

APPARENT LIFE-THREATENING EVENT (ALTE) – PEDIATRIC

APPROVED:



Gregory Gilbert, MD EMS Medical Director



Louise Rogers Interim EMS Administrator

DATE: February 2014

Information Needed:

An Apparent Life-Threatening Event (ALTE) is any episode that is frightening to the observer (may even think infant or child has died) and usually involves any combination of the following symptoms:

- Apnea (central or obstructive)
- Loss of consciousness
- Color change (cyanosis, pallor, erythema, plethora)
- Marked change or loss in muscle tone
- Choking or gagging

ALTE's usually occur in infants under 12 months old, however; any child less than 2 years of age who exhibits any of the above symptoms should be considered an ALTE.

Utilize the Broselow Tape to measure length and then SMC Pediatric Reference Card for determination of drug dosages, fluid volumes, defibrillation/cardioversion joules and appropriate equipment sizes.

Objective Findings:

- History of any of the following:
 - Apnea
 - Loss of consciousness
 - Color change
 - Loss in muscle tone
 - Episode of choking or gagging
- Determine the severity, nature and duration of the episode
 - Was child awake or sleeping at time of episode
 - What resuscitative measures were taken
- Age less than 2 years
- Obtain a complete medical history to include:
 - Past Medical History
 - Evidence of seizure activity
 - Current or recent infections
 - Recent trauma

- Medication history
- Known gastroesophageal reflux or feeding difficulties
- Unusual sleeping or feeding patterns

Treatment:

- Routine medical care
- Assume the history given is accurate
- Perform a comprehensive physical assessment that includes general appearance, skin color, extent of interaction with the environment, and evidence of current or past trauma. **Note: Exam May Be Normal**
- Treat any identifiable causes as indicated
- Transport. **Note: If parent/guardian refuses medical care/and or transport, a consult with Pediatric Base Hospital Physician is required prior to completing a Refusal of Care form.**

Precautions and Comments:

- In most cases, the infant/child will have a normal physical exam when assessed by prehospital personnel. The parent/caregiver's perception that "something is or was wrong" must be taken seriously.
- Approximately 40-50% of ALTE cases can be attributed to an identifiable cause(s) such as child abuse, SIDS, swallowing dysfunction, infection, bronchiolitis, seizures, CNS anomalies, cardiac disease, chronic respiratory disease, upper airway obstruction, metabolic disorders, or anemia. The remaining causes have no known etiology.

ALTERED MENTAL STATUS – PEDIATRIC

APPROVED: Gregory Gilbert, MD EMS Medical Director
Nancy Lapolla EMS Director

DATE: July 2018

Information Needed:

- Surroundings: syringes, blood glucose monitoring supplies, insulin, medication bottles, cleaning supplies, etc.
- Change in mental status: baseline status, onset and progression of altered state. Remember to use age-appropriate GCS and gauge neurologic functioning by appropriate response for age. Parents and guardians are good sources of information as to whether the infant or child's reaction to verbal or tactile stimuli is baseline.
- Preceding symptoms such as fever, respiratory distress, headache, seizures, confusion, trauma, etc.
- Medical history: psychiatric and medical problems, medications, allergies, potential ingestions (especially salicylates, acetaminophen, and ethanol).
- Utilize the Broselow Tape to measure length and then SMC Pediatric Reference Card for determination of drug dosages, fluid volumes, defibrillation/cardioversion joules and appropriate equipment sizes

Objective Findings:

- Appearance, skin signs, temperature
- Level of consciousness and neurological assessment
- Evidence of trauma
- Breath odor
- Pulse oximetry
- Medical information bracelets or medallions
- Blood glucose level
- Vital signs
- Cardiac rhythm on monitor

Treatment:

- Primary field survey
- Routine medical care, ensure protective position or need for c-spine precautions as indicated
- Ensure ABC's, oxygenation, ventilation; suction as needed
- Oxygen via blow-by, mask, or high flow as needed; assist ventilations with BVM as needed.

Known or Suspected Hypoglycemia:

- Glucose paste, Glucola, sugared soft drinks, orange juice or other oral glucose may be administered if patient is able to maintain his airway and follow commands
- Consider IV/IO access
- If neonate (less than 29 days) and blood glucose less than 40 mg/dL give:
 - D₁₀%W IV/IO
 - If no vascular access, administer glucagon IM
- If older than 29 days and blood glucose less than 60 mg/dL give:
 - D₁₀%W IV/IO
 - If no vascular access, administer glucagon IM

Unknown Cause:

- Establish IV/IO access
- Consider naloxone IV, IO, IM or IN
- Give IV/IO fluid bolus of NS for any signs of hypoperfusion or hypovolemia. Reassess. May repeat two times as indicated. Contact Pediatric Base Hospital Physician for additional fluid orders fluid
- Continuously monitor vital signs, pulse oximetry, and cardiac rhythm during transport

Precautions and Comments:

- Naloxone should be used with caution in the neonate of a known or suspected narcotic-addicted mother as this can induce a withdrawal reaction.
- Be attentive for excessive oral secretions, vomiting, and inadequate tidal volume.
- Consider abuse or neglect for children with AMS and unknown cause.
- When in doubt, and if trauma exists, c-spine and backboard precautions are warranted.

BURNS – PEDIATRIC

APPROVED: Gregory Gilbert, MD EMS Medical Director
Nancy Lapolla EMS Director

DATE: July 2018

Information Needed:

- Type and source of burn: explosion, chemical, electrical, steam, smoke or toxic fumes
- Complicating factors: exposure in enclosed space, total time exposed, drugs or alcohol
- Medical history: cardiac or respiratory disease, circulatory problems, etc.
- Physical Exam: presence or absence of sputum, singed nasal hairs, and quality of voice
- Utilize the Broselow Tape to measure length and then SMC Pediatric Reference Card for determination of drug dosages, fluid volumes, defibrillation/cardioversion joules and appropriate equipment sizes

Objective Findings:

- Evidence of inhalation injury or toxic exposure, i.e. carbonaceous sputum, hoarseness, or singed nasal hairs
- Measure the extent of the burn including the depth, full or partial thickness and the total body surface area (TBSA) affected. As a guide, the surface area covered by the patients palm equals one percent of his TBSA.
- Identify entrance or exit wounds if electrical or lightning strike
- Identify associated trauma from explosion, electrical shock, or fall

General Burn Treatment:

- Routine medical care
- Stop the burning process
- Oxygenate with BVM as needed
- Should not delay transport to appropriate facility, if feasible
- Continuous cardiac monitoring: treat dysrhythmias according to appropriate protocols
- Consider IV/IO access (avoid burned skin but use if necessary).
- Consider IV/IO fluid bolus of NS
- Consider pain management, see Interim Pediatric Pain Assessment and Management protocol (June 2016)

Treatment (Thermal):

- Remove jewelry and non-adhered clothing. Do not break blisters
- Cover affected body surface
 - If <5% of body surface, cover with sterile, moist saline dressing

- If >5% TBSA, cover with sterile or clean dry sheet
- Use sheets/blankets to prevent hypothermia if burns are extensive
- For major burns, establish IV or IO access, preferably in unburned skin.
- For less severe burns, consider vascular access for pain management.
- Transport to appropriate facility (see Precautions and Comments)
- If partial or total thickness >5% TBSA :
 - Give IV/IO fluid bolus of NS. May repeat two times as indicated.
 - Contact Pediatric Base Hospital Physician for additional fluid orders.
- Monitor lung sounds

Treatment (Chemical):

- Decontamination and HazMat procedures if indicated
- Provide routine medical care as soon as it is safe
- Brush off dry powder if present
- Remove any contaminated or wet clothing (including underwear)
- Irrigate with copious amounts of saline or water

Treatment (Electrical):

- Moist dressing on exposed, injured area
- Continuous cardiac monitoring: treat dysrhythmias according to appropriate protocols

Major burn is defined as:

- >5% of TBSA partial or full thickness burn
- Burns to critical areas: face, hands feet or genitalia, perineum, or major joints
- Electrical burns or lightning injury
- Chemical burns
- Respiratory burns
- Burns associated with trauma

Transportation:

- Patients with minor burns should be transported to the closest appropriate hospital
- Patients with suspected partial or full thickness (>5%TBSA), electrical burns or full thickness burns of critical areas (hands, face, or perineum) should be transported to Santa Clara Valley Medical Center or St. Francis Hospital – Bothin Burn Center
- Patients with a combination of burns and trauma should be transported to the appropriate Trauma Center
- Patients with respiratory symptoms or physical evidence of respiratory burns (singled nasal hair, soot in the oropharynx) should be transported to the closest receiving hospital

Precautions and Comments:

- Depth of burn:
 - Superficial = 1st degree (skin red but intact with pain)
 - Partial thickness = 2nd degree (severe pain with blisters)
 - Full thickness = 3rd degree (no sensation in burned skin)
- Contact Pediatric Base Hospital Physician for further fluid orders, assistance with destination decision, or further pain management orders if needed.
- Inhalation injuries may cause delayed but severe airway compromise. Be prepared and transport to nearest ED.
- Do not apply ice or ice water directly to skin surfaces as additional injury may result.
- Consider presence of associated multisystem trauma if patient presents with signs or symptoms of hypovolemia or hypoperfusion. See Trauma Protocol for associated trauma.
- Trauma takes precedence over burns. When trauma is suspected, transport to a Trauma Facility or contact Pediatric Base Hospital Physician to help determine destination decision.
- Air medical response should consult their medical direction protocols/procedure for appropriate destination.
- Document the total IV fluid administered on the PCR and provide this in report to the receiving hospital.

CARDIAC ARREST OVERVIEW - PEDIATRIC (GENERAL GUIDELINES)

APPROVED: Gregory Gilbert, MD EMS Medical Director
 Nancy Lapolla EMS Director

DATE: July 2018

Information Needed:

- History of arrest:
 - Witnessed/unwitnessed collapse, time down and preceding symptoms
 - Pre-arrival instructions, Bystander CPR and treatments, including first responder/bystander defibrillation, prior to arrival
- Past medical history: diagnoses (cardiac, respiratory, children with special health care needs), medications, recent illness/fever, recent trauma, recent medical care/treatments, suspicion of abuse/neglect, and birth history (e.g. prematurity, complicated delivery)
- Precipitating event(s): sleeping, eating, playing, bathing, swimming
- Scene: site of arrest (crib, adult bed, trauma scene, bath/pool), immediate surroundings (blankets, pillows, toys, medications, toxins), DNR/POLST form, medallion, or hospice patient
- Estimated age. Follow Neonatal Resuscitation Protocol as indicated
- Utilize the Broselow Tape to measure length and then SMC Pediatric Reference Card for determination of drug dosages, fluid volumes, defibrillation/cardioversion joules and appropriate equipment sizes

Objective Findings:

- Unresponsive; apneic, pulseless (check carotid and femoral pulses)
- Assess rhythm as asystole, PEA, or bradycardia
- Pulse oximetry

Treatment:

- Initiate standard pediatric cardiac arrest management: CAB's, CPR (American Heart Association BLS Standards), monitor, ventilate with 100% oxygen
- Plan actions before interrupting CPR
- Monitor cardiac rhythm and treat dysrhythmia according to appropriate protocol
- Establish IV/IO access

Precautions and Comments:

- Pediatric cardiopulmonary arrest is almost always the lack of oxygen or perfusion from one of many non-cardiac causes. In the pediatric patient, arrest usually follows a primary respiratory arrest.
- In the prehospital setting, trauma, SIDS, drowning, poisoning, choking, severe asthma, and pneumonia represent the most common causes of arrest.
- Ensure that effective CPR continues while advanced skills are carried out.

- Intraosseous infusion (IO) can be used on all children in cardiac arrest.
- AEDs should be used according to manufacturer's directions and/or AHA Guidelines. If AED is being used to defibrillate:
 - Pediatric attenuated shock for patient <8 years old
 - Adult shock for 8 years and older
- When defibrillating/cardioverting patients \leq 10kg weight (GRAY, PINK, and RED color zones), use "pediatric" pads". Optimal placement of pads in this age group is anterior-posterior placement (one pad over the heart, the other on the back).
- When defibrillating/cardioverting patients \geq 10 kg weight (PURPLES through GREEN color zones), use "adult" pads with standard placement or follow manufacturer's directions for hands free defibrillation.
- If patient is hypothermic, transport may be indicated to re-warm patient in hospital setting prior to termination of efforts.
- Consider termination of efforts if there is no response to ALS measures. (see Guidelines for Determining Death in the Field)
- Provide emotional support as appropriate. Contact Public Safety Communications for grief support referral.

CARDIAC ARREST - PEDIATRIC ASYSTOLE/PEA

APPROVED: Gregory Gilbert, MD EMS Medical Director
 Nancy Lapolla EMS Director

DATE: July 2018

Information needed:

See Pediatric Cardiac Arrest: Overview Protocol

- For neonates (<29 days) refer to Neonatal Resuscitation Protocol
- Utilize the Broselow Tape to measure length and then SMC Pediatric Reference Card for determination of drug dosages, fluid volumes, defibrillation/cardioversion joules and appropriate equipment sizes.

Objective Findings:

- Unresponsive; apneic, pulseless (check carotid and femoral pulses)
- Assess rhythm as asystole or PEA
- Pulse oximetry

Treatment:

- Initiate standard pediatric cardiac arrest management: CAB's, CPR, monitor, ventilate with 100% oxygen
- Confirm rhythm as asystole or PEA
- Assess adequacy of ventilations and compressions
- Establish IV/IO
- Give epinephrine (1:10,000) IV/IO. May repeat q 3-5 minutes
- Give IV/IO fluid bolus of normal saline if there are signs of hypoperfusion. Reassess. May repeat fluid bolus twice as indicated. Contact Pediatric Base Hospital Physician for additional fluid orders.

Precautions and Comments:

- Atropine has not been shown to be useful in pediatric asystole or PEA. Consider termination of efforts in the field if the patient is unresponsive to initial treatments. (See Guidelines for Determining Death in Field Policy)

**CARDIAC ARREST- PEDIATRIC
VENTRICULAR FIBRILLATION/
PULSELESS VENTRICULAR TACHYCARDIA**

APPROVED: Gregory Gilbert, MD EMS Medical Director
 Nancy Lapolla EMS Director

DATE: July 2018

Information Needed:

See Pediatric Cardiac Arrest Overview Protocol

- VF is uncommon in children. When seen be suspicious of underlying cardiac disease (eg. congenital anomalies, cardiomyopathies or acute cardiac inflammation) or other possible causes (as listed in PEA protocol).
- For neonates(< 29 days) refer to Neonatal Resuscitation Protocol
- Utilize the Broselow Tape to measure length and then SMC Pediatric Reference Card for determination of drug dosages, fluid volumes, defibrillation/cardioversion joules and appropriate equipment sizes.

Objective Findings:

- Rhythm assessed as ventricular fibrillation or pulseless ventricular tachycardia

Treatment:

- Start CPR utilizing American Health Association (AHA) BLS standards until defibrillator available
- Plan actions before interrupting CPR
- Defibrillate once with appropriate joules
- Resume CPR for 2 minutes immediately after the shock.
- Standard cardiac arrest care (CPR, BVM with 100% oxygen, and establish IV/IO access). Minimize interruptions in chest compressions.
- Check rhythm. If asystole/PEA or pulse is present, go to appropriate protocol.
- Give epinephrine (1:10,000) when IV/IO established. May repeat q 3-5 minutes
- Defibrillate with appropriate joules
- Resume CPR for 2 minutes immediately after the shock.
- Give IV/IO fluid bolus of NS for any signs of hypoperfusion. Reassess. May repeat twice as indicated. Contact Pediatric Base Hospital Physician for additional fluid orders.
- Continue CPR, epinephrine, and defibrillation while minimizing interruptions
- If rhythm changes, check for pulses and proceed to appropriate Pediatric Cardiac Arrest or Dysrhythmia Protocol as indicated.

San Mateo County EMS Agency
Pediatric Treatment Protocols

**CARDIAC ARREST: PEDIATRIC VENTRICULAR FIBRILLATION/PULSELESS
VENTRICULAR TACHYCARDIA**

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Precaution and Comments:

- When defibrillating/cardioverting patients \leq 10kg weight (GRAY, PINK, and RED color zones), use “pediatric” pads. Optimal placement of pads in this age group is anterior-posterior placement (one pad over the heart, the other on the back).
- When defibrillating/cardioverting patients \geq 10 kg weight (PURPLE through GREEN color zones), use “adult” pads with standard placement or follow manufacturers directions for hands free defibrillation.
- AEDs should be used according to manufacturer’s directions and/or AHA Guidelines. If AED is being used to defibrillate:
 - Pediatric attenuated shock for patient <8 years old
 - Adult shock for 8 years and older
- For refractory ventricular fibrillation, resuscitation efforts should be continued through transport to hospital.

DYSRHYTHMIAS: BRADYCARDIA - PEDIATRIC

APPROVED: Gregory Gilbert, MD EMS Medical Director
Nancy Lapolla EMS Director

DATE: July 2018

Information Needed:

- Bradycardia, in pediatric patients, typically is the result of some form of respiratory depression and initial treatment should be directed to ensuring that the patient is breathing adequately and providing supplemental oxygenation and ventilation as needed.
- Clinically significant bradycardia is defined as heart rate less than 60 bpm with signs of instability or a rapidly dropping heart rate associated with poor systemic circulation despite adequate oxygenation and/or ventilation
- History, onset and duration of symptoms, mental status, and neurologic baseline
- History of respiratory insufficiency, failure, obstruction, or respiratory arrest
- History of cardiac disease or etiology, previous episode, treatment required, medications or possibility of ingestion
- Antecedent symptoms: dizziness, syncope, or other related chief complaint
- For neonates (<29 days) refer to the Neonatal Resuscitation Protocol
- Utilize the Broselow Tape to measure length and then SMC Pediatric Reference Card for determination of drug dosages, fluid volumes, defibrillation/cardioversion joules and appropriate equipment sizes.

Objective Findings:

- Assess rhythm as bradycardia and determine if any of the following signs of instability are present:
 - Hypoperfusion
 - Hypotension
 - Respiratory difficulty
 - Altered mental status

Treatment:

- Routine medical care
- For unstable patients: deliver high flow O₂ via non-rebreather mask. Consider BVM with 100% oxygen.
- Confirm rhythm as bradycardia. If heart rate remains < 60/min with continued signs of instability after oxygenation and ventilation, begin cardiac compressions.
- Establish IV/IO
- Give epinephrine (1:10,000) IV/IO. May repeat q 3-5 minutes.


- Give IV/IO fluid bolus of NS for any signs of hypoperfusion. Reassess. May repeat twice as needed. Contact Pediatric Base Hospital Physician for additional fluid orders.
- If rhythm changes, check for pulses, and proceed to appropriate Pediatric Cardiac Arrest or Dysrhythmia Protocol as indicated.

Precautions and Comments:

- Bradycardia in infants < 6 months of age is more likely to cause symptoms as cardiac output is more dependent on heart rate in this age group.

DYSRHYTHMIAS: TACHYCARDIA – PEDIATRIC

APPROVED:



Gregory Gilbert, MD EMS Medical Director



Louise Rogers Interim EMS Administrator

DATE: February 2014

Information Needed:

- Onset and duration of symptoms, fluid loss, fever, nausea, vomiting, diaper changes, trauma, AMS, neurological baseline
- History of previous diagnosis, etiology, or cardiac disease; previous episodes, previous treatment required, medications currently prescribed
- Preceding symptoms, dizziness, syncope, chest pain, palpitations or other chief complaint
- Utilize the Broselow Tape to measure length and then SMC Pediatric Reference Card for determination of drug dosages, fluid volumes, defibrillation/cardioversion joules and appropriate equipment sizes.

Objective Findings:

- Assess rhythm as tachycardia and determine if any of the following signs of instability are present:
 - Hypoperfusion
 - Hypotension
 - Respiratory difficulty
 - Altered mental status

Sinus Tachycardia

Infants: rate usually less than 220 bpm

Children: rate usually less than 180 bpm

Heart rate often varies with activity. History is usually consistent with hypovolemia (eg. dehydration or hemorrhage) but may be associated with hyperthermia or pain.

Treatment:

- Routine medical care
- For unstable patients: deliver high flow O₂ via non-rebreather mask. Consider BVM with 100% oxygen
- Regular assessment of vital signs and signs of perfusion
- Establish IV/IO

- Give IV/IO fluid bolus of NS. Reassess. May repeat two times as indicated
Contact Pediatric Base Hospital Physician for additional fluid orders
- Treat underlying cause as appropriate

Supraventricular Tachycardia (Narrow Complex)

Infants: rate usually greater than 220 bpm:

Children: rate usually greater than 180 bpm.

Heart rate is regular and does not vary with activity.

Treatment:

- High flow oxygen
- Regular assessment of vital signs and signs of perfusion
- Attempt vagal maneuvers without delay
- Reassess
- For stable patients:
 - Establish IV/IO (IV is preferred)
 - Repeat vagal maneuvers as indicated
 - Monitor closely for signs of hypoperfusion
- For patients with signs of hypoperfusion and IV access established:
 - Give adenosine rapid IV push and immediately flush with 5-10 ml NS
 - If dysrhythmia persists, repeat adenosine at double initial dosage rapid IV push and immediately flush with 5-10 ml NS
 - If dysrhythmia persists, immediate synchronized cardioversion.
- For patients with signs of hypoperfusion and IV access not established:
 - Immediate synchronized cardioversion. Reassess, may repeat cardioversion once at double initial joules if necessary
 - Do not delay cardioversion to establish venous access
 - Consider precardioversion administration of midazolam, but only if it does not delay cardioversion. Be prepared to support ventilations and oxygenation

Ventricular Tachycardia (Wide Complex with Pulses)

Heart rate usually greater than 120, regular, with wide QRS interval (>0.08 seconds)

Treatment:

- Routine medical care
- High flow oxygen
- Regular assessment of vital signs and signs of perfusion
- For stable patients:
 - Establish IV/IO
 - Monitor closely for signs of hypoperfusion
- For patients with signs of hypoperfusion whether IV/IO access no established:
 - Immediate synchronized cardioversion. Reassess, may repeat cardioversion once at double initial joules if necessary
 - Do not delay cardioversion to establish venous access

- Consider precardioversion administration of midazolam, but only if it does not delay cardioversion. Be prepared to support ventilations and oxygenation
- Establish IV/IO

Precautions and Comments:

- IO administration of adenosine has been shown to be ineffective in recent studies and cardioversion should not be delayed.
- When giving midazolam (Versed®) prior to cardioversion DO NOT USE THE DOSAGES LISTED ON THE BROSELOW TAPE as they are high doses indicated for induction. Use doses from the SMC Pediatric Reference Card.
- If available cardioversion/defibrillator will not dial down to appropriate energy setting, use lowest possible energy level on the defibrillator.
- When defibrillating/cardioverting patients ≤ 10 kg weight (GRAY, PINK, and RED color zones), use “pediatric” pads”. Optimal placement of pads in this age group is anterior-posterior placement (one pad over the heart, the other on the back).
- When defibrillating/cardioverting patients ≥ 10 kg weight (PURPLES through GREEN color zones), use “adult” pads with standard placement or follow manufacturers directions for hands free defibrillation.
- VAGAL MANUEVERS
 - Infants and small children: use ice/cold pack and applied to the entire face. Use care not to obstruct ventilation or apply ocular pressure.
 - Older children: use standard vagal maneuvers such as breath holding, coughing, or blowing into syringe

NAUSEA AND VOMITING – PEDIATRIC

APPROVED: Gregory Gilbert, MD EMS Medical Director
Nancy Lapolla EMS Director

DATE: July 2018

Indications:

- Patients that present or develop nausea and/or vomiting before or during transport to the hospital provided they have no contraindications.

Information Needed:

- Discomfort or condition: OPQRST (Onset, Provocation, Quality, Radiation, Region, Severity, Timing)
- Associated symptoms: Fever and/or chills, passing flatus, abdominal pain, or diarrhea. Color of stool if different from usual.
- Gastrointestinal: Time and description of last meal or any other suspicious ingestions, description of vomitus, if any, history of similar episodes in the past and time of last bowel movement. History of reflux.
- Neurologic: Presence of a headache or trauma to the head.
- Oncologic: History of recent chemo or radiation therapy.
- Medication history: Antibiotics, toxin or toxic ingestion.
- Medical history: surgery, medications, any sick contacts or others with similar symptoms, and any remedies attempted.

Objective Findings:

- General appearance: severity of nausea/vomiting, skin color, capillary refill.
- Vital signs
- Resolution of symptoms with treatment

Treatment:

- Position of comfort
- Routine medical care
- Consider Ondansetron (Zofran) ODT (Oral Dissolving Tablet) or IV

AGE	DOSE
<2 years	Pediatric Base Hospital Order
2-3 years	2 mg
4-14 years	4 mg

- Consider IV access and fluids for signs of hypoperfusion.

Contraindications:

- Avoid in patients with known sensitivity to Ondansetron (Zofran) or other serotonin antagonists (eg. Granisetron (Kytril), Dolasetron (Anzemet), Palonosetron (Aloxi).
- Do not use in patients known to have Phenylketonurics (contains phenylalanine)

Precautions and Comments:

- If other symptoms exist, refer to those treatment protocols after Ondansetron (Zofran) is given.
- Can be used in patients who develop nausea from narcotics.
- Patient must be at least 6 kgs to be used.
- For patients under 2 years of age, Pediatric Base Hospital contact required for Ondansetron order.
- Do NOT attempt to push the ODT through the foil backing. With dry hands, moisture on hands can cause unintended disintegration of the medication, PEEL OFF the foil backing from 1 blister and GENTLY remove the tablet.
- If the child is between 2-3 years of age, cut the ODT in half.
- IMMEDIATELY place the ONDANSETRON (ZOFRAN) ODT on top of the tongue where it will dissolve in seconds, the patient's saliva is all that is required. No additional liquid is needed.
- Although unlikely, side effects include headache, anaphylaxis, rash, flushing, prolonged QT, dizziness, diarrhea, tachycardia, sedation, or hypotension. Exclude other causes first.

NEONATAL RESUSCITATION

APPROVED: Gregory Gilbert, MD EMS Medical Director
Nancy Lapolla EMS Director

DATE: July 2018

Information Needed:

- Gestational age
- Multiple gestations
- Mother's use of medications and/or illicit drugs
- Utilize the Broselow Tape to measure length and then SMC Pediatric Reference Card for determination of drug dosages, fluid volumes, defibrillation/cardioversion joules and appropriate equipment sizes.

Objective Findings:

- Meconium (dark staining of amniotic fluid) if membranes have ruptured
- Apgar score at 1 and 5 minutes

Treatment:

- Provide warmth with thermal blanket or dry towel
 - Cover head
- Keep neonate at or below the level of the mother
- Position, clear airway
 - Suction the mouth and then the nasopharynx
 - If meconium noted and neonate is depressed (poor respiratory effort, decreased muscle tone or heart rate less than 100) to limit aspiration quickly provide vigorous suctioning of mouth and nasopharynx with appropriate size catheter on low suction setting and immediately afterward provide oxygenation and ventilation
- Dry, stimulate, and reposition airway as needed
- Clamp and cut the cord
- Evaluate respirations, heart rate, and color
 - Check heart rate at umbilical cord stump
- If apneic or heart rate <100/minute:
 - Assisted BVM ventilation at 40-60 breaths/minute with 100% oxygen for 30 seconds and reassess
 - Provide on-going care if improvement noted.
 - Continue reassessment of respirations and heart rate enroute
- If heart rate remains <60/minute:
 - Continue with assisted ventilation with bag-valve mask
 - Begin chest compressions at 120/minute (3:1 compression/ventilation ratio) reassess after 30 seconds
 - If no improvement:

- Establish IV/IO access
- Give epinephrine (1:10,000) IV/IO. May be repeated q 3-5 minutes prn
- Continue CPR and reassessment of respirations and heart rate enroute at regular intervals
- If heart rate is >100/minute:
 - Check skin color; if peripheral cyanosis, give oxygen by mask or blow by
 - Provide on-going care
 - Reassess heart rate and respirations enroute.

Precaution and Comments:

- Even when meconium is present, focus should be on oxygenation and ventilation of the neonate. Neonates born with meconium staining who are not depressed require the same suction techniques as those born with clear fluid
- Prolonged apnea without bradycardia or cyanosis may indicate respiratory depression caused by narcotics administered within 4 hours of delivery. However, naloxone should be avoided in the infant of a known or suspected narcotic-addicted mother as this can induce a withdrawal reaction
- The primary enemy of a newborn is hypothermia, which can occur in minutes. Cold stress can impede effective resuscitation; therefore warming interventions are a priority

Intraosseous access is not recommended as the vascular access of choice for the neonate; however it can be used as an alternative route for medication and fluid administration if unable to establish other venous access.

Apgar Scoring

The Apgar score measures overall cardiopulmonary and neurologic functions of the neonate. A set of scores should be taken at one minute after birth and another set after five minutes. If the newborn is unstable (4-7), scoring should continue every five minutes thereafter. Do not use the Apgar score to guide resuscitation. Instead, it should be used as a tool to measure the effectiveness of interventions.

	Sign	0 Points	1 Point	2 Points
A	Activity (Muscle Tone)	Absent	Arms & Legs flexed	Active movement
P	Pulse Rate	Absent	Below 100 bpm	Above 100 bpm
G	Grimace (Reflex Irritability)	No response	Grimace	Sneeze, cough, pulls away
A	Appearance	Blue-gray, pale all over	Normal except for extremities	Normal over entire body
R	Respirations	Absent	Slow, irregular	Good, crying

Activity - muscle tone should be good with evidence of active motion in arms, legs, and facial expressions

Pulse - may be determined by feeling of pulse at the base of the umbilical cord, or at the brachial or femoral artery

Grimace - reflex irritability is determined by the neonate's response when the nostrils are suctioned

Appearance - skin color should be pink, not pale or cyanotic. Cyanosis may be central or peripheral only. Blue extremities are common in the first few minutes of life

Respirations - should be strong immediately after birth following brief stimulation (slapping the feet)

INTERIM PAIN ASSESSMENT AND MANAGEMENT – PEDIATRIC

APPROVED: Gregory Gilbert, MD EMS Medical Director
Nancy Lapolla EMS Director

DATE: June 2018

Information Needed:

- All patients expressing verbal or behavioral indicators of pain shall have an appropriate assessment and management of pain as indicated.
- Measurement of a patient's pain is subjective; therefore, they are the best determinant of the presence and severity of their pain.
- Determine the appropriate means to assess the pediatric patient's level of pain based upon age and developmental level and DOCUMENT. This policy includes details on three pediatric assessment tools that are recommended for use: 1) FLACC Behavioral Pain Scale (< 3 yrs), 2) Baker-Wong Faces Scale (3-7 yrs), and 3) the Visual Analog Scale (>7 years).
- Utilize the Broselow Tape to measure length and then SMC Pediatric Reference Card for determination of drug dosages, fluid volumes, defibrillation/cardioversion joules and appropriate equipment sizes.

Objective Findings:

- Initial assessment of pain shall include the following:
 - o Onset
 - o Provoked
 - o Quality
 - o Region/location
 - o Scale/intensity
 - o Time/duration
- Document the scale/intensity using the numeric intensity scale equivalent of 0 -10 (0=no pain - 10=worse pain ever). All three recommended pain assessment tools allow for this.
- Reassessment and documentation of a patient's pain shall be performed frequently and following any intervention that may affect pain intensity.
- The administration of pain medication for pediatric patients is contraindicated in the following situations:
 - o Known or suspected head injuries (GCS score less than 15)
 - o If any signs or symptoms of hypoperfusion are present

Treatment:

- Routine medical care
- Determine appropriate form(s) of pain management as indicated. Initial pain management should include as appropriate any of the following interventions: repositioning, bandaging, splinting, elevation, traction, cold

- packs and psychological coaching. Reassess pain intensity and document findings.
- If patient's pain is assessed as Moderate to Severe (5–10) and no contraindications are noted:
 - Determine patient's length-based weight utilizing the Broselow Tape. Based on medication availability, utilize the appropriate version of SMC Pediatric Drug Card to determine dosages.
 - For morphine administration – 2013 Pediatric Drug Card
 - For Fentanyl administration – 2018 Pediatric Drug Card
 - Pediatric Base Physician contact is required if patient's weight is less than the recommended minimums as noted on the Pediatric Drug cards. Establish IV/IO-access
 - Administer Morphine Sulfate IV/IO
 - May repeat once in 5 minutes provided patient has no signs of hypoperfusion
 - If unable to establish IV/IO, administer morphine sulfate IM.
 - May repeat once in 10 minutes provided patients has no signs of hypoperfusion
 - If morphine sulfate is unavailable, **Fentanyl** may be used following dosages found on the 2018 Pediatric Drug Card:
 - IV/IO (1 mcg/kg) slowly over 2 mins. May repeat q 5 mins to a maximum dose of 3 mcg/kg
 - IM (1 mcg/kg). May repeat once in 10 minutes. Not to exceed a maximum dose of 3 mcg/kg
 - IN (2 mcg/kg). Spray ½ dose in each nare. IN Fentanyl may NOT be repeated
 - Have naloxone readily available to reverse any respiratory depression that may occur.
 - Consider Ondansetron (Zofran) ODT or IV for nausea per the Pediatric Drug Card.
 - Reassess vital signs and pain intensity after each dose of morphine sulfate or Fentanyl administration, and document using 0-10 scale.
 - If additional pain medication is indicated, contact Pediatric Base Hospital Physician

Precautions and Comments:

- Pain and anxiety are not the same and require differentiation as their treatments differ.
- An accurate and thorough assessment of pain requires that an initial assessment and on-going assessments be performed and documented. This is the community standard of care and provides clinicians with a baseline to compare subsequent evaluations of the patient's pain.
- The preferred route of analgesia is intravenous; however, if an IV cannot be established then the IO/IM route in an age-appropriate site may be used.

PEDIATRIC PAIN ASSESSMENT TOOLS

The following pain assessment tools are described in detail for prehospital personnel to assist them in the assessment of pediatric patients' pain.

FLACC Behavioral Tool

This tool is appropriate for use with children less than 3 years of age or those with cognitive impairments or any child who is unable to use the other scales. FLACC is the acronym for **F**ace, **L**egs, **A**ctivity, **C**ry and **C**onsolability. The patient is assessed in each of these categories with a score applied to behaviors evaluated. The five scores are totaled and the severity of pain is determined based on the 0-10 pain scale.

	0	1	2
FACE	No particular expression or smile	Occasional grimace or frown, withdrawn, disinterested	Frequent to constant frown, clenched jaw, quivering chin
LEGS	Normal position or relaxed	Uneasy, restless, tense	Kicking or legs drawn up
ACTIVITY	Lying quietly, normal position, moves easily	Squirming, tense, shifting back and forth, hesitant to move, guarding	Arched, rigid or jerking, fixed position, rocking, rubbing of body part
CRY	No cry/moan (awake or asleep)	Moans or whimpers, occasional cries, sighs or complaint	Cries steadily, screams, sobs, moans, groans, frequent complaints
CONSOLABILITY	Calm, content, relaxed, needs no consoling	Reassured by hugging, talking to; distractible	Difficult to console or comfort

Baker-Wong FACES Pain Rating Scale

This tool is usually appropriate for use with children age 3 years and older.



Wong DL, Hockenberry-Eaton M, Wilson D, Winkelstein ML: Wong's Essentials of Pediatric Nursing, 6th edition, St Louis, 2001, Mosby. p 1301. Copyright, Mosby. Inc. Reprinted with permission.

Brief word instructions: Point to each face using the words to describe the pain intensity. Ask the child to choose face that best describes how he/she is feeling.

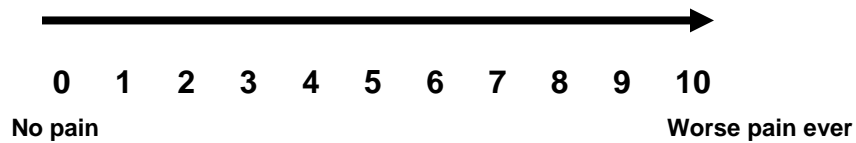
Original instructions: Explain to the person that each face is for a person who feels happy because he has no pain (hurt) or sad because he has some or a lot of pain. Ask the person to choose the face that best describes how he/she is feeling.

- **Face 0** is very happy because he doesn't hurt at all.
- **Face 2** hurts just a little bit.

- **Face 4** hurts a little more.
- **Face 6** hurts even more.
- **Face 8** hurts a whole lot.
- **Face 10** hurts as much as you can imagine, although you don't have to be crying to feel this bad.

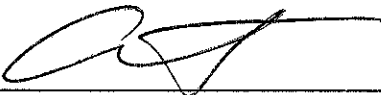
Visual Analog Scale

This tool is usually appropriate for use with children approximately ages 8 and older. If there is any doubt that the child clearly understands the concept of assigning a number to describe the degree of their pain, utilize the Wong-Baker FACES scale or the FLACC Behavioral tool.



**PEDIATRIC PATIENT ASSESSMENT
ROUTINE MEDICAL CARE
PRIMARY AND SECONDARY SURVEY**

APPROVED:



Gregory Gilbert, MD EMS Medical Director



Louise Rogers Interim EMS Administrator

DATE: February 2014

The goal of the pediatric patient assessment is to provide a systematic approach to the assessment of a pediatric patient.

Definitions

The term pediatric is used to define children less than 15 years of age or length-based weight per Broselow Tape of 36 kg or less. Assessment of all pediatric patients (despite weight) should follow this protocol.

- Neonate: newborn up the first 28 days of life
- Infant: 29 days to 12 months
- Toddler: 1-3 years
- Pre-school : 3-5 years
- School-age : 6-10 years
- Adolescent : 11-14 years

Scene Size-Up/Global Assessment

- Recognize hazards, ensure safety of scene, and secure a safe area for treatment
- Apply appropriate universal body substance isolation precautions
- Recognize hazards to patient and yourself and protect from further injury
- Identify number of patients and resources needed
 - Call for EMS, fire and police backup
 - Initiate Multicasualty Incident Policy as needed
- Observe position of patient
- Determine mechanism of injury
- Plan strategy to protect evidence at potential crime scene

Suggested General Approach to the Stable/Conscious Pediatric Patient

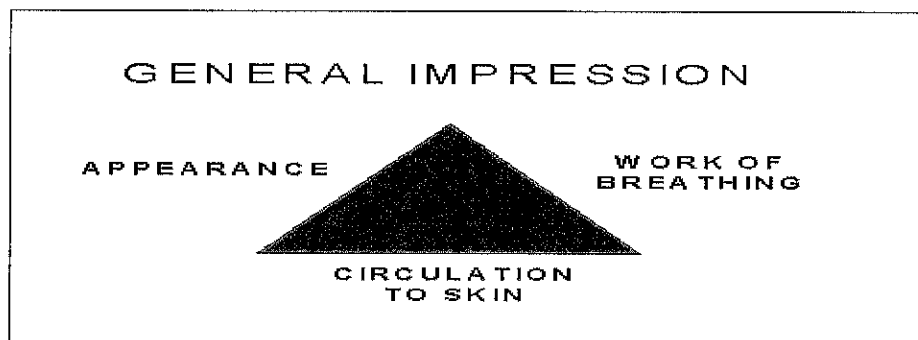
- Smile (when appropriate to the situation)
- Speak slowly and in a quiet even tone; use simple age appropriate terms
- Approach child slowly, calmly and at their level. Observe level of consciousness, activity level and respiratory rate/effort before touching
- Allow the parent/caregiver to remain with the patient whenever possible.

- Consider examining child from foot to head as this is less distressing to infants and young children.
- Have the parents help with the exam in infants and toddlers if appropriate.
 - Have the parents hold the stethoscope
 - Have the parents palpate the abdomen or extremities for you
- Allow child to hold a familiar security object. Use distraction techniques to assist in gaining cooperation. Use toys or pen lights as distracters, make games of the assessment.
- Perform the most distressing components of the assessment last on infants and younger children.
- Adolescents may require interviewing without caregiver present to obtain accurate information about drug/alcohol use, sexual behavior, child abuse, etc.
- Adolescents may want to be examined without parent/caregiver. Honor their request if possible and provide them with privacy.
- Obtain history from both older children and adolescents and their parents/caregivers.
- Compare assessment findings with parents'/caregivers' description of normal behavior.
- Be honest with the child and parent/caregiver. Explain all procedures to older children and adolescents directly.
- Acknowledge positive behaviors, no matter how small.

General Impression/Primary Survey

The Pediatric Assessment Triangle includes the evaluation of the following:

- Appearance
- Work of breathing
- Circulation to skin



Appearance:

- Check for abnormal or absent cry or speech.
- Protect spine from unnecessary movement in patients at risk for spinal injury
- Check for potential airway obstructions:
 - Vomitus / Blood / foreign object (hotdogs, peanuts, etc.)

- Facial Trauma/ Loose or missing teeth
- Check for body positioning / Muscle tone
- Response to parents / Environmental stimuli.
 - Determine AVPU (A-alert, V-verbal, P-pain, U-unresponsive)

Work of breathing:

- Nasal flaring
- Retractions – Supraclavicular, intercostal, substernal retractions,
- Head bobbing
- Abnormal Airway Sounds – Stridor, grunting, wheezing, snoring, muffled or hoarse speech

Circulation/Skin Color:

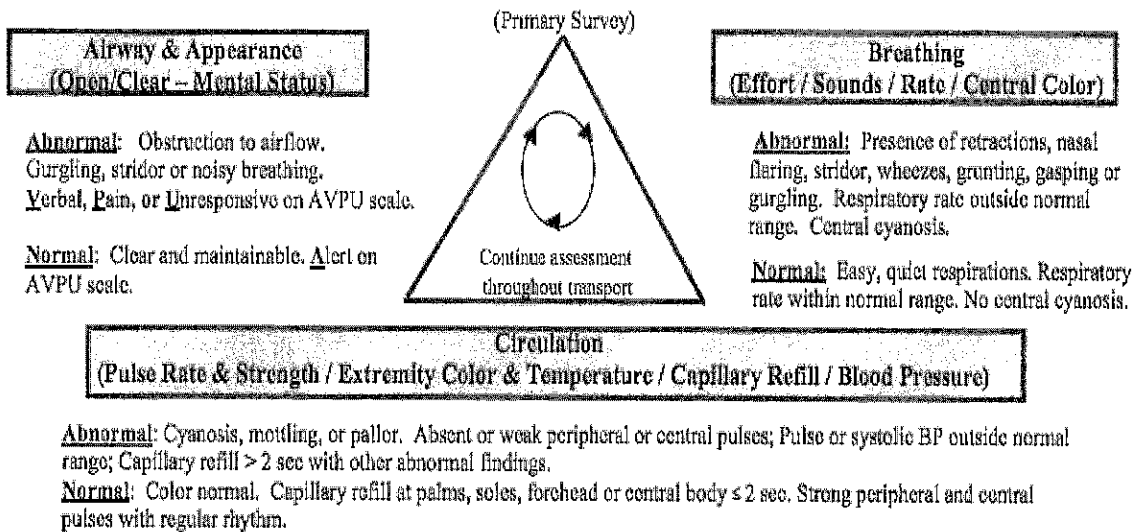
- Mottling – Patchy/lacey skin discoloration
- Cyanosis – Bluish discoloration of skin/mucous membranes
- Bleeding – obvious significant bleeding

For any abnormal findings noted during the general impression initiate treatment per appropriate pediatric protocol

Primary Survey

The purpose of the primary survey is to identify and immediately correct life-threatening problems by assessing:

- Airway
- Breathing
- Circulation



Decision/Action Points

- Initiate treatment and stabilization of any life-threatening airway, breathing, circulation, spinal injuries.
- Utilize the Broselow Tape to measure length and then SMC Pediatric Reference Card for determination of age appropriate vital signs, drug dosages, fluid volumes, defibrillation/cardioversion joules and appropriate equipment sizes
- Begin transport in the potentially unstable or critical patient
- Initiate treatment per appropriate pediatric protocols
- Contact Pediatric Base Hospital Physician for any questions or orders per pediatric specific-protocol

Secondary Survey

The secondary survey is the systematic assessment and complaint-focused, relevant physical examination of the patient. The secondary survey may be done concurrently with the patient's history and should be performed after:

- The primary survey and initial treatment and stabilization of life-threatening airway, breathing and circulation difficulties
- Spinal immobilization as needed
- Beginning transport in the potentially unstable or critical patient
- A Rapid Trauma Assessment in the case of significant trauma
- Investigation of the chief complaint and associated complaints, signs or symptoms
- An initial set of vital signs
 - Pulse
 - Blood pressure
 - Respiration
 - Lung sounds
 - Cardiac rhythm/monitor (if indicated)
 - Pulse oximetry (if indicated)
 - Assess for pain or discomfort with appropriate pediatric tool to determine pain level and document
- Give initial treatment including oxygen, ventilate if indicated, control hemorrhage if needed, institute basic wound/fracture care, and establish IV/IO access if indicated/capable.
- Utilize the Broselow Tape to measure length and then SMC Pediatric Reference Card for determination of age appropriate vital signs, pain scale, drug dosages, fluid volumes, defibrillation/cardioversion joules and appropriate equipment sizes.

History:

- History of present illness (from patient/parents/caregiver)
- Past medical and surgical
- Pregnancy and Delivery

- Vaccinations
- Developmental
- Feeding
- Family and social
- See “Information Needed” section of each protocol for history relevant to specific patient complaints

IN THE STABLE PATIENT, CONSIDER STARTING FROM FEET AND WORKING TOWARDS THE HEAD

Head and Face:

- Inspect and palpate skull (anterior and posterior) for signs of trauma (contusions, abrasions, deformity, crepitus, or lacerations)
- Check eyes for: equality and responsiveness of pupils, movement and size of pupils, foreign bodies, discoloration, contact lenses, prosthetic eyes
- Check nose and ears for foreign bodies, fluid, or blood
- Recheck mouth for potential airway obstructions (swelling, loose or avulsed teeth, vomitus, malocclusion, absent gag reflex) and odors, altered voice or speech patterns, and evidence of dehydration

Neck:

- Assess for pain or discomfort. Check for nuchal rigidity in febrile patient.
- Palpate for signs of trauma, jugular venous distention, use of neck muscles for respiration, tracheal deviation, cervical spine tenderness, stoma, and medical information medallions

Chest:

- Inspect and palpate for signs of trauma, implanted devices, chest wall movement, asymmetry, retractions, crepitus and accessory muscle use
 - AICD or pacemaker, medication patches, should be noted
- Have patient take a deep breath if possible and observe and palpate for signs of discomfort, asymmetry, and air leak from any wounds
- Auscultate breath sounds bilateral
 - Consider having parent hold stethoscope for you

Abdomen:

- Inspect and palpate for signs of trauma, scars, diaphragmatic breathing or distention
- Palpate all four quadrants taking special note of tenderness, rebound, guarding, rigidity or masses.
 - Consider having parent palpate for you

Pelvis/Genito-urinary:

- Inspect the pelvis for signs of trauma or asymmetry, incontinence, priapism, blood at urinary meatus, or presence of any other abnormality.

- Gently palpate lateral pelvic rims and symphysis pubis for tenderness, crepitus, or instability
- Check bilateral femoral pulses

Shoulders and Upper Extremities:

- Inspect and palpate for signs of trauma, asymmetry, skin color, capillary refill, edema, medical information bracelets, track marks, cutting, and equality of distal pulses
 - Consider having the parent palpate for you
- Assess sensory and motor functions as indicated

Lower Extremities:

- Inspect and palpate for signs of trauma, asymmetry, skin color, capillary refill, track marks, cutting, edema, and equality of distal pulses
 - Consider having the parent palpate for you
- Assess sensory and motor function as indicated

Back:

- Inspect and palpate for trauma, asymmetry, spinal tenderness, and sacral edema

Precautions and Comments

- Contact Pediatric Base Hospital Physician whenever you have a question or as indicated per pediatric-specific protocol.
- Minimize scene time for critical or potentially unstable trauma or medical patients; conduct secondary survey en route to the hospital.
- Utilize the Broselow Tape to measure length and then SMC Pediatric Reference Card for determination of age appropriate vital signs, pain scale, drug dosages, fluid volumes, defibrillation/cardioversion joules and appropriate equipment sizes.
- Patients who are known to be less than 15 years of age but whose weight exceeds 36 kg may still be considered pediatric patients given their chronological age; however weights will then need to be estimated and adult dosages should be used.
- Children with Special Health Care Needs (CSHCN) are children who have any type of condition that may affect normal growth and development. This may include physical disability, developmental or learning disability, technologic dependency, and chronic illness. CSHCN may be any age. It is important to consider developmental age, rather than chronological age when working with this population.
- When reporting to Pediatric Base Hospital Physician or receiving facility, convey the color and weight determined using the Broselow Tape.
- Inspection and palpation can be done while gathering patient's history
- A systematic approach will enable the rescuer to be rapid and thorough and not miss subtle findings that may become life-threatening

- The Secondary Survey should ONLY be interrupted if the patient experiences airway, breathing, or circulatory deterioration requiring immediate intervention. Complete the examination before treating the other identified problems
- Reassessment of vital signs and other observations may be necessary, particularly in critical or rapidly changing patients. Changes and trends observed in the field are essential data to be documented and communicated to the receiving facility staff
- Initial signs of shock are tachycardia; Hypotension is a late and ominous finding.
- Prehospital medical personnel (paramedics and EMTs) can assist patient with self-administration of own medication if appropriate

Pediatric Age and or Weight Restrictions for Procedures and Protocols

CPR

- Neonatal resuscitation refers to the resuscitation of an infant *immediately after birth*
- “Infant” CPR techniques should be utilized for pediatric patients under 1 year of age
- “Child” CPR techniques should be utilized for pediatric patients ages 1-8 years

Endotracheal Intubation

- Contraindicated in pediatric patients unless unable to ventilate with BVM
 - Exceptions are for tracheal edema: (See Burns, Allergic Reactions) and unrelieved obstructed airway (see Respiratory Distress).

Nasotracheal Intubation

- Contraindicated in ages less than 12 years

Pediatric Intraosseous Infusion

- Use the EZ-IO Pediatric Needle

Needle Cricothyrotomy

- No longer approved in San Mateo County.

Charcoal

- Contraindicated in ages 2 years or less

Naloxone (Narcan)

- Use with caution in neonates of known or suspected narcotic-addicted mothers as it can induce withdrawal reactions

Multi-lumen airway device (King Airway)

- Contraindicated in pediatric patients under 5 feet tall. The entire length of the Broselow Tape is 5 feet

POISONING AND OVERDOSE - PEDIATRIC

APPROVED: Gregory Gilbert, MD EMS Medical Director
Nancy Lapolla EMS Director

DATE: July 2018

Information Needed:

Consider all environmental poisonings Hazardous Materials Incidents and practice appropriate caution.

- Surroundings and safety: check for syringes, containers, gas cylinders
- Note odors in house or surroundings; check if any monitors are in the home, i.e. carbon monoxide etc.
- For drug ingestions: note drug(s), dosages(s), number remaining, and date of prescription(s), and bring container(s) with the patient
- For other poisoning and exposures; if possible, note identifying information, warning labels, or numbers on packaging and bring container(s) if possible
- Duration of illness: onset and progression of their present state, preceding symptoms such as headache, seizures, confusion, etc.
- History of event: ingested substances, drugs, alcohol, toxic exposures, suicidal intention, and environment
- Past medical history, psychiatric problems, suicidal ideation
- If possible, corroborate information with caregiver, family members or responsible bystanders. Consider possible abuse/neglect when infants and young children are involved
- Utilize the Broselow Tape to measure length and then SMC Pediatric Reference Card for determination of drug dosages, fluid volumes, defibrillation/cardioversion joules and appropriate equipment sizes.

Objective Findings:

- Breath odor
- Medic alert tags/bracelet/medallions/shoelaces
- Cardiac monitor
- Blood glucose level for patients with altered mental status
- Pulse oximetry
- Vital signs
- Skin appearance
- Pupil size
- Airway, breathing, and circulation status
- Emesis, time from ingestion, checking for pill fragments

Treatment:

- Routine medical care

- Ensure ABC's, protective position or need for c-spine precautions
- Provide oxygenation, ventilation, and suction as needed
 - Oxygen via blow-by, mask, or high flow as needed; assist ventilations with BVM as needed.
- Activated charcoal for confirmed recent ingestions (60 minutes or less) if patient is alert with intact airway reflexes
 - Contraindicated in caustic or hydrocarbon (lye or gasoline), ingestions
 - Contraindicated in antidepressants or other overdose of medications that can induce seizures
 - Contraindicated for patients under 2 years of age
- Establish IV/IO access as indicated
- Give IV/IO fluid bolus of NS for signs of hypoperfusion. Reassess. May repeat twice as indicated. Contact Pediatric Base Hospital Physician for additional fluid orders

Unknown Substance

For pts with altered mental status, consider naloxone IV/IO/IM.

- If neonate (less than 29 days) and blood glucose less than 40 mg/dL give:
 - D₁₀%W IV/IO
 - If no vascular access, administer glucagon IM
- If older than 29 days and blood glucose less than 60 mg/dL give:
 - D₁₀%W IV/IO
 - If no vascular access, administer glucagon IM
- Continuously monitor vital signs and cardiac rhythm during transport

Opiates

- Wait until after the patient has received naloxone and BVM ventilation to determine if endotracheal intubation is indicated.
- Naloxone IV/IO/IM/IN. Repeat in 5 minutes for respiratory depression and/or significant hypoperfusion

Antipsychotics with Extrapyrimalidal/Dystonic Reaction

Give diphenhydramine IV/IO/IM

Organophosphates

- Consider HazMat precautions
- For SLUDGE symptoms (increased salivation, lacrimation, urination, diaphoresis/diarrhea, gastric hypermotility/vomiting and meiosis), contact Pediatric Base Hospital Physician for atropine order
- Treat seizures that do not respond to atropine with midazolam (Versed) IV/IO/IN

Tricyclic Antidepressants (TCA's)

- If BVM or intubation indicated, hyperventilate with 100% oxygen.

- Closely monitor cardiac rhythms, vital signs and mental status
- If tachycardia, hypotension, seizure, and/or QRS widening >0.10 seconds are noted, contact Pediatric Base Hospital Physician for administration of sodium bicarbonate IV/IO. May repeat half initial dosage as needed for persistent QRS widening
- Treat seizures with midazolam (Versed) IV/IO/IN as needed for persistent or recurrent seizures

Calcium Channel Blocker Toxicity

- If bradycardia and hypotension noted contact the Pediatric Base Hospital Physician for administration of calcium chloride 10% solution IV/IO q 20 minutes
 - Calcium chloride causes major tissue damage if extravasation occurs; use extra caution that the IV line is patent, properly located, and secured.

Beta-Blocker Toxicity

- If bradycardia and hypotension noted, contact the Pediatric Base Hospital Physician for administration of glucagon IV/IO/IM q 20 minutes

Nerve Gas Exposure

- Administer auto-injectors of 2-PAM and atropine to patients with possible exposure of a nerve agent (e.g. Sarin, Soman, Tabun, Vs) and have significant signs and symptoms
- The best injection site is the lateral (outside) thigh muscle several inches below the hip bone. It is important that the injection be given into a large muscle and caution should be used when being given to small children
- Indications for auto-injection of nerve gas antidote
Signs and symptoms (Mnemonic SLUDGE):
 - S**alivation (watering mouth)
 - L**acrimation (eyes tearing)
 - U**rination
 - D**efecation
 - G**astrointestinal pain & gas
 - E**mesis (vomiting)
- Administer 2 PAM first to children over 1 year of age, then atropine. If symptoms persist, another atropine auto-injection can be given in 3-5 minutes. Use caution when administering auto-injectors in children less than 2 years of age.

Precautions and Comments:

- Contact California Poison Control Center whenever possible to determine risks/information concerning ingested substances.

California Poison Control Center (800) 222-1222
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- Consultation for medication orders should be made with Pediatric Base Hospital Physicians not Poison Control Center.
- **DO NOT USE THE DOSAGES OF MIDAZOLAM** listed on the Broselow Tape as they are high doses indicated for induction not seizure management. Use doses from the SMC Pediatric Reference Card.
- Naloxone should be avoided in neonates of known or suspected narcotic-addicted mothers as it can induce withdrawal reaction.
- Significantly higher doses of naloxone may be needed for treatment of overdoses with synthetic opioid compounds such as meperidine (Demerol®), pentazocine (Talwin®), and codeine
- Consider titrating naloxone to achieve adequate respiratory effort and avoid a withdrawal reaction or combativeness
- Patients with TCA overdoses may experience rapid depression of mental status, sudden seizures, or worsening of vital signs. Attentive monitoring of cardiac rhythm, vital signs, and mental status are essential in these patients. Caustic ingestions are usually caused by alkali (e.g. lye or Drano®) or acids. Hydrocarbons include gasoline, kerosene, turpentine, Pine-Sol®, etc.
- For patients with known TCA, Beta-blocker, and Calcium Channel blocker toxicities note that NS fluid bolus should be initially limited to one bolus as experts recommend more cautious administration of fluids as these drugs have myocardial depressant effects and pulmonary edema may result. Orders from a Pediatric Base Physician are required for additional fluids.

RESPIRATORY DISTRESS - PEDIATRIC

APPROVED: Gregory Gilbert, MD EMS Medical Director
Nancy Lapolla EMS Director

DATE: July 2018

Information Needed:

- Onset, duration of symptoms
- History of choking, foreign body aspiration, fever, sore throat, sputum production, asthma, exposures (allergens, toxins, smoke), trauma
- Medications
- Utilize the Broselow Tape to measure length and then SMC Pediatric Reference Card for determination of drug dosages, fluid volumes, defibrillation/cardioversion joules and appropriate equipment sizes.

Objective Findings:

- Stridor
- Grunting
- Nasal flaring
- Cyanosis or central cyanosis
- Apnea, bradypnea, tachypnea
- Accessory muscle use
- Drooling
- Wheezing
- Weak, ineffective cough
- Choking
- High-pitch sounds or no sounds during inhalation
- Bradycardia
- Altered mental status
- Absent breath sounds
- Pulse oximetry

Treatment:

- Routine medical care
- Ensure ABC's, oxygenation, ventilation; suction as needed
- Oxygen via blow-by, mask, or high flow as needed; assist ventilations with BVM as needed.
- If a basic airway cannot be established, consider foreign body airway obstruction (FBAO)

Partial Obstruction

- Initiate BLS maneuvers for FBAO following American Heart Association standards

Full Obstruction

- If BLS measures fail, then proceed to Magill Forceps and direct laryngoscopy
- Ensure airway positioning and seal on the BVM. Ventilate and reassess
- Continue BLS measures and Magill forceps enroute to hospital

Lower Airway (Wheezing/Bronchoconstriction)

- Position of comfort
- For mild distress:
 - Inhaled albuterol via nebulizer, repeat as necessary
 - For moderate to severe distress (any of the following: cyanosis, accessory muscle use, inability to speak >2 words, severe wheezing or SOB), inhaled albuterol via nebulizer. Repeat nebulized treatments as necessary
- If in severe distress:
 - Epinephrine (1:1,000) IM
 - Epinephrine IM should be administered prior to attempting IV/IO access and may be repeated in 5 minutes if IV/IO not yet established and patient is still in distress. For further doses, contact Pediatric Base Hospital Physician.
- If the tidal volume is decreased, administer Albuterol via in-line BVM

Suspected Epiglottitis

- Position of comfort
- Avoid invasive procedures or agitation
- Do not manipulate the airway for examination
- Blow-by oxygen as tolerated
- Transport quickly to the closest appropriate ED

Croup

- Position of comfort
- Consider nebulized saline treatment

Precautions and Comments:

- Nebulized albuterol can be administered continuously.
- Consider respiratory failure when a child has a history of increased work of breathing but now presents with altered appearance and a slow or normal respiratory rate without retractions.
- It is important to allow parent or caregiver to interact with child as much as possible in order to avoid unnecessary agitation or stress. Whenever

possible allow them to hold the infants and children and assist with treatments.

SEIZURES – PEDIATRIC

APPROVED: Gregory Gilbert, MD EMS Medical Director
Nancy Lapolla EMS Director

DATE: July 2018

Information Needed:

- Onset, duration, description of seizure
- History of pre-existing seizures, fever, infection, chronic conditions
- Change in mental status, baseline mental status, onset and progression of the altered state
- Antecedent symptoms such as headache, trauma, allergies, or possible ingestion of substance or medication
- Medications and those administered for this event.
- Utilize the Broselow Tape to measure length and then SMC Pediatric Reference Card for determination of drug dosages, fluid volumes, defibrillation/cardioversion joules and appropriate equipment sizes.

Objective Findings:

- Level of consciousness and neurological assessment
- Evidence of trauma
- Temperature, skin signs
- Pulse oximetry
- Cardiac monitor
- Blood glucose level

Treatment:

- Routine medical care. Ensure protective position or need for c-spine precautions
- Ensure ABC's, oxygenation, ventilation; suction as needed
 - Oxygen via blow-by, mask, or high flow as needed; assist ventilations with BVM as needed.
- Institute gradual cooling measures as indicated by history
- Consider IV/IO access
 - If neonate (less than 29 days) and blood glucose less than 40 mg/dL give:
 - D₁₀%W IV/IO
 - If no vascular access, administer glucagon IM
 - If older than 29 days and blood glucose less than 60 mg/dL give:
 - D₁₀%W IV/IO
 - If no vascular access, administer glucagon IM

- For persistent seizures, treat with midazolam (Versed®) IV/IO/IN to a maximum of 5 mg total. If seizures persist, contact Pediatric Base Hospital Physician for consultation. Be prepared to support ventilations and oxygenation.

Precautions and Comments:

- A febrile seizure cannot be diagnosed in the field because of other serious causes of fever and seizures (e.g. meningitis). Therefore, transport is recommended for all seizures, with or without fever. Additionally all first-time seizures should also be transported.
- **Note: If parent/guardian refuses medical care/and or transport, a consult with Pediatric Base Hospital Physician is required prior to completing a Refusal of Care form.**
- Consult the ALTE policy
- When giving midazolam, DO NOT USE THE DOSAGES LISTED ON THE BROSELOW TAPE as they are high doses indicated for induction. Use doses from the SMC Pediatric Reference Card.

SHOCK – PEDIATRIC

APPROVED:



Gregory Gilbert, MD EMS Medical Director



Louise Rogers Interim EMS Administrator

DATE: February 2014

Information Needed:

- Shock in children may be subtle and difficult to recognize. Tachycardia may be the only sign noted. Hypotension is a late sign of shock
- Determining a blood pressure may be difficult and readings may be inaccurate in children under 3 years of age
- History of onset of symptoms, duration, fluid loss (nausea, vomiting, diarrhea), fever, infection, trauma, ingestion or history of allergic reaction, past history of cardiac disease or rhythm disturbances, decrease in urinary output (dry diapers).
- Utilize the Broselow Tape to measure length and then SMC Pediatric Reference Card for determination of drug dosages, fluid volumes, defibrillation/cardioversion joules and appropriate equipment sizes.

Objective Findings:

- **Compensated Shock**
 - Anxiety, agitation, restlessness
 - Tachycardia
 - Normotensive
 - Capillary refill normal to delayed
 - Dry mucous membranes
- **Decompensated Shock**
 - Decreased level of consciousness
 - Tachycardia to bradycardia
 - Hypotensive
 - Peripheral cyanosis
 - Delayed capillary refill
 - Inequality of central and distal pulses
 - Dry mucous membranes

General Treatment:

- Routine medical care; ensure need for c-spine precautions if trauma suspected.

- Ensure ABC's, oxygenation, ventilation; suction as needed
- Oxygen via blow-by, mask, or high flow as needed; assist ventilations with BVM as needed.
- Control external bleeding, shock position, as needed
- Keep child warm
- Establish IV/IO access
- Check blood glucose for patients with altered mental status
 - If neonate (less than 29 days) and blood glucose less than 40 mg/dL give:
 - D_{10%}W IV/IO
 - If no vascular access, administer glucagon IM
 - If older than 29 days and blood glucose less than 60 mg/dL give:
 - D_{10%}W IV/IO
 - If no vascular access, administer glucagon IM

Hypovolemia

- Give IV/IO fluid bolus of NS. Reassess. May repeat twice as indicated. Contact Pediatric Base Hospital Physician for additional fluid orders
- If known or suspected trauma, see Trauma Evaluation and Management Protocol

Distributive Shock

- Give IV/IO fluid bolus of NS. Reassess. May repeat twice as needed. Contact Pediatric Base Hospital Physician for additional fluid orders.
- If anaphylaxis is suspected, see Pediatric Allergic Reaction Protocol
- Treat rhythm disturbances if symptomatic

Cardiogenic Shock

- If indicated, go to appropriate Dysrhythmia Protocol
- If tachydysrhythmic or bradydysrhythmic:
 - Give IV/IO fluid bolus of NS. Reassess. May repeat twice as needed. Contact Pediatric Base Hospital Physician for additional fluid orders.

Precautions and Comments:

- Suspect non-accidental injury when physical findings are inconsistent with the history
- Remember reporting requirements for suspected non-accidental injury

TRAUMA EVALUATION AND MANAGEMENT ADULT AND PEDIATRIC PATIENTS

APPROVED: Gregory Gilbert, MD EMS Medical Director
 Nancy Lapolla EMS Director

DATE: July 2018

Information Needed:

- Make sure scene is safe
- Number of patients/victims
- Mechanism of injury. Suspect non-accidental injury when physical findings are inconsistent with the history
- Modifying factors: extremes of age (<5 or >65), drugs, alcohol, pregnancy, medications, diseases
- Safety equipment used

General Assessment

The general assessment of all trauma patients should include but is not limited to the following:

- Respiratory status
 - For pediatric patients: work of breathing - nasal flaring, retractions, grunting
- Circulatory status- capillary refill, central and peripheral pulses, skin signs
- Neurologic status using an appropriate GCS scale
- Pain assessment
- Determination if Major Trauma Victim criteria are met

Penetrating Trauma and Assault:

- Type(s) of weapon(s) used, caliber and distance from weapon
- Length, description, angle, and depth of penetration for blades and other objects
- Patient complaints
- Initial level of consciousness and position
- Patient movement and treatment since injury

Falls:

- Cause or precipitating factors
 - Mechanical e.g., tripped, slipped, pushed or jumped
 - Syncope e.g., fainted, dizzy, weak, loss of consciousness, etc.
- Height and areas of impact
- Surface fallen upon
- Patient complaints
- Initial level of consciousness and position
- Patient movement and treatment since injury

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TRAUMA EVALUATION AND MANAGEMENT

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Vehicle Collisions:

- Vehicle telemetry data, estimated speed, forces, and trajectories
- Type of vehicle
- Type of impact (head-on, rollover, end-over-end, T-bone, auto-pedestrian, etc.)
- Vehicle damage (passenger space intrusion, windshield, and steering wheel, etc.)
- Protective devices (airbags, lap and/or shoulder belt, child seats, helmet, etc.) and damage sustained
- Patient complaints
- Initial level of consciousness and location in vehicle
- Patient movement and treatment since injury
- Extrication time

Treatment:

- Airway with spinal immobilization if indicated
- High flow oxygen, BVM ventilation, or intubation if indicated. Maintain in line stabilization of neck when intubating patients with suspected c-spine injuries
- Assess circulatory status (pulses, skin signs)
- Control external bleeding with direct pressure
- Identify and treat life threatening conditions
- Do not delay transport to perform procedures on scene (perform enroute)
- If patient is unstable or meets Major Trauma Victim criteria, treat (IV/IO therapy, the secondary survey, and treatment) en route.
- IV/IO access with large bore catheter with extension tubing (saline lock) and if hypotensive give fluids titrated to a SBP of >90
- If adult patient remains hypotensive or becomes unstable, place a second large bore IV (en route)
- Secondary survey
- Splint suspected fractures and bandage open wounds
- Cardiac monitor and pulse oximetry
- Consider pain control for moderate to severe pain if there is no evidence of head injury (GCS <15), or no signs and symptoms of hypoperfusion - see Interim Adult Pain Assessment and Management protocol (June 2018)
- Pediatric Patients:
 - Determine patient's length-based weight utilizing the Broselow Tape.
 - Establish vascular access IV/IO
 - For signs and symptoms of hypovolemia give 20 ml/kg fluid bolus of normal saline. Reassess, may repeat twice as indicated. Contact Trauma Center for additional fluid orders.

- Consider pain control for moderate to severe pain if there is no evidence of head injury (GCS \leq 15), or no signs and symptoms of hypoperfusion. – See Interim Pediatric Pain Assessment and Management protocol (June 2018).

Special Trauma Circumstances:

Chest and Abdominal Trauma

- Treatment as described above
- For open chest wounds with an air leak, place a three sided occlusive dressing
- Cover eviscerations with moist sterile saline gauze to prevent further contamination or drying
- Immobilize impaled objects in place to prevent further movement
- If pregnant $>$ 5 months gestation, place in the left lateral position; if transporting in c-spine precautions, tilt the spine board to the left
 - Consider aggressive fluid resuscitation because pregnant patients can mask symptoms of shock and fetal distress
- For suspected tension pneumothorax (identified by severe respiratory distress in combination with absent breath sounds, tracheal deviation, and hypotension), perform needle pleural decompression

Extremity Trauma

- Evaluate and treat extremity trauma only after initial stabilization
- Monitor extremity for deformity, open wounds, swelling, shortening and/or rotation
- Check pulses, sensation, movement, and color of extremity
- Control any external bleeding with direct pressure
- Splint injured extremity in the position found unless precluded by extrication considerations and/or patient comfort
- Elevate extremity and apply cold packs
- Cover open wounds with sterile dressings
- If the extremity is pulseless, attempt to place it in normal anatomic position to restore circulation by gentle in-line traction
- If initial repositioning does not restore circulation, DO NOT manipulate further
- If amputated, wrap part in a moist normal saline sterile dressing, place in sealed plastic bag, and place on top of ice or cold pack
- For partial amputation, avoid ice pack and treat as a fracture/dislocation

Head, Neck and Facial Trauma

- Obtain Glasgow Coma Score (GCS)
- If unresponsive with significant head injury and age appropriate GCS $<$ 9, bag-valve mask ventilate or intubate as appropriate
- Check for blood or fluid from nose or ears

- For head trauma, elevate head of spine board 15-20 degrees
- Monitor for airway obstruction
- Orally intubate when indicated while maintaining spinal immobilization
- In the absence of significant mid-face trauma, the head injured patient may be nasally intubated if oral intubation or Supraglottic Airway Device is unsuccessful and BVM is inadequate.
 - Supraglottic Airway Device is contraindicated for pediatric patients less than 4 feet (48 inches)
- If eye is injured, cover both eyes with dressings. Avoid pressure to eye for any patients with suspected ruptured globe or penetration
- Keep avulsed teeth in saline soaked gauze and transport with patient

Traumatic Cardiac Arrest

- This requires all of the following
 - Physical signs of trauma and/or blood loss
 - GCS= 3. Use the modified Glasgow Coma Scale for infants and children
 - No respiratory effort
 - No palpable pulses
- Consider pleural decompression for suspected thoracic trauma
- If the patient meets all of the above criteria, determination of death in the field, otherwise initiate rapid transport to trauma center
- Notify coroner

Crush Injury Syndrome

This should be suspected in patients with an extensive crush injury (more than one hand or foot) for greater than one hour. Once the compression is released, cellular toxins and potassium may be released into the body. These treatments are utilized to minimize these toxic effects.

- Cardiac Monitor
- IV/IO access
- Albuterol 5 mg via nebulizer, may repeat 2-3 doses, most effective when used close to the release of compression.
- Fluid challenge 250-1000 ml Normal Saline.
 - For pediatric patients: administer Normal Saline fluid bolus. Reassess and may repeat twice as indicated. Use Broselow Tape and San Mateo County Pediatric Reference Card to determine fluid volumes.
 - Pain Management as appropriate
- Sodium bicarbonate 1 mEq/kg IV/IO push.
 - For pediatric patients: use Broselow Tape and San Mateo County Pediatric Reference Card to determine dosages
- For suspected hyperkalemia (peaked T waves, widened QRS) consider calcium chloride 1 gm slowly IVP/IO.

- For pediatric patients: use Broselow Tape and San Mateo County Pediatric Reference Card to determine dosages

Precautions and Comments:

- Reassessment of critical patients should occur at least every 5 minutes. Vital signs and other reassessment information should be documented
- An unsafe scene may warrant transport despite low potential for survival
- Preserve the scene of the crime as much as possible
- Remember reporting requirements for suspected non-accidental injury
- Chest injuries significant enough to cause respiratory distress are commonly associated with significant internal blood loss. Reassess frequently for signs and symptoms of hypovolemia
- Significant intrathoracic or intra-abdominal injury may occur without any external signs of injury, particularly in children or the elderly or in the presence of airbag deployment. Consider the mechanism of injury and the forces involved and be highly suspicious of occult trauma.
- Shock in children may be subtle and difficult to recognize. The only signs of compensated shock that a pediatric patient may display is tachycardia and vasoconstriction. In decompensated shock, the pediatric patient can no longer maintain the compensatory mechanisms and perfusion is profoundly affected. If not reversed decompensated shock will lead to cardio-pulmonary failure.
- The Modified Glasgow Coma Scale for infants and children should be utilized to determine neurologic status. If the patient is intubated, unconscious, or preverbal, the most important part of the scale to note is the best motor response.
- Utilize the Broselow Tape and San Mateo County Pediatric Reference Card for determination of drug dosages, fluid volumes, defibrillation/cardioversion joules and appropriate equipment sizes.
- Pay special attention to keeping all trauma patients warm.
- Provide emotional support as appropriate. Contact Public Safety Communication for grief support referral critical incident stress management.