Yolo County Health & Human Services Agency

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EMS Administrator

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DATE: May 22, 2023

TO: Yolo County Providers and Agencies

FROM: Yolo County EMS Agency

SUBJECT: June 2023 EMS Revisions Update

MEMORANDUM

Effective June 1, 2023, the following Policies, Protocols and Procedures will go into effect for all Yolo County Providers. The protocol App and Website will be updated. It is the responsibility of each agency to ensure that their personnel receive this information.

Please review the additions and changes thoroughly. If you have any questions, please contact Jared Gunter at (916) 402-7519 or Jared.Gunter@yolocounty.org or Megan Rizzo at (530) 490-3962 or Megan.Rizzo@yolocounty.org.

UPDATES

Various Protocols and procedures were edited for clarity and brevity, and to clean up formatting. Any material changes to the direction of care are noted below.

Protocols:

Acute Respiratory Distress
- ALS Section – Edited to specify Asthma-only for IM Epinephrine.
- Consider Section – Removed, and "Receiving ED Physician" replaced with "Base Hospital."

Airway Obstruction
- ALS Section – Edited to "consider advanced airway management techniques."

Allergic Reaction and Anaphylaxis
- BLS Section – Addition of "consider CPAP."
- Allergic Reaction – Addition of pediatric-specific diphenhydramine section (no change in dose).
- Anaphylaxis – Addition of PUSH DOSE Epinephrine. Addition of Ipratropium.
- Direction – Updated to replace "Receiving ED Physician" with "Base Hospital."

Altered Level of Consciousness (ALOC)
- BLS Section – Addition of Naloxone Preload option.
- ALS Section – Addition Naloxone Preload option. Addition of Opioid Withdrawal Protocol direction.
- Direction – Updated to replace "Receiving ED Physician" with "Base Hospital."

Ingestion – Overdose – Poisoning

- BLS Section – Addition of Naloxone Preload option.
- ALS Section – Addition Naloxone Preload option. Addition of Opioid Withdrawal Protocol direction. Addition of "Consider TCP."
- Direction – Updated to replace "Receiving ED Physician" with "Base Hospital."

Medical Cardiac Arrest

- Primary Direction Section – New – Emphasis on resuscitative efforts being performed on scene.
- BLS Section – Addition of Passive Oxygenation. Allows for hands-only CPR (personnel dependent).
- Airway Considerations section – NEW
- Termination of Resuscitation (TOR) section added.

Opioid Withdrawal - New

- Definitions Section – Defines Opioid Withdrawal Disorder and links to COWS Calculator.
- ALS Section – Outlines treatment of Opioid Withdrawal Disorder with Suboxone.
- Contraindications Section – Outlines Contraindications for Suboxone treatment

Post Resuscitation Care

- ALS section – Update to pulse rate. Addition of PUSH DOSE Epinephrine. Added "Consider" to TCP.
- Direction – Updated to replace "Receiving ED Physician" with "Base Hospital."

Tension Pneumothorax

- Indication section – Added "Penetrating Chest Trauma." Replaced "absent" with "decreased" breath sounds.
- Procedure section – Needle language updated. Addition of "consider making attempt at second site."
- Direction – Updated to replace "Receiving ED Physician" with "Base Hospital."

Trauma Patient Care

- Physiologic, Anatomic, and Mechanism criteria overhauled to align with ACS definitions.
- Special Considerations Section – Addition of "large livestock."
- Direction – Updated to replace "closest Trauma Center Physician" with "Base Hospital."

Traumatic Cardiac Arrest

- Purpose section – Renamed to "Primary Direction."
- Indication Section – Removed.
- BLS Section – Added; BLS determination of death criteria listed, and BLS treatment directions.
- ALS Section – Removed "Cardiac Tamponade." Added ALS determination of death criteria.
- Direction Section – Added "Trauma Alert." Updated to replace "closest Trauma Center Physician" with "Base Hospital."

Termination of Resuscitation

- Standalone protocol deleted and language added to medical cardiac arrest treatment protocol.

<u>Procedures:</u>

Airway Management

- BLS Section – Added "Existing high flow device or BiPAP if compatible with transport capabilities."
- Supraglottic Airway – Contraindications updated to add "Suspected foreign body obstruction."
- King Tube – Added "Continuous waveform capnography when available (ALS)."
- Added – "Consider laryngoscopy for foreign body airway obstruction."
- Endotracheal Tube – Updated to require bougie device with all intubation attempts.

- Endotracheal Tube Inducer (Bougie) – Indications updated.
- NEW – Needle Cricothyrotomy (QuickTrach).

Policies:

Paramedic Reaccreditation Process

- Updated to require attendance at two ALS Update classes per accreditation cycle.

Administrative:

YEMSA Staff

- Addition of Jared Gunter, EMS Program Coordinator.

Medication Profiles:

The following medication profiles were updated:

- Amiodarone
- Diphenhydramine HCL
- Fentanyl
- Ketamine
- Midazolam Hydrochloride
- Nitroglycerin
- Suboxone (New)
- Tranexamic Acid (TXA)

ACUTE RESPIRATORY DISTRESS

Adult	Pediatric

BLS

Assess vital signs
Evaluate respiratory rate
O_2, titrate SpO_2 to ≥ 94%
Assess lung sounds
Consider CPAP for moderate to severe distress

ALS

Cardiac Monitor, Waveform $EtCO_2$, Vascular Access

Wheezing/Bronchospasm

Albuterol 5 mg Nebulized
- May repeat x 1

And

Ipratropium 500 mcg Nebulized
- No repeat

If no improvement and Asthma is suspected cause:

Epinephrine (1:1,000) 0.3 mg IM
- No repeat

Wheezing/Bronchospasm

Albuterol 5 mg Nebulized
- May repeat x 1

And

Ipratropium 500 mcg Nebulized
- No repeat

If no improvement

Epinephrine (1:1,000) 0.01 mg/kg IM
- Total max dose 0.3 mg
- No repeat

Pulmonary Edema (CHF)

SBP > 100

Nitroglycerine 0.4 mg SL spray or tablet
- May repeat every 5 minutes

Or Apply

Nitroglycerin Paste 2% 1 inch to chest wall
- No repeat; remove if SBP falls to <100

Stridor

NS 2.5 - 5 mL Nebulized

If no improvement

Epinephrine (1:1,000) 0.5 mL/kg Nebulized
- Add **NS 2 - 3.5 mL** for volume
- Max 5 mL

Direction

- Contact Base Hospital for additional treatment if necessary

AIRWAY OBSTRUCTION

Adult	Pediatric
BLS	
• Abdominal thrusts in rapid sequence • If ineffective, or patient is obese, or late stage pregnancy, consider chest thrusts • If patient becomes unresponsive start CPR • If able to visualize foreign body, attempt to remove it • Assist ventilations with BVM	<u>Patient < 1 year old</u> • 5 back blows followed by 5 chest compressions • If patient becomes unresponsive start CPR <u>Patient > 1 year old</u> • Abdominal thrusts in a rapid sequence • If patient becomes unresponsive start CPR • If able to visualize foreign body attempt to remove it • Assist ventilations with BVM
ALS	
• If able to visualize the foreign body, use Magill forceps to attempt to remove the obstruction • If airway cannot be managed, with BLS measures consider advanced airway management techniques • Do not use supraglottic airway device	• If able to visualize the foreign body use Magill forceps to attempt to remove the obstruction
Direction	
• If obstruction is suspected epiglottitis, do not attempt to visualize the throat or insert anything into the mouth. Minimize outside stimuli, keep patient calm, and allow position of comfort. Early Receiving Hospital ED Physician contact.	

ALLERGIC REACTION & ANAPHYLAXIS

Adult | Pediatric

Definitions

Allergic Reaction: Acute onset cutaneous reactions with any of the following symptoms:

- Hives
- Pruritus
- Flushing
- Angioedema not involving airway
- Rash

Anaphylaxis: Allergic Reaction as defined above with one or more of the following:

- Stridor
- Hoarseness
- Hypotension
- Decreased LOC
- Wheezing
- Edema involving airway
- Airway Compromise
- Abdominal Pain
- Vomiting
- Diarrhea

BLS

Assess vital signs
O_2, titrate SpO_2 to $\geq$ 94%
Lung Sounds
Assist ventilations as appropriate
Consider CPAP

BLS Local Scope

Anaphylaxis (> 30 kg)	Anaphylaxis (15 - 30 kg)
Epinephrine Auto Injector 0.3 mg IM • Inject deep IM into the lateral thigh, midway between waist and knee • No repeat • Record time of injection	**Epinephrine Auto Injector 0.15 mg** IM • Inject deep IM into the lateral thigh, midway between waist and knee • No repeat • Record time of injection

ALS

Cardiac Monitor, Waveform $EtCO_2$, Vascular Access

Allergic Reaction

Diphenhydramine 1 mg/kg IV/IM/PO • Max 50 mg	**Diphenhydramine 1 mg/kg** IV/IM/PO • Max 50 mg

Adult	Pediatric
ALS ***cont.***	
Anaphylaxis	
Epinephrine (1:1,000) 0.3 mg IM • May repeat x 2 every 10 minutes If SBP < 90 and/or Stridor **PUSH DOSE Epinephrine (1:100,000)** • **1 mL every 1-5 minutes** Until SBP > 90 and/or stridor ceases If SBP < 90 mmHg **Fluid Bolus NS 250 mL** IV/IO • May repeat as needed If no response and patient on Beta Blockers **Glucagon 1 mg** IV/IO • Given over 1 minute • No repeat If no IV/IO **Glucagon 1 mg** IM/IN • No repeat	**Epinephrine (1:1,000) 0.01 mg/kg** IM • Deltoid or thigh • Max 0.3 mg • No repeat If no signs of improvement **Epinephrine (1:10,000) 0.01 mg/kg** IV/IO • Max single dose 0.1 mg • No repeat If SBP < normal range for age **Fluid Bolus NS 20 mL/kg** IV/IO • Titrate to age appropriate SBP
Wheezing/Bronchospasm	
Albuterol 5 mg Nebulized • May repeat x 1 And **Ipratropium 500 mcg** Nebulized • No repeat	**Albuterol 5 mg** Nebulized • May repeat x 1 And **Ipratropium 500 mcg** Nebulized • No repeat
Direction	
• Contact Base Hospital for additional treatment	

ALTERED LEVEL OF CONSCIOUSNESS (ALOC)

Adult	Pediatric

Indication

Glasgow Coma Scale (GCS) is < 15 and etiology unclear

BLS

Assess vital signs
Consider SMR for suspected trauma
O_2, titrate SpO_2 to ≥ 94%
Assist ventilations as needed
Temperature
Suction as needed

BLS Local Scope

Blood Glucose Check

Blood Sugar (BS) < 60 mg/dL or un-measurable

Glucose Paste 1 tube by mouth (PO)

Or

Commercially prepared Glucose Solution, 1 bottle by mouth (PO)
Do not administer if patient is unconscious, lethargic, or unable to drink fluids

If mental status and respiratory effort are depressed and suspected opioid overdose

Naloxone (Narcan) 2 mg IN
- ½ dose per nare
- May repeat x 1
- Max dose 4 mg

Or

Naloxone (Narcan) Preload IN
- OK to give **4 mg** dose as packaged

ALS

Cardiac Monitor, Waveform $EtCO_2$, Vascular Access

Adult	Pediatric
ALS *cont.*	
BS < 60 mg/dL	
Dextrose 10% 25 gm in NS 250 mL IV/IO • Infuse wide open If no IV/IO **Glucagon 1 mg** IM/IN • No repeat	**Dextrose 10% in NS 250 mL** IV (*See Infusion Chart on the next page*) • Infuse wide open If no IV/IO **Glucagon 0.5 mg** IM/IN • No repeat
If mental status and respiratory effort are depressed and suspected opioid overdose	
Naloxone (Narcan) 0.4 mg increments IV/IO • titrated to a respiratory rate ≥12 and SpO2 of 94% • May repeat to a max of **6 mg** If unable to obtain vascular access: **Naloxone (Narcan) 2 mg** IN • ½ dose per nare • May repeat x 1 • Max dose 4 mg Or **Naloxone (Narcan) Preload** IN OK to give **4 mg** dose as packaged Following reversal of overdose **See Opioid Withdrawal Protocol** for treatment considerations	**Naloxone (Narcan) 0.1 mg/kg** IV/IO/IM • May repeat x 2 every 2 - 3 minutes • Max single dose 2 mg Or **Naloxone (Narcan) 0.1 mg/kg** IN • ½ dose per nare • May repeat x 1 • Max single dose 2 mg

Pediatric Dextrose 10% in 250 mL
Infusion Chart

AGE	WEIGHT	VOLUME D 10% 25 gm
Preemie	2 kg	10 mL
Newborn	3 kg	15 mL
3 months	5 kg	25 mL
6 months	7 kg	35 mL
1 - 2 years	11 kg	55 mL
3 - 4 years	15 kg	75 mL
5 - 6 years	19 kg	95 mL
7 - 8 years	24 kg	120 mL
9 - 10 years	31 kg	155 mL
11 - 15 years	40 kg	200 mL

ALS *cont.*

Adult	Pediatric

Consider

- Consider diabetic related complications (hypoglycemia/diabetic ketoacidosis)
- Consider carbon monoxide toxicity
- Consider 12-Lead ECG

AEIOU-TIPS*

- **A**lcohol
- **E**pilepsy/**E**ndocrine/**E**lectrolytes/**E**xocrine
- **I**nsulin/**I**nfection
- **O**verdose/**O**xygen deprivation
- **U**remia
- **T**rauma/**T**emperature
- **P**sychosis/**P**orphyria/**P**oison
- **S**troke/**S**hock/**S**epsis/**S**pace occupying lesion/**S**ubarachnoid hemorrhage

**Refer to appropriate treatment protocol*

Direction

- Contact Base Hospital for additional treatment

INGESTION - OVERDOSE - POISONING

Adult	Pediatric
BLS	
Consider calling Poison Control Assess vital signs O_2, titrate $SpO_2 \geq 94\%$ Assist ventilations as needed Suction as needed	
BLS Local Scope	
Blood Glucose Check	
If mental status and respiratory effort are depressed and suspected opioid overdose	
Naloxone (Narcan) 2 mg IN • ½ dose per nare • May repeat x 1 • Max dose 4 mg Or **Naloxone (Narcan) Preload** IN • OK to give **4 mg** dose as packaged	
ALS	
Cardiac Monitor, Waveform $EtCO_2$, Vascular Access	
If mental status and respiratory effort are depressed and suspected opioid overdose	
Naloxone (Narcan) 0.4 mg increments IV/IO • titrated to a respiratory rate ≥12 and SpO_2 of 94% • May repeat to a max of **6 mg** If unable to obtain vascular access: **Naloxone (Narcan) 2 mg** IN • ½ dose per nare • May repeat x 1 • Max dose 4 mg Or **Naloxone (Narcan) Preload** IN OK to give **4 mg** dose as packaged	**Naloxone (Narcan) 0.1 mg/kg** IV/IO/IM • May repeat x 2 every 2 - 3 minutes • Max single dose 2 mg Or **Naloxone (Narcan) 0.1 mg/kg** IN • ½ dose per nare • May repeat x 1 • Max single dose 2 mg

Adult	Pediatric
ALS *cont.*	
Following reversal of overdose **See Opioid Withdrawal Protocol** for treatment considerations	
Beta Blockers	**BS < 60 mg/dL**
Glucagon 1 mg IV/IO • Given over 1 minute • No repeat Or **Glucagon 1 mg** IM/IN • No repeat If no response to Glucagon **Atropine 1.0 mg** IV/IO • May repeat every 5 minutes • Max 3 mg If SBP < 90 and HR < 50 **PUSH DOSE Epinephrine (1:100,000)** • 1 mL every 1-5 minutes • Until SBP > 90 **Consider TCP**	**Dextrose 10% in NS 250 mL** IV (*See Infusion Chart on the next page*)) • Infuse wide open If no IV/IO **Glucagon 0.5 mg** IM/IN • No repeat
Tricyclic Antidepressants	
If any of following are present • SBP < 90 mmHg • QRS > 0.12 seconds • Seizures **Sodium Bicarbonate 1 mEq/kg** IV/IO • No repeat	

Adult

Pediatric

ALS *cont.*

Organophosphate or Carbamate Pesticides

HR < 50 BPM

Atropine 2 mg IV/IO
- May repeat every 3 minutes

Pediatric Dextrose 10% in 250 mL
Infusion Chart

AGE	WEIGHT	VOLUME D 10% 25 gm
Preemie	2 kg	10 mL
Newborn	3 kg	15 mL
3 months	5 kg	25 mL
6 months	7 kg	35 mL
1 - 2 years	11 kg	55 mL
3 - 4 years	15 kg	75 mL
5 - 6 years	19 kg	95 mL
7 - 8 years	24 kg	120 mL
9 - 10 years	31 kg	155 mL
11 - 15 years	40 kg	200 mL

Direction

- Contact Base Hospital for additional treatment

- Overdose/poisoning in the pediatric population is dynamic and requires rapid transport
- Contact Base Hospital for additional treatment

MEDICAL CARDIAC ARREST

Adult	Pediatric

Primary Direction

- In the absence of factors requiring rapid transport (e.g., unsafe scene), all attempts should be made to **perform resuscitative efforts on scene for a MINIMUM of 20 minutes or until ROSC is achieved**
- Movement and transport of patients interrupts CPR and prevents adequate depth and rate of compressions.

BLS

Provide High Performance CPR (See HP-CPR quick reference guide):
Continuous Chest Compressions rate of 100 - 120 per minute, allow for full chest recoil

- Avoid interruptions. Do not interrupt CPR to administer medications or procedures
- Use metronome to ensure proper rate

Automated External Defibrillator (AED) Follow AED prompts, shock if indicated

- Continue compressions while AED charges

Switch Compressors every 2 minutes

- Reassess pulse every 2 minutes during compressor switch
- Do not exceed 10 seconds during pause

<u>Once compressions and AED are deployed</u>

- **Passive Oxygenation**
  - OPA and bilateral NPAs
  - Non-rebreather mask 15 LPM

<u>With adequate personnel (≥ 3) or after 8 minutes of resuscitation*</u>

- **Ventilate BVM with 100% Oxygen**
  - 1 small volume ventilation on the up stroke of every 10th compression
    * *Consider earlier ventilations for pediatrics or if arrest has suspected respiratory cause*

Compression depth 2” - 2.4”	Compression depth of at least 1/3 the diameter of the chest size

ALS

Cardiac Monitor, Defib Pads, Waveform $EtCO_2$, Metronome, **IV Vascular Access when possible, humeral IO is preferred over tibia IO if IV attempt(s) unsuccessful or not feasible**, NG/OG Tube

Ventricular Fibrillation (VF)
Pulseless Ventricular Tachycardia (VT)

Manual Defibrillation on a 2-minute cycle

- Pre-charge the monitor at 1:45, continue compressions during charging
- Minimize perishock pause to less than 5 seconds
- Switch compressors during perishock pause

Adult	Pediatric
ALS *cont.*	
Defibrillate using manufacturer recommended energy dose • Repeat every 2 minutes • Increase dose per manufacture recommendation **Epinephrine (1:10,000) 1 mg** IV/IO • Repeat every 3 - 5 minutes • No Max **Amiodarone 300 mg** (first dose) SIVP/IO • Repeat x1 in 3 - 5 minutes with **150 mg** • Flush with **NS 20 mL**	**Defibrillate** at **2 J/kg** • Repeat every 2 minutes at **4 J/kg** **Epinephrine (1:10,000) 0.01 mg/kg** IV/IO • Repeat every 3 - 5 minutes **Amiodarone 5 mg/kg** SIVP/IO • Max single dose 300 mg • May repeat x 1 in 3 - 5 minutes
Asystole **Pulseless Electrical Activity (PEA)**	
Address reversible causes based on applicable protocols	
Epinephrine (1:10,000) 1 mg IV/IO • Repeat every 3 - 5 minutes • No Max	**Epinephrine (1:10,000) 0.01 mg/kg** IV/IO • Repeat every 3 - 5 minutes • No Max
AIRWAY CONSIDERATIONS	
• A **BLS airway** is the preferred method of airway management during cardiac arrest unless advanced airway is indicated. • See Airway Management protocol for advanced airway management options	
CONSIDERATION IN PREGNANCY ≥ 20 WEEKS GESTATION	
• **Place patient 25° left lateral on backboard for CPR** • IV/IO should be above the diaphragm • Pregnant patients are more prone to hypoxia so oxygenation and airway management should be prioritized • Consider early Advance Airway i-gel® or ET Intubation • Do not interrupt CPR to perform procedures • **Prepare for early transport after 4 minutes of CPR**	

Adult	Pediatric

ALS *cont.*

Termination of Resuscitation (TOR)

Consider TOR in the following conditions*, after a minimum of 20 minutes of resuscitation

- Patient remains pulseless with no signs of cellular metabolism or neurological activity (e.g., unreactive pupils, EtCO2 < 10 mmHG, developing lividity)
- Persistent asystole, wide complex PEA < 40 BPM, or ventricular fibrillation

**Special Considerations*

- Consider transport if patient has persistent narrow complex PEA >100, or persistent V-Tach after 20 minutes of HP-CPR
- Consider pediatric transport after 2 - 3 rounds of on scene ALS interventions IF the cause of the arrest is suspected to be airway related

Direction

- EMS personnel shall not transport expired patients by ambulance except in the rare occurrence that a patient expires during transport. In these situations, EMS personnel shall continue resuscitative efforts and proceed with transport to the closest receiving facility.
- If resuscitative efforts are terminated, personnel shall confirm and document the patient's cardiac rhythm in 2 separate ECG Leads and provide printed rhythm strips of at least 15 second duration.
- Base Hospital Physician consultation should be obtained if EMS personnel have any patient care or scene safety concerns.
- This policy does not apply to Mass Casualty Incidents.

SUSPECTED OPIOID WITHDRAWAL

Adult

Definitions

Opioid Withdrawal Disorder: A life-threatening condition resulting from opioid dependence and the cessation or reduction in opioid use that has been heavy and prolonged; or the administration of an opioid antagonist (e.g., Naloxone) after a period of opioid use. Signs and symptoms include:

- Tachycardia
- Diaphoresis
- Restlessness and/or Agitation
- Dilated Pupils
- Rhinorrhea or Lacrimation
- Vomiting, Diarrhea
- Yawning
- Piloerection
- Nausea
- Stomach/Abdominal cramps
- Body aches
- Achy bones/joints
- Restlessness
- Hot and Cold
- Nasal congestion

COWS Calculator

MAT: Medication-Assisted Treatment

COWS: Clinical Opioid Withdrawal Scale - MDcalc COWS Calculator

ALS

Suspected Opioid Withdrawal Disorder

- Provide supportive treatment and counseling
- Assess patient interest in Suboxone (Buprenorphine and Naloxone)
- Assess for COWS
- Verify patient contact information
- Inform the patient that the hospital's navigator may initiate contact within 72 hours to offer additional treatment

COWS ≥ 7 and Patient Agrees to Treatment

- Contact Base Physician for Suboxone administration approval
- Give water to moisten mucous membranes
- Administer **16 mg Suboxone SL**
- Reassess after 10 minutes

If symptoms worsen or persist

- Re-dose with **8 mg Suboxone SL**
- Total max dose 24 mg SL

COWS < 7 or Patient Denies Treatment or is Ineligible

- Recommend transport
- Provide MAT brochure
- Provide Naloxone

Contraindications

- Under 18 years of age
- Asymptomatic; No evidence or reported opioid withdrawal signs or symptoms
- Pregnant
- Any methadone use within the last 10 days
- Altered mental status and unable to give consent
- Severe medical illness (sepsis, respiratory distress, etc.)
- Current intoxication or recent use of benzodiazepine, alcohol, or other intoxicants suspected
- Unable to comprehend potential risks and benefits for any reason
- Not a candidate for Suboxone treatment for any reason

Direction

- Contact Base Hospital for any treatment or transport concerns

COWS Criteria

Anxiety or Irritability
- **0** None
- **1** Reports increasing irritability or anxiousness
- **2** Obviously irritable or anxious
- **4** Too irritable to participate or affecting participation

Resting Heart Rate *(Measured after sitting for 1 min)*
- **0** ≤ 80 BPM
- **1** 81 – 100 BPM
- **2** 101 – 120 BPM
- **4** ≥ 120 BPM

Restlessness *(Observed during assessment)*
- **0** Able to sit still
- **1** Reports difficult sitting still, but able to do so
- **3** Frequent shifting or extraneous leg/arm movement
- **5** Unable to sit still for more than a few seconds

Tremor *(Observation of outstretched hands)*
- **0** No tremors
- **1** Tremor can be felt but not observed
- **2** Slight observable tremors
- **4** Gross tremors or muscle twitching

Bone or Joint Aches
(If patient was having pain previously, only additional pain attributed to withdrawal is scored)
- **0** Not present
- **1** Mild diffuse discomfort
- **2** Reports sever diffuse aching of joints/muscles
- **4** Rubbing joints or muscles and unable to be still

GI Upset *(Over last half-hour)*
- **0** No GI Symptoms
- **1** Stomach cramps
- **2** Nausea or loose stool
- **3** Vomiting or diarrhea
- **5** Multiple episodes of diarrhea or vomiting

Gooseflesh Skin
- **0** Skin is smooth
- **3** Piloerection can be felt or arm hair standing up
- **5** Prominent piloerection

Yawning *(Observation during assessment)*
- **0** No yawning
- **1** Yawns once or twice during assessment
- **2** Yawns three or more times during assessment
- **4** Yawning several times per minute

Pupil Size
- **0** Pupils pinned or normal sized for ambient light
- **1** Pupils possibly larger than normal for ambient light
- **2** Pupils moderately dilated
- **5** Pupils very dilated

Runny Nose or Tearing
(Not accounted for by cold symptoms nor allergies)
- **0** Not present
- **1** Nasal stuffiness or unusually moist eyes
- **2** Nose running or eyes tearing
- **4** Nose constantly running, tears stream down face

Sweating
(Over past half hour not accounted for by environment or activity)
- **0** No report of chills or flushing
- **1** Subjective report of chills or flushing
- **2** Flushed or observable moistness to face
- **3** Beads of sweat on brow or face
- **4** Sweat streaming off face

TOTAL COWS SCORE:

5 – 12	**Mild**
13 – 24	**Moderate**
25 – 36	**Moderately Severe**
> 36	**Severe Withdrawal**

POST RESUSCITATION CARE

Adult	Pediatric

BLS

Assess vital signs
O_2, titrate SpO_2 to ≥ 94%
Assist ventilations as needed
Avoid hyperventilation
Temperature

BLS Local Scope

Blood Glucose Check

ALS

Cardiac Monitor, Waveform $EtCO_2$, Vascular Access
12-Lead ECG (required on all ROSC patients)

BP < 90 & HR > 50 BPM

Fluid Bolus NS 250 mL IV/IO
- May repeat as needed

BP < 90 & HR < 50 BPM

Atropine 1 mg IV/IO
- May repeat every 3 - 5 minutes
- Max dose 3 mg

If no response, consider

PUSH DOSE Epinephrine (1:100,000)
- **1 mL every 1-5 minutes**
  Titrate to SBP >90

Consider Transcutaneous Pacing

VF/VT ROSC

**Only give Amiodarone if not previously administered during initial resuscitation*

Amiodarone Drip 150 mg in D5W 100 mL IV/IO
(100 gtts/min with 10 gtts/mL set)
- Give over 10 minutes
- No repeat

Signs of hypoperfusion

Fluid Bolus NS 20 mL/kg IV/IO
- Titrate to age appropriate SBP

* *Sustain normothermia*

Direction

- Transport to a STEMI Receiving Center
  - DO NOT divert from STEMI Center if patient re-arrests, continue to the STEMI Receiving Center
- Transmit 12-Lead ECG to Receiving ED
- Consider sedation if the patient is combative
- Contact Base Hospital for additional treatment

TENSION PNEUMOTHORAX

Adult	Pediatric

BLS

Assess vital signs
O_2, titrate SpO_2 > 94%
Lung Sounds
Assist ventilations as needed

ALS

Cardiac Monitor, Waveform $EtCO_2$, Vascular Access

Indication

- Blunt or Penetrating Chest Trauma with:
  - hemodynamically unstable (tachycardia, tachypnea, hypotension, AMS, cyanosis, jugular vein distention, tracheal deviation, respiratory failure) with suspected tension pneumothorax and decreased breath sounds
  - Traumatic cardiac arrest patients with signs of chest trauma

Procedure

- Choose site:
  - Preferred: Lateral 4th or 5th intercostal space, mid-axillary line (must be above the anatomic nipple line)
  - Second: Anterior 2nd intercostal space, mid-clavicular line

- Use minimum 3.5-inch Thoracostomy needle (14 g or larger)
- Insert the needle at a 90-degree angle just over the superior border of the rib
- Advance until a gush of air or blood returns freely, then advance only the catheter to the chest wall and remove the needle
- Leave the catheter in place, do not attach anything to the catheter
- Allow to vent freely
- Monitor and continue to reassess breath sounds
- If no return of air or blood, consider making attempt at second site

Direction

- Two attempts only per affected side
- Cover any open wounds with a chest seal or occlusive dressing
- Contact Base Hospital for additional treatment

TRAUMA PATIENT CARE

Adult | **Pediatric**

Purpose

To identify trauma patients who are at the greatest risk for serious injury and determine the most appropriate destination.

- Trauma Centers improve outcomes for patients with significant traumatic injuries. Patients meeting Critical Trauma Criteria should be transported as soon as possible. On scene procedures should be limited to patient assessment, airway management, external hemorrhage control, and spinal motion restriction procedures. Additional interventions should take place en route with the exception of those incidents requiring prolonged extrication.

Physiological Criteria

- All Patients
  - Unable to follow commands (motor GCS < 6)
  - RR < 10 or > 29 breaths/min
  - Respiratory distress or need for respiratory support
  - Room-air pulse oximetry < 90%
- Age 0–9 years
  - SBP < 70 mm Hg + (2 x age in years)
- Age 10–64 years
  - SBP < 90 mmHg or
  - HR > SBP
- Age ≥ 65 years
  - SBP < 110 mmHg or
  - HR > SBP

Anatomical Criteria

- Penetrating injury to head neck, torso, or extremities proximal to knee or elbow
- Depressed or suspected open skull fracture
- Chest wall instability or deformity or suspected flail chest
- 2 or more proximal long bone fractures in an adult or 1 or more proximal long bone in patient < 14yrs.
- Paralysis
- Crushed, de-gloved, mangled extremity or pulseless extremity
- Amputation proximal to wrist and ankle
- Suspected Pelvic fracture

Adult	Pediatric

Mechanism of Injury Criteria

- High risk automobile crash
  - Intrusion into the passenger compartment (including roof): occupant side > 12 inches, any side > 18 inches
  - Death of occupant in the same compartment
  - Ejection from vehicle (partial or complete)
  - Child (age 0-9) unrestrained or in unsecured child safety seat
  - Vehicle telemetry data consistent with severe injury
- Pedestrian/bicycle rider thrown, run over, or with significant impact Falls from height greater than 10 feet (all ages)
- Rider separated from transport vehicle with significant impact (e.g., motorcycle, ATV, horse, etc.)

Special Considerations

- Patients 55 years or older
- Low-level falls in young children (age ≤ 5 years) or older adults (age ≥ 65 years) with significant head impact
- Anticoagulant use or bleeding disorder
- Time sensitive extremity injury including tourniquet application
- Suspicion of child abuse
- End stage renal disease requiring dialysis
- Pregnant patients > 20 weeks
- Blunt trauma involving large livestock

Contact Closest Trauma Hospital Physician if there is any concern about appropriate destination.

BLS

Open and position the airway
Airway Adjuncts: OPA/NPA as needed to control the airway
O_2, titrate SpO_2 to ≥ 94%
SMR if indicated
Control external bleeding
Prevent hypothermia
Treat suspected shock

ALS

Cardiac Monitor, Waveform $EtCO_2$, Vascular Access

SBP < 90 mmHg	If poor perfusion or suspected shock
Fluid Bolus NS 250 mL IV/IO • Titrate SBP ≥ 90 mmHg Initiate second large bore IV	**Fluid Bolus NS 20 mL/kg** IV/IO • Titrate to age appropriate SBP Initiate second large bore IV

ALS

Adult

Trauma patients with signs and symptoms of hemorrhagic shock meeting all of the following criteria:

1. Blunt or penetrating trauma to the chest, abdomen, or pelvis
2. Total time from Time of Injury to Trauma Center (ED) is > 30 minutes
3. Within 3 hours of injury
4. SBP < 90

TXA Bolus drip 1gm in NS 50 - 100 mL IV/IO over 10 minutes

- No repeat

Fluid Bolus NS 250 mL IV/IO

- Repeat as needed to maintain SBP ≥ 90

* **Place the approved neon green wristband on patient**

TXA Contraindications

- Active thromboembolic event (within the last 24 hours); i.e., active stroke, myocardial infarction, pulmonary embolism or DVT
- Hypersensitivity or anaphylactic reaction to TXA
- Traumatic arrest with > 5 minutes of CPR without return of vital signs
- Suspected traumatic brain injury
- Drowning or hanging victims
- Cervical cord injury with motor deficits

Consider

Consider advanced airway if GCS is ≤ 8 and BLS airway is ineffective

- IV/IO access should be initiated en route
- Consider pain management
- **Pregnant patients** meeting criteria should be taken to a **Trauma Center** with **obstetric** services.
- Air ambulances should only be used when they offer a measurable advantage to ground transport and/or those in need of immediate procedures available to a Flight Nurse but outside the scope of practice of Paramedics.
- Patients with an uncontrolled airway may be considered for transport to the closest hospital.
- For trauma meeting burn criteria - refer to burn triage criteria
- This policy does not apply to Multi-Casualty Incidents

Direction

- If patient meets trauma triage criteria transport to a designated Trauma Receiving Center
- Contact the Trauma Center and advise them of a **"TRAUMA ALERT"** (preferably from the scene)
- If TXA administered advise the Trauma Hospital of **"TRAUMA ALERT TXA"**
- On scene time should be ≤ 10 minutes
- Contact the Base Hospital for additional treatment or transport decisions
- When in doubt, transport to the closest Trauma Center

TRAUMATIC CARDIAC ARREST

Adult | **Pediatric**

Primary Direction

To provide guidelines for rapid, systematic patient assessment and intervention in the setting of traumatic cardiac arrest.

- Cardiac medications (i.e., Epinephrine, Amiodarone) have limited or no benefit in the setting of traumatic cardiac arrest.
- Interventions take priority over chest compressions in agonal or pulseless conditions.
  - Airway management
  - Needle decompression
  - Hemorrhage control
  - Fluid resuscitation

BLS

Blunt OR Penetrating traumatic arrest **PRIOR** to EMS arrival
with no Signs of Life (SOL) (e.g., pulse, respirations, heart tones, reactive pupils, reaction to pain)

- **Do Not Attempt Resuscitation**

Suspected medical cause – minor trauma not likely to be the cause of the arrest.

- **Follow Medical Cardiac Arrest Protocol**

Blunt OR Penetrating traumatic arrest **AFTER** EMS arrival
(e.g., absent or agonal pulse or respirations)

- **Start CPR – Continuous Chest Compressions** rate of 100 – 120 per minute, allow full chest recoil
- **Simultaneously treat reversible causes**
  - Treatment of reversible causes may supersede CPR as needed
  - AED placement and analysis is not indicated
  - SMR precautions are secondary to resuscitation and controlling airway

External Bleeding	Airway Obstruction / Hypoxia	Penetrating Chest Trauma

• Control external bleeding
  ○ Hemostatic dressing, wound packing
  ○ Tourniquet
	• Clear airway – Suction
	• Ventilate BVM with 100% Oxygen
	• Basic or advanced airways as indicated
		• Apply chest seal with one-way valve

ALS

Blunt OR Penetrating traumatic arrest with Asystole or Wide Complex PEA < 40 BPM and no SOL

- **Do Not Attempt Resuscitation**
- **Terminate Resuscitation if already initiated**

Traumatic Arrest Not Meeting Above Criteria

- **Rapid Transport to Trauma Receiving Center**
- **Start CPR, Defibrillate if necessary**
- **Simultaneously treat reversible causes**
- **Do not administer epinephrine or amiodarone**

Hypovolemia	Hypoxia	Tension Pneumothorax
• **Fluid Bolus NS 250 mL** IV/IO ○ Repeat if no ROSC	• Basic or advanced airways as indicated • Needle Cricothyroidotomy as indicated	• Needle Thoracostomy (Chest Decompression) • Consider bilateral decompression in traumatic arrest due to chest trauma

Direction

- Contact the Trauma Center and advise them of a "**TRAUMA ALERT"** (preferably from the scene)
- If ROSC is achieved continue transport to the closest Trauma Receiving Center
- Contact Base Hospital for additional treatment or transport decisions

AIRWAY MANAGEMENT

Basic Airway Management

Indication

Signs and Symptoms of respiratory distress (rapid, slow, shallow, irregular, labored and/or noisy breathing, cyanosis, agitation, confusion, or apnea) or respiratory arrest.

BLS

Adult	Pediatric
Evaluate RR Open and position the airway Airway Adjuncts: OPA/NPA as needed to control the airway O_2 via selected device based on the patient's condition, titrate SpO_2 to $\geq$ 94% Oral pharyngeal suctioning as needed Avoid hyperventilation	
• Nasal Cannula: 2 - 6 LPM • Non-rebreather mask: 10 - 15 LPM • BVM ventilations: 10 breaths/min • CPAP when indicated • Existing High Flow Device or BiPAP if compatible with transport capabilities	• Nasal Cannula: 2 - 6 LPM • Non-rebreather mask: 10 - 15 LPM • BVM ventilations: 12 - 20 breaths/min • CPAP when indicated • Existing High Flow Device or BiPAP if compatible with transport capabilities

Advanced Airway Management

Indications

The inability to adequately ventilate with a BVM and airway adjuncts and the patient is unresponsive, without a gag reflex, apneic and/or has a decreased respiratory effort.

Guidelines

- An intubation attempt is defined as the introduction of an advanced airway device past the patient's teeth
- Make no more than 2 attempts
- Each attempt should last no longer that 15 seconds
- ALS personnel must re-confirm correct advanced airway placement on any patient when the advanced airway has been established by a BLS Service Provider
- ALS personnel assume responsibility for the advanced airway once they have arrived on scene and assume patient care
- Advanced airway placement must be re-confirmed anytime there is concern for the patency of the airway or anytime there is movement of the patient including but not limited to:
  - Movement of the patient to or from the ambulance gurney
  - Movement of the patient into or out of the ambulance
  - Transfer of patient care.

BLS

Adult	Pediatric

Supraglottic Airway

Contraindications

- Patient with known esophageal disease
- Extensive airway burns
- Suspected foreign body obstruction

BLS Optional Scope

Adult - 15 years of age or older

King Tube

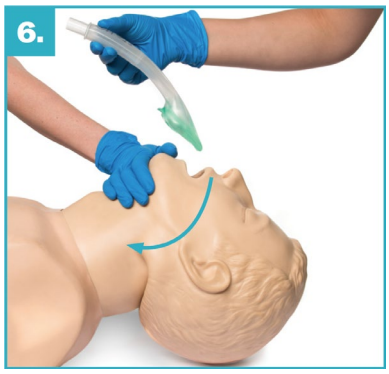
- Select appropriately sized King Tube
- Prepare, position, and oxygenate the patient with 100% O_2
- Lubricate with a water-based lubricant
- Grasp the patient's tongue and jaw and pull forward
- Advance the tip behind the base of the tongue while rotating the tube back to midline so that the blue orientation line faces the chin of the patient
- Without exerting force, advance tube until base connector is aligned with the teeth or gums
- Inflate cuff with 45 – 90 mL of air depending on the size of the device used
- Attach BVM, gently bag the patient to assess ventilation, withdraw the tube until ventilation is easy and free flowing
- Secure with a commercial tube holder
- Verify placement using **ALL** of the following:
  1. Rise and fall of the chest
  2. Bilateral breath sounds
  3. Continuous waveform capnography when available (ALS)

ALS

Adult | Pediatric

i-gel®

- Select appropriately sized i-gel®
  1. For pediatric patients a length based tape is required to determine weight for tube sizing
- Prepare, position, and oxygenate the patient with 100% O_2
- Lubricate with a water based lubricant
- Position the device so the cuff outlet is facing towards the chin of the patient
- Introduce the leading soft tip into the mouth in a direction towards the hard palate
- Glide the device downward and backwards along the hard palate with a continuous but gentle push until a definitive resistance is felt
- Attach BVM, gently bag the patient to assess ventilation
- Secure
- Verify placement by **ALL** of the following:
  1. Rise and fall of the chest
  2. Bilateral breath sounds
  3. Waveform $EtCO_2$ required for verification
- Place an OG tube down the i-gel® gastric channel



Consider

- If unsuccessful consider laryngoscopy for foreign body airway obstruction

Endotracheal Tube (ETT)

Adult - 15 years of age or older

Procedure

- Prepare, position, and oxygenate the patient with 100% O_2
- Evaluate for difficult airway
- Select proper ETT and stylet
- The use of a Bougie device is required with all ETT intubation attempts
- Intubate the trachea via direct laryngeal visualization
- Inflate ETT cuff
- Verify placement using **ALL** of the following:
  1. Rise and fall of the chest
  2. Bilateral breath sounds
  3. Negative epigastric sounds
  4. Condensation in the tube
  5. Continuous waveform $EtCO_2$
- Secure with commercial tube holder
- Place a nasogastric or orogastric tube if not already placed during BLS airway

ALS *cont.*

Adult	Pediatric

Endotracheal Tube Inducer (Bougie)

Indications

- Patient meets clinical indicators for oral intubation

Procedure

- Prepare, position, and oxygenate the patient with 100% O_2
- Select proper ETT without stylet, test cuff and prepare suction
- Lubricate the distal end and cuff of the ETT and the distal half of the Bougie
- Using a laryngoscope visualize the vocal cords, maintain direct visualization during the procedure
- Introduce the Bougie with curved tip anteriorly and visualize the tip passing the vocal cords or above the arytenoids if the cords cannot be visualized
- Once inserted, gently advance the Bougie until you meet resistance, feel for the tracheal rings. If you do not meet resistance, you have probable esophageal intubation and insertion should be removed
- While maintaining a firm grasp on the proximal Bougie, introduce the ETT over the Bougie passing the tube to its appropriate depth
- If you are unable to advance the ETT into the trachea withdraw the ETT slightly and rotate the ETT 90° counterclockwise to turn the bevel of the ETT posteriorly
- Once the ETT is correctly placed, hold the ETT securely and remove the Bougie
- Confirm tracheal placement according to ETT procedure

Consider

- **Basic airway management is the preferred method of airway management** with cardiac arrest and multisystem trauma patients unless unable to effectively manage the airway with BLS maneuvers.
- Intubation of head injury or stroke patients is best addressed at the hospital. Intubation has the potential to increase ICP.
- If there is any doubt as to the proper placement of an advanced airway, attempt to re-verify using the verification steps in the guidelines above. If doubt still remains, remove tube and go to BLS airway.

Direction

- All patients being manually ventilated with a (**BLS**) or (**ALS**) airway shall have an NG/OG tube placed

Documentation

- Device size
- Intubation time
- Number of attempts (successful/unsuccessful)
- Placement location at teeth or gums
- All devices and methods used to confirm placement
- Reason the advanced airway was placed
- Continuous waveform capnography readings and description of waveform (**ALS**)

ALS *cont.*

Adult	Pediatric

NEEDLE CRICOTHYROTOMY (QUICKTRACH)

Purpose

A temporary emergency airway device for adult and pediatric patients that allows quick and safe ventilation of a patient in the presence of acute respiratory distress with upper airway obstruction that is preventing oxygenation and ventilation.

Indications

- Edema of the upper airway or larynx
- Upper airway hemorrhage
- Infection (e.g., Epiglottitis, Ludwig's angina)
- Laryngospasm
- Face and Neck Injuries
- Foreign body obstruction
- Allergic reaction

Contraindications

- Ability to ventilate the patient with other adjuncts
- When landmarks cannot be clearly identified
- Patient with an estimated weight < 22 lbs. (10kg)
- Transection of the trachea distal to the cricothyroid site

Complications

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

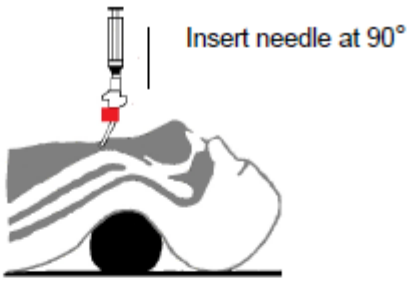
Adult (Kit Size 4.0 mm)	Pediatric (Kit Size 2.0 mm)
• 77 lbs. (35 kg) and higher	• 22 lbs. (10 kg) – 77 lbs. (35 kg)

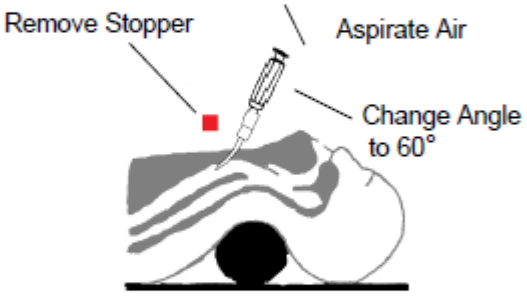
ALS *cont.*

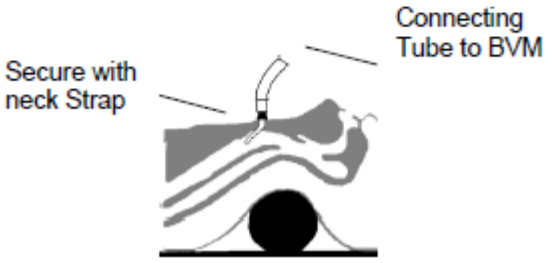
Adult	Pediatric

Procedure

1. Place the patient in a supine position. Stabilize and hyperextend the neck (unless cervical spine injury suspected).
2. Secure the larynx laterally between the thumb & forefinger. Find the puncture site between the thyroid & the cricoid cartilages.
3. Prep site vigorously scrubbing with appropriate prep solution.
4. Firmly hold the device and puncture cricothyroid membrane at a 90° angle.
5. After puncturing the cricothyroid membrane, check the needle entry into the trachea by aspirating air through the syringe. If air is present, the needle is within the trachea.
6. Now, change the angle of insertion to 60° degrees (from the head).
7. Advance the device forward into the trachea to the level of the stopper (red).
8. Remove the stopper. After the stopper is removed, be careful not to advance the device further with the needle still attached.
9. Hold the needle & syringe firmly, slide only the plastic cannula along the needle into the trachea until the flange rests on the neck. Carefully remove the needle and syringe.
10. Secure the cannula with the neck strap.
11. Apply the connecting tube to the 15 mm connection and connect the other end to the bag-valve mask with supplemental oxygen.
12. Patient shall be placed on $EtCO_2$ monitoring.
13. Continue ventilation with 100% oxygen and periodically assess the airway.







Direction

- **NEVER** attempt Needle Cricothyrotomy in a moving vehicle.

Documentation

- All BLS and ALS attempts to **oxygenate** and **ventilate**
- Size of QuickTrach
- Continuous $EtCO_2$ post insertion
- Continuous SpO_2 post insertion
- Reassessment post placement
- Device placement at turnover of care
- Any complications?

PARAMEDIC REACCREDITATION PROCESS

PURPOSE

The purpose of this policy is to establish a process by which individuals renew their Paramedic accreditation through the Yolo County Emergency Medical Services Agency (YEMSA).

AUTHORITY

Health & Safety Code, Division 2.5, Chapter 7, § 1797.192
California Code of Regulations, Title 22, Division 9, Chapter 4, § 100166

RENEWING & MAINTAINING ACCREDITATION

I. Renewing accreditation as a Paramedic shall be contingent upon:
   A. Completing a YEMSA's Paramedic Renewal Application which includes the statement that the individual is not precluded from accreditation for reasons defined in the Health & Safety Code, Division 2.5, Chapter 7, §§ 1798.200 – 1798.211.
   B. Maintaining employment with an approved ALS Provider in Yolo County.
   C. Providing a copy of a current and valid State of California Paramedic License.
   D. Providing a copy of a current and valid United States (U.S.) state-issued driver's license or identification card.
   E. Providing a copy of a current and valid Advance Cardiac Life Support (ACLS) certification.
   F. Providing a copy of a current and valid Pediatric Advanced Life Support (PALS) certification.
   G. Providing a copy of a current and valid International Trauma Life Support (ITLS), or Prehospital Trauma Life Support (PHTLS) certification.
   H. Providing a copy of YEMSA's Paramedic Infrequent Skills Verification Form, signed off by an ALS Service Provider.
   I. Providing a copy of YEMSA's Paramedic Intubation Verification Form, signed off by an ALS Service Provider.
      1. Form should show verification of four (4) intubations per year during the accreditation period.
      2. These intubations may be adult, pediatric, or infant; and can be any combination of live, sim man, or mannequin.

   J. All Paramedics accredited in Yolo County will be required to attend a total of two mandatory ALS Update classes per accreditation cycle.
   K. Paramedics failing to maintain the requirements specified above will result in the individual repeating some or all of the initial accreditation requirements as determined by YEMSA.
   L. There is a late fee for applications turned in the same month they expire (between 0-30 days of expiration). Applications turned in the month before their certification expires are not considered late. The late fee is in addition to the standard application processing fee.
   M. For an accreditation lapse of less than (<) thirty (30) days the reaccrediting

Paramedic must:
1. Meet the requirements for renewing Accreditation, and
2. Pay a late application fee.

N. For an accreditation lapse of greater than (>) thirty (30) days the reaccrediting Paramedic must:
   1. Repeat all initial accreditation steps, and
   2. Pay a late application fee and Paramedic lapse accreditation fee.

O. Paramedics failing to maintain the specified accreditation requirements will result in suspension or revocation of accreditation to practice as a Paramedic in Yolo County, and:
   1. Paramedics are responsible for notifying YEMSA in writing, within thirty (30) calendar days, of any changes to their mailing address or contact information.
   2. Paramedics are responsible for keeping current and valid certifications on file with YEMSA at all times. This means if a certification expires during the Paramedic's accreditation period it's their responsibility to submit a current copy to YEMSA.
   3. Paramedics are responsible for maintain confidentiality of patient medical information.
   4. Paramedics are responsible to know and adhere to all YEMSA Policies & Protocols.

P. Individuals functioning as a Paramedic without current valid accreditation will be reported as functioning outside of medical control to the California EMS Authority and may be subject to criminal and civil penalties.

II. Application Processing
   A. Upon completion of the above, and confirmation that the applicant meets all the criteria specified in the California Code of Regulations, Title 22, Division 9, Chapter 4, Article 5, an individual shall be accredited as a Paramedic in Yolo County. YEMSA shall issue a wallet-sized Paramedic Accreditation card which is valid throughout Yolo County, for a period consistent with and not to exceed the period for which their current State Paramedic license is valid.
   B. Only completed applications including signature, fees, and all required supporting documentation will be processed by YEMSA.
   C. Incomplete applications will not be processed and will held by YEMSA for sixty (60) days awaiting required supporting documentation. All applications not completed within sixty (60) days will be destroyed.
   D. YEMSA will normally process completed applications within ten (10) business days.

YEMSA STAFF

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Medical Health Operational Area Coordinator (MHOAC)
Region IV, Disaster Medical Health Coordinator

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Emergency Medical Services Agency
137 N Cottonwood St Ste 1300
Woodland, CA 95695-6685
Voice Line: (530) 666-8665
www.yemsa.org

Medication Profile

Diphenhydramine HCL
(Benadryl)

Class:

Antihistamine

Action:

Diphenhydramine is an antihistamine with anticholinergic (drying) and sedative side effects. Suppresses an allergic reaction by blocking histamine H1 and H2 receptor sites. Indicated for conditions of excess histamine. Does not reverse histamine-mediated responses.
Also slight sedative, antiemetic, antitussive and antispasmodic effects.

Onset: IV-Immediate
IM 20-30 minutes
PO 15-30 minutes

Peak: 1-4-hours

Duration: 4-8 hours

Indications:

Allergic reaction, anaphylaxis
Dystonic Reaction

Contraindications:

Hypersensitivity/allergy

Side Effects:

CV: Palpitations, tachycardia, hypotension or hypertension
CNS: Drowsiness, headache, restlessness, disturbs coordination
RESP: Dries and thickens bronchial secretions, wheezing
GI: Dry mouth, nausea, vomiting
EENT: Blurred vision, tinnitus

Notes:

- Added CNS depressant effects may occur with alcohol, sedatives, hypnotics, tranquilizers and narcotics.

Medication Profile

Ketamine
(Ketalar)

Class:

Dissociative anesthetic

Action:

N-methyl-D-aspartate (NMDA) receptor antagonist with a potent anesthetic effect.

Onset: 1-2 minutes **Peak:** Immediate **Duration:** 15-20 minutes

Indications:

Severe pain

Contraindications:

Hypersensitivity/allergy
GCS < 15 or agitation
RR ≤ 12
SBP ≤ 100

Side Effects:

CV: Hypertension, arrhythmias
CNS: Seizure like activity

Notes:

- Fast IV administration can result in transient apnea, administer slow over 1 minute.
- May be administered in addition to Acetaminophen or Ketorolac for patients in severe pain.

Medication Profile

Midazolam Hydrochloride
(Versed)

Class:

Short-acting benzodiazepine/CNS agent
Sedative-Hypnotic
Anticonvulsant

Action:

CNS depressant with muscle relaxant, anticonvulsant, and anterograde amnestic effects. Intensifies activity of gamma-aminobenzoic acid (GABA), a major inhibitory neurotransmitter of the brain, by interfering with its reuptake and promoting its accumulation at neural synapses. Also provides some retrograde amnestic effects, making it useful after cardioversion.

Onset: 1-10 minutes **Peak:** 20-60 minutes **Duration:** 2-6 hours

Indications:

Seizures
Sedation

Contraindications:

Hypersensitivity/allergy

Side Effects:

CV: Fluctuations in vital signs, hypotension
CNS: Oversedation, headache, retrograde amnesia, euphoria, drowsiness, coma
RESP: Respiratory depression, respiratory arrest, cough, laryngospasm
GI: Nausea, vomiting, hiccough (diaphragmatic spasm producing a cough/noise)
EENT: Blurred vision, diplopia (seeing two objects), nystagmus

Notes:

- Midazolam Hydrochloride is an effective chemical restraint and should be used early in the restraint process especially with patients showing signs of excited delirium.
- Can be given in conjunction with acetaminophen, fentanyl or ketamine.

Medication Profile

Suboxone
(Buprenorphine and Naloxone)

Class:

Opioid Partial Agonist

Action:

Buprenorphine is a long-acting, high-affinity partial agonist at the mu-opioid receptor. As a long-acting agonist, buprenorphine prevents withdrawal and craving and stabilizes opioid receptors. As a high-affinity agonist, buprenorphine blocks other opioids from binding, preventing abuse of other opioids.

Onset: 15-20 minutes **Peak:** 1-4 hours **Duration:** 24-36 hours

Indications:

Tachycardia, diaphoresis, restlessness and/or agitation, dilated pupils, rhinorrhea or lacrimation, vomiting, diarrhea, yawning, piloerection, nausea, stomach/abdominal cramps, body aches, achy bones/joints, hot and cold, nasal congestion.

Contraindications:

Under 18, pregnant, methadone use in the previous 10 days, altered mental status and unable to give consent, severe medical illness (sepsis, respiratory distress, etc.), current intoxication or recent use of benzodiazepine, alcohol, or other intoxicant suspected, unable to comprehend potential risks and benefits for any reason, not a candidate for buprenorphine maintenance treatment for any reason, no clinical opioid use disorder symptoms.

Side Effects:

CNS: Headache
CV: None
RESP: Minimal respiratory suppression
GI: Constipation, nausea

Notes:

- Blocks other opioids
- Displaces other opioids
- Can precipitate withdrawal
- 25-100 times more potent than morphine

This document is not a substitute for Protocols and Procedures.

Medication Profile

Tranexamic Acid (TXA)

Class:

Antifibrinolytic agent, antihemophilic agent, hemostatic agent, lysine analog

Action:

TXA inhibits fibrin clots from being dissolved or degraded in the body by plasmin.

Onset: Immediate **Peak:** Immediate **Duration:** Unknown

Indications:

Trauma patients with signs and symptoms of hemorrhagic shock meeting all of the following criteria:

- Blunt or penetrating trauma to the chest, abdomen, or pelvis.
- Time of incident to trauma center > 30-minutes
- Within 3 hours of injury.
- SBP < 90

Contraindications:

Active thromboembolic event (within the last 24 hours); i.e., active stroke, myocardial infarction, pulmonary embolism or DVT.
Hypersensitivity/allergy
Traumatic arrest with > 5-minutes of CPR without return of vital signs
Suspected traumatic brain injury
Drowning or hanging victims
Cervical cord injury with motor deficits

Side Effects:

CNS: Dizziness
GI: Nausea, vomiting
CV: Thromboembolic events

Notes: