mg / kg IV/ IO/ ET
Defibrillate 4-10 J/kg q 2 min as needed (up to adult dose)
Use Magnesium 25-50mg/kg IV/ IO if torsades de pointes or hypomagnesemia

Consider possibility of hypoxia, hypovolemia, hypothermia, hydrogen ion (acidosis), hyper/hypokalemia, hypoglycemia, tamponade, tension pneumothorax, toxins/poisons/drugs, trauma or thrombosis (coronary or pulmonary) and treat if present.

This reference card should NOT replace or supersede regional prehospital medical treatment protocols.

4157
Paid for by HRSA Emergency Services for Children State Partnership grant 6H33MC06724
7/2011

MEDICATIONS FOR PEDIATRIC RESUSCITATION AND ARRHYTHMIAS

Medication	Dose	Remarks
Adenosine	0.1 mg/kg (maximum 6 mg)	Monitor ECG
	Repeat: 0.2 mg/kg (maximum 12 mg)	Rapid IV/IO bolus
Amiodarone	5 mg/kg IV/IO; repeat up to 15 mg/kg	Monitor ECG and blood pressure
	Maximum: 300 mg	Adjust administration rate to urgency (give more slowly when perfusing rhythm present)
		Use caution when administering with other drugs that prolong QT (consider expert consultation)
Atropine	0.02 mg/kg IV/IO	Higher doses may be used with organophosphate poisoning
	0.03 mg/kg ET*	
	Repeat once if needed	
	Minimum dose: 0.1 mg	
	Maximum single dose:	
	Child 0.5 mg	
	Adolescent 1 mg	
Calcium chloride (10%)	20 mg/kg IV/IO (0.2 mL/kg)	Slowly
		Adult dose: 5–10 mL
Epinephrine	0.01 mg/kg (0.1 mL/kg 1:10 000) IV/IO	May repeat q 3–5 min
	0.1 mg/kg (0.1 mL/kg 1:1000) ET*	
	Maximum dose: 1 mg IV/IO; 10 mg ET	
Glucose	0.5–1 g/kg IV/IO	$D_{10}W$: 5–10 mL/kg
		$D_{25}W$: 2–4 mL/kg
		$D_{50}W$: 1–2 mL/kg
Lidocaine	Bolus: 1 mg/kg IV/IO	
	Maximum dose: 100 mg	
	Infusion: 20–50 μg/kg per minute	
	ET*: 2–3 mg	
Magnesium sulfate	25–50 mg/kg IV/IO over 10–20 min; faster in torsades	
	Maximum dose: 2g	
Milrinone	50 to 75 mcg/kg loading dose over 10 to 60 minutes, then .5 to .75 mcg/kg/minute IV/IO	Longer infusion times reduce risk of hypotension.
Naloxone	<5 y or ≤ 20 kg: 0.1 mg/kg IV/IO/ET*	Use lower doses to reverse respiratory depression associated with therapeutic opioid use (1–15 μg/kg)
	≥ 5 y or >20 kg: 2 mg IV/IO/ET*	
Procainamide	15 mg/kg IV/IO over 30–60 min	Monitor ECG and blood pressure
	Adult dose: 20 mg/min IV infusion up to total maximum dose 17 mg/kg	Use caution when administering with other drugs that prolong QT (consider expert consultation)
Sodium bicarbonate	1 mEq/kg per dose IV/IO slowly	After adequate ventilation

IV indicates intravenous; IO, intraosseous; and ET, via endotracheal tube.

*Flush with 5 mL of normal saline and follow with 5 ventilations.

PALS Systematic Approach Summary

Initial Impression

Your first quick (in a few seconds) "from the doorway" observation

Appearance	Including level of consciousness (eg, unresponsive, irritable, alert and ability to interact)
Breathing	Increased work of breathing, absent or decreased respiratory effort, or abnormal sounds heard without auscultation
Circulation (color)	Abnormal skin color, such as cyanosis, pallor, or mottling

The purpose is to quickly identify a life-threatening problem.

Is the child unresponsive with no breathing or only gasping?

If YES:

- Shout for help.
- Activate emergency response as appropriate for setting.
- Check for a pulse.
- Begin lifesaving interventions as needed.

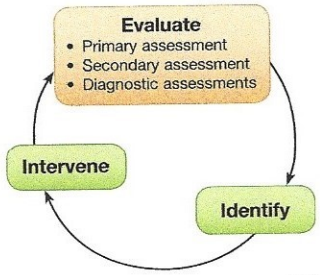
If NO:

- Continue the evaluate-identify-intervene sequence.

Use the ***evaluate-identify-intervene*** sequence when caring for a seriously ill or injured child.

- *Evaluate* the child to gather information about the child's condition or status.
- *Identify* any problem by type and severity.
- *Intervene* with appropriate actions to treat the problem.

Then repeat the sequence; this process is ongoing.



If at any time you identify a life-threatening problem, immediately begin appropriate interventions. Activate emergency response as indicated in your practice setting.

Evaluate

"Evaluate" consists of the primary assessment (ABCDE), secondary assessment, and diagnostic tests.

Primary Assessment

A rapid, hands-on ABCDE approach to evaluate respiratory, cardiac, and neurologic function; this step includes assessment of vital signs and pulse oximetry

Airway

Clear	Maintainable	Not maintainable

Breathing

Respiratory Rate and Pattern	Respiratory Effort	Chest Expansion and Air Movement	Abnormal Lung and Airway Sounds	Oxygen Saturation by Pulse Oximetry
Normal Irregular Fast Slow Apnea	Normal Increased • Nasal flaring • Retractions • Head bobbing • Seesaw respirations Inadequate • Apnea • Weak cry or cough	Normal Decreased Unequal Prolonged expiration	Stridor Snoring Barking cough Hoarseness Grunting Gurgling Wheezing Crackles Unequal	Normal oxygen saturation (≥94%) Hypoxemia (<94%)

Circulation

Heart Rate and Rhythm	Pulses		Capillary Refill Time	Skin Color and Temperature	Blood Pressure
	Central	***Peripheral***			
Normal Fast (tachycardia) Slow (bradycardia)	Normal Weak Absent	Normal Weak Absent	Normal: ≤2 seconds Delayed: >2 seconds	Pallor Mottling Cyanosis Warm skin Cool skin	Normal Hypotensive

Disability

AVPU Pediatric Response Scale				Pupil Size Reaction to Light		Blood Glucose	
Alert	Responds to **V**oice	Responds to **P**ain	**U**nresponsive	Normal	Abnormal	Normal	Low

Exposure

Temperature			Skin	
Normal	High	Low	Rash (eg, purpura)	Trauma (eg, injury, bleeding)

Secondary Assessment	A focused medical history (SAMPLE) and a focused physical exam
Diagnostic Tests	Laboratory, radiographic, and other advanced tests that help to identify the child's physiologic condition and diagnosis

Identify

Identify the child's problem as respiratory, circulatory, or both. Determine the type and severity of the problem(s). The table below lists common clinical signs that typically correlate with a specific type of problem and its severity.

Type		Severity
Respiratory	• Upper airway obstruction • Lower airway obstruction • Lung tissue disease • Disordered control of breathing	• Respiratory distress • Respiratory failure
Circulatory	• Hypovolemic shock • Distributive (eg, septic, anaphylactic) shock • Obstructive shock • Cardiogenic shock	• Compensated shock • Hypotensive shock
Cardiac Arrest		

Respiratory

Signs	Type of Problem	Severity
• Increased respiratory rate and effort (eg, retractions, nasal flaring) • Decreased air movement • Stridor (typically inspiratory) • Barking cough • Snoring or gurgling • Hoarseness	**Upper airway obstruction**	**Respiratory distress** • Some abnormal signs but no signs of respiratory failure **Respiratory failure** *One or more of the following:* • Very rapid or inadequate respiratory rate • Significant or inadequate respiratory effort • Low oxygen saturation despite high-flow oxygen • Bradycardia (ominous) • Cyanosis • Decreased level of consciousness
• Increased respiratory rate and effort (eg, retractions, nasal flaring) • Decreased air movement • Prolonged expiration • Wheezing	**Lower airway obstruction**	
• Increased respiratory rate and effort • Decreased air movement • Grunting • Crackles	**Lung tissue disease**	
• Irregular respiratory pattern • Inadequate or irregular respiratory depth and effort • Normal or decreased air movement • Signs of upper airway obstruction (see above)	**Disordered control of breathing**	

Circulatory

- Tachycardia
- Weak peripheral pulses
- Delayed capillary refill time
- Changes in skin color (pallor, mottling, cyanosis)
- Cool skin
- Changes in level of consciousness
- Decreased urine output

Signs of poor perfusion

Signs	Type of Problem	Severity
• Signs of poor perfusion (see above)	**Hypovolemic shock** **Obstructive shock**	**Compensated shock** • Signs of poor perfusion and *normal* blood pressure **Hypotensive shock** • Signs of poor perfusion and *low* blood pressure
• Possible signs of poor perfusion (see above) *or* • Warm, flushed skin with brisk capillary refill (warm shock) • Peripheral pulses may be bounding • Possible crackles • Possible petechial or purpuric rash (septic shock)	**Distributive shock**	
• Signs of poor perfusion (see above) • Signs of heart failure	**Cardiogenic shock**	

Intervene

On the basis of your identification of the problem, intervene with appropriate actions. Your actions will be determined by your scope of practice and local protocol.