# ALLERGIC REACTION/ANAPHYLAXIS

## ADULT

### BLS TREATMENT

**ABCs / ROUTINE MEDICAL CARE** - Be prepared to support ventilation with appropriate airway adjuncts and circulation with external chest compressions. Administer oxygen at the appropriate flow rate, preferably high flow via non-re-breather mask if patient has dyspnea.

**BLS Personnel**: Allow patient to administer their own allergy medications as prescribed by their physician, see Field Policy: BLS Medication Administration.

Place patient in position of comfort. If shock signs or symptoms begin, place patient in a supine position with legs elevated.

**NOTE**: If allergen is a stinger, scrape it out of the patient’s skin (use a credit card or the dull side of a knife) to prevent the introduction of more venom; a cold pack may also be applied to the sting site to reduce swelling.

**PROTOCOL PROCEDURE**: Flow of protocol presumes that condition is continuing. If the patient is distress, immediate rapid transport is preferred with treatment performed en route.

### OPTIONAL SKILLS EMT TREATMENT

**BENADRYL** – 50 mg PO. Administer only if patient is alert and able to swallow.

**FOR PATIENTS WITH PROGRESSIVELY WORSENING SYMPTOMS:**

**EPI-PEN AUTOINJECTOR** - 0.3 mg IM. (0.3 mL 1:1,000) Repeat dose may be given in 10 minutes if ALS response is delayed and patient is not responding to treatment.

### ALS TREATMENT

**NORMAL SALINE** – establish an IV/IO. Give 1000 mL bolus(es) for hypotension. MR as needed. Start a second line if hypotension is present or if patient is severe.

**BENADRYL** – 50 mg IV, IO, IM or PO.

**EPINEPHRINE 1:1,000** - 0.3 mg IM. Mid-antrolateral thigh is preferred. MR q 10 minutes.

**NEBULIZED BREATHING TREATMENT(S)** (MAY BE GIVEN PRIOR TO IM EPI FOR BRONCHOSPASM):

**FOR WHEEZING: DUONEB** (2.5 mg Albuterol and 0.5 Mg Atrovent in normal saline). **Do not repeat Duoneb**. If symptoms persist, give single dose of **ALBUTEROL** 2.5 mg in 3 mL normal saline.

**FOR STRIDOR: NEBULIZED EPINEPHRINE 1:1,000** – 5 mL (5 mg) via nebulizer given over 10 minutes. MR q 10 minutes.

**FOR SEVERE HYPOTENSION/AIRWAY COMPROMISE (IMPENDING ARREST):**

**NORMAL SALINE** – 2 IVs/IO wide open if hypotension present.

**INSERT ADVANCED AIWAY** - If airway edema is present, intubate as soon as possible.

**CONTACT BASE STATION**

**EPINEPHRINE 1:10,000** – 0.1 mg (diluted with NS or SW to 10 mL) slow IV push over 5 minutes. MR as needed. (Dose is equivalent to 1:100,000 after dilution).

**GLUCAGON** – If no response to epinephrine, administer 2-4 mg IV/IO push or IM, q 5 minutes.
**FOR ANAPHYLAXIS CAUSED CARDIAC ARREST: REFER TO ADULT PULSELESS ARREST PROTOCOL**

**CARDIAC MONITOR** – Treat arrhythmias as needed.

**NORMAL SALINE** – 2 IVs/IO wide open with pressure bags. Aggressive volume expansion with a goal of up to 4 liters.

For Dystonic (Extrapyramidal) reactions: Give BENADRYL 25 mg IV push or IM. (MR to Max. of 50 mg.)
### PEDIATRIC

#### BLS TREATMENT

**ABCs / ROUTINE MEDICAL CARE** - Be prepared to support ventilation with appropriate airway adjuncts and circulation with external chest compressions.

Administer oxygen at the appropriate flow rate, preferably high flow via a non-re-breather mask if patient has dyspnea.

**BLS Personnel**: Allow patient to administer their own allergy medications as prescribed by their physician, see *Field Policy: BLS Medication Administration*.

Place patient in position of comfort. If shock signs or symptoms begin, place patient in a supine position with legs elevated.

**NOTE**: If allergen is a stinger, scrape it out of the patient’s skin (use a credit card or the dull side of a knife) to prevent the introduction of more venom; a cold pack may also be applied to the sting site to reduce swelling.

**PROTOCOL PROCEDURE**: Flow of protocol presumes that condition is continuing. If the patient is distressed, immediate rapid transport is preferred with treatment performed en route.

---

### OPTIONAL SKILLS EMT TREATMENT

**BENADRYL** - 1 mg/kg (25 mg max) PO. *Administer only if patient is alert and able to swallow.*

**FOR PATIENTS WITH PROGRESSIVELY WORSENING SYMPTOMS:**

**EPI-PEN JR AUTOINJECTOR** (Only for pediatric patients weighing 15-30 kg (33-66 lbs)): 0.15 mg IM (0.3 mL 1:2,000) Repeat dose may be given in 10 minutes if ALS response is delayed and patient is not responding to treatment.

---

### ALS TREATMENT

**NORMAL SALINE** – establish an IV/IO and give 20 mL/kg bolus(es) for hypotension, repeated as needed.

**BENADRYL** – 1 mg/kg (25 mg max) IV, IO, IM or PO.

**EPINEPHRINE 1:1,000** - 0.01 mg/kg (Max. 0.3 mg) IM. MR q 10 minutes. Mid-antterolateral thigh is preferred.

**NEBULIZED BREATHING TREATMENT(S)** (MAY BE GIVEN PRIOR TO EPI FOR BRONCHOSPASM):

**FOR WHEEZING**: DUONEB (2.5 Mg Albuterol and 0.5 Mg Atrovent in normal saline). *Do not repeat Duoneb.* If symptoms persist, give single dose of **ALBUTEROL** 2.5 mg in 3 mL normal saline.

**FOR STRIDOR**: NEBULIZED **EPINEPHRINE 1:1,000** – 0.5 mL/kg (Up to Max. single dose of 5 mL (5 mg)) via nebulizer over 10 minutes. Dilute with NS to SmL for patients 10 kgs or <. MR q 10 minutes until stridor subsides *continuous monitoring.*

**FOR HYPOTENSION/AIRWAY COMPROMISE (IMPELLING ARREST):**

**NORMAL SALINE** – 20 mL/kg boluses, repeated as needed.

**INSERT ADVANCED AIRWAY** - If airway edema is present, intubate as soon as possible.

Consider starting CPR if unresponsive and no palpable BP.

### CONTACT BASE STATION

Reference: Routine Medical Care, BLS Medication Administration, Optional Skills EMT, Benadryl, EpiPen & EpiPen Jr. Auto Injector, Epinephrine, Albuterol, Atrovent, Glucagon, Pulseless Arrest
EPINEPHRINE 1:10,000 – 0.01 mg/kg (diluted with NS or SW to 10 mL) slow IV push over 5 minutes. MR as needed. (Dose is equivalent to 1:100,000 after dilution).

GLUCAGON – If no response to epinephrine, administer 0.1mg/kg IV/IO push or IM, q 5 minutes.

**FOR ANAPHYLAXIS CAUSED CARDIAC ARREST: REFER TO PEDIATRIC PULSELESS ARREST PROTOCOL**

CARDIAC MONITOR – Treat arrhythmias as needed.

For Dystonic (Extrapyramidal) reactions: Give BENADRYL 1 mg/kg IV push or IM. (Max. of 25 mg.)

Reference: Routine Medical Care, BLS Medication Administration, Optional Skills EMT, Benadryl, EpiPen & EpiPen Jr. Auto Injector, Epinephrine, Albuterol, Atrovent, Glucagon, Pulseless Arrest
Reference: Routine Medical Care, BLS Medication Administration, Optional Skills
EMT, Benadryl, EpiPen & EpiPen Jr. Auto Injector, Epinephrine, Albuterol, Atrovent,
Glucagon, Pulseless Arrest
ALTERED LEVEL OF CONSCIOUSNESS

ADULT

BLS TREATMENT

**ABCs / ROUTINE MEDICAL CARE** - administer oxygen at appropriate flow rate. Be prepared to support ventilation with appropriate airway adjuncts.

If hypoglycemia is suspected in a conscious, known diabetic who is able to follow simple commands, give the patient 15 grams of prepared oral dextrose solution (may repeat in 10 minutes) or encourage drinking/eating a sugar-containing beverage or food.

**PROTOCOL PROCEDURE:** Flow of protocol presumes that condition is continuing. Consider etiology: shock, toxic exposure, insulin shock, seizure, or head trauma. If patient is in distress, immediate, rapid transport is preferred with treatment performed en route.

ALS TREATMENT

**NORMAL SALINE** – establish IV/IO.

**BLOOD SAMPLE/GLUCOSE LEVEL ASSESSMENT** - obtain blood sample via finger stick or venipuncture. Rule out diabetic emergency. Consider confirming test results with second glucose check with blood from a different site (and different meter, if available) if reading is abnormal or the patient’s presentation doesn’t match the test results.

For symptomatic HYPOGLYCEMIA (b.s. < 60 mg/dL):

**DEXTROSE** - Administer 100cc of a 250cc bag of Dextrose 10% (10g), May repeat to a max of 50g. After each 10g (100cc) bolus check BG, LOC and patency of line.

**GLUCAGON** - if no IV access, give 1 mg IM/IN.

Recheck blood glucose 5 minutes after administration of dextrose or glucagon.

For RESPIRATORY DEPRESSION:

**NARCAN***:

IV: 0.5 mg in 1 minute increments slow IV push, titrated to effect (Max. 2 mg).

IN: 0.5 mg. May repeat in 5 minutes if no response (Max. 1 mL per nostril).

IM: 1 mg if unable to establish IV. May repeat in 5 minutes if no response.

ET: 1 mg diluted to 5-10 mL. May repeat in 5 minutes if no response.

*The goal of Narcan administration is to improve respiratory drive, NOT to return patient to their full mental capacity.

*If no response to normal doses or if patient is in extremis, administer 2 mg IV/IM/IO/ET/IN
ALTERED LEVEL OF CONSCIOUSNESS

q 5 minutes.

CONTACT BASE STATION

References: Formulary Dextrose, Narcan, Glucagon
Routine Medical Care
ALTED LEVEL OF CONSCIOUSNESS

PEDIATRIC

BLS TREATMENT

**ABCs / ROUTINE MEDICAL CARE** - administer oxygen at appropriate flow rate. Be prepared to support ventilation with appropriate airway adjuncts.

If hypoglycemia is suspected in a conscious, known diabetic who is able to follow simple commands, give the patient 15 grams of a prepared oral dextrose solution (may repeat in 10 minutes) or encourage drinking/eating a sugar-containing beverage or food.

**PROTOCOL PROCEDURE:** Flow of protocol presumes that condition is continuing. Consider etiology: shock, toxic exposure, insulin shock, seizure, or head trauma. If patient is in distress, immediate, rapid transport is preferred with treatment performed en route.

---

**ALS TREATMENT**

**NORMAL SALINE** – establish IV/IO.

**BLOOD SAMPLE/GLUCOSE LEVEL ASSESSMENT** - obtain blood sample via finger stick or venipuncture. Rule out diabetic emergency. Consider confirming test results with second glucose check with blood from a different site (and different meter, if available) if reading is abnormal or the patient’s presentation doesn’t match the test results.

Hypoglycemia in pediatrics is defined as:
- **Neonate** (< 1 month): (b.s. < 50 mg/dL)
- **Infant/child** (>1 month): (b.s. < 60 mg/dL)

**For HYPOGLYCEMIA:**

**DEXTROSE:**
- Less than 1m/o: D10W
  - 2 mL/kg IV/IO may repeat every 5 min until b.s. is at a normal limit.
- Greater than 1m/o: D10W
  - 5 mL/kg IV/IO may repeat every 5 min until b.s. is at a normal limit.

**GLUCAGON** - if no IV access, give 0.1 mg/kg IM/IN (Max. 1 mg).

Recheck blood glucose 5 minutes after administration of dextrose or glucagon.

**For RESPIRATORY DEPRESSION:**

**NARCAN** - 0.1 mg/kg IV/IN/IO/IM titrated to effect (Max. 2 mg). May repeat initial dose, if no response, within 5 minutes. (Maximum IN dose of 1 mL per nostril; If no response to normal doses contact base station). Avoid use in neonates.

**CONTACT BASE STATION**

---

References: Formulary Dextrose, Narcan, Glucagon
Routine Medical Care
EL DORADO COUNTY EMS AGENCY
PREHOSPITAL PROTOCOLS
Effective: January 2012
Reviewed: July 2013
Revised: July 1, 2016
Scope: ALS – Adult/Pediatric

BRADYCARDIA

ADULT ALGORITHM

**ABCs / ROUTINE MEDICAL CARE** - Be prepared to support ventilation with appropriate airway adjuncts and circulation with external chest compressions.

Administer oxygen if indicated at the appropriate flow rate.

Place patient in position of comfort.

Obtain and transmit 12 lead EKG (Do not delay therapy).

**PROTOCOL PROCEDURE**: Flow of protocol presumes that bradycardia is continuing. If response or condition changes, see appropriate protocol. If at any time a stable patient becomes unstable, go to the unstable section of this protocol. If patient is in severe distress, immediate, rapid transport is preferred with treatment performed enroute.

<table>
<thead>
<tr>
<th>STABLE</th>
<th>UNSTABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>HR &lt; 50; SBP &gt; 100; GCS &gt; 14; NO SEVERE CHEST PAIN/DYSPNEA</td>
<td>HR &lt; 50; SBP &lt; 100; GCS &lt; 14; SEVERE CHEST PAIN/DYSPNEA</td>
</tr>
</tbody>
</table>

- **Cardiac Monitor**
- **Establish IV**
- **Moved to unstable section if condition deteriorates**

- **Consider 2nd IV or IO if difficult access.**
- **Consider 250 mL Fluid Bolus**
- **Give Atropine IV/IO: 0.5 mg q 3-5 min (Max 3 mg)**
  - **Adolescents**: 1mg IV/IO (Max. Single dose)
  - **Max total dose**: 2mg IV/IO
- **If Atropine is ineffective or if delay in IV/IO**
  - **Begin TCP at 80 bpm**
  - **Do not delay if high degree block is present**
- **Consider pain Management**
  - Fentanyl 50mcg slow IV/IO over 2 min
  - **Withhold if Systolic BP < 100 mm Hg**

**CONTACT BASE**
Dopamine infusion may be ordered for hypotension. 2-10 µg/kg/min IV/IO.
Titanate to patient response. Taper slowly

**References**: Prehospital Formulary, Transcutaneous Pacing Procedure, 12 Lead EKG Procedure
BRADYCARDIA

CONTINUED

**PEDIATRIC ALGORITHM**

**ABCs / ROUTINE MEDICAL CARE** - Be prepared to support ventilation with appropriate airway adjuncts and circulation with external chest compressions.

**Begin ventilation with BVM if HR < 60; if no improvement in 1 minute begin CPR.**

Administer oxygen if indicated at the appropriate flow rate.
Place patient in position of comfort.
Obtain and transmit 12 lead EKG (Do not delay therapy).

**PROTOCOL PROCEDURE:** Flow of protocol presumes that bradycardia is continuing. If response or condition changes, see appropriate protocol. If at any time a stable patient becomes unstable, go to the unstable section of this protocol. If patient is in severe distress, immediate, rapid transport is preferred with treatment performed enroute.

<table>
<thead>
<tr>
<th>STABLE</th>
<th>UNSTABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NO HYPOTENSION, NO DELAYED CRT, NO SEVERE CHEST PAIN/DYSPNEA</strong></td>
<td><strong>ALOC, HYPOTENSION, DELAYED CRT, SEVERE CHEST PAIN/DYSPNEA</strong></td>
</tr>
<tr>
<td>Cardiac Monitor</td>
<td>If HR &lt; 60 Perform CPR</td>
</tr>
<tr>
<td></td>
<td>Consider 2\textsuperscript{nd} IV or IO if difficult access.</td>
</tr>
<tr>
<td></td>
<td><strong>Give Epinephrine</strong> 0.01 mg/kg IV/IO</td>
</tr>
<tr>
<td></td>
<td>1:10,000 = 0.1 mL/kg</td>
</tr>
<tr>
<td></td>
<td>Repeat every 3 – 5 min.</td>
</tr>
<tr>
<td></td>
<td>If increased vagal tone or primary AV block:</td>
</tr>
<tr>
<td></td>
<td><strong>Give Atropine</strong> 0.02 mg/kg IV/IO</td>
</tr>
<tr>
<td></td>
<td>May repeat dose once in 5 min.</td>
</tr>
<tr>
<td></td>
<td>Minimum dose 0.1mg. Max. total dose of 1 mg.</td>
</tr>
<tr>
<td></td>
<td><strong>Consider TCP</strong> at 80 bpm</td>
</tr>
<tr>
<td></td>
<td><strong>Do Not</strong> delay if high degree block is present</td>
</tr>
<tr>
<td></td>
<td>Consider pain management if BP adequate</td>
</tr>
<tr>
<td></td>
<td>Fentanyl 50mcg slow IV/IO over 2 min</td>
</tr>
<tr>
<td></td>
<td>Treat underlying causes</td>
</tr>
<tr>
<td></td>
<td>Contact Base</td>
</tr>
</tbody>
</table>

**References:** Prehospital Formulary, Transcutaneous Pacing Procedure, 12 Lead EKG Procedure
EL DORADO COUNTY EMS AGENCY
PREHOSPITAL PROTOCOL
Effective: July 1, 2017
Reviewed: February 8, 2017

BRIEF RESOLVED UNEXPLAINED EVENT
General Info:
A Brief Resolved Unexplained Event was formerly known as “An Apparent Life Threatening Event”.

- An ALTE is an episode that is frightening to the observer (may think infant has died) and involves some combination of:
  1. Apnea
  2. Color change
  3. Marked change in muscle tone. (Limpness, loss of tone)
  4. Choking or gagging

- Usually occurs in infants <12 months old. However, any child < 2 years old who exhibits symptoms of apnea may be considered an ALTE

- 50% have a possible identifiable etiology (e.g., abuse, SIDS, swallowing dysfunction, infection, bronchitis, seizures, CNS abnormalities, tumors, cardiac diseases, chronic respiratory disease, upper airway obstruction, metabolic abnormalities, anemia, or other

BLS TREATMENT

<table>
<thead>
<tr>
<th>ROUTINE MEDICAL CARE</th>
<th>GLUCOSE LEVEL ASSESSMENT – rule out hypoglycemia.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NORMAL SALINE – establish IV when indicated.</td>
</tr>
<tr>
<td><strong>Obtain a detailed history of event:</strong></td>
<td>Treat any identifiable causes by referring to the appropriate protocol.</td>
</tr>
<tr>
<td>o Apnea?</td>
<td>CONTACT BASE STATION</td>
</tr>
<tr>
<td>o Color change?</td>
<td></td>
</tr>
<tr>
<td>o Change in muscle tone?</td>
<td></td>
</tr>
<tr>
<td>o Choking or gagging?</td>
<td></td>
</tr>
<tr>
<td>o Was any resuscitation required?</td>
<td></td>
</tr>
<tr>
<td>o Seizure activity?</td>
<td></td>
</tr>
<tr>
<td>o Was infant sleeping? Position?</td>
<td></td>
</tr>
<tr>
<td>Obtain detailed medical history:</td>
<td></td>
</tr>
<tr>
<td>o Any chronic diseases (including seizures)?</td>
<td></td>
</tr>
<tr>
<td>o Current or recent infections?</td>
<td></td>
</tr>
<tr>
<td>o Gastroesophageal reflux?</td>
<td></td>
</tr>
<tr>
<td>o Recent trauma?</td>
<td></td>
</tr>
<tr>
<td>o Inappropriate mixture of formula?</td>
<td></td>
</tr>
<tr>
<td>o Medications?</td>
<td></td>
</tr>
</tbody>
</table>

PROTOCOL PROCEDURE: All cases of ALTE should be transported to the hospital for further evaluation. If parent/guardian is refusing medical care and/or transport, consult with the base station prior to completing an AMA.

ALS TREATMENT
EL DORADO COUNTY EMS AGENCY
PREHOSPITAL PROTOCOLS
Effective: July 1, 2017
Reviewed: November 9, 2016
Revised: November 9, 2016

BRONCHOSPASM

ADULT

BLS TREATMENT

**ABCs / ROUTINE MEDICAL CARE** – place patient in position of comfort. If indicated, administer oxygen at the appropriate flow rate. Be prepared to support ventilation with appropriate airway adjuncts.

If patient is in severe distress, attempt to assist breathing with BVM after explaining procedure to patient. *(For patients with severe asthma use a slower ventilation rate (6-8 VPM) and smaller tidal volume).*

**BLS Personnel:** Allow patient to administer their own respiratory medications as prescribed by their physician, see **Field Policy: BLS Medication Administration.**

**PROTOCOL PROCEDURE:** Flow of protocol presumes that condition is continuing. If the patient is distress, immediate rapid transport is preferred with treatment performed en route.

**OPTIONAL SKILLS EMT TREATMENT**

**IF PATIENT IS IN EXTREMIS (LOW SP02, INABILITY TO SPEAK, AND/OR ALOC):**

**CPAP** - start with valve at 7.5 cm setting and 100% O2 flow rate. Titrate to patient’s condition. If patient’s respiratory status does not improve, change valve setting to 10.0 cm. Be prepared to support ventilations with appropriate airway adjuncts. Monitor and record vital signs every 5 minutes. Be prepared for possible hypotension. If hypotension develops, decrease valve setting.

**FOR ASTHMA PATIENTS:** Administer EPI-PEN AUTOINJECTOR - 0.3 mg IM. (Repeat dose may be given in 10 minutes if ALS response is delayed and patient is not responding to treatment).

**ALS TREATMENT**

**CPAP** - start with valve at 7.5 cm setting and 100% O2 flow rate. Adjust valve as necessary.

Start with **DUONEB** (2.5 Mg Albuterol and 0.5 Mg Atrovent in normal saline). Do not repeat.

If severe symptoms persist, initiate continuous **ALBUTEROL** 2.5 mg in 3 mL normal saline (Max. 15 mg/hr). Breathing treatments may be given concurrently with CPAP.

Breathing treatments may be given concurrently with CPAP.

**NORMAL SALINE** – establish an IV/saline lock.

**FOR PATIENTS IN EXTREMIS (LOW SP02, INABILITY TO SPEAK, OR ALOC):** administer **EPINEPHRINE 1:1,000** - 0.3 mg IM. (Repeat doses may be given in 10 minute intervals).

**FOR STRIDOR (croup/airway burns/laryngeal edema/anaphylaxis):** administer **NEBULIZED EPINEPHRINE 1:1,000** – 5 mL (5 mg) via nebulizer given over 10 minutes. (MR q 10 minutes).

**CONTACT BASE STATION**

**Note:** If “base line” vital signs have increased 20%, visible tremors, or increased arrhythmias/palpitations occur discontinue treatment and contact base station.
## BLS Treatment

**ABCs / Routine Medical Care** – place patient in position of comfort. Be prepared to support ventilation with appropriate airway adjuncts.

If indicated, administer high flow oxygen via non re-breather mask OR may attempt high flow humidified oxygen via nasal cannula.

If patient is in severe distress, attempt to assist breathing with BVM after explaining procedure to patient. *(For patients with severe asthma use a slower ventilation rate (6-8 VPM) and smaller tidal volume).*

**BLS Personnel:** Allow patient to administer their own respiratory medications as prescribed by their physician, see Field Policy: BLS Medication Administration.

**Protocol Procedure:** Flow of protocol presumes that condition is continuing. If patient is in distress, immediate, rapid transport is preferred with treatment performed en route.

## Optional Skills EMT Treatment

### For Asthma Patients in Extremis (Low SpO2, Inability to Speak, and/or ALOC):

**EpiPen JR** *(Only for pediatric patients weighing 15-30 kg (33-66 lbs); 0.15 mg (0.3 mL, 1:2,000) IM (lateral thigh is preferred). May repeat in 10 minutes if ALS response is delayed and patient condition warrants.)*

## ALS Treatment

### Nebulized Breathing Treatments:

Start with **Duoneb** *(2.5 Mg Albuterol and 0.5 Mg Atrovent in normal saline). Do not repeat.*

If severe symptoms persist, initiate continuous **Albuterol** 2.5 mg in 3 mL normal saline (Max. 15 mg/hr). Breathing treatments may be given concurrently with CPAP.

**Normal Saline** – establish an IV/saline lock.

### For Patients in Extremis (Low SpO2, Inability to Speak, or ALOC): administer **Epinephrine 1:1,000** - 0.01 mg/kg IM. *(Repeat dose may be given in 10 minutes).*

### For Stridor (Croup/Airway Burns/Laryngeal Edema/Anaphylaxis): administer **Nebulized Epinephrine 1:1,000** – 0.5 mL/kg *(Up to Max. single dose of 5 mL (5 mg)) via nebulizer over 10 minutes. Dilute with NS to 5mL for patients 10 kgs or <. *(MR q 10 minutes).*

### Contact Base Station

**Note:** If “base line” vital signs have increased 20%, visible tremors, or increased arrhythmias/palpitations occur discontinue treatment and contact base station.
EL DORADO COUNTY EMS AGENCY
PREHOSPITAL PROTOCOLS

Effective: July 1, 2017
Reviewed: February 8, 2017
Revised: February 8, 2017

BURNS

**ADULT**

**BLS TREATMENT**

**ABCs / ROUTINE MEDICAL CARE** – Stop burning process. Remove all clothing and jewelry. Administer high-flow oxygen for any patient in respiratory distress. Be prepared to support ventilation with appropriate airway adjuncts.

**BURN CARE:**

- **Thermal Burns:** Stop the burning process with water or saline, if indicated.
  
  Use dry sterile burn dressings to avoid hypothermia.
  
  Cover patient with sterile burn sheet(s) and blanket(s) to preserve body heat.

- **Caustic and Chemical Burns:** Wear protective clothing and gloves and consider the presence of hazardous materials. Remove source of burn and all of the patient’s clothing, then for:
  
  - **Liquid Substances (acids, alkalis):** Flush with copious amounts of water. Do not scrub.
  
  - **Dry Chemicals:** Brush powders off then flush with copious amounts of water (Exception: dry lime, metallic sodium or lithium).

- **Electric Burns:** May produce extensive damage not apparently visible from surface wounds. For this reason, all patients suffering from an electric burn should be placed on a cardiac monitor. For arrhythmias following electrical burns, refer to appropriate protocol.

- **CPAP** – Consider for patients with respiratory distress.

**PROTOCOL PROCEDURE:** Consider early notification of base station for destination decision.

**ALS TREATMENT**

**ADVANCED AIRWAY** - Consider early if evidence of airway burns.

**FREQUENT BLOOD SAMPLE/GLUCOSE LEVEL ASSESSMENTS** - obtain blood sample via finger stick or venipuncture. Rule out hypoglycemia. Refer to ALOC protocol/formulary for dextrose/glucagon dosing.

**NORMAL SALINE** – establish warm IV or IO. If partial or total thickness burns > 10% TBSA, give fluid challenge 1000-2000 mL NS, reassess and repeat if indicated.

**CONSIDER PAIN MANAGEMENT** – refer to formulary for pain control options.

**CONSIDER DUONEB IF BRONCHOCONSTRICTION IS PRESENT** - administer ALBUTEROL – 2.5 mg
in normal saline mixed with ATROVENT 0.5 mg in normal saline via nebulizer. If severe symptoms persist, initiate continuous ALBUTEROL via nebulizer (Max. 15 mg/hr). Do not repeat Atrovent.

**CONTACT BASE STATION**

**DISPOSITION** - Burn victims should be transported to the closest trauma center (level I, II, or III). Burn victims do not necessarily need to be transported to a burn center for initial care.

Consider utilizing an air ambulance or rapid ground transport to closest ER for the following patients:
- Airway involvement (consider need for RSI)
- Facial Burns (consider possible airway involvement)
- Unable to establish IV/IO access in significant (> 25% TBSA) burns

**Adult Rule of Nines Chart:**

![Adult Rule of Nines Chart](image)
**PEDIATRIC**

### BLS TREATMENT

**ABCs / ROUTINE MEDICAL CARE** – Stop burning process. Remove all clothing and jewelry. Administer high-flow oxygen for any patient in respiratory distress. Be prepared to support ventilation with appropriate airway adjuncts.

**BURN CARE:**

- **Thermal Burns:** Stop the burning process with water or saline, if indicated. Use dry sterile burn dressings to avoid hypothermia. Cover patient with sterile burn sheet(s) and blanket(s) to preserve body heat.

- **Caustic and Chemical Burns:** Wear protective clothing and gloves and consider the presence of hazardous materials. Remove source of burn and all of the patient’s clothing, then for:
  - **Liquid Substances (acids, alkalis):** Flush with copious amounts of water. Do not scrub.
  - **Dry Chemicals:** Brush powders off then flush with copious amounts of water (Exception: dry lime, metallic sodium or lithium).

- **Electric Burns:** May produce extensive damage not apparently visible from surface wounds. For this reason, all patients suffering from an electric burn should be placed on a cardiac monitor. For arrhythmias following electrical burns, refer to appropriate protocol.

**PROTOCOL PROCEDURE:** Consider early notification of base station for destination decision. Pediatric burn victims should be transported to the closest trauma center (level I, II, or III). Burns in combination with serious trauma should be transported to a pediatric trauma center.

### ALS TREATMENT

**Advanced Airway** - Consider early if evidence of airway burns.

**FREQUENT BLOOD SAMPLE/GLUCOSE LEVEL ASSESSMENTS** - obtain blood sample via finger stick or venipuncture. Rule out hypoglycemia. Refer to ALOC protocol/formulary for dextrose/glucagon dosing.

- **Hypoglycemia in pediatrics is defined as:**
  - Neonate < 1 month: (b.s. < 50 mg/dL)
  - Infant/child >1 month: (b.s. < 60 mg/dL)

**NORMAL SALINE** – establish warm IV or IO.

If partial or total thickness burns > 10% TBSA, give fluid challenge 20 mL/kg NS, reassess and repeat if indicated. For hypotension/signs of compensatory shock refer to the pediatric SHOCK protocol.

**CONSIDER PAIN MANAGEMENT** – refer to formulary for pain control options.

**CONSIDER DUONEB IF BRONCHOCONSTRICTION IS PRESENT** - administer ALBUTEROL – 2.5 mg

References: Formulary, Albuterol, Atrovent, Normal Saline, Hypoglycemia
in 3ml NS mixed with ATROVENT 0.5 mg in normal saline via nebulizer. If severe symptoms persist, initiate continuous ALBUTEROL via nebulizer (Max. 15 mg/hr). Do not repeat Atrovent.

CONTACT BASE STATION

DISPOSITION - Burn victims should be transported to the closest trauma center (level I, II, or III). Burns in combination with serious trauma should be transported to a pediatric trauma center. Burn victims do not necessarily need to be transported to a burn center for initial care.

Consider utilizing an air ambulance or rapid ground transport to closest ER for the following patients:
- Airway involvement (consider need for RSI)
- Facial Burns (consider possible airway involvement)
- Unable to establish IV/IO access in significant (> 25% TBSA) burns

Pediatric Rule of Nines Charts:

References: Formulary, Albuterol, Atrovent, Normal Saline, Hypoglycemia
CHEST PAIN/ACUTE CORONARY SYNDROME (ACS)

**BLS TREATMENT**

**ROUTINE MEDICAL CARE** - administer oxygen at appropriate flow rate. Keep patient in position of comfort and don’t allow patient to walk.

**ASPIRIN** – Give 324 MG PO.

BLS personnel may assist patient with own medications (NTG), see Field Policy: BLS Medication Administration.

**PROTOCOL PROCEDURE:** Possible thrombolytic/STEMI candidates should be identified and transported immediately with treatment performed en route. Not all AMI/ACS patients present with chest pain; other signs or symptoms (such as: feelings of impending doom, diaphoresis, palpitations, nausea, dyspnea, pain in back, arm, or jaw) may be present that could also indicate an ACS/AMI. Contact the base station for all STEMI patients and for orders in all suspected AMI/ACS cases not presenting with chest discomfort, pain, or pressure. Consider air transport for STEMI patients in remote areas or for long ground transport times. **12 lead EKGs cannot solely diagnose an AMI, treat all potential cardiac symptoms as such, regardless of 12 lead findings.**

**ALS TREATMENT**

<table>
<thead>
<tr>
<th>SBP over 100/</th>
<th>SBP under 100/</th>
</tr>
</thead>
</table>
| **NTG** 0.4 mg SL q 5 min x 3 (withhold if SBP <100 or CP is relieved completely) | **Establish IV***
| **Establish IV*** | **Consider 250cc bolus(es) x 2** |
| **Apply 1” NTG** paste after reaching max of three SL NTG | If BP increases begin treatment with NTG**
| Consider pain management with Fentanyl/MS for CP not relieved with NTG | Refer to Shock Protocol if SBP <100

If STEMI IS CONFIRMED on ECG go to this STEMI TRANSPORT SECTION while continuing to follow the treatment algorithm.

**PT. IN EXTREMIS?**

- **YES**
  - Contact BH and advise “STEMI ALERT”
  - Transmit EKG ASAP

- **NO**
  - **Approximate transport time of 45 minutes to SRC?**
    - **YES**
      - Transport to SRC
    - **NO**
      - Transport to Closest ER

**NOTES:**

*ASA should be given even if the patient’s symptoms have subsided or the patient has self-administered prior to your arrival.

**If patient has taken any erectile dysfunction medication in the last 48 hours do not give NTG or apply NTG paste. Go directly to Fentanyl or MS if SBP is >100 in this situation.

**NTG paste should be applied after reaching maximum dose of SL NTG and should only be removed if SBP <100.**

**Consider second IV and/or Twin Cath with saline lock for suspected STEMI/thrombolytic candidates.**

References: Formulary; Nitro, Aspirin, Fentanyl, Morphine
Routine Medical care, BLS Medication administration
CHF/PULMONARY EDEMA

BLS TREATMENT

**ABCs / ROUTINE MEDICAL CARE** – place patient in sitting position with legs down. Be prepared to support ventilation with appropriate airway adjuncts. Administer at appropriate flow rate. If patient is in obvious respiratory distress high flow oxygen via non re-breather mask is indicated.

**If patient is in severe distress:**

**CPAP** (If trained and equipped) - start with valve at 7.5 cm setting and 100% O₂ flow rate. Titrate to patient’s condition. If patient’s respiratory status does not improve change valve setting to 10.0 cm. Be prepared to support ventilations with appropriate airway adjuncts. Monitor and record vital signs every 5 minutes. Be prepared for possible hypotension. If hypotension develops, decrease valve setting.

**If CPAP is not available:** Attempt to assist breathing with BVM after explaining procedure to patient.

**PROTOCOL PROCEDURE:** Flow of protocol presumes that condition is continuing. If patient is in severe respiratory distress due to excessive fluid in the lungs, immediate, rapid transport is essential with treatment performed en route.

### STABLE

(Normal respiratory effort, normal oxygen saturation, speaks in full sentences, and No ALOC)

1) **NORMAL SALINE** - Establish a saline lock or IV*.
2) Monitor patient’s condition and transport. If patient’s condition worsens, move to UNSTABLE section.

### UNSTABLE

(Increased/increasing respiratory effort, low oxygen saturation, difficulty speaking, or signs of decreased level of consciousness)

If Patient is HYPOTENSIVE: Refer to shock protocol.

For NORMOTENSIVE/HYPERTENSIVE patients:

1) **NTG** - Apply 1” of NTG Paste to patient’s skin. (Systolic BP < 100 mm Hg, NTG should be withheld or discontinued by wiping off with a clean towel).
2) Place patient on CPAP
3) **NORMAL SALINE** - Establish saline lock, IV, or IO*. Watch for respiratory depression. If respiratory status and “drive” continues to deteriorate, intubation may be indicated.

*Establish an IV or IO in lieu of saline lock in patients with tachycardia/consider fluid bolus.

References: Formulary; Nitro, Routine Medical Care, CPAP
**NTG should be withheld in patients who have taken erectile dysfunction medications (Viagra, Cialis, or Levitra) within 48 hours.
EL DORADO COUNTY EMS AGENCY
PREHOSPITAL PROTOCOLS
Effective: July 1, 2009
Reviewed: April 2011
Revised: July 1, 2016
Scope: BLS/ALS - Adult

CHILDBIRTH

BLS TREATMENT

ABCs / ROUTINE MEDICAL CARE – Be prepared to support ventilation with appropriate airway adjuncts.

Position mother in a lateral recumbent position. Inspect the perineum for crowning.

The following questions should be asked to determine maternal history:
- Is the patient under a doctor’s care?
- Past medical history, current medications?
- What is the due date?
- Gravida and Para Status, single fetus or twins?
- Any problems with this or other pregnancy / delivery?
- When did contractions start, How far apart and How long do they last?
- Has the patient’s water broken? What color was fluid, was there an odor?
- Is there sensation of fetal activity?
- Does the patient feel the urge to bear down?

DELIVERY IS IMMINENT AND NORMAL PRESENTATION:

1. Encourage mother to breathe through contractions so as to avoid precipitous delivery and vaginal tearing.

2. Prepare OB kit.

3. As head is delivered, observe for any obvious obstructions, suction baby’s mouth and nose with the bulb syringe. Note any meconium staining.

4. If cord is around baby’s head and cannot be easily slipped off, double clamp the cord and cut the cord between the clamps, with a finger between the cord and the baby, to ensure that the baby is not injured by cutting.

5. Continue delivery, encourage mother to push once head is delivered.

6. After baby is delivered, dry baby thoroughly with towels and wrap in a warm blanket. Keep baby’s head warm and dry, and positioned at or below the level of the vagina until the cord is cut. Allow mother to hold baby and breast-feed to facilitate uterine contractions. **Note:** Placing baby skin to skin with mother is good way to keep baby warm.

7. After 30 seconds, Double clamp cord 6 inches from baby and cut between the clamps, if you have not already done so, as per step 4.

8. Follow NEONATAL RESUSCITATION protocol if signs of distress, cyanosis, bradycardia, or flaccidity occur. Also follow NEONATAL RESUSCITATION protocol if the baby was born preterm (<37 weeks of gestation) or there is evidence of meconium on the baby or in the fetal fluids. Record Apgar at 1 and 5 minutes. Reassess maternal vital signs.

9. Be prepared to deliver the placenta, do not pull on the cord. Bring the placenta to the hospital. After the placenta is delivered, gently massage fundal area.

10. Continue to monitor mother and baby. Keep baby as warm and dry as possible.

11. Reassess airway and vital signs frequently. Re-suction baby’s mouth and nose, as needed.
FOR ABNORMAL PRESENTATIONS

Prolapsed Cord:
If cord not pulsating; insert two gloved fingers into vagina and attempt to lift baby off of cord.
Place mother in knee chest position.
Provide high flow oxygen via non re-breather mask.
Encourage mother to breathe through contractions.

Breech Birth:
Do not attempt to deliver baby by pulling on its legs.
Place mother in knee chest position.
Provide high flow oxygen via non re-breather mask.
If baby is only partially delivered and baby’s head has not delivered; insert two gloved fingers into vagina and place over the baby’s face to create an air passage.

Multiple Births:
Clamp cord of first baby before the second baby is born.
Care for the babies as you would for a single delivery.
Maintain identity of first born.

PROTOCOL PROCEDURE: Flow of protocol presumes a woman is in active labor.
Imminent delivery with abnormal presentations should be discussed with the base station to decide if delivery should be attempted en route.

ALS TREATMENT

DELIVERY NOT IMMINENT:
NORMAL SALINE – Consider IV access.

DELIVERY IS IMMINENT:
NORMAL SALINE – Establish IV access. If patient is in shock, or is compensating for impending shock, refer to SHOCK protocol.

CONTACT BASE STATION

APGAR SCALE

<table>
<thead>
<tr>
<th>Sign</th>
<th>0 Points</th>
<th>1 Point</th>
<th>2 Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Activity (Muscle Tone)</td>
<td>Absent</td>
<td>Arms and Legs Flexed</td>
<td>Active Movement</td>
</tr>
<tr>
<td>P Pulse</td>
<td>Absent</td>
<td>Below 100 BPM</td>
<td>Above 100 BPM</td>
</tr>
<tr>
<td>G Grimace (Reflex Irritability)</td>
<td>No Response</td>
<td>Grimace</td>
<td>Sneeze, cough, pulls away</td>
</tr>
<tr>
<td>A Appearance (Skin Color)</td>
<td>Blue-gray, pale all over</td>
<td>Normal, except for extremities</td>
<td>Normal over entire body</td>
</tr>
<tr>
<td>R Respiration</td>
<td>Absent</td>
<td>Slow, irregular</td>
<td>Good, crying</td>
</tr>
</tbody>
</table>
COLD EXPOSURES

ADULT/PEdiATRIC

BLS TREATMENT

**ABCs / ROUTINE MEDICAL CARE** – Remove any wet clothing, dry and cover patient with warm blankets to prevent any further heat loss. Handle hypothermia patients very gently. Be prepared to support ventilation with appropriate airway adjuncts. Take care not to hyperventilate as this can cause VFib. Be prepared to defibrillate should the patient arrest.

- Administer oxygen at appropriate flow rate.
- Place patient in warm environment. Apply chemical heat packs to axilla, groin, and neck. Do not place directly on patient skin.
- Patient should be handled gently; avoid patient exertion.
- Pulse should be taken for 60 seconds.

**If frostbite is present:** Immobilize and wrap affected extremity with thick warm blankets or clothing. Avoid placing chemical heat packs directly on injured area. Do not rub skin to rewarm. Do not allow refreezing.

**AED Equipped BLS Instructions (Patients > 1 year old only):**

- **CARDIAC ARREST (prior to EMS arrival)** – Perform 2 minutes of CPR while attaching automatic or semiautomatic external defibrillator to patient if so equipped. **If defibrillation is indicated, limit shocks to one only.** Follow with 2 minutes of CPR. If there is still no pulse or evidence of breathing, continue with CPR until ALS personnel take over care of patient.

- **CARDIAC ARREST (during patient treatment)** - Attach automatic or semiautomatic external defibrillator to patient if so equipped. **If defibrillation is indicated, limit to only one shock.** Follow with 2 minutes of CPR. If there is still no pulse or evidence of breathing, continue with CPR until ALS personnel take over care of patient. If no defibrillator is available perform CPR until return of spontaneous circulation or ALS personnel take over care of patient.

**PROTOCOL PROCEDURE:** Flow of protocol presumes that the patient’s condition is continuing. If patient is in severe distress, immediate, rapid transport is preferred with treatment performed en route.
ALS TREATMENT

FOR HYPOTHERMIA MILD/MODERATE:

BEGIN RE-WARMING - Remove any wet clothing, dry and cover patient with warm blankets to prevent any further heat loss. Apply hot packs to axilla, groin, and neck; do not place directly on patient’s skin.

CARDIAC MONITORING - Follow appropriate cardiovascular protocol.

NORMAL SALINE - Establish IV/IO and give warm NS: 1000 mL bolus (Adult) or 20 mL/kg (Peds)

BLOOD SAMPLE/GLUCOSE LEVEL ASSESSMENT - Obtain blood sample via venipuncture. Rule out diabetic emergency.

REFER TO ALTERED LEVEL OF CONSCIOUSNESS OR SEIZURE PROTOCOLS AS INDICATED.

FOR HYPOTHERMIA (SEVERE/CARDIAC ARREST):

PALPATE PULSE - For 60 seconds to determine whether perfusion is present.

CARDIAC MONITORING:

PEA – Do not do CPR or administer medication. Transport as gently as possible.

Asystole – Begin CPR and refer to ALS pulseless arrest algorithm – administer 1 round of medications only and continue CPR.

VF/VT – Begin CPR and refer to pulseless arrest algorithm – administer a single defibrillatory shock and 1 round of medications only and continue CPR.

NORMAL SALINE – Establish IV/IO and give warm NS: 1000 mL bolus (Adult) or 20 mL/kg (Peds).

CONTACT BASE STATION

Hypothermic patients appear dead but may be salvageable. In isolated hypothermia, CPR is indicated for situations without a perfusing rhythm (VF or asystole). For PEA chest compressions should be withheld. These patients are usually adequately managed with re-warming as there may be undetectable, yet life-sustaining cardiac function.
CRUSH SYNDROME

ADULT

BLS TREATMENT

**ABCs / ROUTINE MEDICAL CARE** – be prepared to support ventilation with appropriate airway adjuncts.

**FULL SPINAL PRECAUTIONS, if indicated.**

Administer high flow oxygen via non-re-breather mask.

*Splint the effected limb(s) at heart level.*

Maintain body temperature.

**PROTOCOL PROCEDURE:** Flow of protocol presumes patient has had a full extremity (or more) crushed, pinned, or otherwise immobile with severely impaired circulation for **at least two (2) hours**. It is advisable in these situations for BLS personnel to **wait for ALS personnel** before attempting extrication. *Early notification to the hospital is essential for proper triage and a notification of surgical personnel.*

ALS TREATMENT

**PRE-EXTRICATION:**

**CONSIDER AIR AMBULANCE RESPONSE TO SCENE**

**EKG** - Apply and continuously monitor patient’s cardiac rhythm.

**NORMAL SALINE** - Establish 2 large bore IVs via blood administration or macro drip tubing. Use IO if unable to establish IV. **Give 20 mL/kg IV/IO bolus**, prior to release of compression. If patient is in shock or is compensating for impending shock, refer to SHOCK protocol.

**PAIN MANAGEMENT** – As appropriate, refer to Formulary.

**IMMEDIATELY BEFORE EXTRICATION (IF POSSIBLE):**

- **ALBUTEROL** - 5.0 mg in 6 ml NS via nebulizer. Run continuously before and after extrication.

- **SODIUM BICARBONATE** – 1 mEq/kg up to 100 mEq IVP/IO (Flush line with NS before and after administration).

**POST –EXTRICATION:**

**RAPID TRANSPORT** - As soon as possible.

**CALCIUM CHLORIDE** – If suspected hyperkalemia (Compression ≥ 4 hrs and: absent P waves, Peaked T waves, and/or prolonged QRS) give 1 gm IV/IO slowly over 5 minutes. Repeat at same dose if symptoms persist. (Flush line with NS before and after administration).

**NOTE:** Do not run Sodium Bicarbonate and Calcium Chloride concurrently. Either flush the line well or use a separate line.
ABCs / ROUTINE MEDICAL CARE – Be prepared to support ventilation with appropriate airway adjuncts.

FULL SPINAL PRECAUTIONS, if indicated.
Administer high flow oxygen via non re-breather mask.

Splint the effected limb(s) at heart level.
Maintain body temperature.

PROTOCOL PROCEDURE: Flow of protocol presumes patient has had their lower extremities/pelvis/torso crushed, pinned, or otherwise immobile with severely impaired circulation for at least two (2) hours. It is advisable in these situations for BLS personnel to wait for ALS personnel before attempting extrication. Early notification to the hospital is essential for proper triage and notification of surgical personnel.

ALS TREATMENT

PRE-EXTRICATION:

CONSIDER AIR AMBULANCE RESPONSE TO SCENE

NORMAL SALINE – Establish IV or IO. Refer to shock protocol if patient is in shock.

PAIN MANAGEMENT – As appropriate, refer to Formulary.

CONTACT BASE STATION- For treatment determination and for early notification of destination and surgical personnel.

FLUID BOLUSES (May be ordered) – Give initial bolus of 20 mL/kg. If suspected history of volume loss and no improvement with initial bolus give additional fluid boluses at 20 mL/kg to a Max. of 60 mL/kg.

IMMEDIATELY BEFORE EXTRICATION (IF POSSIBLE):

ALBUTEROL* - 5.0 mg in 6 ml NS via nebulizer. Run continuously before and after extrication.

SODIUM BICARBONATE – 1 mEq/kg up to 100 mEq IVP/IO (Flush line with NS before and after administration).

POST –EXTRICATION:

RAPID TRANSPORT - As soon as possible.

BASE PHYSICIAN ORDER ONLY– If suspected hyperkalemia (Compression ≥4 hrs and: absent P waves, Peaked T waves, and/or prolonged QRS) CALCIUM CHLORIDE 20 mg/kg IV/IO push over 1 minute may be ordered. Repeat at same dose if symptoms persist. (Flush line with NS before and after administration).

NOTES:

* Use 2.5 mg of Albuterol in 3 mL of NS/SW if patient is < 2 years old.

Do not run Sodium Bicarbonate and Calcium Chloride Concurrently. Either flush the line well or use a separate line.
EL DORADO COUNTY EMS AGENCY  
PREHOSPITAL PROTOCOLS  
Effective: July 1, 2017  
Reviewed: February 8, 2017

DROWNING

ADULT/PEDIATRIC

BLS TREATMENT

- **ABCs / ROUTINE MEDICAL CARE** - administer oxygen at appropriate flow rate. Be prepared to support ventilation with appropriate airway adjuncts.

- **IF THE PATIENT IS IN CARDIOPULMONARY ARREST, SEE PULSELESS ARREST PROTOCOL.**

- **FULL SPINAL PRECAUTIONS** - if there is a suspected diving injury, in the setting of other trauma or if there are signs of intoxication.

- **ADULTS ONLY: CPAP** (If trained and equipped) - start with valve at 7.5 cm setting and 100% O₂ flow rate. Titrate to patient’s condition. If patient’s respiratory status does not improve, change valve setting to 10.0 cm. Be prepared to support ventilations with appropriate airway adjuncts. Monitor and record vital signs every 5 minutes. Be prepared for possible hypotension. If hypotension develops, decrease valve setting.

- **PROTOCOL PROCEDURE:** Flow of protocol presumes that the patient’s condition is continuing. If patient is in severe distress, immediate, rapid transport is preferred with treatment performed en route.

  - All patients should have wet clothing removed and be covered with warm blankets to prevent further heat loss.

  - All patients should be transported for evaluation, no matter how stable they present.

  - Begin resuscitation in all patients with <90 minute submersion time (deviations to this time frame will be at the discretion of the base station).

  - For patients submerged in cold water, refer to “COLD EXPOSURE” protocol.

ALS TREATMENT

- **NORMAL SALINE** - establish IV/IO, set rate as per patient’s condition.

- **BLOOD SAMPLE/GLUCOSE LEVEL ASSESSMENT** - obtain blood sample via venipuncture. Rule out diabetic emergency.

- **REFER TO ALTERED LEVEL OF CONSCIOUSNESS OR SEIZURE PROTOCOLS AS APPROPRIATE.**

- **CONTACT BASE STATION**
EL DORADO COUNTY EMS AGENCY
PREHOSPITAL PROTOCOLS
Effective: July 1, 2017
Reviewed: December 14, 2016
Revised: December 14, 2016
GENERAL TRAUMA

ADULT/PEDIATRIC

BLS TREATMENT

**ABCs / ROUTINE MEDICAL CARE** – Be prepared to support ventilation with appropriate airway adjuncts.

**CONTROL BLEEDING:**
For Uncontrolled Extremity Bleeding:
1) Apply direct pressure/pressure bandage. Use hemostatic agent*, if still not controlled:
2) Apply approved tourniquet device:
   - Apply 2-3" proximal to wound
   - Tighten until control of bleeding
   - Document time and presence/absence of distal pulses

If bystanders or first responders placed non-approved or improperly placed tourniquet, assess need for tourniquet and re-apply an approved tourniquet if necessary.

For bleeding to head, neck, pelvis, or for penetrating trauma to extremities:
Pack wound with an approved hemostatic gauze until external bleeding is controlled (be aware that internal hemorrhage may still occur).

**SMR*/FULL SPINAL PRECAUTIONS** - if indicated.

**ADMINISTER OXYGEN** - at the appropriate flow rate, preferably high flow via non-re-breather mask for any major trauma.

Attempt to have patient packaged prior to the medic unit’s arrival, if possible.

**PROTOCOL PROCEDURE** Flow of protocol presumes patient has, or has the potential for, a significant traumatic injury. Rapid transport with IV(s) established en route is a standard. Consider air ambulance response for rapid transport from rural areas. Amputations not meeting critical trauma criteria should be transported to the closest appropriate hospital. Early notification to the hospital is essential for proper triage and notification of surgical personnel.

<table>
<thead>
<tr>
<th>SPECIFIC TRAUMATIC INJURIES:</th>
</tr>
</thead>
</table>

**EXTREMITIES INJURIES:**
Splint extremity in position found. Return extremity to anatomical position only if distal pulse is absent. After splinting, check distal pulse frequently. Apply Traction splint to isolated mid-shaft femur fracture. Clean exposed bone ends prior to applying traction splint to open fractures. Apply pelvic binder device (KED or bed sheet) for suspected open-book pelvic fractures.

**AMPUTATIONS/AVULSIONS:**
Place amputated/avulsed part in a dry, sterile, and watertight container/bag. Place the sealed container/bag in ice water and transport with the patient.
<table>
<thead>
<tr>
<th>FLAIL CHEST:</th>
<th>Closely monitor patient’s airway, breathing, and consider CPAP.</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPEN CHEST WOUNDS:</td>
<td>Cover (do not pack) the wound with occlusive dressing. “(Asherman Chest Seal)” Continuously evaluate for the development of tension pneumothorax. If the patient’s condition worsens after the application of occlusive dressing, remove dressing momentarily during forceful exhalation. Evaluate patient, then re-apply by securing the dressing on three sides only (dressing acts as a one-way-valve allowing air to escape, but not enter the chest). Closely monitor patient’s airway and breathing.</td>
</tr>
<tr>
<td>OPEN NECK WOUNDS:</td>
<td>Cover wound with an occlusive dressing and apply direct pressure. If uncontrolled hemorrhage occurs, pack wound with hemostatic gauze before covering wound with occlusive dressing. Closely monitor patient’s airway and breathing.</td>
</tr>
<tr>
<td>IMPALED OBJECTS:</td>
<td>Do not remove object unless it interferes with CPR or upper airway. Stabilize object in place.</td>
</tr>
<tr>
<td>ABDOMINAL EVISCERATIONS:</td>
<td>Cover injury with a sterile saline-soaked dressing. Cover saline-soaked dressing with an occlusive dressing.</td>
</tr>
</tbody>
</table>

**ALS TREATMENT**

**CONTACT BASE STATION** - preferably while en route to the scene for early notification of destination and surgical personnel.

**RAPID TRANSPORT** - as soon as possible with ALS procedures performed en route. Ideally, scene times for critical trauma should not exceed 10 minutes.

**NORMAL SALINE** - establish 2 large bore IVs via blood administration or macro drip tubing. Use IO if unable to establish IV. If patient is in shock, or is compensating for impending shock, refer to SHOCK protocol.

**CONSIDER PAIN MANAGEMENT** – refer to formulary for pain control options for those hemodynamically stable patients who are in moderate to severe pain.

**FOR TRAUMATIC ARREST** - Treat as per Pulseless Arrest Protocol. Consider immediate bilateral needle chest decompression and aggressive fluid expansion with pressure infusers.
HEAD TRAUMA

ADULT

BLS TREATMENT

**ABCs / ROUTINE MEDICAL CARE :**
- Be prepared to support ventilation with appropriate airway adjuncts.
- Administer oxygen if indicated at an appropriate flow rate.
- Spinal Precautions as indicated.
- For eye injuries consider covering both eyes to prevent further trauma of injured eye.
- Consider possible non-traumatic etiology of ALOC: shock, toxic exposure, insulin shock, or seizures. Refer to appropriate protocol.

**PROTOCOL PROCEDURE:** Flow of protocol presumes patient has, or has the potential for, a significant head injury. Rapid transport with IV(s) established en route is a standard. Early notification to the hospital is essential for proper triage and notification of surgical personnel.

ALS TREATMENT

**CONTACT BASE STATION** - Early notification of destination and surgical personnel.

**RAPID TRANSPORT** - ASAP - Ideally, scene times for critical trauma should not exceed 10 minutes.

**NORMAL SALINE** - Establish 2 large bore IVs via macro drip tubing. Place IO if unable to establish IV. If patient is in shock or is compensating for impending shock, refer to SHOCK protocol. Hypotensive patients with head injuries should have IV fluid resuscitation to maintain appropriate systolic BP.

**BLOOD SAMPLE/GLUCOSE LEVEL ASSESSMENT** - Obtain blood sample via venipuncture. Rule out diabetic emergency. Use caution when administering Dextrose/Glucagon to head injured patients, consider contacting base station if blood sugar is borderline or patient is not a known diabetic.

**REFER TO ALTERED LEVEL OF CONSCIOUSNESS OR SEIZURE PROTOCOLS AS APPROPRIATE.**

**LIDOCAINE 2% (PRE-INTUBATION ONLY)** - 1.5 mg/kg IV push (Max. total dose 100 mg). Administer 2 minutes prior to intubation attempt when feasible, to blunt increased ICP.

**AVOID HYPERVENTILATION OF HEAD INJURED VICTIMS.**
HEAD TRAUMA

CONTINUED

PEDIATRIC

BLS TREATMENT

**ABCs / ROUTINE MEDICAL CARE:**

- Be prepared to support ventilation with appropriate airway adjuncts.
- Administer oxygen if indicated at an appropriate flow rate.
- Spinal Precautions as indicated.
- For eye injuries consider covering both eyes to prevent further trauma of injured eye.
- Consider possible non-traumatic etiology of ALOC: shock, toxic exposure, insulin shock, or seizures. Refer to appropriate protocol.

**PROTOCOL PROCEDURE:** Flow of protocol presumes patient has, or has the potential for, a significant head injury. Rapid transport with IV(s) established en route is a standard. Early notification to the hospital is essential for proper triage and notification of surgical personnel.

ALS TREATMENT

**CONTACT BASE STATION** – Early notification of destination and surgical personnel.

**RAPID TRANSPORT** – ASAP. Ideally, scene times for critical trauma should not exceed 10 minutes.

**NORMAL SALINE** – Establish 2 large bore IVs via macro drip tubing. Place IO if unable to establish IV. Hypotensive patients with head injuries should have IV fluid resuscitation to maintain appropriate systolic BP. [70 + (2 x age in Yrs)]

**BLOOD SAMPLE/GLUCOSE LEVEL ASSESSMENT** - Obtain blood sample via venipuncture. Rule out diabetic emergency. Use caution when administering Dextrose/Glucagon to head injured patients, consider contacting base station if blood sugar is borderline or patient is not a known diabetic.

**REFER TO ALTERED LEVEL OF CONSCIOUSNESS OR SEIZURE PROTOCOLS AS APPROPRIATE.**

**LIDOCAINE 2% (PRE-INTUBATION ONLY)** – 1 mg/kg IV/IO (Max. total dose 50 mg). Administer 2 minutes prior to intubation attempt when feasible, to blunt increased ICP.

**AVOID HYPERVENTILATION OF HEAD INJURED VICTIMS.**
HEAT EXPOSURES

**ADULT/PEDIATRIC**

**BLS TREATMENT**

**ROUTINE MEDICAL CARE** - administer oxygen at appropriate flow rate. Be prepared to support ventilation with appropriate airway adjuncts. Obtain and document temperature if able.

**BEGIN COOLING MEASURES** – Move patient to a cooler environment, remove restrictive clothing. If temperature is elevated begin active cooling: sponge with tepid water and apply ice packs to axilla, groin, and neck, do not apply directly to skin.

**PROTOCOL PROCEDURE**: Flow of protocol presumes that the patient’s condition is continuing. Immediate, rapid transport for heat emergency is preferred with treatment performed en route.

**ALS TREATMENT**

**Heat Cramps** – Benign muscle cramps or weakness, normal to elevated temperature, dehydration and warm moist skin. Begin passive cooling.

**Heat Exhaustion** - Consists of dehydration, dizziness, fever, headache, cramping, nausea and vomiting. Vital signs usually consist of tachycardia, hypotension and elevated temperature with warm or cool moist skin. Begin active cooling.

**Heat Stroke** - Consists of dehydration tachycardia, hypotension and temperature >104 and altered mental status. Sweating disappears as temperatures reach 104, hot dry skin. Begin rapid active cooling.

**NORMAL SALINE** - Establish IV/IO, **Adults**: Give NS 1000ml bolus, may repeat 500ml bolus to maintain a SBP of at least 100mm/Hg. **Peds**: Give NS 20ml/kg, repeat to effect age appropriate SBP of at least (70 + (2 x Age)).

**BLOOD SAMPLE/GLUCOSE LEVEL ASSESSMENT** - Obtain blood sample via venipuncture. Rule out diabetic emergency.

**REFER TO ALTERED LEVEL OF CONSCIOUSNESS, SEIZURE OR SHOCK PROTOCOLS AS APPROPRIATE.**

**CONTACT BASE STATION**
HYPERGLYCEMIA

ADULT

BLS TREATMENT

ABCs / ROUTINE MEDICAL CARE - administer oxygen at appropriate flow rate. Be prepared to support ventilation with appropriate airway adjuncts.

PROTOCOL PROCEDURE: Hyperglycemia is defined as a blood glucose level at or above 250 mg/dL. Flow of protocol presumes that patient is exhibiting symptoms related to high blood glucose levels (i.e., ALOC, malaise, hypotension, dehydration, polydipsia, muscle cramps, nausea, abdominal pain, tachypnea). Consider other causes: shock, toxic exposure, insulin shock, seizure, or head trauma. If patient is in distress, immediate, rapid transport is preferred with treatment performed en route.

ALS TREATMENT

BLOOD SAMPLE/GLUCOSE LEVEL ASSESSMENT - obtain blood sample via finger stick or venipuncture. Confirm test results with second glucose check with blood from a different site (and different meter, if available).

NORMAL SALINE – establish IV/IO. Give a 1000 mL bolus. May repeat once. Contact Base Station for additional boluses.

CONTACT BASE STATION
PEDIATRIC

BLS TREATMENT

**ABCs / ROUTINE MEDICAL CARE** - administer oxygen at appropriate flow rate. Be prepared to support ventilation with appropriate airway adjuncts.

**PROTOCOL PROCEDURE:** Hyperglycemia is defined as a blood glucose level at or above 250 mg/dL. Flow of protocol presumes that patient is exhibiting symptoms related to high blood glucose levels (i.e., ALOC, malaise, hypotension, dehydration, polydipsia, muscle cramps, nausea, abdominal pain, tachypnea). Consider other causes: shock, toxic exposure, insulin shock, seizure, or head trauma. If patient is in distress, immediate, rapid transport is preferred with treatment performed en route.

ALS TREATMENT

**BLOOD SAMPLE/GLUCOSE LEVEL ASSESSMENT** - obtain blood sample via venipuncture. Confirm test results with second glucose check with blood from a different site (and different meter, if available).

**NORMAL SALINE** – establish IV/IO. Give 20 mL/kg fluid bolus. May repeat as needed.

**CONTACT BASE STATION**
NARROW COMPLEX TACHYCARDIA

ADULT ALGORITHM

**ABCs / ROUTINE MEDICAL CARE** - Be prepared to support ventilation with appropriate airway adjuncts and circulation with external chest compressions.

Administer oxygen at the appropriate flow rate per routine medical care protocol.

Place patient in position of comfort.

**PROTOCOL PROCEDURE:** Flow of protocol presumes that narrow complex tachycardia is continuing. If response or condition changes see appropriate protocol. Rate related symptoms are uncommon in rates < 150 BPM. If the patient remains stable and rhythm does not convert, transport to appropriate hospital. If at any time the patient becomes unstable, go to the unstable section of this protocol.

### STABLE
(GCS 14 or greater; SBP greater than 100; NO SEVERE CHEST PAIN/DYSPEA)

- Attempt Valsalva
- Establish IV administer 250 mL fluid bolus(es)

#### Regular Rhythm
- Adenosine
  - 6 mg rapid IVP w/10 mL flush
  - If 1st dose unsuccessful: Repeat with 12 mg rapid IVP w/10 mL flush, May repeat x 1 (Max total of 30mg)

#### Irregular Rhythm
- Monitor patient
- Move to unstable section if patient condition deteriorates

### UNSTABLE
(GCS less than 14; SBP less than 100; SEVERE CHEST PAIN/DYSPEA)

*If patient is awake consider sedation with Versed 2.5 mg IV/IO push q 5 min/ 5 mg IN/IM.

**Do not delay cardioversion if patient is unresponsive**

- Establish IV/IO (If time allows)

#### Regular Rhythm
- Synchronized Cardioversion: 70/75 J,
  - If no conversion: 120→150→200J

#### Irregular Rhythm
- Synchronized Cardioversion: 120J,
  - If no conversion: 150→200J

**Contact Base**
(Consider transmitting 12 lead, if equipped)
**PEDIATRIC ALGORITHM**

**ABCs / ROUTINE MEDICAL CARE** - Be prepared to support ventilation with appropriate airway adjuncts and circulation with external chest compressions. Administer oxygen at the appropriate flow rate, preferably high flow via non-rebreather mask. Place patient in position of comfort.

**PROTOCOL PROCEDURE:** Flow of protocol presumes that narrow complex tachycardia is continuing. If response or condition changes see appropriate protocol. Supra-ventricular tachycardia is defined as pulse rate > 220 in infants (<1 year) and > 180 in children. If the patient remains stable and rhythm does not convert, transport to appropriate hospital. If at any time the patient becomes unstable, go to the unstable section of this protocol.

**STABLE**

(GCS 14 or greater; ADEQUATE PERFUSION; NO SEVERE CHEST PAIN/DYSPEA)

- Attempt Valsalva/Ice Pack
  - Establish IV administer 20 mL/kg fluid bolus(es)

**Regular Rhythm**

- Adenosine
  - 0.1 mg/kg rapid IVP w/5 mL flush
  - (Max. 6 mg)
  - If 1st dose unsuccessful:
    - Repeat with 0.2 mg/kg rapid IVP w/5 mL flush (Max of 0.3 mg/kg)
    - (Max 12 mg)

**Irregular Rhythm**

- Monitor patient
  - Move to unstable section if patient condition deteriorates

**UNSTABLE**

(GCS less than 14; INADEQUATE PERFUSION; SEVERE CHEST PAIN/DYSPEA)

- If patient is alert:
  - Consider sedation with Versed
    - 0.1 mg/kg diluted in 3 mL NS
    - slow IV/IO push or 0.1 mg/kg IM or IN.
  - Do not delay cardioversion if patient is unresponsive
  - Establish IV/IO (If time allows)
  - Synchronized Cardioversion:
    - 0.5-1 J/kg. Repeat as needed at 2 J/kg

**Contact Base**

(Consider transmitting 12 lead, if equipped)

References: Formulary Versed, Adenosine Routine Medical Care, Cardioversion
NEONATAL RESUSCITATION

BLS TREATMENT

ROUTINE MEDICAL CARE –

- Drying, warming, and stimulation of baby are the priority. Stimulate by drying vigorously including head and back. Use clean dry blankets or towels and continue drying until baby is completely dry. Placing baby skin to skin with mother is good way to keep baby warm.

- Neonatal cardiac arrest is predominantly asphyxia, assessment should consist of simultaneous evaluation of 3 clinical characteristics:
  - Heart rate: apical pulse with stethoscope or palpate at umbilical cord
  - Respiratory rate
  - Oxygenation: assessment of color, central cyanosis

- Assess APGAR at 1 minute and 5 minutes.

1. If the neonate is term, the baby is breathing or crying and has good muscle tone, provide warmth, clear the airway if needed, dry the baby and assess skin color, place neonate with mother and monitor skin and vital signs.

2. If baby is apneic or HR<100 BPM provide positive-pressure ventilation. Reassess after 30 secs:
   - If the HR >100 and the color is pink or improving: Provide post resuscitation care and continue to monitor.
   - If HR is 60-100: Continue with ventilations at 40-60 breaths per minute
   - If HR <60: Begin CPR

3. If HR <60: Position airway, provide positive pressure ventilation and chest compressions. Reassess after 30 seconds:
   - If the HR>100 and the color is pink or improving: provide post resuscitation care.
   - If HR is 60-100: continue with ventilations.
   - If HR <60: continue with chest compressions and positive-pressure ventilations until ALS personnel take over care.

CPR - Chest compressions are given using the 2 thumb-encircling hands techniques. The ratio is 3 compressions to 1 ventilation (3:1), with 90 compressions and 30 breaths to achieve approximately 120 events per minute. Do not ventilate and compress at the same time.

PROTOCOL PROCEDURE: Flow of protocol presumes that condition is continuing. If patient is in severe distress, immediate, rapid transport is preferred with treatment performed en route. Remember not to forget mom in post delivery resuscitations, consider utilizing a second medic unit to transport her.
ALS TREATMENT

Routine intubation for tracheal suction is no longer recommended if meconium is present. Appropriate intervention to support ventilation and oxygenation should be initiated as indicated for each individual infant. This may include intubation and suction if the airway is obstructed.

**MONITOR** - EKG for the rapid and accurate measurement of the newborn’s heart rate. State of oxygenation is optimally determined by a pulse oximeter rather than by simple assessment of color.

**NORMAL SALINE** – Establish IV/IO. Consider bolus of 10 mL/kg. May repeat once.

**GLUCOSE LEVEL ASSESSMENT** - Rule out hypoglycemia.

**DEXTROSE** - B.S. < 50 mg/dL give D10W 2 mL/Kg IV/IO.

**To make D10:** Draw up enough D50 to equal the patient’s weight in kilograms into a syringe (1 mL/kg). In the same syringe draw up four times the amount of sterile water, then mix and administer the appropriate dose.

**EPINEPHRINE** – Initial and repeat doses; IV/IO/ET: 0.01 mg/kg (1:10,000, 0.1 mL/kg) every 3 - 5 minutes, until HR >80 BPM.

**CONTACT BASE STATION**

**NARCAN** – 0.05 – 0.1 mg/kg (Max. 2 mg). IV/IN/IO/IM only. May repeat initial dose if no response within 5 minutes.

<table>
<thead>
<tr>
<th>Sign</th>
<th>0 Points</th>
<th>1 Point</th>
<th>2 Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Activity (Muscle Tone)</td>
<td>Absent</td>
<td>Arms and Legs Flexed</td>
</tr>
<tr>
<td>P</td>
<td>Pulse</td>
<td>Absent</td>
<td>Below 100 BPM</td>
</tr>
<tr>
<td>G</td>
<td>Grimace (Reflex Irritability)</td>
<td>No Response</td>
<td>Grimace</td>
</tr>
<tr>
<td>A</td>
<td>Appearance (Skin Color)</td>
<td>Blue-gray, pale all over</td>
<td>Normal, except for extremities</td>
</tr>
<tr>
<td>R</td>
<td>Respiration</td>
<td>Absent</td>
<td>Slow, irregular</td>
</tr>
</tbody>
</table>
POISONING / OVERDOSE

ADULT

**BLS TREATMENT**

**ABCs / ROUTINE MEDICAL CARE** - Be prepared to support ventilation with appropriate airway adjuncts. Administer oxygen at appropriate flow rate, preferably high flow via non rebreather mask.

If patient is unconscious, place in a left lateral recumbent position and be prepared to suction airway.

Attempt to identify type / quantities of ingested substance and when substance was ingested, collect all pertinent medication containers for transport with the patient.

Contact Poison Control Center @ (800) 222-1222

**PROTOCOL PROCEDURE:** Treat specific ingestion/exposure according to specific treatment guidelines. Base station should either contact Poison Control Center or advise prehospital personnel to do so directly. Flow of protocol presumes that the patient’s condition is continuing. If patient is in severe distress, immediate, rapid transport is preferred with treatment performed en route.

**ALS TREATMENT**

**NORMAL SALINE** – establish IV/IO. Administer 1000 mL fluid challenge if systolic BP is < 100 mm Hg. Titrate to a systolic BP of 100.

**GLUCOSE LEVEL ASSESSMENT** - for ALOC, rule out diabetic emergency.

**FOR SUSPECTED NARCOTIC OVERDOSE:**

Refer to Formulary/ALOC protocol for naloxone indications and dose.

**FOR INGESTION OF DRUGS OR CHEMICALS:**

**ACTIVATED CHARCOAL** - administer 50 gm orally. (If ingestion is with 1 hour)

Contraindicated in patients with ALOC

**REFER TO ALOC OR SEIZURE PROTOCOL(S) AS APPROPRIATE**

**CONTACT BASE STATION**

**FOR ORGANOPHOSPHATE POISONING:**

**ATROPINE (If patient is symptomatic):**

**IV/IO/IM:** administer 2 mg. May be repeated q 5 minutes until symptoms clear.

**ET:** administer 4 mg (followed with 5 mL normal saline flush and 5 normal ventilations). May
be repeated q 5 minutes until symptoms clear.

If symptoms are severe or the patient does not respond to treatment, higher doses of atropine may be ordered by base station.

FOR TRICYCLIC ANTIDEPRESSANT OVERDOSE:

SODIUM BICARBONATE - administer 1 mEq/kg IV/IO push for cardiac toxicity. May require second dose and 1-2 L fluid resuscitation. The goal is correction of QRS widening and cardiac stability.

FOR BETA BLOCKER OVERDOSE:

GLUCAGON - administer 2 - 4 mg IV/IO/IM push or IM.

FOR CALCIUM CHANNEL BLOCKER OVERDOSE:

CALCIUM CHLORIDE - administer 10 mg/kg (0.1ml/kg) of a 10% solution slow IV/IO push.

Calcium Chloride is contraindicated in patients taking digitalis-based medications.

References: Formulary; Activated Charcoal, Atropine, Sodium Bicarbonate, Glucagon, Calcium Chloride.
Routine Medical Care, ALOC
POISONING / OVERDOSE

CONTINUED

PEDIATRIC

BLS TREATMENT

**ABCs / ROUTINE MEDICAL CARE** - Be prepared to support ventilation with appropriate airway adjuncts. Administer oxygen at appropriate flow rate, preferably high flow via non-re-breather mask.

If patient is unconscious, place in a left lateral recumbent position and be prepared to suction airway.

Attempt to identify type / quantities of ingested substance and when substance was ingested, collect all pertinent medication containers for transport with the patient.

Contact Poison Control Center @ (800) 222-1222

**PROTOCOL PROCEDURE:** Treat specific ingestion/exposure according to specific treatment guidelines. Base station should either contact Poison Control Center or advise prehospital personnel to do so directly. Flow of protocol presumes that the patient’s condition is continuing. If patient is in severe distress, immediate, rapid transport is preferred with treatment performed en route.

ALS TREATMENT

**NORMAL SALINE** – Establish IV/IO. If signs and symptoms of shock, administer 20 mL/kg fluid challenge. May re-bolus at 20 mL/kg until a maximum of 60 mL/kg has been reached.

**GLUCOSE LEVEL ASSESSMENT** – for ALOC, rule out diabetic emergency.

**FOR SUSPECTED NARCOTIC OVERDOSE:** Refer to Formulary/ALOC protocol for naloxone indications and dose.

**REFER TO ALOC OR SEIZURE PROTOCOL(S) AS APPROPRIATE**

CONTACT BASE STATION

**FOR INGESTION OF DRUGS OR CHEMICALS:**

- **ACTIVATED CHARCOAL** – For pediatric patients: 25gm (125ml, half the contents of a bottle) unless a large quantity of intoxicant has been ingested and where there is risk of life. In these circumstances, administer 50gm (250ml) (If ingestion is within 1 hour)

  Contact Poison Control for contraindication guidelines

**FOR ORGANOPHOSPHATE POISONING:**

- **ATROPINE** (if patient is symptomatic):

  For pediatric patients: 0.02mg/kg IV/IO initially, repeat every 30 minutes until muscarinic symptoms reverse.

  Contact Poison Control for contraindication guidelines.

References: Formulary; Activated Charcoal, Atropine, Sodium Bicarbonate, Glucagon, Calcium Chloride, Routine Medical Care, ALOC
**FOR TRICYCLIC ANTIDEPRESSANT OVERDOSE:**

SODIUM BICARBONATE - administer 1 mEq/kg IV/IO push for cardiac toxicity. May require second dose and aggressive fluid resuscitation. The goal is correction of QRS widening and cardiac stability.

**FOR BETA BLOCKER OVERDOSE:**

GLUCAGON - administer 0.1 mg/kg IV/IO/IN push or IM.

**FOR CALCIUM CHANNEL BLOCKER OVERDOSE:**

CALCIUM CHLORIDE – administer 20mg/kg (0.2 mL/kg) of a 10% solution slow IV/IO push. Calcium Chloride is contraindicated in patients taking digitalis-based medications.
PULSELESS ARREST

BLS TREATMENT

1. Ensure scene safety and confirm unresponsiveness.
2. Simultaneously check for pulse and no breathing or only gasping for no more than 10 seconds.
3. Start CPR as per current guidelines. Support ventilation with appropriate airway adjuncts.
4. Prior to defibrillation: Ensure skin is clean and dry. Remove metal necklaces and underwire bras. Check the person for implanted medical devices or piercings, place pads at least 1 inch away from implanted devices or piercings.
5. Unwitnessed arrest: CPR should be initiated while the AED/defibrillator equipment is being retrieved and applied. Defibrillation, if indicated, should be attempted as soon as the device is ready for use. If no shock advised continue CPR.
   Witnessed arrest: Attach AED/defibrillator to patient. If shock advised, deliver shock and immediately follow shock, and each subsequent shock, with 2 minutes of CPR (5 cycles of 30:2) starting with compressions. If no shock advised continue CPR.
   Pediatric Note: If an AED with an attenuator is not available, an AED with standard electrodes may be used. Attach pads in anterior/posterior position.
6. If patient is hypothermic limit shocks to one (1) only, refer to COLD EXPOSURES protocol.
7. Continue CPR and follow AED instructions until ROSC achieved and/or care is transferred to ALS personnel.
8. Establish airway with King Tube Device (EXPANDED SCOPE EMTS).

Return of Spontaneous Circulation (ROSC):

1. If patient is resuscitated and has:
   - Effective spontaneous respirations: Apply high flow oxygen, place patient in left lateral recumbent position and be prepared to suction airway.
   - Ineffective or absent respirations: Assist/provide ventilations, do not over-ventilate the patient. Administer 10 ventilations per minute and be prepared to suction airway.
2. Re-assess the patient’s vital signs and effectiveness of ventilations frequently.

PROTOCOL PROCEDURE:

Flow of protocol presumes pulseless arrest is continuing. Effective CPR with a minimum of interruptions should be the primary objective. Consider possible cause (H’s and T’s) and treat accordingly. If correctable cause is suspected or condition changes refer to appropriate protocol.
### ADULT ALS ALGORITHM

<table>
<thead>
<tr>
<th>ASYSTOLE/PEA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Do 5 cycles of CPR between each procedure.</td>
</tr>
<tr>
<td>2) Establish IV/IO.</td>
</tr>
<tr>
<td>3) Give Epinephrine IV/IO: 1 mg 1:10,000 May repeat q 3-5 min.</td>
</tr>
<tr>
<td>4) Insert advanced airway.</td>
</tr>
<tr>
<td>5) If no IV/or IO give Epinephrine via ET: 2 mg 1:1,000 dilute in 5-10 mL NS or SW followed by 5 normal ventilations. May repeat q 3-5 min.</td>
</tr>
<tr>
<td>6) Consider Sodium Bicarbonate 1mEq/kg for known dialysis patient, arrest &gt;20 minutes, or suspected tricyclic OD.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PULSELESS VT/VF</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Check rhythm. If indicated give 1 shock*, then immediately resume CPR. Deliver shocks every 2 minutes if VF/VT continues.</td>
</tr>
<tr>
<td>2) Do 5 cycles of CPR between each procedure.</td>
</tr>
<tr>
<td>3) Establish IV/IO.</td>
</tr>
<tr>
<td>4) Give Epinephrine 1 mg 1:10,000 IV/IO. May repeat q 3-5 min.</td>
</tr>
<tr>
<td>5) Give Amiodarone: 300 mg Slow IV/IO push over 1-2 minutes.</td>
</tr>
<tr>
<td>6) Consider Magnesium Sulfate 2 Gm IV/IO diluted in 10 mL NS or SW for Torsades de pointes.</td>
</tr>
<tr>
<td>7) Insert advanced airway. EtCO2 waveform monitoring</td>
</tr>
<tr>
<td>8) If no IV/or IO give Epinephrine via ET: 2 mg 1:1,000 dilute in 5-10 mL NS or SW followed by 5 normal ventilations.</td>
</tr>
<tr>
<td>9) Repeat Amiodarone 5 min after first dose: 150 mg Slow IV/IO push over 1-2 minutes.</td>
</tr>
<tr>
<td>10) Consider Amiodarone 150 mg IV over 10 minutes for recurrent VF/VT with periods of ROSC where no antiarrhythmic has yet been given.</td>
</tr>
</tbody>
</table>

*Joule settings:*
- **Monophasic:** 360J
- **Physio-Control® Biphasic:** 200J (Increase to 300J, then 360J for each subsequent shock)
- **Zoll® Biphasic:** 120J (increase to 150J, then 200J for each subsequent shock)

- Consider Sodium Bicarbonate 1mEq/kg for known dialysis patient, arrest >20 minutes, or suspected tricyclic OD
- Consider Gastric Tube upon establishing an advanced airway
- Resuscitate on scene a minimum of 20 minutes or until there is return of spontaneous circulation (ROSC), consider pronouncement if resuscitation is not successful or transport per base station order. See Determination of Death Policy
- If ROSC achieved, consider Therapeutic Hypothermia if inclusion criteria are met. See Procedure

### During CPR:
- Push hard and fast 100-120/min)
- Press at least 2-2.4” deep while Ensuring full chest recoil
- 1 cycle of CPR: 30:2. minimize interruptions
- Avoid hyperventilation
- Ventilate at 10 breaths per minute without compression pauses when an advanced airway is in place
- Rotate compressors every two minutes
- Check rhythm every 2 minutes

### Consider possible correctable causes H’s and T’s:
- Hypovolemia
- Hypoxia
- Hydrogen ion (acidosis)
- Hypo-/hyperkalemia
- Hypoglycemia
- Hypothermia
- Toxins
- Tamponade, cardiac
- Tension pneumothorax
- Thrombosis (coronary or pulmonary)
- Trauma
**PEDIATRIC ALS ALGORITHM**

<table>
<thead>
<tr>
<th>ASYSTOLE/PEA</th>
<th>PULSELESS VT/VF</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Do 5 cycles of CPR between each procedure.</td>
<td>1) Check rhythm. If indicated give 1 shock*, then immediately resume CPR. Deliver shocks every 2 minutes if VF/VT continues.</td>
</tr>
<tr>
<td>2. Establish IV/IO.</td>
<td>2) Do 5 cycles of CPR between each procedure.</td>
</tr>
<tr>
<td>3. Give Epinephrine IV/IO: 0.01 mg/kg (1:10,000: 0.1 mL/kg). May repeat q 3-5 min.</td>
<td>3) Establish IV/IO.</td>
</tr>
<tr>
<td>4. Insert advanced airway.</td>
<td>4) Give Epinephrine IV/IO 0.01 mg/kg (1:10,000: 0.1 mL/kg). May repeat q 3-5 min.</td>
</tr>
<tr>
<td>5. If no IV/or IO give Epinephrine via ET: 0.1 mg/kg (1:1,000: 0.1 mL/kg) dilute in 3-5 mL NS or SW followed by 5 normal ventilations. May repeat q 3-5 min.</td>
<td>5) Give Amiodarone: 5 mg/kg mg Slow IV/IO push over 1-2 minutes.</td>
</tr>
<tr>
<td>6. Consider Sodium Bicarbonate 1mEq/kg for known dialysis patient, arrest &gt;20 minutes, or suspected tricyclic OD.</td>
<td>6) Insert advanced airway. EtCO2 waveform monitoring</td>
</tr>
<tr>
<td></td>
<td>7) If no IV/or IO give Epinephrine via ET: 0.1 mg/kg (1:1,000: 0.1 mL/kg) dilute in 3-5 mL NS or SW followed by 5 normal ventilations. May repeat q 3-5 min.</td>
</tr>
<tr>
<td></td>
<td>8) Repeat Amiodarone q 5 minutes: 5 mg/kg Slow IV/IO push over 1-2 minutes. (Max of 15 mg/kg).</td>
</tr>
</tbody>
</table>

*Joule settings:*
- 1st dose: 2 J/kg
- 2nd and subsequent doses: 4 J/kg

Consider increasing joules not to exceed 10J/kg or adult dose for refractory VF.

Consider Gastric Tube upon establishing an airway.

**During CPR:**
- Push hard and fast 100 -120/min
- Press at least 1/3 depth of the chest while Ensuring full chest recoil (approx 1.5” – infants, 2” – peds)
- 1 cycle of CPR: 30:2 (1 rescuer) - 15:2 (2 rescuer)
- Avoid hyperventilation
- Ventilate at 10 breaths per minute without compression pauses when an advanced airway is in place
- Rotate compressors every two minutes
- Check rhythm every 2 minutes

**Consider possible correctable causes (H’s and T’s):**
- Hypovolemia
- Hypoxia
- Hydrogen ion (acidosis)
- Hypo-/hyperkalemia
- Hypoglycemia
- Hypothermia
- Toxins
- Tamponade, cardiac
- Tension pneumothorax
- Thrombosis (coronary or pulmonary)
- Trauma
EL DORADO COUNTY EMS AGENCY
PREHOSPITAL PROTOCOLS
Effective: July 1, 2017
Reviewed: November 9, 2016
Revised: November 9, 2016

SEIZURES

ADULT

BLS TREATMENT

**ABCs / ROUTINE MEDICAL CARE** - administer oxygen at appropriate flow rate. Be prepared to support ventilation with appropriate airway adjuncts.

Protect patient from injury by loosening any restricting clothing items and/or padding or removing any sharp or dangerous items from the patient’s proximity. **Do not place anything in the patient’s mouth.**

After seizure stops, place patient in left lateral recumbent position and be prepared to suction airway.

If hypoglycemia is suspected in a known diabetic who is conscious and able to follow simple commands, give the patient a prepared oral dextrose solution or encourage drinking/eating a sugar-containing beverage or food.

**PROTOCOL PROCEDURE:** Flow of protocol presumes that condition is continuing. Consider etiology: shock, toxic exposure, insulin shock, or head trauma. If patient is in distress, immediate, rapid transport is preferred with treatment performed en route.

ALS TREATMENT

**NORMAL SALINE** – establish IV/IO.

**BLOOD SAMPLE/GLUCOSE LEVEL ASSESSMENT** - obtain blood sample via venipuncture. Rule out diabetic emergency. Consider confirming test results with second glucose check with blood from a different site (and different meter, if available) if reading is abnormal or the patient’s presentation doesn’t match the test results.

For **HYPOGLYCEMIA** (b.s. < 60 mg/dL):  
**DEXTROSE** - Administer 100cc of a 250cc bag of Dextrose 10% (10g), May repeat to a max of 50g. After each 10g (100cc) bolus check BG, LOC and patency of line. .

**GLUCAGON** - if no IV access, give 1 mg IM/IN.

For **ACTIVE SEIZURES**:

**VERSED***:  
IV/IO – 2.5 mg diluted in 5 mL SW slow IV/IO push titrated to effect. MR in 5 min.  
IN – 5 mg via MAD atomizer. MR in 5 min. (Max. of 1 mL per nostril).  
IM – 5 mg IM.  
*For doses above 5 mg contact base station (Except repeat IN dose). Monitor respiration and SPO2 continuously after administration.

**BASE CONTACT**

For **ECLAMPSIA** related seizures: rule out hypoglycemia, then go directly to:

**MAGNESIUM SULFATE** - 6 gm diluted in 10 mL SW slow IV push over 1-2 min.

PEDIATRIC
SEIZURES

BLS TREATMENT

**ABCs / ROUTINE MEDICAL CARE** - administer oxygen at appropriate flow rate. Be prepared to support ventilation with items appropriate airway adjuncts.

Protect patient from injury by loosening any restricting clothing items and/or padding or removing any sharp or dangerous items from the patient’s proximity. **Do not place anything in the patient’s mouth.**

After seizure stops, place patient in left lateral recumbent position and be prepared to suction airway.

**If febrile seizures are suspected:** institute cooling measures with towels soaked in tepid water; avoid cooling to the point of shivering. Then consider treatment (if patient is alert and able to swallow) with **ACETAMINOPHEN** (15 mg/kg PO) or **IBUPROFEN** (10 mg/kg PO).

If hypoglycemia is suspected in a known diabetic who is conscious and able to follow simple commands, give the patient a prepared oral dextrose solution or encourage drinking/eating a sugar-containing beverage or food.

**PROTOCOL PROCEDURE:** Flow of protocol presumes that condition is continuing. Consider etiology: shock, toxic exposure, insulin shock, or head trauma. If patient is in distress, immediate, rapid transport is preferred with treatment performed en route.

---

ALS TREATMENT

**NORMAL SALINE** – establish IV/IO.

**BLOOD SAMPLE/GLUCOSE LEVEL ASSESSMENT** - obtain blood sample via venipuncture. Rule out diabetic emergency. Consider confirming test results with second glucose check with blood from a different site (and different meter, if available) if reading is abnormal or the patient’s presentation doesn’t match the test result:

Hypoglycemia in pediatrics is defined as:
- Neonate < 1 month: (b.s. < 50 mg/dL)
- Infant/child >1 month: (b.s. < 60 mg/dL)

For **HYPOGLYCEMIA:**

**DEXTROSE***:
- Less than 1 m/o: **D10W** 2 mL/kg IV/IO may repeat every 5 min until b.s. is in normal limits.
- Greater than1 m/o: **D10W** 5 mL/kg IV/IO may repeat every 5 min until b.s. is in normal limits.

**GLUCAGON** - if no IV access, give 0.1 mg/kg IM/IN (Max. 1 mg).

Recheck blood glucose 10 minutes after administration of dextrose or glucagon.

*Dextrose:

To make D10: Draw up enough D50 to equal the patient’s weight in kilograms into a syringe (1 mL/kg). In the same syringe draw up four times the amount of SW then mix and administer the appropriate dose.

To make D25: Draw up enough D50 to equal the patient’s weight in kilograms a syringe (1 mL/kg). In the same syringe draw up an equal amount of SW then mix and administer the appropriate dose.

---

Reference: Routine Medical Care, Hypoglycemia
Formulary: Acetaminophen, Ibuprofen, Dextrose, Versed, Magnesium Sulfate
For ACTIVE SEIZURES:

VERSED*:
- IV/IO - 0.1 mg/kg diluted in 3-5 mL of SW slow IV push over 2-5 min. titrated to effect (max dose 3mg).
- IN – 0.1 mg/kg via MAD atomizer (Max. of 1 mL per nostril) (max dose 3mg).
- IM - 0.1 mg/kg (max dose 3mg).

*Max. total dose of 3 mg (All doses administered from different routes apply to the total max dose).

*Monitor respirations and SPO2 continuously after administration.

*A seizure of less than 5 - 10 minutes, which occurs in response to a fever, will usually be self limiting. Airway maintenance and cooling measures take priority.

CONTACT BASE STATION
SEPSIS - ADULT

BLS TREATMENT

ABCs / ROUTINE MEDICAL CARE – Be prepared to support ventilation with appropriate airway adjuncts. Administer high flow oxygen via non re-breather mask.

SIRS CRITERIA: (Systemic Inflammatory Response Syndrome)
ANY 2 OR MORE OF THE FOLLOWING:
- TEMPERATURE >100.4 OR < 96.8
- HEART RATE > 90
- RESPIRATORY RATE > 20

If history is suggestive of infection and 2 or more SIRS criteria are present Sepsis should be suspected. Report these findings to base station.

PROTOCOL PROCEDURE: Flow of protocol presumes that condition is continuing. Immediate, rapid transport is preferred with treatment performed en route.

ALS TREATMENT

NORMAL SALINE – Establish 2 large bore IVs via blood administration or macro drip tubing. Use IO if unable to establish IV.

ADMINISTER:
- 1000ml fluid bolus
- Repeat 500ml fluid bolus if BP<100 systolic
- Repeat fluid bolus up to 30ml/kg

Do not withhold fluid boluses even in the presence of “wet lungs” if BP does not improve.

CONTACT BASE STATION

If BP is refractory to fluid boluses (If hypotension persists in non-hypovolemic shock):
DOPAMINE– 5-20 µg/kg/min IV/IO infusion may be ordered.

NOTE: The initial treatment of Sepsis involves maximizing perfusion with intravenous fluid boluses not vasopressors.
SEVERELY AGITATED PATIENT

BLS TREATMENT

**ABCs / ROUTINE MEDICAL CARE** - administer oxygen at appropriate flow rate. Remember scene safety and use of law enforcement trained in restraining people.

**PROTOCOL PROCEDURE**: The intent of this protocol is to insure patient and personnel safety from severely agitated patients. **It is only to be considered when no other calming measures have been effective.** The goal is to sedate the patient to a manageable level and initiate effective treatment with safe transport to the most appropriate facility. Document your justification for utilizing this protocol on the PCR, including all pertinent details.

ALS TREATMENT

**RESTRAINTS**– Leather restraints or handcuffs shall be used for all potentially violent patients. All restrained patients shall be placed in a supine position. Restraints are only used to prevent the patient from injuring self or others.

**BLOOD SAMPLE/GLUCOSE LEVEL ASSESSMENT** - obtain blood sample via venipuncture. Rule out diabetic emergency **as soon as safely possible**.

**CONSIDER SEDATION** – Give Versed** 5 mg IM or IN q 10 minutes until effect. It is allowable to administer Versed directly through patient’s clothing if paramedic’s personal safety is compromised.

If an IV/IO is already established and a patient unexpectedly becomes severely agitated, give Versed** 2.5 mg diluted in 5 mL of SW slow IV/IO push q 10 minutes until effect.

**CONTACT BASE STATION**

* Refer to EDCEMSA Physical Restraint Policy for restraining severely agitated patients.

**Versed may cause hypotension and/or respiratory depression. Use caution and prepare for 250 mL fluid bolus and/or ventilatory assistance. Consider lowering the dose to 2.5 mg for smaller sized or elderly patients.

Consider possible underlying medical or traumatic conditions causing agitated behavior and refer to appropriate protocol as indicated.
SHOCK

BLS TREATMENT

**ABCS / ROUTINE MEDICAL CARE** – Keep patient warm. Be prepared to support ventilation with appropriate airway adjuncts. Administer high flow oxygen via non re-breather mask. Consider spinal precautions for patients with traumatic injury.

**SIGNS AND SYMPTOMS:**
- Restlessness, confusion, ALOC
- Weakness, dizziness
- Weak, rapid pulse
- Pale, cool, clammy skin
- Delayed capillary refill
- Hypotension
- Coffee-ground emesis
- Tarry stools

**CONSIDER CAUSE:**

| ANAPHYLACTIC | Severe allergic reaction - Refer to Allergic Reaction Protocol |
| SEPTIC | Overwhelming Infection – Refer to Sepsis Protocol |
| HYPOVOLEMIC | Decreased circulating volume due to blood or fluid loss. i.e. Trauma, anticoagulants, history of GI or vaginal bleeding, ectopic pregnancy, vomiting, diarrhea |
| CARDIOGENIC | Circulatory Failure is due to inadequate cardiac function, i.e. Acute MI, CHF, congenital defect |
| NEUROGENIC | Loss of sympathetic tone causing decrease in peripheral vascular resistance. Occurs in head and spinal cord injury |

**PROTOCOL PROCEDURE:** Flow of protocol presumes patient is in shock or that the patient is compensating for impending shock. Rapid transport with IV(s) established en route is a standard.
# ALS Treatment

## Shock Continuation

### Apply Cardiac Monitor and Assess Vital Signs

Establish 2 large bore IVs. Use IO if unable to establish IV.

<table>
<thead>
<tr>
<th>Hypovolemic</th>
<th>Cardiogenic</th>
<th>Neurogenic</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Adult</strong></td>
<td><strong>Adult</strong></td>
<td><strong>Adult</strong></td>
</tr>
</tbody>
</table>
| 1) Give 1000ml bolus if BP < 100sys OR has signs of compensatory shock (tachycardia, tachypnea, poor skin signs, delayed cap refill)  
2) Repeat 500ml Bolus as necessary for BP < 100  
3) Treat injury per General Trauma Protocol | 1) Obtain 12 lead EKG  
2) Check Blood Glucose  
3) Give 1000ml bolus if BP < 100sys OR has signs of compensatory shock (tachycardia, tachypnea, poor skin signs, delayed cap refill) | 1) Give 1000ml bolus if BP < 100sys OR has signs of compensatory shock (tachycardia, tachypnea, poor skin signs, delayed cap refill)  
2) Check Blood Glucose  
3) Repeat 500ml Bolus as necessary for BP < 100 |

### Contact Base Station

**Dopamine** - If hypotension persists

5-20 µg/kg/min. IV/IO infusion may be ordered. Titrate to effect to maintain BP > 100 systolic

### Pediatric

1) Give bolus of 20 mL/kg. If hypotensive OR has signs of compensatory shock (tachycardia, tachypnea, poor skin signs, delayed cap refill)  
2) Check Blood Glucose  
3) If no improvement with initial bolus give additional fluid boluses at 20 mL/kg to a Max. of 60 mL/kg.

1) Obtain 12 lead EKG  
2) Check Blood Glucose  
3) Give 20ml/kg bolus if hypotensive OR has signs of compensatory shock (tachycardia, tachypnea, poor skin signs, delayed cap refill)  

**Contact Base Station**

**Dopamine** - If hypotension persists

5-20 µg/kg/min. IV/IO infusion may be ordered via Volutrol with micro-drip tubing. Titrate to effect to maintain appropriate BP for age

2) Check Blood Glucose  
3) If no improvement with initial bolus give additional fluid boluses at 20 mL/kg.
SNAKEBITE

**ADULT/PEDIATRIC**

**BLS TREATMENT**

**ABCs / ROUTINE MEDICAL CARE** - administer oxygen at appropriate flow rate. Be prepared to support ventilation with appropriate airway adjuncts.

**CIRCLE SWELLING** - if any, around bite mark(s) with a pen and note time. Measure the circumference of the extremity proximal to the bite and note time. This measurement is used as a baseline for determining the progress of swelling.

**AVOID MOVEMENT** - of the affected extremity; keep the extremity in the neutral position.

**PROTOCOL PROCEDURE**: Flow of protocol presumes that the patient’s condition is continuing and that the bite was from a native pit viper (rattlesnake). If bite is from an exotic/non-native reptile, immediately contact base station to determine destination and treatment options. If patient is in severe distress, immediate, rapid transport is preferred with treatment performed en route.

**ALS TREATMENT**

**MONITOR CARDIAC RHYTHM** – Refer to appropriate cardiovascular protocol.

**NORMAL SALINE** - Establish IV/IO, set rate as per patient’s condition.

**CONSIDER PAIN MANAGEMENT** – Refer to Formulary for hemodynamically stable patients who are in severe pain.

**CONTACT BASE STATION** - Advise base hospital of snakebite and confirm receiving hospital has appropriate supply of antivenin.
STROKE

BLS TREATMENT

ABCs / ROUTINE MEDICAL CARE - administer oxygen at appropriate flow rate. Be prepared to support ventilation with appropriate airway adjuncts.

Perform CVA specific patient assessment including:

- Age
- Time of onset
- Physical exam utilizing the Cincinnati Prehospital Stroke Scale
- Level of consciousness
- Blood pressure and heart rate
- Blood glucose assessment

HEMORRHAGIC STROKE - Any combination of the following symptoms may indicate cerebral hemorrhage. The patient may or may not have ischemic stroke symptoms:

- Sudden onset of severe headache, often described as "the worst headache of my life"
- ALOC/seizures
- Nausea and/or vomiting
- Marked hypertension

Cincinnati Prehospital Stroke Scale

Facial Droop (have patient show teeth or smile):
Normal: both sides of face work equally well.
Abnormal: one side of face does not move as well as the other side.

Arm Drift (patient closes eyes and holds both arms out):
Normal: both arms move the same or both arms do not move at all. (Other findings such as pronator grip may be helpful).
Abnormal: one arm does not move or one arm drifts down compared with the other.

Speech (have the patient say “you can’t teach an old dog new tricks”):
Normal: patient uses correct words with no slurring.
Abnormal: patient slurs words, uses inappropriate words, or is unable to speak.

PROTOCOL PROCEDURE: Flow of protocol presumes that condition is continuing. Immediate, rapid transport is preferred with treatment performed en route. Contact base station for consideration of air ambulance transport for patients in remote areas with long transport times.

Patients who show signs and symptoms of stroke must be treated as a time-sensitive emergency and should be transported without delay to the closest institution that provides emergency stroke care. (All ERs that serve as closest receiving facilities for El Dorado County are stroke certified)

1. Transfer of care from paramedics to receiving facility personnel must occur without delay, on scene time less than 15 minutes is the goal.
ALS TREATMENT

ESTABLISH IV/IO NS TKO. Twin Cath or a second line is preferred for thrombolytic candidates. Limit IV attempts to two.

OBTAIN BLOOD TUBES – Preferred Order: 1) Blue, 2) Red, 3) Green 4) Purple.

GLUCOSE LEVEL ASSESSMENT - obtain blood sample via finger stick or via IV cath. Follow ALOC protocol for hypoglycemic treatment.

CONTACT BASE STATION - notify of “STROKE ALERT “and relay ISCHEMIC/HEMORRHAGIC specific assessment information and ETA.
WIDE-COMPLEX TACHYCARDIA

ADULT ALGORITHM

**ABCs / ROUTINE MEDICAL CARE** - Be prepared to support ventilation with appropriate airway adjuncts and circulation with external chest compressions. Administer oxygen at the appropriate flow rate, preferably high flow via non re-breather mask. Place patient in position of comfort and obtain a 12 lead EKG as soon as reasonably possible.

**PROTOCOL PROCEDURE:** Flow of protocol presumes that wide-complex tachycardia is continuing. If response or condition changes, see appropriate protocol. If the patient remains stable and rhythm does not convert, transport to appropriate hospital. If at any time the patient becomes unstable, go to the unstable section of this protocol. If delays in synchronized cardioversion occur and clinical condition is critical, go to immediate unsynchronized shocks.

---

**STABLE**

(GCS14 or greater; SBP Greater than 100; NO SEVERE CHEST PAIN/DYSPNEA)

- Establish IV administer 250 mL bolus(es)
- For Presumed Ventricular Tachycardia consider: Amiodarone 150 Mg IV drip over 10 minutes. (May Repeat x1)
- Contact Base and consider transmitting 12 lead, if equipped

---

**UNSTABLE**

(GCS less than 14; SBP Less than 100; SEVERE CHEST PAIN/DYSPNEA)

- Consider Sedation if patient is awake give Versed 2.5 mg IV/IO push q 5 min/ 5 mg IN/IM. DO NOT DELAY CARDIOVERSION IF PATIENT IS UNRESPONSIVE
- Establish IV/IO (If time allows)
- Synchronized Cardioversion: 70/75 J
  - If no conversion: Repeat Synchronized Cardioversion: 120-150-200J
- For Presumed Ventricular Tachycardia Amiodarone* 150 Mg IV/IO drip over 10 minutes. (May Repeat x 1)
- Contact Base and consider transmitting 12 lead, if equipped
- *For Torsades De Pointe administer 2 gm MAGNESIUM SULFATE diluted in 10 mL SW slow IV/IO push over 1-2 minutes prior to administration of Amiodarone

---

**AMIODARONE DRIP GUIDELINES:**

**Method #1:** Using 100 cc bag of NS and macro drip tubing (10 gtts/mL): add 150 mg Amiodarone and mix well. Piggy back into IV/IO line and run at 1.5 gtts per second.
- For Amiodarone sensitivity/allergy give Lidocaine 1-1.5 mg/kg IV/IO. May repeat ½ initial dose in 5-10 minutes to a max of 3mg/kg cumulative dose
**Wide Complex Tachycardia Continued**

**ABCs / Routine Medical Care** - Be prepared to support ventilation with appropriate airway adjuncts and circulation with external chest compressions.

Administer oxygen at the appropriate flow rate, preferably high flow via non-re-breather mask.

Place patient in position of comfort and obtain a 12 lead EKG as soon as reasonably possible.

**Protocol Procedure:** Flow of protocol presumes that wide complex tachycardia is continuing. If response or condition changes, see appropriate protocol. If the patient remains stable and rhythm does not convert, transport to appropriate hospital. If at any time the patient becomes unstable, go to the unstable section of this protocol. If delays in synchronized cardioversion occur and clinical condition is critical, go to immediate unsynchronized shocks.

<table>
<thead>
<tr>
<th>Stable (GCS 14 or greater: Adequate Perfusion; No Severe Chest Pain/Dyspnea)</th>
<th>Unstable (GCS Less than 14: Inadequate Perfusion; Severe Chest Pain/Dyspnea)</th>
</tr>
</thead>
</table>
| Establish IV adminster 20 mL/kg fluid bolus(es)  
For Presumed Ventricular Tachycardia Consider: Amiodarone 5 mg/kg. Using a 100cc bag NS infuse total contents over 30 minutes  
Contact Base and consider transmitting 12 lead, if equipped | Consider Sedation if patient is awake give Versed 0.1 mg/kg diluted in 2-3 mL NS slow IV/IO push or 0.1 mg/kg IM or IN. DO NOT DELAY CARdioversion IF PATIENT IS UNRESPONSIVE  
Establish IV/IO (if time allows)  
Synchronized cardioversion: 0.5-1 J/kg  
If no conversion; Repeat Synchronized Cardioversion as needed at 2 J/kg  
For Presumed Ventricular Tachycardia: Amiodarone 5 mg/kg. Using 100cc bag NS infuse total contents over 30 minutes  
Contact Base and consider transmitting 12 lead, if equipped |

- For Amiodarone sensitivity/allergy give Lidocaine 1 mg/kg IV/IO push. May repeat q 10 minutes to max of 3 mg/kg.

**Amiodarone Drip Guidelines:**

- Using a 100cc bag of NS and micro drip tubing (60gtts/mL): add Amiodarone and mix well. Run at 3gtts per second
- Using a 100cc bag of NS and macro drip tubing (10gtts/mL): add Amiodarone and mix well. Run at 1gtt every 2 seconds.

References: Routine Medical Care, Amiodarone, Lidocaine, Cardioversion