PEDIATRIC ADVANCED LIFE SUPPORT

Participant Preparation Packet 2016 – 2020

This information is derived from the 2015–2020 ECC guidelines

This packet contains prep information for the PALS Course as well as EKG and BLS reviews. We strongly recommend completing these exams prior to the course.

-MANDATORY REQUIREMENTS-

★ If you are attending the BLS section following, refer to page 43 for additional instructions.
This copyrighted prep packet is a supplement for those students taking PALS with EMC.

Welcome to the latest American Heart Association Pediatric Advanced Life Support course sponsored by Emergency Medical Consultants Inc. The Full training course is two days. The refresher course is one day only. NOT ALL 2 DAY COURSES HAVE A ONE DAY REFRESHER COMPONENT – PLEASE VERIFY WITH OUR OFFICE IF WE ARE OFFERING A ONE DAY COURSE AND WHICH DAY IT WILL BE.

The PALS course stresses early recognition and management of pre-terminal events rather than merely “running a pedi code”. We use no stress, small group interactive skills and scenario stations to present the information in a fun, relaxed atmosphere. We are pleased you have chosen our program and are sure you will find the course informative and worthwhile.

In order to keep our programs “Stress Free” and assure all participants meet the AHA requirements for proficiency, a certain amount of home study is required prior to the actual class. The AHA mandates participants have access to the latest textbook, review it, and suggest completing the pretest prior to entering the program. If you do not have access to a textbook, please call Laerdal at 1-888-562-4242. Or, you may purchase the textbook through our office.

The evaluation process consists of a written exam, on which participants are required to score at least 84% and two patient management scenarios requiring appropriate treatment. Again, these stations are designed to be user friendly and low stress.

We work very hard to keep our programs upbeat, relevant and at a level ALL participants who have prepared will pass with ease. Our faculty is always available to explain information or procedures, just ask.

All information is based on the American Heart Association PALS standards at the time of printing and thought to be correct. Providers are encouraged to review the PALS textbook and their specific policies prior to implementing any procedures or administering any medication based on this study packet.

This packet contains prep information and a pretest. The AHA text provides information to access their online pre-test information at www.heart.org/eccstudent. The first few pages of your text will give you a code/password such as palsprovider.

For more EKG practice, log onto www.Skillstat.com

If you have any questions or comments feel free to call our office at 772-878-3085.

We look forward to seeing you in the PALS program.

Shaun Fix
President, Emergency Medical Consultants Inc.
PALS 2015-AHA Guideline Updates

The latest PALS guidelines from the American Heart Association 2015 ECC Committee were published in late 2015 and implementation began in early 2016. These guidelines will be utilized from 2016 through 2020.

This section contains a brief synopsis of the guidelines that were new in 2015, as well as a rationale.

**CPR Changes - Children & Infants**

As with adults—Call for nearby help as soon as the victim is found unconscious. Simultaneous assessment of pulse and respirations is also indicated for infants and children. If not present, activate the emergency response system or call for backup.

**New Change: Infant/Child Chest Compression Depth**—Rescuers should provide chest compressions that depress the chest at least 1/3rd of the anteroposterior diameter of the chest in pediatric patients (approximately 1.5” in infants up to one year- to 2” in children up to the onset of puberty.) Once children have reached puberty—the recommended depth of compression is, again, same as the adult, at least 2’ but not over 2.4”.

**Rationale:** A pediatric study observed improved 24 hour survival when compression depth is at least 2 inches. Judgement of compression depth is difficult at the bedside, and the use of a feedback device that provides such information may be useful, if available.

**New Change: Infant/Child Compression Rate**—the adult, child and infant compression rate is now the same, 100-120.

**Rationale:** To maximize educational consistency and retention, pediatric experts have adopted the same compression rate as recommended for adult BLS.

**New Change: Compression only CPR**—Conventional CPR (rescue breath and chest compressions) should be provided for infants and children in cardiac arrest. “Compression only” is the least preferred method.

**Rationale:** The asphyxial nature of most pediatric patients necessitates ventilation as part of effective CPR. Large registry studies have demonstrated worse outcomes for presumed asphyxial pediatric cardiac arrest patients, which compromise the vast majority of out-of-hospital pediatric arrests that were treated only with compression only CPR.

**New Change: CPR with an Advanced Airway in Place**—With an advanced airway in place, deliver 1 breath every 6 seconds (10 breaths per minute) while continuous chest compressions are being performed.

**Rationale:** This simple single rate for adults, children and infants-rather than a range of breaths per minute-should be easier to learn, remember and perform.

As always- with adults, infants and children, make every effort to minimize interruptions in CPR to less than 10 seconds.

All above BLS changes apply to the pediatric/infant patient in addition to the PALS specific new recommendations:
**PALS Specific Changes**

**New Change: Fluid Resuscitation**—For children in shock, an initial fluid bolus of 20ml/kg is reasonable. However, if the child has a febrile illness-administration of IV fluids should be undertaken with caution as it may actually be harmful. This is especially true in clinical settings where access to critical care resources (ventilators and inotropic drugs) are limited.

**Rationale:** The current recommendation continues to emphasize the administration of IV fluids for children with septic shock. However, in certain resource limited settings, excessive fluid boluses given to febrile children may lead to complications when appropriate equipment and expertise are not available to effectively address them.

**New Change: Atropine for Endotracheal Intubation**—There is no evidence to support the routine use of atropine as a premedication to prevent bradycardia in emergency pediatric intubations.

**Rationale:** Recent evidence is conflicting as to whether atropine prevents bradycardia and other arrhythmias during emergency intubation in children.

**New Change: Antiarrhythmic Medications for shock refractory VF or pulseless VT**—Amiodarone or Lidocaine is equally acceptable for treatment of shock refractory ventricular fibrillation (VF) or pulseless ventricular tachycardia (pVT).

**Rationale:** Recent studies have indicated that lidocaine was associated with higher rates of survival, return of spontaneous circulation (ROSC) and increased 24 hour survival rate that amiodarone. However, neither lidocaine nor amiodarone administration was associated with improved survival to hospital discharge.

**New Change: Targeted Temperature Management**—For comatose children who are comatose in the first few days following cardiac arrest (in or out of hospital), temperature should be monitored closely and fever should be treated aggressively.

If the arrest occurred out of hospital, the comatose child can maintain either 5 days of normothermia (36-37.5C) or 2 days of initial continuous hypothermia (32-34C) followed by 3 days of normothermia. For children who remain comatose after in-hospital cardiac arrest, there is insufficient data to recommend hypothermia over normothermia.

**Rationale:** A study comparing hypothermia vs normothermia showed no difference in functional outcome at 1 year between the 2 groups. There was also no additional complications in the group that was treated with therapeutic hypothermia.
Pediatric Advanced Life Support
Syllabus
Approx 14 hours

Two Day Full Training Program

**Day One**

Program Introduction  
Overview of PALS Science  
Recognition of Respiratory Failure and Shock Review  
**Break**  
Overview of Rhythms / Algorithms  
Skills Review – Respiratory Management, Vascular Access, Review CPR standards  
**Lunch**  
Skills stations  
1. Respiratory Emergencies, Airway management  
2. Vascular Access IV & IO Skills, medication & broselow review  
3. BLS – Child and Infant CPR and AED

**Day Two**

Putting scenario management together / Team Concept  
Group Review of Patient Cases  
**Break**  
Patient Case management Scenarios  
1. Shock and Trauma  
2. Respiratory Emergencies  
3. Cardiac Cases  
**Lunch**  
Evaluations  
1. Written Exam  
2. Scenario Management Evaluations
Pediatric Advanced Life Support
Syllabus

One Day- Refresher Program
Approx 7 hours

GENERALLY PRESENTED THE FIRST DAY OF 2 DAY PROGRAM

Program Introduction
Overview of PALS science
Pediatric Assessment, Recognition of Respiratory Failure and Shock Review

Break
Overview of Rhythms / Algorithms
Skills Review, Respiratory Management, Vascular Access, Review CPR Standards

Lunch
Group Review of Case Management
1. Cardiac Cases
2. Respiratory Cases
3. Shock Cases
BLS Child & Infant Skills Check-off
Evaluations
1. Written Exam
2. Scenario Management Evaluations
ASSESSING KIDS

Think like the Child
“A giant stranger is coming after me”
“Mom says don’t talk to strangers”
“If I say I’m OK they’ll leave”

Unique issues when dealing with children
They don’t think we are heroes when we are there to treat them
Medically, they “hide” illness and injury by maintaining normal vital signs
Head injuries and liver bleeds are 2 culprits that can cause a slow deterioration

Tips for dealing with children
Understand MOST of us don’t get to regularly evaluate signs and symptoms in kids
Remember they may present a little differently
Assess the conscious child from across the room initially
If appropriate, use the parents for psychological first aid
Talk to the child about himself and his toys to gain a rapport
Unlike adults, stable kids will generally stay that way if we support their ABC’s

*Continually review the unique presentation of respiratory and circulatory compromise in children since it differs from the adult patients we are used to dealing with

Good resources for pediatric information
American Academy of Pediatrics 847-434-4000  www.aap.org
American College of Emergency Physicians 800-798-1822  www.ACEP.org
EMSC 202-844-4927  www.ems-c.org
National Safe Kids Campaign 202-662-0600 www.safekids.org
National Center for Injury Prevention and Control 770-488-1506  www.ohcinfo@cdc.gov
PEDiatric ASSESSMENT Sequence

*Initial Impression*

“Sick or not sick”

Initial Pediatric Assessment

General Appearance Most Crucial

General Appearance

Work of Breathing

Assessment Triangle

Perfusion of Skin

*Evaluate*

Primary Assessment

<table>
<thead>
<tr>
<th>Airway</th>
<th>Breathing</th>
<th>Circulation</th>
<th>Disability</th>
<th>Exposure</th>
</tr>
</thead>
</table>

Secondary Assessment

<table>
<thead>
<tr>
<th>Physical Exam</th>
<th>SAMPLE History</th>
<th>Bedside Tests</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head to toe as needed</td>
<td>*Symptoms *Past history</td>
<td>*Vital signs *Glucose</td>
</tr>
<tr>
<td></td>
<td>*Allergies *Last intake</td>
<td>*Monitors (O2,EKG)</td>
</tr>
<tr>
<td></td>
<td>*Meds *Events causing incident</td>
<td></td>
</tr>
</tbody>
</table>

*Identify*

Respiratory Problem

Circulatory Problem (Shock)

Cardiac Problem (Tachy, Brady or CP Failure)

*Intervene*

Manage

C – support Circulation = from EKG to vascular access, fluids or meds as needed
A – position Airway if needed
B – manage Breathing = blow by O2 to BVM, intubation or meds as needed
Tertiary Assessment / Management
* Labs * Cultures * X-rays * Medications * Cardiac Tx * Specialty Consult

RESPIRATORY DISTRESS / RESPIRATORY FAILURE

The key to pediatric resuscitation is to recognize early and treat aggressively before the child decompensates.

**Respiratory distress**

**Potential respiratory failure:** Increased work of breathing
- Tachypnea
- Retractions
- Nasal flaring
- Grunting

**Probable respiratory failure:**
- Lethargy
- Head bobbing

**Respiratory failure:** Inadequate ventilation or oxygenation
- Slow respirations

**Cardiopulmonary failure:**
- Agonal breathing
- Bradycardia

Respiratory Management

**Maintain airway**
- Usually done by patient if awake
- For decreased level of consciousness place in “sniffing position” (supine with neck and head slightly elevated)

**Assist with oxygen – only enough to maintain saturation between 94-99%**
- Blow-by, if alert and apprehensive
- Direct mask if the child will accept and needs it
- Bag valve mask for low rate or tidal volume
- Intubation - see indications below

**Consider intubation by a skilled professional for the following:**
- Unconscious in profound shock
- Any patient requiring bag valve mask ventilations for more than one minute
  - respiratory arrest
  - respiratory depression not responding to bag-valve-mask ventilations
  - bradycardia not responding to bag valve mask ventilations
  - tachypnea with poor tidal volume not responding to bag-valve-mask

If an intubated patient suddenly deteriorates think “DOPE”
- Displaced tube
- Obstructed tube
- Pneumothorax
- Equipment failure (i.e. ventilator failure, ambu failure, O2 empty, etc.)
  (not necessarily in that order)
SHOCK

Shock: inadequate perfusion to meet the metabolic demands of the tissues.

*Question #1: Is there a reason for this child to be in shock?*

**Early signs**
- Tachycardia
- Decreased perfusion of skin – cool, pale or mottled, delayed capillary refill
- Altered mentation
- Discrepancy in volume between peripheral and central pulses

Hypotension is a late sign of shock

**Compensated shock** – patient showing signs of shock with a normal B/P

**Hypotensive shock** – shock with hypotension (generally not seen until 30% fluid loss)

**Treatment:**
- Assess CAB’s
- Maintain Airway
- Administer high flow 02
- Maintain Body Temperature
- Monitor EKG and Pulse oximetry
- Obtain vascular access (IV or IO)
- Administer Fluid Bolus’s 20 ml/kg NS OR LR in under 20 min. Repeat PRN
- Consider vasopressors for refractory, cardiac, or septic shock

If IV access is not readily accessible in a patient in arrest, near arrest or profound shock, proceed with intraosseous infusion.

**IV tips:**
- Don’t tie the tourniquet too tight
- Use transilluminator if available
- Immobilize the child if necessary
- Immobilize the child if necessary
- Leave the plug off the end of the angiocath
- Bevel down for small or superficial veins
- Use skin prep (i.e. benzoin) and lots of tape
- Secure to IV board if necessary

In the trauma patient with shock give two fluid boluses; if symptoms are still present consider packed cells or blood.
CARDIOPULMONARY FAILURE
Bradycardia (below 60/min) with Agonal Breathing

Assess CAB’s
Ventilate
Administer 100% Oxygen
Intubate when appropriate
Assess Vital Signs
Obtain vascular access

Cardiorespiratory Compromise?
Poor perfusion
Hypotension
Respiratory distress

Yes
Perform chest compressions if despite oxygenation & ventilation:
Heart rate <60/min

No
Observe
Support CAB’s
Transport peds facility

Continue CPR until rate sustains at greater than 60 min, ideally over 80 -100

Epinephrine
IV/IO: 0.01 mg/kg 1:10,000

Repeat Epinephrine every 3 -5 minutes at same dose

Atropine
0.02 mg/kg (usually not used in children < 1 year)
Min. dose: 0.1 mg
Max single dose: 0.5 mg for child
1.0 mg for adolescent
May be repeated once

Consider pacemaker

Consider treatable causes
Hypoxia
Hypoglycemia
Hypothermia
Herniation of brain stem
In general, children require defibrillation much less frequently than adults, however more recent studies confirm ventricular fibrillation is more prevalent than previously thought and may be missed due to the fact that EKG’s may not be initiated as rapidly as in adults.

DEFIBRILLATOR – REQUIRED KNOWLEDGE

JOULE (WATT SECONDS) SETTINGS:

DEFIBRILLATION:  2 J/kg First attempt, 4 J/kg later attempts (higher doses may be considered up to 10 J/kg)
CARDIOVERSION:  0.5-1.0 J/kg. May increase to 2 J/kg

1. Knows how to turn monitor AND defibrillator on
2. Knows how to set current (joules)
3. Knows how to set sync button for perfusing rhythms
4. Knows how to discharge paddles to patient
5. Knows how to QUICK LOOK / Paddle function vs. lead select
6. Knows where to position paddles/ pads
7. Knows how to change to pediatric paddle size
8. Knows indications for use:
   Ventricular fibrillation
   Ventricular Tachycardia
   Supraventricular tachycardia
9. Knows to clear the patient area
10. Knows what interface media to use – jell or pads
11. Knows current to use in children and infants

AED – (Automatic defibrillator) can be used on all children and infants. Ideally, use pediatric pads because they reduce the energy as it comes from the defibrillator. If pediatric pads are not available, adult pads may be used, as the risk of allowing ventricular fibrillation to deteriorate into asystole is greater than the risk posed by the higher energy of the AED using adult defibrillation doses.
**Skills Review for Healthcare Providers**

**The CAB's of CPR**

Simultaneously Determine unresponsiveness and check for effective breathing

If unresponsive: call a “code” or 911

**C = Circulation** - Check for a pulse Max - 10 seconds. If pulse is not definite, begin compressions.

**A = Airway** - Open airway (head tilt/chin lift)

**B = Breaths** - Give 2 breaths then back to compressions

**D = Defibrillator** - Attach a manual defibrillator or AED

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**CPR Reference**

<table>
<thead>
<tr>
<th></th>
<th>Adults (&gt; puberty)</th>
<th>Children (1 - puberty)</th>
<th>Infants (&lt; 1yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rescue breathing, Victim definitely has a pulse</strong></td>
<td>10-12 breaths/min recheck pulse every 2 minutes</td>
<td>12-20 breaths/min recheck pulse every 2 minutes</td>
<td>12-20 breaths/min recheck pulse every 2 minutes</td>
</tr>
<tr>
<td><strong>Compression landmark</strong></td>
<td>Middle of the chest, between the nipples</td>
<td>Middle of the chest, between the nipples</td>
<td>1 finger below nipple line</td>
</tr>
<tr>
<td><strong>No pulse</strong> (or pulse &lt;60 in infant or child with poor perfusion)</td>
<td>Heel of 2 hands</td>
<td>Heel of 1 or 2 hands</td>
<td>2 fingers OR 2 thumbs when using encircling hands technique</td>
</tr>
<tr>
<td><strong>Compressions are performed with</strong></td>
<td>Heel of 2 hands</td>
<td>Heel of 1 or 2 hands</td>
<td>2 fingers OR 2 thumbs when using encircling hands technique</td>
</tr>
<tr>
<td><strong>Rate of compressions per minute</strong></td>
<td>100-120/min</td>
<td>100-120/min</td>
<td>100-120/min</td>
</tr>
<tr>
<td><strong>Compression depth</strong></td>
<td>2-2.4 inches</td>
<td>At least 1/3 depth of chest 2 inches</td>
<td>At least 1/3 depth of chest 1 ½ inches</td>
</tr>
<tr>
<td><strong>Ratio of compressions to breaths</strong></td>
<td>30:2 Change compressors and reevaluate every 2 min</td>
<td>30:2 Change compressors and reevaluate every 2 min</td>
<td>30:2 Change compressors and reevaluate every 2 min</td>
</tr>
<tr>
<td><em>Once an advanced airway is placed ventilations will be 1 every 6 sec. with continual compressions.</em></td>
<td>30:2 Change compressors and reevaluate every 2 min</td>
<td>30:2 Change compressors and reevaluate every 2 min</td>
<td>30:2 Change compressors and reevaluate every 2 min</td>
</tr>
</tbody>
</table>

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**Foreign Body Airway Obstruction**

*If not rapidly removed call Emergency Medical Service*

**Conscious choking**

<table>
<thead>
<tr>
<th>Adult</th>
<th>Child</th>
<th>Infant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abdominal Thrusts</td>
<td>Abdominal Thrusts</td>
<td>5 Back Blows/5 Chest Thrusts</td>
</tr>
</tbody>
</table>

**Unconscious choking**

<table>
<thead>
<tr>
<th>Adult</th>
<th>Child</th>
<th>Infant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Call a “code” or call 911 Begin CAB’s of CPR Before giving breaths: look in mouth for foreign body, remove object if it is seen. Repeat cycles of CPR if needed</td>
<td>Begin CPR If second rescuer is present, send them to call a “code” or 911, otherwise, call after 2 min of CPR Before giving breaths: look in mouth for foreign body, remove object if it is seen. Repeat cycles of CPR if needed</td>
<td>Begin CPR If second rescuer is present, send them to call a “code” or 911, otherwise, call after 2 min of CPR Before giving breaths: look in mouth for foreign body, remove object if it is seen. Repeat cycles of CPR if needed</td>
</tr>
</tbody>
</table>
Cardiac Rhythm Disturbances

Most children do not have significant cardiac dysrhythmias causing instability (do not take this to mean that children never have cardiac dysrhythmias). In general rhythm disturbances in children are treated emergently when the patient is symptomatic or if the rhythm is likely to deteriorate.

In children, rhythms are classified as:

**Tachy (Fast):**
- First sign of stress
- Look for causes other than cardiac (i.e. fever, pain, hypovolemia)
- Not considered SVT unless 220 in infant, 180 in child.
- Signs of SVT – no p wave, HR does not vary with activity, abrupt onset, narrow complex
- Wide complex (>0.09 sec or 2 boxes) may be v-tach

**Brady (Slow) Causes:**
- Hypoxia
- Hypothermia
- Hypoglycemia

**Collapse (Absent):**
- Frequently the end result of prolonged hypoxia and/or acidosis
- May be Agonal/Asystole, pulseless electrical activity (PEA) or v-fib/pulseless v-tach

Newborn Resuscitation

**Quick History:**

**Quick Assessment:**
- Term of gestation? Amniotic fluid clear? Breathing or crying? Good muscle tone?

**Term Newborn Vital Signs**
- Heart rate (awake): 100 to 180 bpm
- Respiratory rate: 30 to 60 breaths/min
- Systolic blood pressure: 55 to 90 mm Hg
- Diastolic blood pressure: 25 to 55 mm Hg

<table>
<thead>
<tr>
<th>Sign</th>
<th>0</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart rate (bpm)</td>
<td>Absent</td>
<td>Slow (&lt;100 beats/min)</td>
<td>≥100 beats/min</td>
</tr>
<tr>
<td>Respirations</td>
<td>Absent</td>
<td>Slow, irregular</td>
<td>Good, crying</td>
</tr>
<tr>
<td>Muscle tone</td>
<td>Limp</td>
<td>Some flexion</td>
<td>Active motion</td>
</tr>
<tr>
<td>Reflex irritability</td>
<td>No response</td>
<td>Grimace</td>
<td>Cough, sneeze, cry</td>
</tr>
<tr>
<td>(to a catheter in the nares, tactile stimulation)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Color</td>
<td>Blue or pale</td>
<td>Pink body with Blue extremities</td>
<td>Completely pink</td>
</tr>
</tbody>
</table>

**APGAR SCORE**
- 7 – 10 Normal
- 4 – 6 Moderately depressed requires O₂ and stimulation
- 0 – 3 Severely depressed requires resuscitation

**Meconium**
- Suction Mouth and nose, *only if obstructed*
- Intubate and suction using meconium aspirator, *only in depressed neonates with thick meconium present.*
- Repeat with new ETT until clear
- Then start pyramid

**Initial Assessment and Stabilization Outside the Delivery Room**
- Assess and support*:
  - Airway (position and clear)
  - Breathing (stimulate to breathe)
  - Circulation (assess heart rate and color)
  - Temperature (warm and dry)

- Always needed by newborns:
  - Drying, warming, positioning, stimulation
  - Oxygen
  - Bag-Valve-Mask Ventilation

- Needed less frequently:
  - Intubation

- Rarely needed by newborns:
  - *Note ABC is still used in newborns*
Initial Management of the Pediatric Arrest
“The Panic Zone”
Shaun Fix

I. Introduction
Perhaps the greatest stressor for the medical provider is dealing with and managing the uncommon cardiac arrest in the pediatric population. While adult “codes” are routine, “pedi codes” become hectic, frantic, ad chaotic- thus, the “load and go” response takes over. This session is designed to give participants a brief overview of the pediatric arrest pathophysiology, expected outcomes and a simple format to effectively apply BLS and ALS procedures in order to give your patient their best chance for survival.

II. Learning objectives
At the end of this program the participant will be able to:
1. Discuss the pathophysiology of the pediatric arrest in contrast to the adult.
2. Discuss expected outcomes for the pediatric patient who arrests
3. Explain the use of oxygen and bag valve mask in the pediatric patient
4. Describe intubation differences in the pediatric population
5. State which medications can be given via the endotracheal tube.
6. Discuss the importance of proper BLS procedures-CPR, immobilization, O2 and temperature regulation
7. State the indications and procedures for intraosseous access
8. Explain the concept of a precalculated pharmacology system

III. Discussion / Summary
The prognosis for the pediatric patient who suffers cardiac or respiratory arrest is poor; the only real way to reduce child deaths is to stress prevention. The most common causes are respiratory in nature, thus, in the nontraumatized patient it is imperative that providers manage the victim with excellent CPR, appropriate airway procedures and oxygenation, shock control, and initial medications where the patient lies to give the child the greatest chance of survival.

Things to keep in mind:
- Children may not be small adults- but the principles of care are unchanged. Circulation, Airway, and Breathing support can be accomplished rapidly and with little difficulty by the initial responding providers.
- Excellent ACLS with poor BLS is of no value. Immediate BLS management and CPR are of paramount importance.
- Medical codes should receive ALS treatment where the patient lies- Along with good CPR, oxygen, upgraded airway, intraosseous infusion, and initial pharmacology if possible within a reasonable time.
- Trauma is still treated in the operating room. Secure C-spine and airway “Load and Go” with secondary treatment, IV’s and meds enroute.
- Cool is the rule! As our stress levels increase, our patient care levels decrease.
Medications for Pediatric Cardiac Arrest & Symptomatic Arrhythmias

Note: The standard recommendation is to have some type of pre calculated drug chart or length based tape for dosing.

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dose (pediatric)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adenosine</td>
<td>0.1mg/kg IV/IO</td>
<td>Rapid IV/IO bolus</td>
</tr>
<tr>
<td></td>
<td>Repeat dose 0.2mg/kg</td>
<td></td>
</tr>
<tr>
<td>Amiodarone (pulseless VT/VF)</td>
<td>5mg/kg IV/IO</td>
<td>IV bolus</td>
</tr>
<tr>
<td>Amiodarone (perfusing tachy rhythms)</td>
<td>Loading: 5mg/kg IV/IO over 20-60 min</td>
<td>Repeat to max 15mg/kg/day IV</td>
</tr>
<tr>
<td>Ativan (Lorazepam)</td>
<td>0.1 mg/kg IV/IO/IM</td>
<td>Max single dose 4mg</td>
</tr>
<tr>
<td>Atropine sulfate</td>
<td>0.02 mg/kg IV/IO</td>
<td>Min dose: 0.1mg Max single dose 0.5mg child, 1mg adolescent</td>
</tr>
<tr>
<td></td>
<td>May double for 2nd dose</td>
<td></td>
</tr>
<tr>
<td>Ca²⁺ chloride 10%</td>
<td>20 mg/kg IV/IO (0.2ml/kg)</td>
<td>Give slowly</td>
</tr>
<tr>
<td>Dopamine</td>
<td>2-20 mcg/kg/min</td>
<td>1600 mcg/ml concentration</td>
</tr>
<tr>
<td>Dobutamine</td>
<td>2-20 mcg/kg/min</td>
<td>2000 mcg/ml concentration</td>
</tr>
<tr>
<td>Epinephrine for arrest</td>
<td>0.01mg/kg IV/IO</td>
<td>Repeat every 3 – 5 min</td>
</tr>
<tr>
<td>Or bradycardia</td>
<td>*TT: 0.1mg/kg (10 X’s the IV dose)</td>
<td></td>
</tr>
<tr>
<td>Epinephrine infusion</td>
<td>0.1-1 mcg/kg/min</td>
<td>concentrations: 0.1 mg/ml (100 mcg/ml)</td>
</tr>
<tr>
<td></td>
<td>For 3-7 kg pts: 0.05 mg/ml (50 mcg/ml)</td>
<td></td>
</tr>
<tr>
<td>Glucose</td>
<td>0.5-1 g/kg IV/IO</td>
<td>10% = 5 -10ml/kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td>25% = 2 - 4 ml/kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td>50% = 1 – 2 ml/kg</td>
</tr>
<tr>
<td>Lidocaine</td>
<td>1mg/kg IV/IO</td>
<td>Equally acceptable as Amiodarone in vf/pvt</td>
</tr>
<tr>
<td>Lidocaine infusion</td>
<td>20-30mcg/kg/min</td>
<td>concentrations: 4000 mcg/ml</td>
</tr>
<tr>
<td></td>
<td>After 1mg/kg loading dose</td>
<td>For 3 -7 kg pts: 8000 mcg/ml</td>
</tr>
<tr>
<td>Magnesium sulfate</td>
<td>25-50 mg/min IV/IO over 10-20 min</td>
<td>Max dose 2g</td>
</tr>
<tr>
<td>Naloxone</td>
<td>0.1mg/kg up to 2.0mg IV/IO/IM</td>
<td>Titrate to desired effect</td>
</tr>
<tr>
<td>Procainamide</td>
<td>15 mg/kg IV/IO</td>
<td>Give over 30 – 60 min</td>
</tr>
<tr>
<td>Sodium Bicarbonate</td>
<td>1mEq/kg per dose</td>
<td>Push slowly &amp; only</td>
</tr>
<tr>
<td></td>
<td>If ventilation is adequate</td>
<td></td>
</tr>
<tr>
<td>Valium (Diazepam)</td>
<td>0.1-0.3 mg/kg IV/IO or 0.5 mg/kg rectal</td>
<td>Max single dose 5 mg (rectal max single dose 10 mg)</td>
</tr>
</tbody>
</table>

*Tracheal Tube doses (TT) or Lido, Epi, Atropine & Narcan are acceptable but discouraged
Pediatric Asystole

“Circle of Life”
Core Concepts of Resuscitation
Assess C A B’s & Begin CPR
Attach monitor / defibrillator
Administer Oxygen
Continually provide CPR in 2 min cycles
30 compressions/2 breaths 1 rescuer
15 compressions/2 breaths 2 rescuer
Stop briefly every 2 min to assess

[Secondary procedures]
Secure Airway when appropriate / Monitor CO₂
Obtain Vascular Access

Continually provide CPR in 2 min cycles then stop briefly to reassess rhythm

Epinephrine (give as soon as possible)
IV/IO: 0.01 mg/kg 1:10,000

Repeat Epinephrine Q 3-5 minutes

Identify & treat causes:

**H**’s
Hypovolemia
Hypoxia
Hydrogen ions (acidosis)
Hypothermia
Hypo/hyperkalemia.
Hypoglycemia

**T**’s
Toxins
Trauma
Tamponade (cardiac)
Tension pneumothorax
Thrombosis (pulmonary or coronary)
Too slow or too fast

Anytime in the sequence
Pulseless Electrical Activity
Could be any rhythm other than pulseless VF or VT

“Circle of Life”
Core Concepts of Resuscitation
Assess C A B’s & Begin CPR
Attach monitor / defibrillator
Administer Oxygen
Continually provide CPR in 2 min cycles
30 compressions/2 breaths 1 rescuer
15 compressions/2 breaths 2 rescuer
Stop briefly every 2 min to assess

[Secondary procedures]
Secure Airway when appropriate / Monitor CO₂
Obtain Vascular Access

Epinephrine (give as soon as possible)
IV/IO: 0.01 mg/kg 1:10,000

Repeat Epinephrine Q 3 -5 minutes

Identify and treat causes:

H’s
Hypovolemia
Hypoxia
Hydrogen ions (acidosis)
Hypothermia
Hypo/hyperkalemia.
Hypoglycemia

T’s
Toxins
Trauma
Tamponade (cardiac)
Tension pneumothorax
Thrombosis (pulmonary or coronary)
Too slow or too fast

Anytime in the sequence
Pediatric Ventricular Fibrillation/Pulseless Ventricular Tachycardia

“Circle of Life”
Core Concepts of Resuscitation
Assess C A B’s & Begin CPR
Attach monitor / defibrillator
**Defibrillate 2 J/kg**
Administer Oxygen
Continually provide CPR in 2 min cycles
Stop briefly every 2 min to assess and defibrillate

[Secondary procedures]
Secure Airway when appropriate / Monitor CO₂
Obtain Vascular Access
Defibrillate 4 J/kg 2 minutes after first defibrillation
Epinephrine
IV/IO: 0.01 mg/kg 1:10,000
Defibrillate 4 J/kg if VF or pulseless VT
Amiodarone 5mg/kg IV or IO
Defibrillate 4 J/kg if VF or pulseless VT
Repeat Epinephrine every 3 -5 min at the same dose
Continue 2 min of CPR after each dose
Defibrillate 4 J/kg
May repeat Amiodarone every 5 min up to 15mg/kg
Defibrillate 4 J/kg
Identify and Treat causes between defibrillation

May consider:
Lidocaine 1mg/kg (equally effective as Amiodarone)
orMagnesium sulfate 25-50 mg/kg
ONLY if Torsades or hypomagnesemia is suspected

Anytime in the sequence:
H’s-Hypovolemia, Hypoxia, Hydrogen ions (acidosis), Hypothermia, Hypo/hyper kalemia, Hypoglycemia
T’s-Toxins, Trauma, Tamponade, Tension Pneumo, Thrombus (pulm or coronary), Too fast or too slow.
Bradycardia
Cardiopulmonary Failure
Bradycardia (below 60/min) with Agonal Breathing

Assess C A B’s
Ventilate
Administer oxygen as needed
Intubate when appropriate
Obtain vascular access
Assess vital signs

Cardio-respiratory compromise?
Poor perfusion
Hypotension
Respiratory distress

Yes
Perform chest compressions if despite oxygenation & ventilation: Heart rate <60/min

No
Observe
Support CAB’s
Transport peds facility

Continue CPR until rate sustains at greater than 60 min, ideally over 80 - 100

Epinephrine
IV/IO: 0.01 mg/kg 1:10,000

Repeat Epinephrine every 3-5 minutes at same dose

Atropine
0.02 mg/kg (usually not used in children < 1 year)
Min. dose: 0.1 mg
Max single dose: 0.5 mg for child
1.0 mg for adolescent
May be repeated once

Consider pacemaker

Consider treatable causes
Hypoxia
Hypoglycemia
Hypothermia
Herniation of brain stem

Anytime in the sequence
Wide Complex Tachycardia (>0.09 sec)
Assumed to be
Ventricular Tachycardia, Stable
(no signs of shock)

Asses C A B’s
Maintain airway
Oxygen, as needed
EKG and pulse oximeter
Assess vital signs

Consider 12 lead ECG and expert consult especially if stable

Establish vascular access

Amiodarone 5 mg/kg over 20-60 min

Successful conversion?

Yes
Consider Expert Consult

No
Synchronized cardioversion 0.5 J/kg to 1 J/kg
(may increase to 2 J/kg)
Consider Expert Consult

*May choose to try one dose of adenosine 0.1mg/kg to determine if the rhythm is SVT with aberrancy.
Wide Complex (>0.09 sec)

Assumed to be

Ventricular Tachycardia, Unstable

(signs of poor perfusion / shock)

Assess C A B’s
Maintain airway
Oxygen, as needed
EKG & pulse oximeter
Assess vital signs
Code equipment prepared

Expert Consult & 12 lead ECG when appropriate

Immediate synchronized cardioversion
0.5-1.0 J/kg
(consider sedation, do not delay cardioversion)

Attempt 2\(^{nd}\) synchronized cardioversion up to 2J/kg

If unsuccessful or rapid reoccurrence

May consider:
Amiodarone 5mg/kg IV over 20-60 min
or
Procainamide 15mg/kg IV over 30-60 min
(do not routinely administer multiple antiarrhythmic meds)

Then a 3\(^{rd}\) synchronized cardioversion up to 2 J/kg
Rate: over 180 for children; over 220 for infants

Narrow Complex Tachycardia

Assumed to be

Supraventricular Tachycardia, Stable

Assess C A B’s

Maintain airway

Oxygen, as needed

EKG & pulse oximeter

Assess vital signs

Consider 12 lead ECG & expert consult

↓

Vagal maneuvers

(ice or straw)

↓

Establish vascular access

↓

Adenosine 0.1 mg/kg IV rapidly

Followed by rapid flush

(may double dose and repeat x 1)

↓

Expert pediatric consult
Narrow Complex Tachycardia
Supraventricular Tachycardia, Unstable
(signs of poor perfusion / shock)

Assess C A B’s
Maintain Airway
Oxygen, as needed
Assess vital signs
Code equipment prepared

Consider 12 lead ECG & expert consult when appropriate

Consider vagal maneuvers
if not critically unstable
(ice or straw)

If IV/IO is already in place & pt is not critical
Adenosine 0.1mg/kg IV rapidly
followed by rapid flush
OR

Synchronized cardioversion
0.5 - 1.0 J/kg
Sedate if possible (must not delay cardioversion)

If unsuccessful
2\textsuperscript{nd} synchronized cardioversion up to 2 joules/kg

Then a 3\textsuperscript{rd} synchronized cardioversion up to 2 J/kg

May consider:
Amiodarone 5mg/kg IV over 20-60 min
or
Procainamide 15mg/kg IV over 30-60 min
(do not routinely administer multiple antiarrhythmic meds)
**Pediatric Shock**

**Poor perfusion pre or post resuscitation**

Hypoperfusion from any cause

**Assess C A B’s**
- Maintain Airway
- Administer Oxygen, as needed
- Maintain body temperature
- Monitor EKG & Pulse oximetry

**Emergency Vascular Access (IV or IO)**

*Always assess for and treat hypoglycemia, hypocalemia, and acidosis*

**ASSESS FOR AND MAINTAIN AN ADEQUATE HEART RATE AND RHYTHM**

<table>
<thead>
<tr>
<th>Shock from Trauma</th>
<th>Cardiac Related Shock</th>
<th>Septic Shock</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 ml/kg NS or LR Rapidly</td>
<td>20 ml/kg NS or LR (provided lungs are clear)</td>
<td></td>
</tr>
<tr>
<td>Continued signs of poor perfusion</td>
<td>Continued signs of poor perfusion</td>
<td></td>
</tr>
<tr>
<td>20 ml/kg NS or LR Rapidly</td>
<td>Along with 2nd fluid bolus consider:</td>
<td></td>
</tr>
<tr>
<td>Continued signs of poor perfusion</td>
<td>Dopamine at 10 – 20 mcg/kg/min or</td>
<td></td>
</tr>
<tr>
<td>3rd infusion of 20 ml/kg NS/LR or 10 ml/kg packed RBC’s mixed with NS</td>
<td>Epinephrine 0.1 – 1 mcg/kg/min</td>
<td></td>
</tr>
<tr>
<td>Repeat Q 20-30 min as needed</td>
<td>NorEpi 0.1 – 2 mcg/kg/min</td>
<td></td>
</tr>
<tr>
<td>Address the problem (surgery?) and administer whole blood</td>
<td>20 ml/kg NS or LR (administer fluids carefully in a febrile illness)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 – 4 x’s in the first hour</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Correct Glucose and Calcium level</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Start Antibiotics PRN</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Contact / Transfer to specialized ICU</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Consider: Dopamine 10 -20 mcg/kg/min or</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Epinephrine 0.1 – 1 mcg/kg/min</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NorEpi 0.1 – 2 mcg/kg/min</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ICU options based Sev02 &amp; B/P</td>
<td></td>
</tr>
<tr>
<td></td>
<td>*Norepinephrine/vasopresson</td>
<td></td>
</tr>
<tr>
<td></td>
<td>*Hgb transfusion</td>
<td></td>
</tr>
<tr>
<td></td>
<td>*Dobutamine</td>
<td></td>
</tr>
</tbody>
</table>

**Post Cardiac Arrest- Induced Targeted Temperature Management (TTM):**
For the resuscitated child who remains comatose, TTM **may be beneficial.** (**32 – 34°C / low 90’s F**)
For comatose children resuscitated out of hospital, it is reasonable to maintain either 5 days of normothermia (36-37°C) or 2 days of continuous hypothermia (32 – 34°C), followed by 3 days of normothermia. Current studies showed no difference in outcome after 1 year between randomized
groups that received either hypothermia or normothermia. For children who were resuscitated in-hospital, there is insufficient data to recommend hypothermia over normothermia.

### Supplemental Info
#### Special Needs Children

Medical and technological advances have allowed critically ill or injured children to live longer lives. Many of these 12 million children will be encountered at home, in schools, or in non-medical care facilities.

These patients present special challenges in assessment and management. The caretaker can be a great help in determining what is “normal” and what is unique for this particular patient.

Common technological support includes tracheostomies, ventilators, CSF shunts and gastrostomy tubes. Troubleshooting complications with these devices can be accomplished using a modified version of the DOPE mnemonic for evaluating ET tubes.

#### Tracheostomy Tubes

The patient may or may not have a patent upper airway allowing ventilation or oral intubation in the emergency setting. Another trach tube or a standard ET tube can be placed in the stoma if needed. Possible complications:

- **D** – dislodged tube
- **O** – obstructed tube
- **P** – pneumothorax
- **E** – equipment failure

#### Home Ventilators

The caregiver should be familiar with the ventilator type, function and settings for the child. Identifying and treating the causes of acute respiratory distress in the ventilator dependent patient must be done immediately. Possible causes of the deteriorating child who is ventilator dependent may include:

- **D** – displaced or disconnected tubing or ET or trach tube
- **O** – obstruction of air flow – ventilator or trach tube
- **P** – pneumothorax or patient condition (i.e. – respiratory diseases)
- **E** – equipment failure – try to manually ventilate the patient

#### Central Venous Catheters

These sites may have external ports requiring regular “flushing” or be placed under the skin showing a visible “port” which must be accessed through the skin and require monthly “flushing”.

Common causes of CVC related complications include:

- **D** – displacement or disconnection causing serious bleeding
- **O** – obstruction – clots or kinking of the catheter
- **P** – pulmonary embolus, pneumothorax, pericardial tamponade
- **E** – equipment failure – leaking, cracking or infection

#### Feeding Tubes

Used for nutrition or medications in children who have nutritional, developmental or swallowing problems.

Potential complications for feeding catheters include:

- **D** – displacement
- **O** – obstructed
- **P** – peritonitis, perforation, pneumoperitoneum
- **E** – equipment failure – the tubing or the feeding pump

#### CSF Shunts

Used in patients who are unable to drain or reabsorb CSF from the ventricles in the brain. This may be due to medical conditions, trauma or neoplasms. The shunt is a catheter placed in the brain, which drains fluid to the abdominal or thoracic cavity for reabsorption. Emergencies involving CSF shunts may include:

- **D** – displacement – patient may show signs of ↑ ICP
- **O** – obstruction – SI/SX include headache irritability, N/V, bulging fontanelle are signs of ↑ ICP
• P – peritonitis, perforation, pseudo cyst – all presenting as acute abdomen or shock
• E – equipment failure – leaking, kinking or cracking of the shunt causing signs of infection or ↑ ICP

Supplemental Info
Common Pediatric Emergencies

Seizures
Most common pediatric medical emergency

Fever is the most common cause
• Febrile seizures alone are not life threatening (but how do you know fever is truly the cause?)
• No alcohol or cool baths – these can lead to shivering and increase temp.

Status Epilepticus – 2 or more seizures without regain in consciousness or 1 continuous seizure lasting more than 15-20 minutes.

Treatment
CAB’s
Prevent Injury, Lateral recumbant position (for airway maintenance)
Vascular access if unstable or in status seizures
Ativan IM or IV, IO (0.1mg/kg)
Midazolam IV, IN, IM, IO (0.1mg/kg)
Valium IV, IO (0.1-0.2mg/kg) or rectal (0.5mg/kg) or

Most seizures last less than 5 minutes and need no treatment except opening the airway, suction, and O2

Fever
Remove clothing
Tylenol (15mg/kg) or Motrin (10mg/kg)

Sepsis
Initially manage shock and fever
Appropriate antibiotics
Consider sepsis specific facility

Meningitis
Watch for S/S of increased ICP
May be life threatening if not caught early

Symptoms
Fever (may be only presenting symptom in infant)
Bulging fontanel
Irritability
Lethargy
Nuchal rigidity
S/S increased ICP

Treatment
Initially manage shock, ICP, and fever
Appropriate labs
Appropriate antibiotics

**Head Injuries**

Common in Pediatrics – large head compared to body

**Concussion**
Pathophysiology
Swelling – no actual damage to brain tissue

**Assessment**
Vomiting
Sleepiness
Neuro checks WNL

**Management**
CAB’s
Observe for:
  • S/S increased ICP
  • S/S hemorrhage/contusion

**Intracranial Hemorrhage/Contusion**
Pathophysiology
Bleeding within the brain tissue

**Assessment**
S/S of concussion + neuro deficits
Lethargy or loss of consciousness
Seizures
Unequal or sluggish pupils
Hemiparesis, hemiparalysis

**Management**
CAB’s
Close observation
Surgical intervention

**Increased Intracranial Pressure**

**Assessment** (Cushing’s Triad)
Hypertension
Bradycardia
Irregular respirations

**Management**
CAB’s
Consider elevating head
Maintain adequate ventilations (pCO₂ approx. 30)
Hyperventilation reserved for rapidly deteriorating patients (may need rapid surgical intervention)
Corticosteroids
Mannitol may be considered by some if no bleed

**Respiratory Distress**

“Noisy breathing is obstructed breathing”

Managing the respiratory distress is more important than diagnosing

<table>
<thead>
<tr>
<th>Croup</th>
<th>Epiglottitis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Usually &lt; 3 yrs old</td>
<td>Usually 3-6 yrs old</td>
</tr>
<tr>
<td>“Sick” for a couple of days</td>
<td>Sudden onset</td>
</tr>
<tr>
<td>Low grade fever</td>
<td>High fever</td>
</tr>
<tr>
<td>Not “toxic” appearing</td>
<td>“Toxic” appearing</td>
</tr>
<tr>
<td></td>
<td>Drooling – dysphagia</td>
</tr>
<tr>
<td></td>
<td>“Tripod”</td>
</tr>
</tbody>
</table>

Both
Stridor
“Barky” cough

**Asthma**
RAD (reactive airway disease) – bronchoconstriction
Tightness reduces airflow and thus may decrease wheezing

**Pneumonia / Bronchiolitis**
Infiltrates
Respiratory distress with coarse breath sounds, rales, rhonchi, and possibly wheezing

**General management**
Psychological first aid
Airway as appropriate – position of comfort → sniffing position
O₂ as tolerated – blow by → BVM → ETT
Pulse oximeter, cardiorespiratory monitor
Initial IV therapy may be delayed
Nebulizer treatments
- Bronchodilators, for asthma, and possibly pneumonia and bronchiolitis
  - (Albuterol 1.25-2.5 mg/dose)
- Racemic epinephrine 0.05mL/kg/dose for croup (not used for epiglottitis)
Sudden Infant Death Syndrome (SIDS) is the sudden and unexplained death of an infant under one year of age.

SIDS, sometimes known as “crib death”, is the major cause of death in babies from 1 month to 2 year of age. The death is sudden and unpredictable, most often in a seemingly healthy baby, and usually during sleep. Most SIDS deaths occur between ages 1 and 4 months, affecting more boys than girls, and occurring more often in the fall, winter and early spring months.

Reducing the Risk of SIDS

Sleep position
  • Unless contraindicated, healthy babies should sleep on their backs
  • If the side lying sleep position is chosen, the baby’s lower arm should be positioned forward to prevent him from rolling into a prone position

Sleep surface
  • The baby should sleep on a firm mattress. Fluffy blankets, waterbeds, sheepskin, or pillows should not be used as a sleep surface

Temperature
  • Room temperature should be moderate; not cold, but not warmer than is comfortable for adults
  • Smoke free environment
  • Babies and young children exposed to smoke have higher incidence of colds and other respiratory infections, as well as increased risk for SIDS

Routine healthcare
  • Routine well and sick baby visits as well as receiving vaccinations on time reduce the risk of SIDS

Prenatal care
  • Early and regular prenatal care can help reduce the risk of SIDS
  • The risk of SIDS is higher for babies whose mothers smoked during pregnancy

Breastfeeding
  • Breastfeeding provides enhanced immune protection for infants
Written Pre Course Examination

1. Which of the following rhythms is shown on this rhythm strip?

![Rhythm Strip]

a. ventricular fibrillation  
b. ventricular tachycardia  
c. sinus bradycardia  
d. supraventricular tachycardia

2. A 2-year-old unresponsive, apneic child is brought to the Emergency Department. The EMTs transporting the child tell you the child became pulseless as they pulled up to the hospital. The child is receiving CPR, including positive-pressure ventilation with bag and mask and 100% oxygen and chest compressions. You confirm that apnea is present and that ventilation is producing bilateral breath sounds and chest expansion while a colleague confirms absence of spontaneous central pulses and other signs of circulation. A third colleague attaches the ECG monitor and reports that ventricular fibrillation is present. Which of the following therapies is most appropriate for this child at this time?

a. establish IV/IO access and administer Amiodarone 5 mg/kg  
b. establish IV/IO access and administer Lidocaine 1 mg/kg  
c. attempt defibrillation at 2 J/kg  
d. establish IV/IO access and administer epinephrine 0.01 mg/kg

3. You are attempting resuscitation of a two year old in cardiac arrest. Using a weight based tape you determine the child’s weight to be 20kg. The doctor has ordered defibrillation of v-fib at 200J. What should the provider do next?

a. Defibrillate as ordered  
b. administer asynchronous cardioversion  
c. attempt synchronized cardioversion  
d. Professionally ask the doctor to clarify the dose
4. You are preparing to use a manual external defibrillator and external paddles in the pediatric setting. When would it be most appropriate to use the smaller “pediatric-sized” paddles or pads for delivery of direct-current energy?

a. the smaller paddles should be used for synchronized cardioversion but not for defibrillation
b. the smaller paddles should be used when the patient weights less than approximately 25 kg or is less than 8 years old
c. the smaller paddles should be used when the patient weights less than approximately 10 kg-15 kg or is less than 1-2 year old
d. the smaller paddles should be used whenever you can compress the victim’s chest using only the heel of one hand

5. A 7-year-old boy is found unresponsive, apneic, and pulseless. CPR is provided, and tracheal intubation and vascular access are achieved. The ECG monitor reveals pulseless electrical activity (PEA). An initial IV dose of epinephrine has been administered, and effective ventilations and compressions continue for 1 minute. Which of the following therapies should you perform next?

a. attempt to identify and treat reversible causes (using the H’s and T’s to recall treatments)
b. attempt defibrillation at 4 J/kg
c. administer escalating doses of epinephrine
d. administer synchronized cardioversion

6. Which of the following is the most serious concern during a status seizure where the patient is protected and not in danger of injuring himself?

a. the seizure may decrease peripheral vascular resistance and reduce myocardial afterload so that ventricular contractions are less effective
b. during and post seizures the child is in danger of respiratory depression or irregular control of breathing.
c. victims of seizures rarely have complications, hence there is virtually no concern
d. EKG monitoring is of paramount importance due to the incidence of post seizure V-fib

7. After eating a hot dog a 9 year old becomes dyspnic, is wheezing, mottled, pale, and lethargic. His HR 140, RR 40, 02 Sat 89, Cap refill 4 sec. Mom says he is allergic to cow lips. We should?

a. administer oxygen and stand by for an IV
b. administer Epinephrine 0.01mg/kg IM
c. begin ventilations at 20/min
d. call for steroid administration
8. A 9-month-old infant presents with a respiratory rate of 45 breaths/min and an SVT with narrow QRS complexes. The infant is receiving 100% oxygen by face mask, and you do not yet have vascular access. The infant’s systolic blood pressure is 64 mm Hg and palpable with faint pulses, and capillary refill time is 5 to 6 seconds. The infant responds only to painful stimulation, and he has no history of vomiting or diarrhea. Which of the following is the most appropriate initial treatment for this infant?

a. attempt immediate defibrillation
b. obtain vascular access and administer a 20 mL/kg fluid bolus of normal saline over 20 minutes or less
c. attempt immediate cardioversion at 0.5-1 joules/kg
d. obtain vascular access and administer verapamil

9. Your above action was unsuccessful. You should

a. attempt cardioversion with double your original joule setting
b. attempt defibrillation
c. obtain vascular access and administer a fluid bolus
d. obtain vascular access and administer verapamil

10. You are in a restaurant when a woman at the next table cries out, “I think he’s choking”. You look over and see a 3-year-old child who does appear to be choking. You go to the table and confirm that the child is responsive, but he is cyanotic, unable to cough or talk, and is not moving air. Which of the following is the most appropriate initial therapy for this child?

a. give 5 back blows and then 5 chest thrusts
b. perform a blind finger sweep
c. do not intervene unless the child becomes unresponsive; then perform abdominal thrusts
d. tell the victim you will help and give abdominal thrusts.

11. You are evaluating a 7-month-old boy. The infant presented with a history of poor feeding, fussiness, and sweating. He is alert and responsive, and he has a respiratory rate of 48 breaths/min with good bilateral breath sounds. Heart rate is 250 bpm with narrow (<0.09 seconds) QRS complexes, and the heart rate does not vary with activity or cry. Pulses are readily palpable, and capillary refill is 2 seconds. Which of the following therapies is most appropriate for this infant?

a. make an appointment with a pediatric cardiologist for later in the week
b. consider vagal maneuvers (eg, ice to the face) while IV access is attempted and provide IV adenosine once access is established
c. perform immediate synchronized cardioversion without awaiting establishment of IV access
d. establish IV access, administer a fluid bolus of 20 mL/Kg of isotonic crystalloid, and administer antibiotics
12. You are evaluating a responsive 6-year-old girl. The child presented with fever, irritability, mottled color, cool extremities, and a prolonged capillary refill time. Her heart rate is 160 bpm, respiratory rate is 45 breaths/min, and BP is 98/56 mm Hg. Which of the following most accurately describes this child’s condition, using the terminology taught in the PALS course?

a. hypotensive shock associated with inadequate tissue perfusion
b. hypovolemic shock associated with inadequate tissue perfusion and significant hypotension
c. compensated shock requiring no intervention
d. compensated shock associated with inadequate tissue perfusion

13. An 8-year-old child was struck by a car. He arrives in the Emergency Department alert, anxious, and in respiratory distress. His cervical spine is immobilized, and he is receiving a 10 L/min flow of 100% oxygen by face mask. Respirations are 60 breaths/min, heart rate is 150 bpm, and systolic blood pressure is 60 mm Hg. No breath sounds are heard over the right chest, and the trachea is clearly deviated to the left. Pulse oximetry reveals an oxyhemoglobin saturation of 84%. Which of the following is the most appropriate immediate intervention for this child?

a. perform tracheal intubation and call for a STAT chest x-ray
b. obtain a chest x-ray and provide bag-mask ventilation until the x-ray is read
c. establish IV access and administer a 20 mL/kg bolus of normal saline
d. perform needle decompression of the right chest and assist ventilation with a bag and mask if necessary

14. A 2-year-old child presents with mild difficulty breathing of gradual onset. She is alert, but she has a sore throat and is making coarse, high-pitched inspiratory sounds (mild stridor). Her oxyhemoglobin saturation is 94% in room air, and her lung sounds are clear with adequate breath sounds bilaterally. Which of the following is the most appropriate initial intervention for this child?

a. immediate tracheal intubation
b. immediate radiologic evaluation of the soft tissues of the neck
c. evaluation of oxyhemoglobin saturation with pulse oximetry and analysis of arterial blood gases to determine if hypercarbia is present
d. administration of humidified supplemental oxygen as tolerated and continued evaluation

15. An 18-month-old child presents with 1-week history of a cough and runny nose. He is cyanotic and responds only to painful stimulation. His heart rate is 160 bpm; respirations have dropped from 65 to 10 per minute with severe intercostals retractions and a capillary refill time of less than 2 seconds. Which of the following is the most appropriate immediate treatment for this toddler?

a. establish vascular access and administer a 20 mL/kg bolus of isotonic fluids
b. open the airway and provide positive-pressure ventilation using 100% oxygen and a bag-mask device
c. administer 100% oxygen by face mask, establish vascular access, & obtain a STAT chest x-ray
d. administer 100% oxygen by face mask, obtain blood for arterial blood gas analysis, and establish vascular access
16. You are supervising another healthcare provider in the insertion of an intraosseous needle into an infant’s tibia. Which of the following signs should you tell the provider will best indicate successful insertion of a needle into the bone marrow cavity?

   a. pulsatile blood flow will be present in the needle hub
   b. fluids or drugs can be administered freely without local soft tissue swelling
   c. resistance to insertion suddenly increases as the tip of the needle passes through the bony cortex into the marrow
   d. once inserted the shaft of the needle moves easily in all directions within the bone

17. Following a motor vehicle accident, a 9 year old who had been submerged was resuscitated via EMS and the Emergency Department. He is currently unresponsive but maintaining vital signs, in relation to bedside tertiary assessment, which of the following should the initial provider consider?

   a. order blood cultures, 12 lead ECG, and venous blood gasses
   b. establish a second IV, monitor core temp to maintain at 98°F, mildly hyperventilate
   c. check and maintain normal glucose level, maintain 02 sat 94-99%, maintain temperature
   d. begin a full blood profile, administer 02 by nasal canula if tolerated, obtain ABG’s

18. A child presents with Ventricular Tachycardia. There is no medical history and the standard treatment clears the condition for a brief period, then VT recurs. What must the clinician consider?

   a. the child may have a new onset of hypertension
   b. the child may require an infusion of epinephrine
   c. the possibility of a toxin or metabolic disorder
   d. the child may be faking

19. An infant with a history of vomiting and diarrhea arrives by ambulance. The infant responds only to painful stimulation. The upper airway is patent, respiratory rate is 40 breaths/min with good bilateral breath sounds, and 100% oxygen is being administered. She has cool extremities, weak pulses, and a capillary refill time of more than 5 seconds. Blood pressure is 85/65 mm Hg, and glucose concentration (measured by bedside test) is 100 mg/dL. Which of the following is the most appropriate treatment for this child?

   a. establish IV or IO access and administer 20 mL/kg 5% dextrose and 0.45% sodium chloride over 5 minutes
   b. establish IV or IO access and administer 20 mL/kg lactated Ringer’s solution over 60 minutes
   c. perform tracheal intubation and administer 0.1 mg/kg epinephrine (0.1 mL/kg of 1:1000 solution) by tracheal tube
   d. administer 20 mL/kg isotonic crystalloid over 10 to 20 minutes
20. Which of the following devices will most reliably deliver a high (90% or greater) concentration of inspired oxygen? Bedside, what is the best way to assess the patients’ respiratory status?

a. a nasal cannula with oxygen flow of 4 LPM  /  Evaluate ABG’s
b. a simple oxygen mask  /  Monitor Mean Arterial Pressure
c. a non-rebreathing face mask with an oxygen reservoir  /  Evaluate patients respiratory effort
d. a partial rebreathing mask  /  Monitor coronary perfusion pressure.

21. You are transporting 6-year-old tracheally intubated patient who is receiving positive-pressure mechanical ventilation. The child begins to move his head and suddenly becomes cyanotic and bradycardic. You remove the child from the mechanical ventilator circuit and provide manual assisted ventilation with a bag via the tracheal tube. During manual ventilation with 100% oxygen, the child’s color and heart rate and his blood pressure remains unchanged. Breath sounds and chest expansion are present and adequate on the right side, but they are consistently diminished on the left side. The trachea is not deviated, and the neck veins are not distended. A suction catheter passes easily beyond the tip of the tracheal tube. Which of the following is the most likely cause of this child’s acute deterioration?

a. tracheal tube displacement
b. tracheal tube obstruction
c. tension pneumothorax
d. equipment failure

22. An 11-year-old skateboarder suffered multiple system trauma. He is intubated and receiving positive pressure ventilation. You note signs of a tension pneumothorax. Which of the following is the most appropriate site for needle decompression?

a. under the second rib at the mid clavicular line
b. over the fifth rib at the midaxillary line
c. over the third rib at the mid clavicular line
d. under the sixth rib at the midaxillary line

23. An unresponsive 7-month-old infant presents with cold extremities and a capillary refill time of more than 5 seconds. His heart rate is 260bpm with weak pulses and narrow QRS complexes. IV access is established with difficulty. The infant is receiving 100% oxygen by non-rebreathing face mask, and oxygenation and ventilation are adequate. Pediatric monitor/defibrillation/pacing electrode pads are in correct position on the infant’s chest. You attempt to flush the IV line with normal saline and note that it is no longer patent. Which of the following is the most appropriate initial treatment for this infant?

a. perform immediate tracheal intubation
b. reattempt vascular access to enable administration of IV adenosine
c. establish IO access and administer 20 mL/kg bolus of isotonic crystalloid followed by adenosine
d. perform immediate synchronized cardioversion
24. A pulseless 11-month-old infant with ventricular fibrillation arrives in the Emergency Department. CPR is in progress. Which of the following best describes this heart rhythm?

a. the heart is pumping too fast to fill between beats and therefore is not providing adequate circulation.
b. the heart is pumping too slow to maintain adequate circulation
c. there is electrical activity without any mechanical activity
d. the heart is “quivering” without actually pumping any blood

25. You are participating in the attempted resuscitation of a 3-year-old child in pulseless ventricular tachycardia. You have attempted defibrillation without converting the VT to a perfusing rhythm. The airway is secure and ventilation is effective. Attempts at IV access have been unsuccessful, but IO access has been established. You have been unable to identify any reversible cause of the VT. You administer epinephrine, circulate it with good CPR, and attempt defibrillation a fourth time, but VT persists. Which of the following drugs should you administer next?

a. epinephrine 0.1 mg/kg by tracheal tube (1:1000 solution, 0.1 mL/kg)
b. adenosine 0.1 mg/kg IV push
c. epinephrine 0.1 mg/kg IO (1:1000 solution, 0.1 mL/kg)
d. amiodarone 5 mg/kg IO

26. An 18-month-old submersion (near-drowning) victim is currently stable in a community hospital ED. A tracheal tube is in place with proper position confirmed. The toddler is receiving mechanical ventilation and a mid-dose dopamine infusion to support blood pressure and perfusion. Which of the following options is most appropriate for transporting this child from the community hospital to a tertiary care center?

a. a helicopter team with no pediatric experience that is 20 minutes away
b. the local EMS service with a Basic EMT
c. a pediatric critical care transport team from the receiving tertiary care center that is 30 minutes away
d. the local basic EMS service with a pediatric nurse along to help

27. A 3-year-old boy presents with multiple system trauma. The child was an unrestrained passenger in a motor vehicle crash. He is unresponsive to anything but painful stimuli. He has vascular access via an antecubital IV and is on oxygen by mask. You notice his heart rate drop from 110/min to 48/min. Your first course of action should be?

a. administer atropine 0.02mg/kg
b. administer epinephrine 0.01mg/kg
c. administer oxygen by bag mask device @12-20/min
d. begin CPR at a rate of at least 100/min
28. Which of the following rhythms is shown on this rhythm strip?

![Rhythm Strip]

a. ventricular fibrillation  
b. ventricular tachycardia  
c. sinus bradycardia  
d. supraventricular tachycardia  

29. The appropriate treatment for a 5yr old with a narrow EKG at 230/min with adequate perfusion after attempting vagal maneuvers by applying ice to his face or blowing into an occluded straw?

a. compressions at a rate over 100/min  
b. rapid bolus of adenosine 0.1mg/kg  
c. cardioversion 2j/kg followed by 4j/kg  
d. rapid bolus of adenosine 6mg followed by 12mg if needed  

30. You are alone when you see your neighbors’ 13-year-old daughter floating face-down in their swimming pool. She is unresponsive, limp, and cyanotic when you pull her from the water. You did not witness her entry into the water. Which of the following best summarizes the first steps you should take to maximize this adolescent’s chances of survival?

a. shout for help; briefly check for signs of breathing then begin chest compressions. Open airway with a jaw thrust while keeping her spine immobilized, provide 2 rescue breaths, continue CPR  
b. carefully lay her on the ground, leave her to phone 911, and then return, open her airway, and continue the steps of CPR  
c. immediately begin cycles of 5 chest compressions and 1 ventilation  
d. shout for help and if no one arrives, open her airway with a head tilt-chin lift, check breathing, and provide 2 rescue breaths if she is not breathing adequately  

31. You find a 7-year-old boy unresponsive in his bed. Your briefly check breathing and find it absent. You check for a pulse and it is not palpable. You deliver 30 compressions then 2 breaths. What should you keep in mind when performing chest compressions on this child?

a. compress at a rate of 140 per minute  
b. do not interrupt compressions for more than 1 minute  
c. compress the chest at least ¾ of the anterior-posterior distance from the abdomen.  
d. be sure to allow complete recoil of the chest
32. You have just assisted with the elective tracheal intubation of a child with respiratory failure and a perfusing rhythm. You perform a clinical assessment during assisted manual ventilation to verify proper tracheal tube position, and you want to confirm tube position with a secondary technique. Which of the following would provide the most reliable, prompt secondary confirmation of correct tracheal tube placement in this child?

a. some color improvement, some chest rise, and a 94% oxygen saturation per pulse oximetry
b. auscultation of breath sounds over the peripheral areas of both lung fields and presence of inspiratory sounds over the abdomen during assisted ventilation
c. presence of mist in the tracheal tube
d. presence of exhaled carbon dioxide using a waveform end tidal CO₂ device

33. You are assisting at a track and field event at a local elementary school. You witness a young teenage girl collapse while running. She is unresponsive when you arrive at her side. Other bystanders have called for EMS support and are performing well-coordinated CPR. They report that the teen has no known health problems, but she is now apneic and pulseless. The school has an adult AED. Which of the following actions would most likely improve this teen’s chance of survival?

a. take over mouth-to-mouth resuscitation and provide mild hyperventilation
b. turn on the AED, attach the Adult Pads, follow the shock or no shock directions
c. continue ventilations, do not attach the AED as there are only Adult Pads
d. get a blanket to keep the patient warm while elevating her legs

34. Parents walk to you with their toddler who has an obvious stridorous, “seal bark” cough. The parents state they put the child to bed earlier and other than a “runny nose” he was fine. Currently he is alert, in no acute distress, RR 28, 02 sat 98%, HR 130, Cap refill 1 sec and afebrile. Which is the most expected course of treatment?

a. immediate IV Solumedrol
b. obtain ABG’s and administer 02
c. neck x-ray, prep the child for an OR transfer
d. keep child calm, administer nebulized Epinephrine (racemic Epi if possible)

35. Respiratory conditions are one of the most common reasons children seek medical care. In assessing the child if you hear stridor, you suspect obstruction / constriction in the _________ airways. Where as the wheezing patient is more likely to have an issue in the ______________ airway.

a. upper, lower
b. lower, upper
c. alveolar, subthoracic
d. posterior, anterior
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The following pages contain a Pretest for anyone choosing to complete the BLS course after ACLS or PALS.

This information in this packet comes from the 2015 BLS textbook; Please use the book to review.

You must score a 76% (-7)
In order to take this program

Completing these test questions prior to the course is mandatory if you plan on attending the CPR section after the PALS program.
Skills Review for Healthcare Providers
The CAB’s of CPR

Simultaneously Determine unresponsiveness and check for effective breathing
If unresponsive: call a “code” or 911

C = Circulation - Check for a pulse Max - 10 seconds. If pulse is not definite, begin compressions.
A = Airway - Open airway (head tilt/chin lift)
B = Breaths - Give 2 breaths then back to compressions
D = Defibrillator - Attach a manual defibrillator or AED

CPR Reference

<table>
<thead>
<tr>
<th></th>
<th>Adults (&gt; puberty)</th>
<th>Children (1 - puberty)</th>
<th>Infants (&lt; 1yr)</th>
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<tr>
<td>Rescue breathing, Victim definitely has a pulse</td>
<td>10-12 breaths/min recheck pulse every 2 minutes</td>
<td>12-20 breaths/min recheck pulse every 2 minutes</td>
<td>12-20 breaths/min recheck pulse every 2 minutes</td>
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<td>Compression landmark</td>
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<td>No pulse</td>
<td>Middle of the chest, between the nipples</td>
<td>1 finger below nipple line</td>
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<td>or pulse &lt;60 in infant or child with poor perfusion</td>
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<tr>
<td>Compressions are performed</td>
<td>Heel of 2 hands</td>
<td>Heel of 1 or 2 hands</td>
<td>2 fingers OR 2 thumbs when using encircling hands technique</td>
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<td>Rate of compressions per minute</td>
<td>100-120/min</td>
<td>100-120/min</td>
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<td>Compression depth</td>
<td>2-2.4 inches</td>
<td>At least 1/3 depth of chest</td>
<td>At least 1/3 depth of chest</td>
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<td>2 inches</td>
<td>2 inches</td>
<td>1 ½ inches</td>
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<td>Ratio of compressions to breaths</td>
<td>30:2</td>
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<td>Change compressors and reevaluate every 2 min</td>
<td>15:2 if 2 rescuer</td>
<td>Change compressors and reevaluate every 2 min</td>
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<td>Foreign Body Airway Obstruction</td>
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<td><em>If not rapidly removed call Emergency Medical Service</em></td>
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Conscious choking

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<tr>
<td>Abdominal Thrusts</td>
<td>Abdominal Thrusts</td>
<td>5 Back Blows/5 Chest Thrusts</td>
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Unconscious choking

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<th>Adult</th>
<th>Child</th>
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<tr>
<td>Call a “code” or call 911 Begin CAB’s of CPR Before giving breaths: look in mouth for foreign body, remove object if it is seen. Repeat cycles of CPR if needed</td>
<td>Begin CPR If second rescuer is present, send them to call a “code” or 911, otherwise, call after 2 min of CPR Before giving breaths: look in mouth for foreign body, remove object if it is seen. Repeat cycles of CPR if needed</td>
<td>Begin CPR If second rescuer is present, send them to call a “code” or 911, otherwise, call after 2 min of CPR Before giving breaths: look in mouth for foreign body, remove object if it is seen. Repeat cycles of CPR if needed</td>
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INFORMATION TO KEEP IN MIND:

1. Know the maximum time that should be spent checking for the presence of a pulse.

2. Know the preferred techniques/devices for providing ventilations if you are a single rescuer versus having multiple resources in the professional setting.

3. Know the concept of scene safety/awareness before providing care.

4. Know which patients require ventilations and which require ventilations plus compressions.

5. Know the best way to open the airway for an Adult, Child, Infant or spinally injured patient.

6. Know the location, depth and rate of compressions for an Adult, Child and Infant.

7. Know when to start compressions for an Adult, Child and Infant, be able to explain chest recoil (release) and high quality CPR.

8. Know the compression to ventilation ratio for both 1 and 2-rescuer for Adult, Child and Infant.

9. Know how to reduce the incidence of air being introduced into the patient’s stomach versus their lungs.

10. Understand how an AED affects the heart (shock to organize the rhythm), and know the steps for using an AED on an Adult, Child or Infant; pediatric use and placement.

11. Know how to incorporate CPR before, during and after AED use.

12. Know the changes in CPR, which are incorporated once a victim has an advanced airway “tube” placed by a medical professional.

13. Know the sequence, procedures and roles for 1 rescuer versus 2-rescuer CPR.

14. Know the procedures for conscious and unconscious choking for Adult, Child and Infant.

15. Know how to determine effectiveness of ventilations and compressions being provided during CPR.

16. Know the elements of effective team dynamics and communicating during an emergency.
MANDATORY BLS Pre-Course Exam

1. An elderly woman collapses to the floor in a bingo hall. Your first action should be:

   A. Open the airway and give 2 breaths.
   B. Go grab the defibrillator off the wall in the hallway.
   C. Yell out/ call for help while simultaneously assessing for pulse and respirations.
   D. Check for a carotid pulse.

2. You are performing 1 rescuer CPR on a 75-year-old female with a history of chest pain and diabetes. An AED has just been made available to you. What is the first action that you should take at this time?

   A. Finish the 5 cycles of chest compressions that you have started.
   B. Place the AED pads on the chest.
   C. Secure an electrical outlet to plug the AED into.
   D. Turn the AED on.

3. You are attending your nephew’s birthday party when a 5 year old child suddenly starts choking on a hotdog. What should you do?

   A. Administer 2 rescue breaths.
   B. Perform a blind sweep of the victim’s mouth.
   C. Deliver 5 back-slaps.
   D. Position yourself behind the child and administer abdominal thrusts (Heimlich Maneuver).

4. Opioids are medications that are used to treat pain but have a high potential for abuse. Addiction rate to the medications is a growing problem and they can cause respiratory and or cardiac arrests. Currently, more adults die every year from opioid overdoses than car accidents. What is the name of the medication that is utilized to reverse the effects of respiratory depression?

   A. Naloxone.
   B. Ativan.
   C. Lasix.
   D. Magnesium Sulfate.

5. Your middle age neighbor is mowing his grass when he clutches his chest and drops to the ground. He has no pulse or respirations. Your son calls 911 while you initiate chest CPR. How fast should the compression rate be?

   A. 100 compressions per minute.
   B. 100-120 compressions per minute.
   C. 80-100 compressions per minute.
   D. 120-150 compressions per minute.

6. Bystanders have pulled a young woman with a pulse but no respirations out of a lake. One of them is administering rescue breaths at a rate of one every 5-6 seconds while waiting for EMS to arrive. Which of the following is true about rescue breaths?

   A. Each breath should result in visible chest rise.
   B. Give each breath over 1 second.
   C. The pulse should be checked every 2 minutes.
   D. All of the above
7. Which of the following situations will slightly delay AED usage while the situation is made safe for AED application?

A. A person found lying on a metal floor inside a meat cooler.
B. A person found submerged in a bathtub.
C. A person who collapsed in snow.
D. A person who has a transdermal nitro patch on their arm.

8. When utilizing a bag valve mask device it is important to remember:

A. That this device requires training and is best suited for a 2-rescuer situation.
B. The E-C clamp technique should be used while lifting the jaw to provide a good seal.
C. To squeeze the bag for 1 second while watching the chest rise.
D. All of the above.

9. What is the correct ratio for compressions to ventilations in infant CPR with 2 rescuers present?

A. 20 compressions to 4 breaths.
B. 15 compressions to 2 breaths.
C. The rate remains 30 compressions to 2 breaths.
D. 15 compressions to 1 breath.

10. The maximum amount of time that should be taken to check for a pulse on an adult, infant or child is:

A. 15 seconds
B. 10 seconds
C. 30 seconds
D. 5 seconds

11. You are the second rescuer providing ventilations to an adult victim in cardiac arrest. You observe the hand placement of the person who is providing compressions to be incorrect. You advise them to reposition their hands. This is an example of what type of team dynamic communication?

A. Knowledge Sharing.
B. Closed Loop Communication.
C. Constructive Intervention.
D. Open Communication

12. While providing CPR to a victim, an AED becomes available and a shock is indicated and administered. What should you do next?

A. Administer 2 more shocks; to total 3.
B. Immediately restart CPR, starting with compressions.
C. Give 2 breaths first then resume CPR.
D. Check the carotid pulse for no longer than 10 seconds.

13. What is the purpose of defibrillation?

A. To stop a chaotic rhythm and restore the heart’s normal rhythm.
B. To increase the rate of complete heart block.
C. To provide a blood pressure.
D. To treat cardiac standstill.
14. Current guidelines suggest that adult compressions should be administered at a depth of 2-2.4 inches. Which of the following is not true regarding chest compression depth?

A. Compressions are often delivered too hard rather than too shallow.
B. It may be difficult to accurately judge compression depth without the use of a feedback device.
C. Consistent compression depth of at least 2 inches is associated with better outcomes.
D. Potential complications can occur at depths of greater than 2.4 inches.

15. What is the correct rate of ventilations to provide when an advanced airway is in place?

A. 1 breath every 3-5 seconds.
B. 1 breath every 6-8 seconds.
C. 1 breath every 10 seconds.
D. 1 breath every 6 seconds.

16. You begin your shift on the med/surg floor. You begin your rounds and when you walk into a patient’s room, you notice the patient has agonal respirations. What should you do first?

A. Give the patient oxygen
B. Check a pulse, and begin compressions if indicated
C. Do nothing, the patient is asleep
D. Begin the Heimlich maneuver

17. When is the two thumb encircling technique is used?

A. On an infant when two rescuers are available
B. When the infant is choking
C. When performing CPR on a pediatric victim
D. When performing one rescuer CPR on an infant and you become tired

18. At the beginning of your work shift, you are assigned the role of compressor during a cardiac arrest. This is known as:

A. Mutual respect
B. Closed loop communications
C. Clear roles and responsibilities
D. Constructive intervention

19. While assisting with a cardiac arrest, you are instructed to take over bag valve mask ventilations. You repeat back “you would like for me to take over bag valve mask ventilations.” In team dynamics, what is this called?

A. Closed loop communications
B. Knowing your limitations
C. Knowledge sharing
D. Mutual respect
20. In relation to the “Team concept” of resuscitation, if adequate medical staff is available, in order to reduce fatigue and increase effectiveness of compressions the team should?

A. Assign several people to switch off on compressions every 2 min
B. Have each compressor work until they state they need relief
C. Put a rescuer on each side of the victim and rotate each set of 30 compressions
D. Always assign the largest, strongest person to compressions

21. You arrive to find a hospital maintenance worker lying on the ground, next to a ladder. He appears unconscious, your first action should be?

A. Check for breathing and a pulse
B. Shake and shout, check unresponsiveness
C. Begin compressions at 30:2
D. Assure the area is safe for you to be in

22. After performing the choking procedure for a conscious victim who becomes unconscious, the next procedure is to?

A. Perform a finger sweep
B. Attempt ventilations
C. Straddle the victim
D. Begin CPR compressions

23. High quality CPR is the critical component to resuscitation, especially compressions; which concept is correct?

A. Compression depth has a higher priority than recoil or relaxation
B. Compression and recoil (refill) are equally important
C. Ventilation is the priority for all victims
D. 30 ventilations per minute are optimum for the best outcome

24. When performing compressions on a child for CPR or unconscious foreign body airway procedures the proper depth is?

A. ½" or ½ the depth of the chest
B. 1 ½ " to 2 1 ½ " inches
C. Varies based on age and weight
D. 2" or 1/3 the depth of the chest
25. While at a school event, a teacher chokes on gum. He runs towards the office before falling unconscious. Immediately after performing 30 compressions, the next step is?

A. Open the airway and look into the mouth before ventilating  
B. Perform a finger sweep and attempt breaths  
C. Readjust the airway with a jaw thrust maneuver  
D. Check pulse for no more than 10 seconds

26. The resuscitation team is made up of various professionals with different levels of license and skill sets. In order to function efficiently the team members must?

A. Wait for a physician to order CPR and defibrillation  
B. Always be prepared to perform any skills, even if not licensed to  
C. Realize their strengths, abilities and limitations  
D. Decide if they feel CPR is worth the physical effort

27. A victim begins to choke, and you find them grabbing their throat and coughing uncontrollably, you should?

A. Perform the Heimlich maneuver  
B. Perform the modified Heimlich maneuver  
C. Perform chest thrust if they are pregnant or obese  
D. Allow them to continue coughing

28. You are assisting with a cardiac arrest at a surgicenter. Someone brings in an AED that you are not familiar with, in relation to utilizing this:

A. Have an overhead page put out for someone familiar with the unit  
B. Perform 2 minutes of CPR, then apply the pads  
C. Wait for EMS or someone familiar with the AED before using  
D. Turn on the unit and follow the directions

29. The accepted ratio of compressions to ventilations for a 6 year old drowning victim when only 1 rescuer is available is?

A. 15:1  
B. 30:1  
C. 30:2  
D. 15:2

30. AED Pads require firm contact to the skin to be most effective, which of the following will negatively effect that contact?

A. Water on the patients chest  
B. Suntan oil on the skin  
C. Hair on the chest  
D. All of the above
COURSE: Mandatory Pre Test Questions for those completing BLS after ACLS or PALS

# MISSED: ____________  GRADE: ____________

1. A B C D
2. A B C D
3. A B C D
4. A B C D
5. A B C D
6. A B C D
7. A B C D
8. A B C D
9. A B C D
10. A B C D
11. A B C D
12. A B C D
13. A B C D
14. A B C D
15. A B C D
16. A B C D
17. A B C D
18. A B C D
19. A B C D
20. A B C D
21. A B C D
22. A B C D
23. A B C D
24. A B C D
25. A B C D
26. A B C D
27. A B C D
28. A B C D
29. A B C D
30. A B C D

REMINDER:
You must score a 76% to be eligible for the BLS Completion section after ACLS or PALS