Section: Pediatric Medical
Subject: ACUTE ABDOMEN
Section #: 343.01
Issue Date: March 21, 2011
Revision Date: December 1, 2017
Approved By: Michael Lozano, Jr., M.D., HCFR Medical Director

1. Basic ALS Treatment

2. ALS Transport Criteria:
    a. ALL pediatric acute abdomen patients are ALS.

3. QA points:
    a. Contact Medic-1 for narcotic administration to pediatric patients with abdominal pain.

Section: Pediatric Medical
Subject: ALTERED STATE OF CONSCIOUSNESS
Section #: 343.02
Issue Date: March 21, 2011
Revision Date: December 1, 2017
Approved By:  Michael Lozano, Jr., M.D., HCFR Medical Director

1. Basic ALS Treatments

2. Check blood glucose level

3. If blood glucose demonstrates hypoglycemia (<50 mg/dL):
    a. Oral dextrose (patient who is awake with an adequate gag reflex)
        i. Pt is <20 kg, administer 7.5 g PO (one-half tube)
        ii. Pt is ≥ 20 kg, administer 15 g PO (whole tube)
            1. May be repeated in 10 minutes if there is a partial response. Otherwise, proceed to IV/IO dextrose.
    b. Glucagon (when unable to establish an IV):
        i. 0.03 mg/kg up to a maximum of 1 mg IM.
    c. Intravenous dextrose:
        i. Patients <20 kg, administer 0.25 g/kg of Dextrose 10% ($D_{10}W$) IV/IO
        ii. Patients ≥20 kg, administer 0.25 g/kg of Dextrose 25% ($D_{25}W$) IV/IO
        iii. Refer to HCFR PEDIATRIC MEDICATION DOSAGES protocol for mixing instructions.
        iv. It is an acceptable approach to administer both glucagon and $D_{10}W$ if you are not initially able to establish an IV, as having glucagon does not prevent you from giving $D_{10}W$ later in the call.

4. If signs and symptoms of narcotic overdose are present:
    a. Naloxone: 0.1 mg/kg IV, IM, ET or IN.
    b. May be repeated twice, if inadequate response and narcotic OD is strongly suspected.

5. QA points:
    a. The administration of naloxone should be limited to those patients exhibiting signs and symptoms consistent with opiate toxidrome.

Section: Pediatric Medical
Subject: ANAPHYLAXIS / ALLERGIC REACTION
Section #: 343.03
Issue Date: March 21, 2011
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Approved By:  Michael Lozano, Jr., M.D., HCFR Medical Director

1. Basic ALS Treatments

2. Specific ALS treatments:
   a. Epinephrine (for symptoms beyond hives)
      i. Administer 0.01 mg/kg of a 1:1,000 solution (max single dose of 0.3mg) IM
      ii. May be repeated once in 3 – 4 minutes.
   b. Albuterol: If patient is wheezing or complaining of dyspnea:
      i. For weight < 20 kg, administer 2.5 mg via nebulizer q 20 minutes PRN
      ii. For weight ≥ 20 kg, administer 5 mg via nebulizer q 20 minutes PRN
   c. Diphenhydramine:
      i. 1.0 mg/kg (max dose 50 mg) IM or IV (flush thoroughly)
   d. Methylprednisolone:
      i. Children ≤ 12 years, 1 mg/kg (max dose of 80 mg) IV/IO over 1-2 min, or IM if IV/IO is not available.
      ii. Children > 12 years, 80 mg IV/IO over 2 minutes, or IM if IV/IO is not available.
   e. Epinephrine IV:
      i. For life threatening symptoms, administer 0.01 mg/kg of a 1:10,000 solution IV over 1 – 2 minutes.

Section: Pediatric Medical
Subject: ASTHMA
Section #: 343.04
Issue Date: March 21, 2011
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Approved By: Michael Lozano, Jr., M.D., HCFR Medical Director

1. Basic ALS Treatments

2. Albuterol: (nebulized)
   a. For weight < 20 kg, administer 2.5 mg via nebulizer q 20 minutes PRN
   b. For weight ≥ 20 kg, administer 5 mg via nebulizer q 20 minutes PRN

3. Methylprednisolone:
   a. Children ≤ 12 years, 1 mg/kg (max dose 80 mg) IV/IO over 1-2 minutes, or IM if IV/IO is not available.
   b. Children > 12 years, 80 mg IV/IO over 1 – 2 minutes, or IM if IV/IO is not available.

4. Magnesium Sulfate: If the patient does not respond to beta agonists and the patient is in severe respiratory distress:
   a. 40 mg/kg in 50 mL of normal saline infused over 20 minutes
      i. Monitor the patient closely for respiratory depression.
   b. Be prepared to provide ventilatory support while administering magnesium sulfate.

5. Epinephrine: If unable to nebulize the patient or the patient is unresponsive to nebulized medication:
   a. 0.01 mg/kg IM of 1:1,000 (max single dose of 0.3 mg)
   b. Use caution with severe tachycardia or hypertensive patients

Section: Pediatric Medical
Subject: BRONCHIOLITIS
Section #: 343.05
Issue Date: March 21, 2011
Revision Date: December 1, 2017
Approved By: Michael Lozano, Jr., M.D., HCFR Medical Director

1. Basic ALS Treatments

2. Albuterol: nebulized
   a. For weight < 20 kg, administer 2.5 mg via nebulizer q 20 minutes PRN
   b. For weight ≥ 20 kg, administer 5.0 mg via nebulizer q 20 minutes PRN

Section: Pediatric Medical
Subject: CARDIAC ARREST – GENERAL PROTOCOL
Section #: 343.06
Issue Date: March 21, 2011
Revision Date: December 1, 2017
Approved By:  Michael Lozano, Jr., M.D., HCFR Medical Director

1. Treatment of cardiac arrest will place particular emphasis on high quality CPR.

2. The following are important points to be followed for all patients in cardiac arrest:
    a. Continuous and effective chest compressions, an adequate airway, and proper ventilation and oxygenation are more important than administering medications and therefore take precedence over attempts at endotracheal intubation, initiating an IV line, or injecting medications.
    b. When resuscitation is indicated, the patient will be treated quickly and aggressively where found if possible.
        i. If it is subsequently determined that the patient's intention was for a DNRO to be in effect, efforts at resuscitation may be stopped in order that the natural course of disease may proceed.
    c. Pulse checks will be no more than 5 seconds, and be initiated within 10 seconds of arrival
    d. As long as the patient is pulseless (e.g. asystole, PEA, VF/pVT) 200 compressions (two minutes of CPR) will follow the administration of any drug or shock.
    e. Compressions / Ventilations:
        i. Compressions will be immediate and sufficient to produce a central pulse at a rate of at least 100 per minute.
            1. Any interruption in compressions must be extremely limited and for as brief a period as possible.
            2. Rotate personnel performing CPR every two minutes.
        ii. Given that maintaining continuous compressions is of paramount importance, the initial capture of the airway will be with a multi-lumen airway device.
            1. If there is return of spontaneous circulation (ROSC), the airway may be converted to an ETT by an approved method at the discretion of the paramedic in charge.
            2. If a previously intubated patient experiences cardiac arrest, the ETT may continue to be used.
        iii. The compression to ventilation ratio will be 15:2 for 2 rescuers. The ratio for single rescuers is 30:2. In either case, use the ratio until such time an advanced airway is established.
            1. Once an advanced airway is placed, compression will be continuous with ventilations performed at a rate of 8 to 10 per minute.
            2. Avoid excessive ventilations.
            3. Capnography shall be used in all cardiac arrest patients.
    f. Defibrillation:
        i. All initial defibrillation attempts for pediatric patients will be at 2 joules/kg
            1. All defibrillator models used by HCFR are biphasic.
            2. Subsequent doses are 4J/kg or higher (not to exceed 10 J/kg or standard adult dose)
        ii. Immediately after each defibrillation, perform 200 chest compressions (two minutes of CPR) prior to performing a pulse and rhythm check.
            1. Remember in all situations, chest compression will only be interrupted for the briefest amount of time possible.

Section: Pediatric Medical
Subject: CARDIAC ARREST – GENERAL PROTOCOL
Section #: 343.06
Issue Date: March 21, 2011
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Approved By:  Michael Lozano, Jr., M.D., HCFR Medical Director

g. Intravenous Therapy:
   i. The primary route of medication administration will be intravenous, but intraosseous will also be acceptable.
      1. All doses listed as IV can also be given IO.
   ii. The largest bore catheter possible *shall* be used.
   iii. The external jugular vein may be considered acceptable for use in adolescents suffering cardiac arrest.
   iv. The internal jugular and subclavian veins are not authorized to be accessed by HCFR personnel.
   v. When using an extremity vein, medication administration should be followed by a 20 mL bolus of normal saline and immediate elevation of the extremity to facilitate flow into the into the central circulation.
   vi. If the patient is hypoglycemic (≤ 50 mg/dL), follow the HCFR PEDIATRIC HYPOGLYCEMIA protocol.
   vii. If narcotic overdose is suspected, give naloxone 0.1 mg/kg IV/IO.
h. Post Intubation Care:
   i. End-tidal CO_2 detection will be used and documented in all intubated patients or patients with an advanced airway.
   ii. Capnography will be used and documented when available
      1. If the $ETCO_2$ <10 mmHg attempt to improve CPR quality.
   iii. An NG tube shall be inserted in intubated pediatric patients to maximize tidal volume.
   iv. Airway protection:
      1. When using manual CPR, minimize the possibility of airway device dislodgement by securing the patient to a long spine board with head immobilization devices.
i. Return of Spontaneous Circulation (ROSC):
   i. See HCFR ROSC protocol.

Section: Pediatric Medical
Subject: CARDIAC ARREST – ASYSTOLE
Section #: 343.07
Issue Date: March 21, 2011
Revision Date: December 1, 2017
Approved By: Michael Lozano, Jr., M.D., HCFR Medical Director

1. General Cardiac Arrest Algorithm

2. Specific ALS Treatment
   a. Epinephrine 0.01 mg/kg of a 1:10,000 solution (0.1 mL/kg) q 3-5 min IV/IO

3. If there is return of spontaneous circulation (ROSC), continue with the HCFR ROSC protocol.

4. If after twenty (20) minutes of asystole and $ETCO_2$ is <10 mm Hg, contact Medic-1 for consideration of termination of resuscitation efforts.

5. QA Points:
   a. Consider possible causes that we can address:
      i. Hypoxia
      ii. Hypovolemia
      iii. Hypoglycemia
      iv. Drug Overdose
      v. Hypothermia
      vi. Tension Pneumothorax
   b. Available evidence suggests that the routine use of atropine during PEA or asystole is unlikely to have a therapeutic benefit.
   c. Pauses in compressions must be as short as possible.
   d. Given that maintaining continuous compressions is of paramount importance, the initial capture of the airway will be with a multi-lumen airway device or a blind (LMA) airway device
   e. If there is return of spontaneous circulation (ROSC), the airway may be converted to an ETT by an approved method at the discretion of the paramedic in charge

Section: Pediatric Medical
Subject: CARDIAC ARREST – PULSELESS ELECTRICAL ACTIVITY
Section #: 343.08
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Revision Date: December 1, 2017
Approved By:  Michael Lozano, Jr., M.D., HCFR Medical Director

1. General Cardiac Arrest Algorithm

2. Specific ALS Treatment
    a. Epinephrine 0.01 mg/kg of a 1:10,000 solution (0.1 mL/kg) q 3-5 min IV/IO
    b. If hypovolemia is a consideration, infuse normal saline of 20 mL/kg IV.

3. If there is a return of spontaneous circulation (ROSC), then proceed to the HCFR ROSC protocol

4. QA Points:
    a. Consider possible causes that we can address:
        i. Hypoxia
        ii. Hypovolemia
        iii. Hypoglycemia
        iv. Drug Overdose
        v. Hypothermia
        vi. Tension Pneumothorax
    b. Available evidence suggests that the routine use of atropine during PEA or asystole is unlikely to have a therapeutic benefit.
    c. Pauses in compressions must be as short as possible.
    d. Given that maintaining continuous compressions is of paramount importance, the initial capture of the airway will be with a supra-glottic airway device.
        i. If there is return of spontaneous circulation (ROSC), the airway may be converted to an ETT by an approved method at the discretion of the paramedic in charge.

Section: Pediatric Medical
Subject: CARDIAC ARREST – VENTRICULAR FIBRILLATION / PULSELESS VENTRICULAR TACHYCARDIA
Section #: 343.09
Issue Date: March 21, 2011
Revision Date: December 1, 2017
Approved By: Michael Lozano, Jr., M.D., HCFR Medical Director

1. General Cardiac Arrest Algorithm

2. Specific ALS Treatment

3. Defibrillation
    a. Initial energy is 2 J/kg

4. Treatment Sequence
    a. A circular algorithm will be followed:
        i. Defibrillate, then
        ii. CPR for two minutes, then
        iii. Medications, then
        iv. Pulse check, then repeat
    b. Defibrillation:
        i. 4 J/kg for the second and subsequent shocks
    c. Medications:
        i. Epinephrine:
            1. 0.01 mg/kg (0.1 mL/kg of a 1:10,000 solution) IV/IO
            2. Repeat every 3 – 5 minutes.
        ii. Amiodarone:
            1. 5.0 mg/kg IV/IO bolus
            2. May repeat up to two times for refractory VF/pulseless VT.
        iii. For *Torsades de Pointes* magnesium sulfate 50 mg/kg (maximum 2.0 grams) IV/IO as a bolus.

5. Return of Spontaneous Circulation (ROSC)
    a. Continue to HCFR ROSC protocol
    b. Treat lethal arrhythmias appropriately (remember a resuscitated patient will still be affected by prior drug therapy)

6. QA Points:
    a. In resistant VF/pVT, the maximum amperage is 10 J/kg.
        i. Not to exceed the adult dose
        ii. Contact Medic-1 for authorization
    b. Pauses in compressions must be as short as possible.
    c. Given that maintaining continuous compressions is of paramount importance, the initial capture of the airway will be with a supra-glottic airway device.
    d. If there is return of spontaneous circulation (ROSC), the airway may be converted to an ETT by an approved method at the discretion of the paramedic in charge.

Section: Pediatric Medical
Subject: CARDIAC DYSRHYTHMIAS – BRADYCARDIA / BLOCK
Section #: 343.10
Issue Date: March 21, 2011
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Approved By:  Michael Lozano, Jr., M.D., HCFR Medical Director

1. Basic ALS Treatments
    a. Maintain patent airway; assist breathing as necessary
    b. Monitor vital signs
    c. Establish IV or IO access
    d. 12-lead EKG if it doesn't delay therapy

2. Specific ALS treatments:
    a. Evaluate for signs of cardiopulmonary compromise
        i. hypotension
        ii. acutely altered mental status
        iii. signs of shock
    b. Perform chest compressions if heart rate is < 60/min with poor perfusion despite oxygenation and ventilation.
    c. Epinephrine:
        i. 0.01 mg/kg of a 1:10,000 solution IV/IO
        ii. Repeat q 3 – 5 minutes
    d. Atropine (patient ≥ 6 months of age):
        i. 0.02 mg/kg I(minimum dose of 0.1 mg; maximum dose 0.5 mg) IV/IO
        ii. May repeat once in five minutes
    e. Transcutaneous Pacing:
        i. Set rate according to age:
            1. < 1 year = 100/min.
            2. ≥ 1 year = 80/min.
        ii. Increase amperage until capture is achieved.
        iii. Analgesia and sedation (for normal to high BP):
            1. Fentanyl 1 mcg/kg slow IV or IN q10 minutes PRN.
            2. Midazolam 0.05 mg/kg (max dose of 2.5 mg) IV or IN q10 minutes PRN.

3. Special conditions apply in severe hypothermia – see HCFR PEDIATRIC HYPOTHERMIA policy.

4. QA Points:
    a. Bradycardia and heart block in the pediatric setting is usually due to hypoxia.

Section: Pediatric Medical
Subject: CARDIAC DYSRHYTHMIAS –NARROW COMPLEX TACHYCARDIA
Section #: 343.11
Issue Date: March 21, 2011
Revision Date: December 1, 2017
Approved By:  Michael Lozano, Jr., M.D., HCFR Medical Director

1. Basic ALS Treatments.

2. Adequate perfusion and QRS normal (≤0.09 sec)
    a. Probable sinus tachycardia
        i. Search for and treat cause
    b. Probable SVT
        i. Consider vagal maneuvers
        ii. Adenosine: 0.1 mg/kg (max dose of 6mg); if no response then
        iii. Adenosine dose of 0.2 mg/kg (max dose of 12 mg) in two (2) minutes if no response then:
        iv. Obtain 12-lead EKG if not already done.
        v. Amiodarone: 5.0 mg/kg IV/IO over 20-60 minutes

3. Poor perfusion and QRS normal (≤0.09 sec):
    a. If rapid IV access is available:
        i. Adenosine: 0.1 mg/kg (max dose of 6mg); if no response then
        ii. Adenosine dose of 0.2 mg/kg (max dose of 12 mg) in two (2) minutes if no response then
    b. If IV access is NOT immediately available:
        i. Synchronized cardioversion:
            1. First energy level: 0.5 – 1.0 J/kg.
            2. Subsequent energy levels 2.0 J/kg
        ii. Establish IV/IO once stabilized
        iii. Analgesia and sedation (for normal to high BP):
            1. Fentanyl 1 mcg/kg (max dose of 50 mcg) slow IV once.
            2. Midazolam 0.05 mg/kg (max dose of 2.5 mg) IV or IN once.

4. Obtain a 12-lead EKG as soon as the patient is stabilized.

5. QA Points:
    a. EKG findings consistent with sinus tachycardia:
        i. QRS normal (≤0.09 sec)
        ii. P waves present and normal
        iii. Variable R-R with constant PR interval
        iv. Rate in infants usually < 220/min
        v. Rate in children usually < 180/min
    b. EKG findings consistent with SVT
        i. QRS normal (≤0.09 sec)
        ii. P waves absent or abnormal
        iii. Rate is not variable with activity
        iv. Rate in infants usually > 220/min
        v. Rate in children usually > 180/min
    c. EKG findings consistent with SVT with QRS aberrancy
        i. QRS wide (>0.09 sec)
        ii. Uniform QRS morphology

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Subject:	CARDIAC DYSRHYTHMIAS –NARROW COMPLEX TACHYCARDIA	
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d. Unstable condition must be related to the tachycardia.
    i. Signs and symptoms may include chest pain, shortness of breath, decreased level of consciousness, low blood pressure, shock, pulmonary congestion, CHF, or acute MI.
e. Immediate cardioversion is seldom needed for heart rates < 150 bpm.
f. If delays in synchronization occur and clinical conditions are critical, switch to immediate unsynchronized cardioversion.

Section: Pediatric Medical
Subject: CARDIAC DYSRHYTHMIAS – WIDE COMPLEX TACHYCARDIA
Section #: 343.12
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1. Basic ALS Treatments

2. Adequate perfusion and wide QRS (> 0.09 sec):
   a. Amiodarone: 5 mg/kg IV/IO over 20 minutes
   b. Obtain 12-lead EKG

3. Poor perfusion and wide QRS (> 0.09 sec):
   a. Synchronized cardioversion:
      i. First energy level: 0.5 – 1.0 J/kg.
      ii. Subsequent energy levels 2.0 J/kg
      iii. Establish IV/IO once stabilized
      iv. Analgesia and sedation (for normal to high BP):
         1. Fentanyl 1 mcg/kg (max dose of 50 mcg) slow IV once.
         2. Midazolam 0.05 mg/kg (max dose of 2.5 mg) IV or IN once.

4. Obtain a 12-lead EKG as soon as the patient is stabilized.

5. QA Points:
   a. EKG findings consistent with sinus tachycardia:
      i. QRS normal (≤0.09 sec)
      ii. P waves present and normal
      iii. Variable R-R with constant PR interval
      iv. Rate in infants usually < 220/min
      v. Rate in children usually < 180/min
   b. EKG findings consistent with SVT
      i. QRS normal (≤0.09 sec)
      ii. P waves absent or abnormal
      iii. Rate is not variable with activity
      iv. Rate in infants usually > 220/min
      v. Rate in children usually > 180/min
   c. EKG findings consistent with SVT with QRS aberrancy
      i. QRS wide (>0.09 sec)
      ii. Uniform QRS morphology
   d. Unstable condition must be related to the tachycardia.
      i. Signs and symptoms may include chest pain, shortness of breath, decreased level of consciousness, low blood pressure, shock, pulmonary congestion, CHF, or acute MI.
   e. Immediate cardioversion is seldom needed for heart rates < 150 bpm.
   f. If delays in synchronization occur and clinical conditions are critical, switch to immediate unsynchronized cardioversion.

Section: Pediatric Medical
Subject: CROUP
Section #: 343.13
Issue Date: March 21, 2011
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1. Basic ALS Treatments

2. Specific ALS Treatments
   a. Oxygen:
      i. May use blow-by face administration technique to reduce anxiety in appropriate age group.
   b. Albuterol:
      i. For weight < 20 kg, administer 2.5 mg via nebulizer q20 minutes PRN
      ii. For weight ≥ 20 kg, administer 5 mg via nebulizer q20 minutes PRN
   c. Normal saline:
      i. 3 mL nebulized if patient will tolerate.
      ii. May repeat as needed if there is response

Section: Pediatric Medical
Subject: EPIGLOTTITIS
Section #: 343.14
Issue Date: March 21, 2011
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Approved By: Michael Lozano, Jr., M.D., HCFR Medical Director

1. Basic ALS Treatments

2. Specific treatment:
   a. Keep patient calm.
   b. Place child in sitting position with parent or caregiver if they do not agitate the patient.
   c. Blow-by oxygen
   d. Rapid transport

3. QA points:
   a. If child's airway occludes and ETT required, then use a tube that is 1 size smaller than normal.
   b. Ever since the development of the *Hemophilus influenza* vaccination, severe epiglottitis has all but disappeared in the U.S.

Section: Pediatric Medical
Subject: HEAT EMERGENCIES
Section #: 343.15
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1. Heat Cramps:
    a. Move the patient to a cool environment
    b. Stretch the muscles involved
    c. Give oral fluids as tolerated

2. Heat Exhaustion:
    a. Move patient to cool environment
    b. Avoid overcooling and subsequent hypothermia
    c. Watch for signs of heat stroke developing
    d. Hydration and cooling:
        i. Normal saline 20 mL/kg IV/IO
        ii. Cool saline if possible
        iii. Give oral fluids as tolerated
    e. Monitor for dysrhythmias

3. Heat Stroke (hyperthermia with neurologic signs or symptoms):
    a. Move patient to cool environment
    b. Immediately:
        i. Remove clothing
        ii. Cool patient with water and air conditioner
        iii. Cool packs should be place in the axilla, neck, and groin regions
    c. IV normal saline 20 mL/kg IV/IO:
        i. Cool if possible
        ii. Hydrate until capillary refill time is < 2 seconds
        iii. Watch for seizures and precipitous cardiopulmonary arrest
        iv. Monitor for dysrhythmias

4. QA Points:
    a. Children with sickle cell anemia are more susceptible to suffer heat related emergencies than the general population.

Section: Pediatric Medical
Subject: HYPOGLYCEMIA
Section #: 343.16
Issue Date: March 21, 2011
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Approved By: Michael Lozano, Jr., M.D., HCFR Medical Director

1. Basic ALS Treatments.

2. Check blood glucose level

3. If blood glucose demonstrates hypoglycemia (<50 mg/dL):

    a. Oral dextrose (patient who is awake with an adequate gag reflex)
        i. Pt is <20 kg, administer 7.5 g PO (one-half tube)
        ii. Pt is ≥ 20 kg, administer 15 g PO (whole tube)
            1. May be repeated in 10 minutes if there is a partial response. Otherwise, proceed to IV/IO dextrose.
    b. Glucagon (when unable to establish an IV):
        i. 0.03 mg/kg up to a maximum of 1 mg IM.
    c. Intravenous dextrose:
        i. Patients <20 kg, administer 0.25 g/kg of Dextrose 10% ($D_{10}W$) IV/IO
        ii. Patients ≥20 kg, administer 0.25 g/kg of Dextrose 25% ($D_{25}W$) IV/IO
        iii. Refer to HCFR PEDIATRIC MEDICATION DOSAGES protocol for mixing instructions.
        iv. It is an acceptable approach to administer both glucagon and $D_{10}W$ if you are not initially able to establish an IV, as having glucagon does not prevent you from giving $D_{10}W$ later in the call.

4. NOTE: It is likely under this protocol that we will transport more patients with hypoglycemia, as glucagon at times does not suffice, and the administration of Dextrose $D_{10}W$ may take a long amount of time.

Section: Pediatric Medical
Subject: HYPOTHERMIA
Section #: 343.17
Issue Date: March 21, 2011
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Approved By: Michael Lozano, Jr., M.D., HCFR Medical Director

1. Basic ALS Treatments

2. Initiate passive re-warming procedures:
    a. Remove wet clothing and remove patient form cold environment.
    b. Cover patient, including head, with blankets.
    c. Move patient inside heated ambulance.

3. Severe hypothermia (core temp < 95°):
    a. Place hot packs in the axilla, groin, and carotid regions.
    b. Handle patient gently because rough handling may precipitate VF

4. PALS modifications for cardiac arrest in hypothermia.
    a. Bradycardia:
        i. Hypothermic patients may tolerate bradycardia very well.
        ii. Bradycardia and slow atrial fibrillation are common manifestation of severe hypothermia
    b. Asystole:
        i. Perform CPR.
    c. VF/pVT:
        i. Defibrillate once at 4 j/kg.

5. Contact Medic-1:
    a. For the administration of drugs.

Section: Pediatric Medical
Subject: NAUSEA / VOMITING
Section #: 343.18
Issue Date: March 21, 2011
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Approved By: Michael Lozano, Jr., M.D., HCFR Medical Director

1. Basic ALS Treatments

2. Specific ALS treatment:
   a. Ondansetron hydrochloride 0.1 mg/kg (maximum 4.0 mg) IV/IM.
   b. May repeat in 20 minutes if needed.
   c. If extrapyramidal reactions occur: diphenhydramine: 0.5 mg/kg (max 25 mg) IV over 1 – 2 minutes or IM.

Section: Pediatric Medical
Subject: OVERDOSE / ORAL POISONING
Section #: 343.19
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Approved By: Michael Lozano, Jr., M.D., HCFR Medical Director

1. Basic ALS Treatments:
    a. If time allows, contact Poison Control (1-800-222-1222) for treatment recommendations
        i. Contact Medic-1 for recommendations from Poison Control not covered by HCFR policy.

2. Beta blocker overdose:
    a. The primary determinant of β-blocker toxicity and death is respiratory arrest, so be vigilant to support the patient's respiration.
    b. For seizures, follow HCFR PEDIATRIC SEIZURE protocol
    c. Transcutaneous pacing, if available, as a bridge measure until pharmacology is available.
        i. Set rate according to age:
            1. < 1 year = 100/min.
            2. ≥ 1 year = 80/min.
        ii. Increase amperage until capture is achieved.
        iii. Analgesia and sedation (for normal to high BP):
            1. Fentanyl 1 mcg/kg (max dose of 50 mcg) slow IV or IN q10 min PRN.
            2. Midazolam 0.05 mg/kg (max dose of 2.5 mg) IV or IN q10 min PRN.
    d. Atropine (for patients ≥ 6 months of age):
        i. 0.02 mg/kg (minimum dose 0.1 mg; maximum dose 0.5 mg) IV/IO q5 min.
            1. Maximum dose in children = 1 mg.
            2. Maximum dose in adolescents = 3 mg.
    e. Dopamine:
        i. Start with 5 mcg/kg/min IV/IO infusion
        ii. Titrated by 5 mcg/kg/min q5 minutes to desired effect
        iii. Maximum dose is 20 mcg/kg/min IV/IO.
    f. Normal Saline (0.9% NaCl): 250 mL q5 min for hypotension.

3. Calcium channel blocker overdose:
    a. For seizures, follow HCFR PEDIATRIC SEIZURE protocol
    b. Transcutaneous pacing, if available, as a bridge measure until pharmacology is available.
        i. Set rate according to age:
            1. < 1 year = 100/min
            2. ≥ 1 year = 80/min
        ii. Increase amperage until capture is achieved.
        iii. Analgesia and sedation if systolic BP ≥ 100 mmHg):
            1. Fentanyl 1 mcg/kg (max dose of 50 mcg) slow IV or IN q10 min PRN.
            2. Midazolam 0.05 mg/kg (max dose of 2.5 mg) IV or IN q10 min PRN.
    c. Atropine (for patients ≥ 6 months of age):
        i. 0.02 mg/kg (minimum dose 0.1 mg; maximum dose 0.5 mg) IV/IO q 5 min.
            1. Maximum dose in children = 1.0 mg
            2. Maximum dose in adolescents = 3.0 mg
    d. Dopamine:
        i. Start with 5.0 mcg/kg/min IV/IO infusion
        ii. Titrated by 5.0 mcg/kg/min q 5 minute to desired effect
        iii. Maximum does is 20 mcg/kg/min IV/IO
    e. Normal Saline (0.9% NaCl): 250 ml q 5min for SBP < 100 mmHg.

Section: Pediatric Medical
Subject: OVERDOSE / ORAL POISONING
Section #: 343.19
Issue Date: March 21, 2011
Revision Date: December 1, 2017
Approved By: Michael Lozano, Jr., M.D., HCFR Medical Director

4. Phenothiazine overdose:
    a. Dystonia present (distorted twisting or movement of a body part):
        i. Diphenhydramine: 1.0 mg/kg (maximum dose of 50 mg) IV/IM.

5. Tricyclic antidepressant overdose (TCAs):
    a. If hypotension, heart block, tachycardia, or cardiac conduction disturbances (QRS > 0.12 msec) are present:
        i. Sodium Bicarbonate: 1.0 mEq/kg IV/IO
        ii. Normal saline (0.9% NaCl) 20 mL/kg bolus IV/IO, and then 250 mL/hr IV.
    b. If they are intubated. hyperventilate the patient to an $ETCO_2$ of 20 mmHg

6. Narcotic overdose:
    a. Naloxone: 0.1 mg/kg IV/IO/IM/SQ/IN
        i. Repeat q2 minutes PRN (titrated to effect).
        ii. Some narcotics such as methadone require more naloxone than you would normally use.
        iii. Complete reversal of symptoms may not be the optimal therapeutic goal. Rather, resolution of respiratory depression, hypotension, and hypoperfusion should be the treatment goal.

7. Organophosphate poisoning (commercial and agricultural products):
    a. Decontaminate per HCFR protocol and policy
    b. Avoid skin contact.
    c. Flush area of exposure with copious amounts of water.
    d. Atropine:
        i. Less than 12 years old
            1. 0.02 mg/kg (minimum dose 0.1 mg) IV/IO q 5 min until bronchial secretions and hemodynamically significant bradycardia are controlled (no maximum dose).
        ii. 12 years or older
            1. 2.0 mg IV q 5 minutes until bronchial secretions and hemodynamically significant bradycardia are controlled (no maximum dose).
    e. Contact HIT for 2-PAM (pralidoxime) treatment if available and administration is timely

Section: Pediatric Medical
Subject: POISONS – INHALED OR ABSORBED
Section #: 343.20
Issue Date: March 21, 2011
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1. Basic ALS Treatments

2. Specific ALS treatments:
    a. Decontaminate the patient per HCFR policy and protocol.
    b. Contact Poison Control (1-800-222-1222) if any doubt as to toxicity or expected adverse effects.

3. If wheezing is present albuterol (nebulized):
    a. For weight < 20 kg, administer 2.5 mg via nebulizer q20 minutes PRN
    b. For weight ≥ 20 kg, administer 5 mg via nebulizer q20 minutes PRN

4. Organophosphates (see also policy section on Organophosphates and Military Nerve Type Agents):
    a. Avoid skin contact.
    b. Flush area of exposure with copious amounts of water.
    c. Atropine:
        i. Less than 12 years old
            1. 0.02 mg/kg (minimum dose 0.1 mg) IV/IO q 5 min until bronchial secretions and hemodynamically significant bradycardia are controlled (no maximum dose).
        ii. 12 years or older
            1. 2 mg IV q 5 minutes until bronchial secretions and hemodynamically significant bradycardia are controlled (no maximum dose).
    d. Contact HIT for 2-PAM (pralidoxime) treatment if available and administration is timely

5. Contact Medic-1:
    a. Recommendations from Poison Control not covered by HCFR policy.

Section: Pediatric Medical
Subject: POISONOUS STINGS AND BITES
Section #: 343.21
Issue Date: March 21, 2011
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Approved By: Michael Lozano, Jr., M.D., HCFR Medical Director

1. Basic ALS Treatments

2. Specific ALS treatments:
    a. Keep the patient calm and immobilize the limb parallel to the heart.
    b. Contact Poison Control (1-800-222-1222) for ALL poisonous stings and bites.
        i. Contact Medic-1 for recommendations from Poison Control not covered by HCFR policy.
    c. Apply a constricting band only if the victim or a bystander has applied a tourniquet.
        i. In that case, place a constricting band two (2) inches above the tourniquet and then remove the tourniquet.

3. Treat anaphylaxis as per appropriate HCFR PEDIATRIC ANAPHYLAXIS protocol.

4. Treat seizures as per appropriate HCFR PEDIATRIC SEIZURES protocol.

5. Treat pain as per appropriate HCFR PAIN MANAGEMENT protocol.

6. Do not apply ice or cold packs unless otherwise directed by Poison Control.

7. If the source of the envenomation cannot be positively identified, HCFR personnel may attempt to bring the offending animal or insect to the receiving facility, but only if in doing so it will not put responders or receiving facility personnel at risk. In this day and age, an image would be an acceptable substitute.

Section: Pediatric Medical
Subject: SEIZURES
Section #: 343.22
Issue Date: March 21, 2011
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1. Basic ALS Treatments

2. Specific ALS treatments:[1]
    a. Position the patient to avoid an injury
    b. If possible, place in the left lateral decubitus position
    c. All seizure patients should receive supplemental oxygen to maintain oxygen saturation >94%
    d. Benzodiazepine: (midazolam is preferred, but use what is available.)
        i. Midazolam[2] (intranasal is an acceptable route of delivery[3])
            1. 0.2 mg/kg (maximum 5.0 mg) IN/IV/IO/IM now and then q10 min times two PRN
            2. Maximum total dose = 15 mg
        ii. Diazepam, if no response to midazolam
            1. 0.2 mg/kg (maximum 8 mg) IV/IO now and then q 10 min times two
            2. Maximum total dose = 24 mg

3. After the first dose of benzodiazepine, check the patient for hypoglycemia.
    a. If hypoglycemia is present, treat per HCFR PEDIATRIC HYPOGLYCEMIA protocol

4. Reaching the maximum dose on a benzodiazepine is an indication of a complex patient, and you need to leave the scene if you have not already done so.

5. Contact Medic-1:
    a. For doses of midazolam beyond 0.6 mg/kg
    b. For doses of diazepam beyond 0.6 mg/kg

6. QA Points:
    a. Never wait for longer than a few minutes of continuous seizure activity before beginning antiepileptic therapy.
    b. Spinal precautions are not routinely necessary in all seizure patients.
    c. The classical definition of status epilepticus is a single seizure lasting continuously for more than 30 minutes, or two or more seizures with no recovery of normal mental status and function in between episodes. The operational definition of status epilepticus in the pre-hospital setting should be simplified, and includes any seizure that continues from the initial 911 call until HCFR arrives on the scene, or any patient who remains postictal on our arrival and then experiences another seizure.

[1] Chamberlain, James M., et al. "Lorazepam versus Diazepam for Pediatric Status Epilepticus: A Randomized Clinical Trial." JAMA, the Journal of the American Medical Association, no. 16, 2014, p. 1652.

[2] Rainbow J. Controlling seizures in the prehospital setting: diazepam or midazolam? *J Paediatr Child Health* - 01-DEC-2002; 38(6): 582-6

[3] Holsti M. Prehospital intranasal midazolam for the treatment of pediatric seizures. *Pediatr Emerg Care* - 01-MAR-2007; 23(3): 148-53

Section: Pediatric Medical
Subject: SICKLE CELL CRISIS
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1. Basic ALS Treatments

2. Fluids:
   a. IV bolus: normal saline 20 mL/kg IV
   b. IV maintenance infusion[1] is determined by weight.
      i. Less than 10 kg: start at 4 mL/kg/hr.
      ii. 10 kg – 20 kg: 40 mL/hr plus 2 mL/kg/hr over 10 kg.
      iii. >20 kg: 60 mL/hr plus 1 mL/kg over 20kg to a maximum of 100 mL/hr.

3. HCFR PAIN MANAGEMENT policy as needed.

[1] [Modified from] Holliday MA< Segar WE. The maintenance need for water in parenteral fluid therapy. Pediatrics, 1957 May;19(5):823-32.