County of El Dorado

Emergency Medical Services Agency

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PARAMEDIC ALERT

No. 2022-03

June 8th, 2022

TO: **EMS Personnel**
FROM: **El Dorado County EMS Agency**
SUBJECT: **Updates to Protocols and Procedures**
PURPOSE: **Stakeholder information**

Background:

1. The El Dorado County EMS Agency (EDCEMSA) is the Local Emergency Medical Services Authority (LEMSA) for the County of El Dorado.

2. Pursuant to CCR Title 22 § 100148, EDCEMSA shall establish policies and procedures governing the delivery of EMS services within its jurisdiction, including field procedures, policies and protocols.

3. EDCEMSA is in the process of updating the above referenced documents to conform to the most contemporary evidence and remedy any interruptions in the protocol review process proximate to COVID.

ALERT:

The following documents have been updated and published on the public website for immediate implementation.

Protocols

Annexes 1-10

- Airway Obstruction *(New)*
- Allergic Reaction *(replaces Allergic Reaction/Anaphylaxis)*
- Altered Level of Consciousness - ALOC
- Bites Stings Envenomation *(replaces Snakebite)*

- Bradycardia
- Brief Resolved Unexplained Event
- Bronchospasm COPD *(replaces Bronchospasm)*
- Burns
- Chest Pain *(replaces Chest Pain/Acute Coronary Syndrome)*
- Heat Illness *(replaces Heat Exposures)*

Field Procedures

Annex 11

- Needle Cricothyroidotomy

- These documents are accessible in electronic form on the '**Prehospital Protocols'** and **'Field Procedures'** sections of the EMS Agency Website: https://edcgov.us/Government/EMS/

- While none of the updates above draw upon new skills or medications, field personnel should review the changes carefully to ensure thorough retention and execution.

- Stakeholders are encouraged to stay abreast of future updates by signing up for automatic notifications. *From the link above, use the 'Emergency Medical Services Menu' (upper left) to navigate to any of the pages under the Policies/Procedures/Protocols/Drug Formulary heading. Subscription link is at the top of each page.*

EL DORADO COUNTY EMS AGENCY
PREHOSPITAL PROTOCOLS

see Signature on file
EMS Agency Medical Director

Effective: July 1, 2022
Reviewed: N/A
Revised: N/A
Scope: BLS/ALS – Adult/Pediatric

AIRWAY OBSTRUCTION – ADULT

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

Basic Life Support

EMT

ABCs / ROUTINE MEDICAL CARE –

- Assess airway and support ventilation with appropriate airway adjuncts as indicated.
- If conscious
    - If patient is unable to speak, perform 5 abdominal thrusts and reassess
    - If spontaneous ventilation adequate, monitor in position of comfort
- If patient becomes unconscious, lower to ground and begin HP-CPR
- Apply Pulse Oximetry
- Apply oxygen if pulse oximetry <94% or signs of hypoperfusion or respiratory distress

LOSOP

EMT working under Local Optional Scope

AIRWAY – Consider BVM and SGA with ETCO2

Advanced Life Support

Paramedic

AIRWAY

- Perform direct laryngoscopy to visualize potential obstruction when indicated
- Remove visible foreign body with Magill forceps
- Monitor ETCO2
- Consider clinical presentation

For suspected anaphylaxis:

Treat per **Allergic Reaction Protocol**

For stridor:

Epinephrine 1:1000 (1mg/mL) 5mg (5 mL) nebulized. Repeat x 1 in 10 min prn.

For visible airway/tongue swelling:

Epinephrine 1:1000 (1mg/mL) 0.5mg (0.5mL) IM. Repeat q 10 min prn to max 3 doses.

For patients with tracheostomy and suspected obstruction:

- Attempt suctioning
- Remove inner cannula
- Clean with saline if present
- Replace if positive-pressure ventilation required

If obstruction not relieved:

- Remove entire tracheostomy tube and replace with new tracheostomy or 6.0mm ETT – may consider bougie-tracheostomy introduction if difficulty passing tracheostomy tube or ETT. (Note: bougie may be tight in a 6-0mm ETT and a 6.5mm ETT may be required for this method)

If new tube cannot be placed:

- Cover stoma and attempt BVM via mouth

If no chest rise:

- Attempt BVM over stoma with small mask
- Place SGA or intubate prn

If unable to ventilate with BLS or ALS airway:

- Perform needle cricothyrotomy (if training complete)

VASCULAR ACCESS

- Establish IV/IO, rate as indicated.

CARDIAC MONITOR

AIRWAY OBSTRUCTION – PEDIATRIC

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

Basic Life Support

EMT

ABCs / ROUTINE MEDICAL CARE –

- Assess airway and support ventilation with appropriate airway adjuncts as indicated.
- If conscious and unable to speak/vocalize
    - < 1yo: Alternate back blows and chest thrusts 5 ea with head inferior to chest and reassess
        - Repeat until airway cleared or patient becomes unconscious
    - > 1 yo: perform 5 abdominal thrusts and reassess
        - Repeat until airway cleared or patient becomes unconscious
    - If spontaneous ventilation adequate, monitor in position of comfort
- If patient becomes unconscious, lower to ground and begin HP-CPR
- Apply Pulse Oximetry
- Apply oxygen if pulse oximetry <94% or signs of hypoperfusion or respiratory distress

Advanced Life Support

Paramedic

AIRWAY

- Perform direct laryngoscopy to visualize obstruction if unconscious
- Remove visible foreign body with Magill forceps
- Monitor ETCO2
- Consider clinical presentation
    - For suspected anaphylaxis, treat per Allergy/Anaphylaxis Protocol

<u>For stridor concerning for croup or tracheitis:</u>

< 1 yr. **Epinephrine 1:1000 (1mg/mL) 2.5mg** (2.5 mL) nebulized. Repeat x 1 in 10 min prn

>/=1 yr. **Epinephrine 1:1000 (1mg/mL) 5mg** (5 mL) nebulized. Repeat x 1 in 10 min prn

For visible airway/tongue swelling:

Epinephrine 1:1000 (1mg/mL) 0.01 mg/kg IM. Repeat q 10 min prn to max 3 doses.
(single dose max not to exceed the adult dose of 0.5mg (0.5mL) IM)

For patients with tracheostomy and suspected obstruction:

- Attempt suctioning
- Remove inner cannula
- Clean with saline if present
- Replace if positive-pressure ventilation required
- If obstruction not relieved with above maneuver,

< 7 yr: cover stoma and attempt BVM via mouth first. If no chest rise, attempt BVM over stoma with small mask.

>/= 7 yr: consider placement of same size trach tube or 5.0 - 6.0mm ETT in stoma

- Consider BVM and SGA if required

If unable to ventilate with BLS or ALS airway:

- Perform needle cricothyrotomy if landmarks can be identified and training is complete

VASCULAR ACCESS

- Establish IV/IO prn

CARDIAC MONITOR

EL DORADO COUNTY EMS AGENCY

PREHOSPITAL PROTOCOLS

please see signature on file
EMS Agency Medical Director

Effective: July 1, 2015
Reviewed: July 2021
Revised: May 2022
Scope: BLS/ALS – Adult/Pediatric

ALLERGIC REACTION/ANAPHYLAXIS - ADULT

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

Basic Life Support

EMT

Remove allergen if applicable and apply ice: If removing a stinger, scrape it out with a dull object, (i.e. credit card).

ABCs / ROUTINE MEDICAL CARE –

- Assess airway and support ventilation with appropriate airway adjuncts as indicated.
- HP-CPR as indicated
- Apply oxygen if pulse oximetry <94% or signs of hypoperfusion or respiratory distress.

- 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.

LOSOP

EMT working under Local Optional Scope

DIPHENHYDRAMINE (BENADRYL) – 50 mg PO. **Administer only if patient is alert and able to swallow**. (IM or IV should be administered by ALS for patients with more significant symptoms or a decreased LOC.)

FOR PATIENTS in severe distress:

EPI-PEN AUTO-INJECTOR OR EPINEPHRINE 1:1000 (1mg/mL) - 0.5 mg IM (or 0.3mg IM from preloaded EpiPen). Repeat dose in 10 minutes if indicated.

AIRWAY – Consider BVM, SGA and ETCO2 if indicated.

Advanced Life Support

Paramedic

CARDIAC MONITOR

VASCULAR ACCESS - establish IV/IO. Start a second line if indicated for hypotension and/or severe distress.

NORMAL SALINE – Give 250-1000 mL bolus(es) for hypotension. Repeat as needed.

DIPHENHYDRAMINE (BENADRYL) – 50 mg IM/IO/IV/PO (IV preferable for more symptomatic patients)

NEBULIZED (albuterol) BREATHING TREATMENTS (MAY BE GIVEN PRIOR TO EPI FOR BRONCHOSPASM):

EPINEPHRINE 1:1,000 (1mg/mL) - 0.5 mg IM. Mid-anterolateral thigh preferred. Repeat q 10 minutes as indicated.

FOR WHEEZING (note wheezing from anaphylaxis also requires IM epi):

Albuterol: 5 mg in 3mL normal saline via nebulizer

If wheezing persists: repeat albuterol as necessary

FOR STRIDOR:

NEBULIZED EPINEPHRINE 1:1,000 (1mg/mL) – 5 mg (5 mL) via nebulizer given over 10 minutes. Repeat q 10 minutes as indicated.

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

NORMAL SALINE – 2 IVs/IO wide open if hypotension is present: 1-2 liter bolus as required

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

IV "Push-Dose" EPINEPHRINE

- Mix 1mL of **Epi 1:10,000 (0.1mg/mL**) with 9 mL of NaCl 0.9% for a concentration of 1:100,000 (0.01mg/mL).
- Label syringe "**epi 10 mcg/mL**".
- Administer 0.5-1 mL (5-10mcg) IVP every 1-5 minutes as needed.
- Titrate to SBP>90.

GLUCAGON – If no response to epinephrine, administer 2-4 mg IV/IO push or IM q 5 minutes as indicated.

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

FOR ANAPHYLAXIS CAUSED CARDIAC ARREST: REFER TO APPROPRIATE ADULT CARDIAC ARREST PROTOCOL

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

ALLERGIC REACTION/ANAPHYLAXIS - PEDIATRIC

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

Basic Life Support

PSFA and EMT

Remove allergen if applicable and apply ice: If removing a stinger, scrape it out with a dull object, (i.e. credit card).

ABCs / ROUTINE MEDICAL CARE –

- **Assess airway and support ventilation** with appropriate airway adjuncts as indicated.
- HP-CPR as indicated
- Allow patient to administer their own allergy medications as prescribed by their physician, see **Field Policy: BLS Medication Administration.**
- Apply oxygen if pulse oximetry <94% or signs of hypoperfusion or respiratory distress.
- Place patient in position of comfort. If shock signs or symptoms begin, place patient in a supine position with legs elevated.

LOSOP

EMT under Local Optional Scope of Practice

DIPHENHYDRAMINE (BENADRYL) – 1 mg/kg (50 mg max) PO. Administer only if patient is alert and able to swallow. (IM or IV should be administered by ALS for patients with more significant symptoms or a decreased LOC.)

FOR PEDIATRIC PATIENTS IN SEVERE DISTRESS

15-30kg (33-66lbs.): EPI-PEN JR AUTO-INJECTOR OR EPINEPHRINE 1:1000 (1mg/mL) 0.15 mg IM. May repeat every 10 minutes X2 as indicated.

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

>30kg (66lbs) EPI-PEN AUTO-INJECTOR OR EPINEPHRINE 1:1000 (1mg/mL) 0.3 mg IM. May repeat every 10 minutes X2 as indicated.

ALS

Paramedic

CARDIAC MONITOR

VASCULAR ACCESS – establish an IV/IO

NORMAL SALINE - 20 mL/kg bolus(es) for hypotension, repeat as indicated

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

DIPHENHYDRAMINE (BENADRYL) – 1 mg/kg IM/IO/IV/PO

EPINEPHRINE 1:1,000 (1mg/mL) - 0.01 mg/kg IM (Max. 0.5 mg). Repeat q 10 minutes X2 as indicated. Mid-anterolateral thigh is preferred.

FOR WHEEZING (note wheezing from anaphylaxis also requires IM epi):

Albuterol: 5 mg in 3mL normal saline via nebulizer
If wheezing persists: repeat albuterol as necessary

FOR STRIDOR:

EPINEPHRINE NEB 1:1,000 – 0.5 mL/kg (Up to Max. single dose of 5 mg (5 mL)) by nebulizer over 10 minutes.

- Dilute with NS to 5mL for patients 10 kg or less.
- May repeat q 10 minutes x 2 as indicated for ongoing stridor.

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

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

BVM or INSERT SGA as indicated.

IV "PUSH-DOSE" EPINEPHRINE for children 10kg or less:
(Note: if child >10Kg, use the adult preparation administered at the lower dose of 0.5ml)

- Into a sterile 10cc syringe, draw up the "code dose" of **0.01 mg/kg** -- for the patient's weight -- from a **1:10,000 (0.1mg/mL)** 10cc epinephrine syringe. (note: a 10kg child will require 1mL of the 1:10,000 epinephrine)

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

- In the same sterile 10cc syringe, add the necessary quantity of NaCl 0.9% to fill the syringe to the total 10 mL.
- Label the syringe with "epi" and the calculated concentration in mcg/mL. (note: A 10kg child will yield a concentration of "10mcg/ml" - which is also the same concentration as the adult preparation above)
- Administer 0.5 mL IV every 1-5 minutes as needed (which is 0.5 mcg/kg). Titrate to age-appropriate SBP.

EL DORADO COUNTY EMS AGENCY

PREHOSPITAL PROTOCOLS

see signature on file
EMS Agency Medical Director

Effective: July 1, 2015
Reviewed: July 2021
Revised: May 2022
Scope: BLS/ALS – Adult/Pediatric

ALTERED LEVEL OF CONSCIOUSNESS - ADULT

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.*

Basic Life Support

EMT

ABCs / ROUTINE MEDICAL CARE –

- Assess airway and support ventilation with appropriate airway adjuncts as indicated.
- If head trauma suspected, consider c spine stabilization and/or backboard
- HP-CPR as indicated
- Apply oxygen if pulse oximetry <94% or signs of hypoperfusion or respiratory distress
- If hypoglycemia is suspected in a conscious, known diabetic who is able to follow simple commands, give the patient 15 g of prepared oral dextrose solution or encourage drinking/eating a sugar-containing beverage or food. Repeat as indicated q 10 minutes.
- If patient is able, perform and document stroke screen.

LOSOP

EMT working under Local Optional Scope

GLUCOSE LEVEL ASSESSMENT –

- Via finger stick. Consider confirming test results with second glucose check with blood from a different site (and different meter, if available) if the patient's presentation doesn't match the test results.

HYPOGLYCEMIA (blood glucose .≤60 mg/dL)-

- **Glucose Dose -**15 g PO. Repeat if ALOC does not resolve and ALS intervention is unavailable.

FOR RESPIRATORY DEPRESSION - RR < 12 breaths/minute:

Naloxone (Narcan) – **4mg/0.1mL** (Prefilled Single Dose Nasal Spray): Administer full dose in one nostril. If partial response in breathing or consciousness repeat 4mg/0.1mL single dose administration in opposite nostril.

Naloxone (Narcan) - 2mg/2mL (Nasal Atomizer): 1mg (Max 1mL per nostril). Repeat in 5 minutes as indicated.

AIRWAY

BVM and SGA as indicated.

- Monitor SpO2 and ETCO2

Advanced Life Support

Paramedic

VASCULAR ACCESS – establish IV/IO, rate as indicated.

GLUCOSE LEVEL ASSESSMENT – Via venipuncture or finger stick. Consider confirming test results with second glucose check with blood from a different site (and different meter, if available) if the patient's presentation doesn't match the test results.

****Treat per GLYCEMIC EMERGENCY protocol as indicated.****

FOR RESPIRATORY DEPRESSION – RR <12 breaths/min

NALOXONE (Narcan)

0.5mg (IV) in 1 minute increments slow IV push, titrated to effect. Repeat prn (Max 2mg), or;

1mg (IN) may repeat in 5 minutes prn (Max 1mL per nostril), or;

1mg (IM) if unable to establish IV and IN contraindicated (i.e. nasal trauma). Repeat in 5 minutes prn

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

***If inadequate response to normal doses or if suspect fentanyl use, or if patient is in extremis contact Base and administer 2mg IV/IM/IN/IO q 5 minutes.**

AIRWAY

- Intubate as indicated

- Monitor SpO2 and ETCO2

ALTERED LEVEL OF CONSCIOUSNESS - PEDIATRIC

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.*

Basic Life Support

EMT

ABCs / ROUTINE MEDICAL CARE –

- Assess airway and support ventilation with appropriate airway adjuncts as indicated.
- HP-CPR as indicated
- Apply oxygen if pulse oximetry <94% or signs of hypoperfusion or respiratory distress
- 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.

LOSOP

EMT working under Local Optional Scope

BLOOD SAMPLE/GLUCOSE LEVEL ASSESSMENT –

- Via finger stick. Consider confirming test results with second glucose check with blood from a different site (and different meter, if available) if patient's presentation doesn't match the test results.

  Hypoglycemia in pediatrics is defined as:
  Neonate <1month (blood glucose ≤ 50mg/dL)
  Infant/child >1month (blood glucose ≤ 60mg/dL)

- **Glucose Dose** – 15 g PO. Repeat, if no response and ALS intervention is not available.

RESPIRATORY DEPRESSION - RR < 12 breaths/minute

- **Naloxone (Narcan)**
  - 4mg/0.1mL (Prefilled Single Dose Nasal Spray): Administer full dose in one nostril. If

partial response in breathing or consciousness, repeat 4mg/0.1mL single dose administration in opposite nostril.

- 2mg/2ml (Nasal Atomizer): 0.1mg/kg titrated to effect. (Max 2mg) May repeat initial dose if no response within 5 minutes.

Advanced Life Support

Paramedic

NORMAL SALINE – establish an IV/IO

GLUCOSE LEVEL ASSESSMENT –
Via venipuncture. Consider confirming test results with second glucose check with blood from a different site (and different meter, if available) if patient's presentation doesn't match the test results.

****Treat per GLYCEMIC EMERGENCY protocol as indicated.****

For RESPIRATORY DEPRESSION – RR < 12 breaths/min

NARCAN (NALOXONE)- 0.1mg/kg IV/IN/IO/IM titrated to effect (Max 2mg). Repeat initial dose, if inadequate response within 5 minutes. Maximum of 1 mL (IN) per nostril; if no response to normal dose, **contact Base Hospital**

AIRWAY

- BVM and SGA as indicated.
- Monitor SpO2 and ETCO2

EL DORADO COUNTY EMS AGENCY
PREHOSPITAL PROTOCOLS

(please see signature on file)
EMS Agency Medical Director

Effective: July 29, 2013
Reviewed: July 2021
Revised: May 2022
Scope: BLS/ALS –Adult/Pediatric

BITES/STINGS/ENVENOMATION/SNAKEBITE - ADULT/PEDIATRIC

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.*

Basic Life Support

EMT

ABCs / ROUTINE MEDICAL CARE –

- Assess airway and support ventilation with appropriate airway adjuncts as indicated.
- Apply oxygen if pulse oximetry <94% or signs of hypoperfusion or respiratory distress
- Identify cause. If feasible and only if safe to do so without a delay in treatment, have animal transported for identification purposes.

Bee/Wasp sting - Remove (scrape away) stinger. Cold packs may be applied to relieve pain. Monitor distal pulses.

Spider bite/Scorpion sting - Remove stinger. Cold packs may be applied to relieve pain. Monitor distal pulses.

Snake envenomation - Avoid movement of the affected extremity, keeping extremity at or below heart level. **DO NOT APPLY ICE**. Monitor distal pulses. Circle any swelling and/or discoloration around bite mark(s) with a pen and note time.

Advanced Life Support

Paramedic

MONITOR CARDIAC RHYTHM – Refer to appropriate cardiac protocol `prn.

VASCULAR ACCESS – Establish IV/IO

NORMAL SALINE - Rate as indicated.

FOR INDUCED ALLERGIES OR ANAPHYLAXIS - treat as per Allergic Reaction/Anaphylaxis protocol

CONSIDER PAIN MANAGEMENT – Refer to Pain Management protocol

- **Consider midazolam** for severe muscle spasm, especially with black widow bite. See Formulary - midazolam

CONTACT BASE - Advise nature of envenomation and determine destination and treatment.

ANNEX 5

EL DORADO COUNTY EMS AGENCY

PREHOSPITAL PROTOCOLS

Effective: January 2012
Reviewed: July 2021
Revised: July 1, 2021
Scope: **ALS – Adult/Pediatric**

EMS Agency Medical Director

BRADYCARDIA - ADULT

PROTOCOL PROCEDURE: *Flow of protocol presumes that bradycardia is continuing. If response or condition changes, refer to 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 en route.*

ABCs / ROUTINE MEDICAL CARE –

- Assess airway and support ventilation with appropriate airway adjuncts as indicated.
- HP-CPR as indicated
- Apply oxygen if pulse oximetry <94% or signs of hypoperfusion or respiratory distress Place patient in position of comfort.
- Obtain and transmit 12 lead EKG (Do not delay therapy).

STABLE ***HR < 50; SBP > 90; GCS 15; NO CHEST DISCOMFORT / DYSPNEA or CHANGE IN MENTAL STATUS***	**UNSTABLE - SYMPTOMATIC** ***Fluids, atropine and/or TCP for the patient with: HR < 50; SBP<90 and signs of hypoperfusion including any: Acutely Altered Mental Status, Signs of shock, Chest Discomfort, or Acute Heart Failure***
Cardiac Monitor Vascular Access: IV/IO. Rate as indicated. ↓ Move to unstable section if condition deteriorates	Consider 2nd IV or IO if difficult access ↓ Consider 500 mL Fluid Bolus ↓ Atropine IV/IO: 0.5 mg q 3-5 min (Max 3 mg) (Go directly to TCP for patients with wide complex rhythms) ↓ **If Atropine is ineffective or if delay in IV/IO Begin TCP at 80 bpm** Do not delay if high degree block is present ↓ Refer to Pain Management Protocol
	CONTACT BASE Dopamine or epinephrine infusion may be ordered for hypotension. Titrate to patient response.

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

BRADYCARDIA

BRADYCARDIA – PEDIATRIC

ABCs / ROUTINE MEDICAL CARE –

- Assess airway and support ventilation with appropriate airway adjuncts as indicated
- Apply oxygen if pulse oximetry <94% or signs of hypoperfusion or respiratory distress
- Place patient in position of comfort.
- Obtain and transmit 12 lead EKG (Do not delay therapy).

STABLE ***NO HYPOTENSION, NO DELAYED CRT, NO CHEST PAIN/DYSPNEA***	**UNSTABLE OR SYMPTOMATIC** ***ALOC, DELAYED CRT, HYPOTENSION CHEST PAIN, DYSPNEA, SHOCK***
Cardiac Monitor ↓ Vascular Access – - IV/IO. Rate as indicated. ↓ Move to unstable section if condition deteriorates	**Begin Ventilation with BVM if HR<60; if no improvement in 1 minute begin HP-CPR** If HR < 60 Perform CPR ↓ Consider 2nd IV or IO if difficult access ↓ **Epinephrine 1:10,000 (0.1mg/mL)** 0.01 mg/kg IV/IO Repeat every 3 – 5 min. ↓ **Atropine** 0.02 mg/kg IV/IO Repeat q 5 min prn. Minimum dose 0.1mg. Max. total dose 1 mg. ↓ **Consider TCP** at 80 bpm **Do Not** delay if high degree block is present Refer to Pain Management Protocol ↓ Treat underlying causes ↓ Contact Base Dopamine or epinephrine infusion may be ordered for hypotension. Titrate to patient response.

ANNEX 6

EL DORADO COUNTY EMS AGENCY

PREHOSPITAL PROTOCOL

please see signature on file
EMS Agency Medical Director

Effective: July 1, 2015
Reviewed: July, **2021**
Revised: May, 2022
Scope: BLS/ALS **Pediatric**

BRIEF RESOLVED UNEXPLAINED EVENT "BRUE"

General Info:

A Brief Resolved Unexplained Event "BRUE" was formerly known as "An Apparent Life Threatening Event (ALTE)".

- A BRUE 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 BRUE
- 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

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

Basic Life Support

EMT

ROUTINE MEDICAL CARE –

- Apply oxygen if pulse oximetry <94% or signs of hypoperfusion or respiratory distress
- Keep patient warm.
- Assume history of event is accurate.

Obtain a detailed history of event: ○ Apnea? ○ Color change? ○ Change in muscle tone? ○ Choking or gagging? ○ Was any resuscitation required? ○ Seizure activity? ○ Was infant sleeping? Position?	Obtain detailed medical history: ○ Any chronic diseases (including seizures)? ○ Current or recent infections? ○ Gastroesophageal reflux? ○ Recent trauma? ○ Inappropriate mixture of formula? ○ Medications?

LOSOP

EMT working under Local Optional Scope

GLUCOSE LEVEL ASSESSMENT – Via finger stick. Treat as indicated.

Advanced Life Support

Paramedic

VASCULAR ACCESS – IV as indicated with rate as indicated.

Treat any identifiable causes per protocol.

EL DORADO COUNTY EMS AGENCY

PREHOSPITAL PROTOCOLS

please see signature on file
EMS Agency Medical Director

Effective: July 1, 2015
Reviewed: May, **2022**
Revised: May, **2022**
Scope: BLS/ALS – Adult/Pediatric

BRONCHOSPASM/COPD - ADULT

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

Basic Life Support

EMT

ABCs / ROUTINE MEDICAL CARE –

- Place in position of comfort
- Assess airway and support ventilation with appropriate airway adjuncts as indicated.
- Apply escalated dosing of oxygen if pulse oximetry <94% or signs of hypoperfusion or respiratory distress.
- Allow patient to administer their own respiratory medications as prescribed by their physician, see **Field Policy: BLS Medication Administration.**
- HP-CPR as indicated

Continuous Positive Airway Pressure (CPAP)

(Contraindications: decreased LOC, no gag reflex, vomiting, facial trauma, hypotension)

- Start with valve at 7.5 cmH2O setting and 100% O_2 flow rate.
- Titrate to patient's condition. If patient's respiratory status does not improve CPAP pressure may be increased every 5 minutes, first to 10.0 cmH2O and then to a maximum pressure setting of 15 cmH2O if required.
- Monitor and record vital signs every 5 minutes.
- Be prepared for possible hypotension. If hypotension develops, decrease valve setting.

If patient continues in severe distress, consider assisted breathing with O2 and BVM

LOSOP

EMT working under Local Optional Scope

FOR EXTREMIS PROXIMATE TO BRONCHOSPASM (Low $Sp0_2$, Inability to speak, and/or ALOC):

Epinephrine Auto-injector, or;

Epinephrine 1:1000 (0.1mg/mL) – 0.5 mg IM. Repeat after 10 minutes as needed.

Consider BVM and SGA if required

Advanced Life Support

Paramedic

FIRST LINE:

Nebulize:
5 mg albuterol and 0.5 Mg Ipratropium (Atrovent) in 3 mL normal saline.
Do not repeat the Ipratropium.

If symptoms persist, initiate continuous **ALBUTEROL 5 mg** in 3 mL normal saline (Max. 15 mg/hr). Breathing treatments may be given concurrently with CPAP.

VASCULAR ACCESS - establish an IV/saline lock.

MAGNESIUM SULFATE – 2 g in 100 mL normal saline IV/IO over 20 minutes

FOR EXTREMIS PROXIMATE TO BRONCHOSPASM (Low $Sp0_2$, Inability to speak, and/or ALOC):

EPINEPHRINE 1:1,000 (1 mg/mL) 0.5 mg IM. (*Repeat doses q 10 minutes prn*).

FOR STRIDOR: (Moderate to severe croup/airway burns/laryngeal edema/anaphylaxis)

NEBULIZED EPINEPHRINE 1:1,000 (1mg/mL) – 5 mg (5 mL) via nebulizer over 10 minutes. Repeat q 10 minutes prn.

Note: If heart rate increases > 20%, visible tremors, or increased arrhythmias/palpitations, discontinue treatment and contact Base Hospital.

Reference: Routine Medical Care, BLS Medication Administration, Optional Skills, CPAP, Asthma, EpiPen & EpiPen Jr. Auto Injector, Albuterol, Atrovent, Epinephrine

BRONCHOSPASM - PEDIATRIC

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

Basic Life Support

EMT

ABCs / ROUTINE MEDICAL CARE –

- Place in position of comfort
- Assess airway and support ventilation with appropriate airway adjuncts as indicated.
- HP-CPR as indicated
- Apply oxygen if pulse oximetry <94% or signs of hypoperfusion or respiratory distress.
- Allow patient to administer their own respiratory medications as prescribed by their physician, see **Field Policy: BLS Medication Administration.**

Continuous Positive Airway Pressure (CPAP) may be utilized in patients 12 yrs or older - if mask fits appropriately

(Contraindications: decreased LOC, no gag reflex, vomiting, facial trauma, hypotension)

- Start with valve at 5 cmH2O setting and 100% O_2 flow rate.
- Titrate to patient's condition. If patient's respiratory status does not improve CPAP pressure may be increased my 2.5 cmH2O every 5 minutes, to a maximum pressure setting of 15 cmH2O if required.
- Monitor and record vital signs every 5 minutes.
- Be prepared for possible hypotension. If hypotension develops, decrease valve setting.

If patient continues in severe distress, consider assisted breathing with O2 and BVM

Reference: Routine Medical Care, BLS Medication Administration, Optional Skills, CPAP, Asthma, EpiPen & EpiPen Jr. Auto Injector, Albuterol, Atrovent, Epinephrine

LOSOP

EMT working under Local Optional Scope

FOR EXTREMIS PROXIMATE TO BRONCHOSPASM (Low $Sp0_2$, Inability to speak, and/or ALOC):

Pediatric Epinephrine Auto-injector, or;

Epinephrine 1:1000 (0.1mg/mL):

- 15-30 kg (33-66 lb.): **0.15 mg IM** (lateral thigh is preferred). Repeat in 10 minutes prn.
- > 30 kg (> 66 lb): **0.3 mg IM**
- > 50 kg (> 110 lb): **0.5 mg IM**

Advanced Life Support

Paramedic

FIRST LINE:

DUONEB (2.5 mg albuterol and 0.5 Mg Ipratropium (Atrovent) in normal saline). **Do not repeat.**

If 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/IO/saline lock.

FOR EXTREMIS PROXIMATE TO BRONCHOSPASM (Low $Sp0_2$, Inability to speak, and/or ALOC):

EPINEPHRINE 1:1,000 (1 mg/mL) 0.01 mg/kg IM. Maximum single dose 0.5mg. (*Repeat dose in10 minutes prn*).

FOR STRIDOR: (Moderate to severe croup/airway burns/laryngeal edema/anaphylaxis)

NEBULIZED EPINEPHRINE 1:1,000 (1mg/mL) – 0.5 mg/kg, maximum single dose of 5mg (5mL) via nebulizer over 10 minutes. Repeat q 10 minutes prn. For doses less than 3mL dilute with NS to 5mL to allow for nebulization (May repeat q 10 minutes).

Reference: Routine Medical Care, BLS Medication Administration, Optional Skills, CPAP, Asthma, EpiPen & EpiPen Jr. Auto Injector, Albuterol, Atrovent, Epinephrine

EL DORADO COUNTY EMS AGENCY

PREHOSPITAL PROTOCOLS

please see signature on file
EMS Agency Medical Director

Effective: July 1, 2015
Reviewed: July, 2021
Revised: May 2022

BURNS - ADULT

Basic Life Support

EMT

ABCs / ROUTINE MEDICAL CARE –

- Stop burning process. Remove all adjacent clothing and jewelry.
- Place in position of comfort
- Assess airway and support ventilation with appropriate airway adjuncts as indicated.
- Apply oxygen if pulse oximetry <94% or signs of hypoperfusion or respiratory distress
- Apply 100% NRB oxygen if suspect carbon monoxide poisoning

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 appropriate PPE 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:** Assure patient is disconnected from electric source. Electric Burns may produce extensive internal damage not outwardly visible. For this reason, all patients suffering from an electric burn should be placed on cardiac monitor. For arrhythmias following electrical burns, refer to appropriate protocol.

CPAP – Consider for patients with respiratory distress.

CONTACT BASE: Consider early notification to notify of case and determine destination and disposition if not clear.

DISPOSITION – *Burn patients **do not generally need to be transported** directly to a burn*

center. Burned trauma triage patients should be transported as per Trauma Policy (trauma triage takes priority over burn – significant airway issues from either, go to the nearest ED.)

LOSOP

EMT working under Local Optional Scope

AIRWAY: Airway adjuncts, BVM and SGA placement if indicated – note: SGA is not definitive treatment for stridor or tracheal injury from burn or smoke.

GLUCOSE LEVEL ASSESSMENT - Via finger stick. Treat per protocol/formulary as indicated.

Advanced Life Support

Paramedic

CARDIAC MONITOR – Prioritize in case of electrical burn.

AIRWAY:

- Consider early intubation if evidence of airway burns.
- Monitor ETCO2

GLUCOSE LEVEL ASSESSMENT - Via finger stick or venipuncture. Treat per protocol/formulary

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. After boluses, adjust normal saline rate to adhere to Parkland formula.

PAIN MANAGEMENT – refer to Pain Management Protocol

FOR BRONCHOCONSTRICTION:

> **Nebulize:** 5 mg albuterol and 0.5 Mg Ipratropium (Atrovent) in 3 mL normal saline). **Do not repeat Atrovent.**
>
> If symptoms persist, repeat single dose of **ALBUTEROL 5 mg** in 3 mL normal saline.

FOR STRIDOR secondary to airway burns:

> **NEBULIZED EPINEPHRINE 1:1,000 (1mg/mL) – 5 mL (5 mg**) via nebulizer given over 10 minutes. Repeat q 10 minutes as indicated.

References: Formulary, Albuterol, Atrovent, Normal Saline, Hypoglycemia

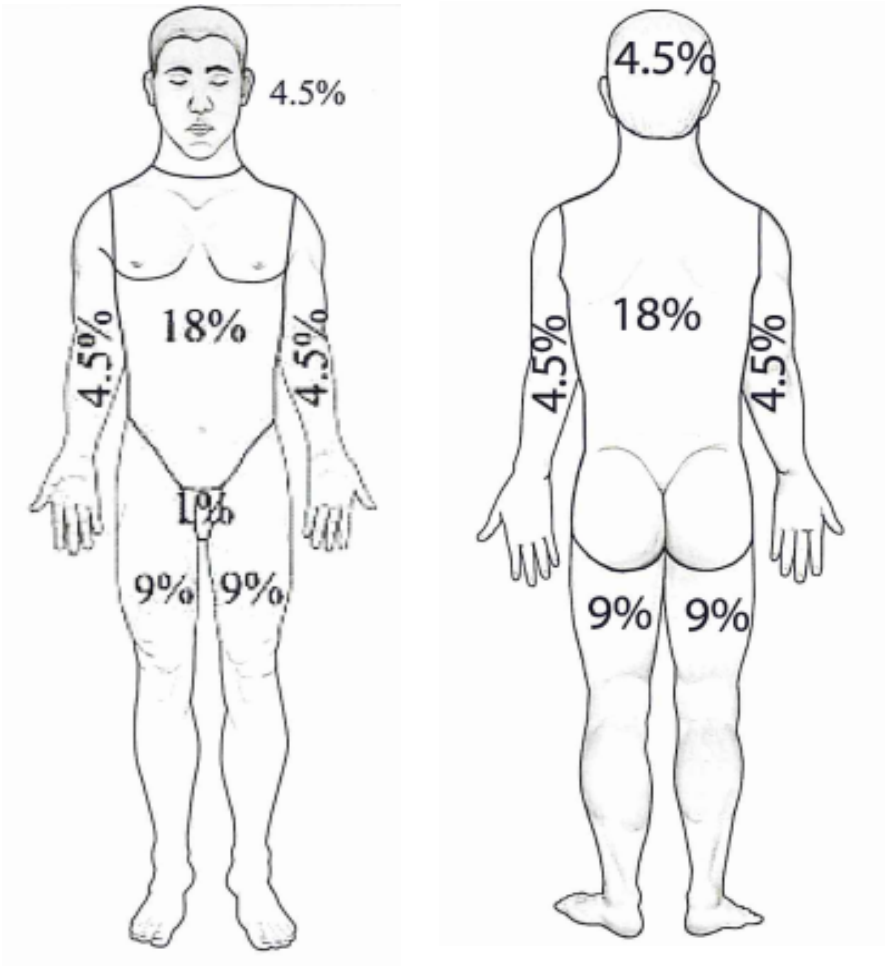
FOR VISIBLE AIRWAY OBSTRUCTION secondary to airway burns:

CONSIDER IM EPINEPHRINE – See airway obstruction policy

CONSIDER AIR AMBULANCE or rapid ground transport to closest ED for:

- **Facial burns, oral burns, or airway involvement (consider need for RSI)**
- **Unable to establish IV/IO access in significant (> 25% TBSA) burns**

Adult Rule of Nines Chart:



References: Formulary, Albuterol, Atrovent, Normal Saline, Hypoglycemia

BURNS – PEDIATRIC

Basic Life Support

EMT

ABCs / ROUTINE MEDICAL CARE –

- Stop burning process. Remove all adjacent clothing and jewelry.
- Place in position of comfort
- Assess airway and support ventilation with appropriate airway adjuncts as indicated.
- Apply oxygen if pulse oximetry <94% or signs of hypoperfusion or respiratory distress
- Apply 100% NRB oxygen if suspect carbon monoxide poisoning

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 appropriate PPE 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:** Assure patient is disconnected from electric source. Electric Burns may produce extensive internal damage not outwardly visible. For this reason, all patients suffering from an electric burn should be placed on cardiac monitor. For arrhythmias following electrical burns, refer to appropriate protocol.

CONTACT BASE: Consider early notification to notify of case and determine destination and disposition if not clear or outside of protocols.

DISPOSITION: *Burn patients* ***do not generally need to be transported directly to a burn center****. Burn patients with partial or full thickness circumferential, hand/finger, facial, genital or TBSA>10% may be best served at a burn center directly – Contact Base Hospital Medical Control.*

Burn patients meeting trauma triage criteria should be transported as per Trauma Policy (trauma triage takes priority over burn – critical airway issues from either burn or trauma go to the nearest Emergency Department).

References: Formulary, Albuterol, Atrovent, Normal Saline, Hypoglycemia

Air ambulance should be considered and launched early for concerning pediatric patients.

Pediatric air ambulance burn or trauma triage patients are best served by a pediatric trauma center if the time to destination is not markedly extended compared to the closest level 3 Trauma Center – Contact Base Hospital Medical Control.

LOSOP

EMT working under Local Optional Scope

AIRWAY: Airway adjuncts, BVM and SGA placement if indicated – note: SGA is not definitive treatment for stridor or tracheal injury from burn or smoke.

GLUCOSE LEVEL ASSESSMENT - Via finger stick. Treat per protocol/formulary as indicated.

Advanced Life Support

Paramedic

AIRWAY –

- Airway adjuncts, BVM and SGA placement if indicated – note: SGA is not definitive treatment for stridor or tracheal injury from burn or smoke.
- Monitor ETCO2

GLUCOSE LEVEL ASSESSMENT - Via finger stick or venipuncture. Treat per protocol/formulary as indicated.

Hypoglycemia in pediatrics is defined as:		
Neonate	< 1 month:	(blood glucose ≤ 50 mg/dL)
Infant/child	>1 month:	(blood glucose ≤ 60 mg/dL)

VASCULAR ACCESS - establish warm IV or IO.

FOR PARTIAL OR TOTAL THICKNESS BURNS >10% TBSA, HYPOTENSION OR SHOCK:

NORMAL SALINE BOLUS – 20ml/kg, reassess and repeat if indicated.
Initiate/Transition to Parkland formula after bolus(s)
See Pediatric Shock Protocol and make base contact for ongoing hypotension or evidence of shock

References: Formulary, Albuterol, Atrovent, Normal Saline, Hypoglycemia

PAIN MANAGEMENT: refer to pain management protocol

FOR BRONCHOCONSTRICTION (also see bronchospasm protocol):

Consider DUONEB (2.5 mg albuterol and 0.5 Mg Ipratropium (Atrovent) in normal saline). **Do not repeat Duoneb.**

If symptoms persist, initiate continuous **ALBUTEROL 2.5 mg** in 3 mL normal saline (Max. 15 mg/hr).

FOR STRIDOR secondary to airway burns:

NEBULIZED EPINEPHRINE 1:1,000 (1mg/mL) – 0.5mL/kg (Max single dose of 5mL) via nebulizer over 10 minutes. For doses less than 3mL dilute with NS to 5mL to allow for nebulization (May repeat q 10 minutes).

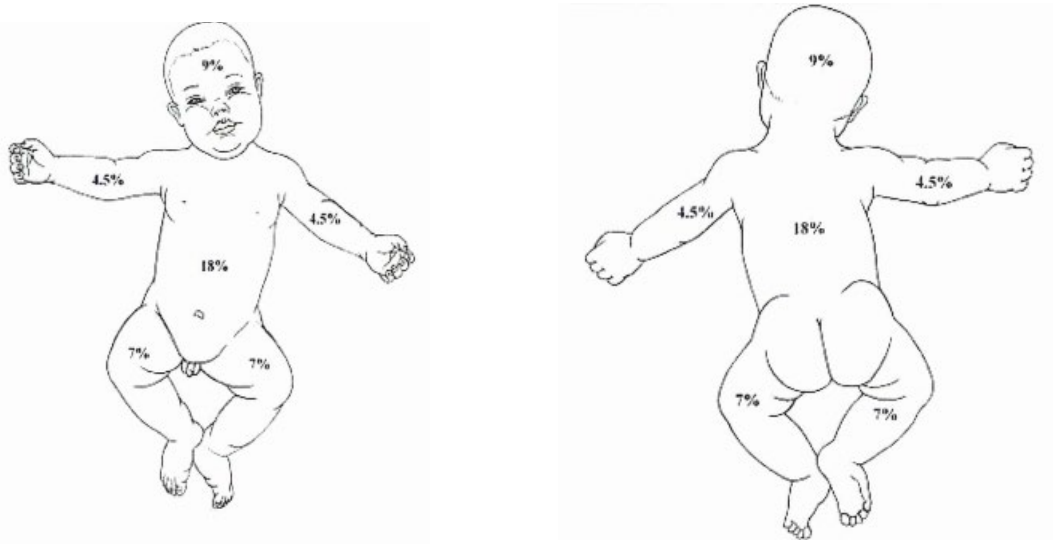
CONTACT BASE for disposition if not clear

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 ED for:

- **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

Parkland Formula (NOTE: the 20ml/kg bolus - if indicated - comes before Parkland rate):

% Burn	10kg	20kg	30kg	40kg	50kg	60kg	70kg	80kg	90kg	100kg
10	25	50	75	100	125	150	175	200	225	250
20	50	100	150	200	250	300	350	400	450	500
30	75	150	225	300	375	450	525	600	675	750
40	100	200	300	400	500	600	700	800	900	1,000
50	125	250	375	500	625	750	875	1,000	1,125	1,250
60	150	300	450	600	750	900	1,050	1,200	1,350	1,500
70	175	350	525	700	875	1,050	1,225	1,400	1,575	1,750
80	200	400	600	800	1,000	1,200	1,400	1,600	1,800	2,000
90	225	450	675	900	1,125	1,350	1,575	1,800	2,025	2,250
20ml/kg	200	400	600	800	1,000	1,200	1,400	1,600	1,800	2,000

This table represents the fluid recommended in the first hour (1/8 of the initial 8 hour dose) by the Parkland formula.

The second dose, administered over the second 16 hours, is equal to the amount given in the initial dose.

The final/bottom represents the amount of a 20mL/kg bolus

References: Formulary, Albuterol, Atrovent, Normal Saline, Hypoglycemia

EL DORADO COUNTY EMS AGENCY

PREHOSPITAL PROTOCOLS

please see signature on file
EMS Agency Medical Director

Effective: July 1, 2015
Reviewed: July, 2021
Revised: May 2022
Scope: BLS/ALS Adult

CHEST PAIN/ACUTE CORONARY SYNDROME (ACS)

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, neck or jaw) may indicate an ACS/AMI. Contact the Base Hospital 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 AMI. Treat all potential cardiac symptoms as such, regardless of 12 lead findings.***

Basic Life Support

EMT

ROUTINE MEDICAL CARE –

- Apply oxygen if pulse oximetry <94% or signs of hypoperfusion or respiratory distress
- Keep patient in position of comfort and don't allow patient to walk.

ASPIRIN* – Give 324 MG PO.

MEDICATION ASSISTANCE - BLS personnel may assist patient with own medications (i.e. NTG), see **Field Policy: BLS Medication Administration.**

References: Formulary; Nitro, Aspirin, Fentanyl, Morphine
Routine Medical care, BLS Medication administration

Advanced Life Support

Paramedic

SBP over 100/

NTG** 0.4 mg SL q 5 min x 3 (withhold if SBP <100 or CP is relieved completely)

Establish IV***

Apply 1" NTG paste** after reaching max of three SL NTG

Consider pain management with **Fentanyl or morphine** for CP not relieved with NTG

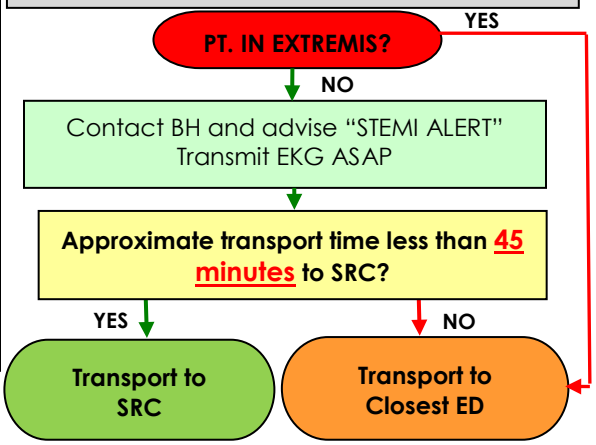
SBP under 100/

Establish IV***

Consider 250cc bolus(es) x 2
If BP increases begin treatment 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



NOTES:

*ASA should be given even if the patient's symptoms have subsided. If the patient has self-administered prior to your arrival, document dose taken and give ASA to complete total 324 or 325 mg as needed.

**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 morphine 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.

ANNEX 10

EL DORADO COUNTY EMS AGENCY

PREHOSPITAL PROTOCOLS

Effective: July 2009
Reviewed: July 2021
Revised: May 2022
Scope: BLS/ALS – Adult/Pediatric

please see signature on file
EMS Agency Medical Director

HEAT ILLNESS - ADULT/PEDIATRIC

PROTOCOL PROCEDURE: *Flow of protocol presumes that the patient's condition is continuing. Immediate, rapid transport for heat illness with treatment performed en route is preferred UNLESS severe heat exhaustion or heat stroke with cold water immersion (CWI) in process by on-scene staff. CWI should be allowed to be completed (10-15 minutes) unless trauma or other possible issues require hospital intervention.*

HEAT CRAMPS	HEAT EXHAUSTION	HEAT STROKE
Sx: Muscle cramps and possibly fatigue and/or dehydration **Signs:** Warm moist skin, normal to elevated temp, skin may be flushed **Care:** Begin passive cooling and oral rehydration	**Sx**: Dehydration, dizziness, low grade fever, headache, cramping, nausea, vomiting **Signs**: Tachycardia, hypotension and elevated temperature with warm or cool moist skin **Care:** Begin active cooling and rehydration	**Sx**: Dehydration, fever, altered mental status **Signs:** Tachycardia, hypotension, temperature >102, cessation of sweating (if environmental) or continued sweating (if exertional). Confusion or slow to respond **Care:** Begin rapid active cooling and cool IV saline Bolus

Basic Life Support

EMT

ROUTINE MEDICAL CARE –

- Assess airway and support ventilation with appropriate airway adjuncts as indicated
- Apply oxygen if pulse oximetry <94% or signs of hypoperfusion or respiratory distress
- 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. In order of effectiveness, use dependent on availability of resources:
    - 1. If on scene at an event where staff have initiated cold water immersion (CWI) for suspicion of heat stroke, do not move the patient from cold water immersion until patient starts shivering or 10-15 minutes of immersion, whichever is soonest. Ideal core temperature, if available, would be 102°F (39°C) or less when cold water immersion is

discontinued.

- 2. If CWI not available but cool/cold water is, remove clothing and rotate cool/cold wet towels over entire body of patient
- 3. If CWI and cool/cold wet towels not available, remove clothing, splash/sponge patient with water and place cool packs on neck, axillary, and inguinal areas. Promote evaporative cooling with fan or by fanning.

LOSOP

EMT working under Local Optional Scope

GLUCOSE LEVEL ASSESSMENT via finger stick and treat if indicated per GLYCEMIC EMERGENCY protocol.

Advanced Life Support

Paramedic

VASCULAR ACCESS - Establish IV/IO

NORMAL SALINE –

- **Adult:** NS 1000mL bolus. Repeat 500mL boluses to keep minimum SBP of 100mmHg.
- **Peds:** Give NS 20ml/kg. Repeat as indicated to keep minimum age appropriate SBP [70 + (2 x age in years)].

GLUCOSE LEVEL ASSESSMENT - Via finger stick or venipuncture and treat if indicated per GLYCEMIC EMERGENCY protocol.

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

EL DORADO COUNTY EMS AGENCY

FIELD PROCEDURES

Effective: July 2008
Reviewed: July 2021
Revised: May 2022
Scope: **ALS** –**Adult** and Pediatric

EMS Agency Medical Director

NEEDLE CRICOTHYROIDOTOMY

PURPOSE:

To provide an emergency airway to the patient who is in respiratory or cardiac arrest or has a complete airway obstruction and all other methods of BLS and ALS ventilation have failed.

INDICATIONS:

The adult or pediatric patient who is in respiratory or cardiac arrest or has a complete airway obstruction where conventional methods to establish ventilation have been unsuccessful. This includes abdominal thrusts, Heimlich procedure, back blows, orotracheal visualization and McGill forceps for foreign body removal, orotracheal intubation, supraglottic airway device, bag/valve/mask ventilation, and standard methods for correction of airway obstructions.

This is a last resort procedure for patients who will otherwise succumb to their obstructed airway.

CONTRAINDICATIONS:

- When other BLS or ALS adjuncts can successfully ventilate the patient
- When landmarks cannot be clearly identified – often difficult in pediatric patients less than 14.
- Transection of the trachea
- Relative contraindications may exist such as known tracheal disease, cancer, or lower airway obstruction. However, this is a procedure of last resort thus consider the benefit vs. the risk

COMPLICATIONS:

- Subcutaneous emphysema
- Tracheal mucosal injury
- Mediastinal emphysema
- Bending of catheter
- Hemorrhage
- Pneumocyst
- Esophageal or mediastinal puncture
- Aspiration
- Barotrauma
- Thyroid perforation

EQUIPMENT:

- 10-14 gauge reinforced style catheter (minimum of 2 ½ " long)
- 5 mL syringe
- Chlorhexidine Prep/Swabs
- Normal saline
- Twill tape
- Tape
- Oxygen flow modulator
- Oxygen source (15-30 liters per minute flow capacity)

PROCEDURE:

1) Attach oxygen flow modulator to oxygen source.
2) Place the patient in a recumbent or semi-recumbent position with neck slightly extended. (No extension if patient has suspected spinal injury)
3) Identify cricothyroid membrane.
4) Prep the patient's neck with chlorahexadine swab/prep.
5) Stabilize the larynx with the thumb and middle finger and place the index finger over the cricothyroid membrane.
6) Attach the transtracheal airway catheter to a 5 mL syringe filled with 2 mL of normal saline. Insert the catheter at a 45-degree angle directed inferiorly through the cricothyroid membrane.
7) Cannulate the trachea through the cricothyroid membrane and advance the transtracheal airway catheter until aspiration of air can be obtained in the syringe.
8) Remove the needle firmly holding the catheter in place.
9) Secure the catheter in place with twill tape, reinforced with adhesive tape.
10) Attach the Luer lock of the oxygen flow modulator to the transtracheal airway catheter.
11) Select an oxygen flow of at least 15 up to 30 liters per minute.
12) Cover all vent holes of oxygen flow modulator using thumb and forefinger for two (2) seconds and release all vent holes for three (3) seconds. Continue oxygenation cycle as above.
13) Auscultate the patient's chest and the upper abdomen for breath sounds to confirm pulmonary inflation and exhalation. Note: ETCO2 device cannot be used with flow modulator.

Never attempt needle cricothyroidotomy in a moving vehicle.

The pulsed oxygen flow should result in slight inward and outward movement of the chest and or upper abdomen. In case of complete upper airway obstruction, quantitative gas discharge from the patient's lungs through the released openings of the oxygen flow modulator will need more time.

Needle cricothyroidotomy only accomplishes oxygenation and does not replace ventilation. Therefore CO2 retention will quickly be a problem. Ideally a definitive airway such as surgical cricothyroidotomy or tracheostomy should be performed within 20 minutes by an emergency physician or qualified flight nurse or flight paramedic.

Documentation should include indications, procedures followed, time and location, equipment used, response/success of procedure, reassessment of patient and device placement at turn over of care.

Act decisively when moving to needle cricothyroidotomy, while the patient is still alive giving the best opportunity for a successful outcome.