

SAN JOAQUIN COUNTY EMERGENCY MEDICAL SERVICES

Advanced Life Support Treatment Protocols



Routine ALS

**San Joaquin County
Emergency Medical Services Agency**



Routine ALS Care

AUTHORITY: Division 2.5, Health and Safety Code, Sections 1797.220 & 1798 et seq.

DEFINITIONS:

- A. **Standard Precautions:** Application of body substance isolation precautions including the use of appropriate personal protective equipment (PPE) shall apply to all patients receiving care, regardless of their diagnosis or presumed infectious status. Body substance isolation precautions apply to 1) blood; 2) all bodily fluids, secretions, and excretions except sweat, regardless of whether or not they contain visible blood; 3) non intact skin; and 4) mucous membranes. Standard precautions are designed to reduce the risk of transmission of microorganisms from both recognized and unrecognized sources of infection in the prehospital setting (Center for Disease Control, 2005).

POLICY:

- I. Routine ALS Medical Care shall consist of the following:
- A. Standard precautions
 - B. Provision of appropriate basic life support (BLS) care in accordance with EMS Agency policy
 - C. ECG monitoring
 - D. IV access as indicated (may use saline lock when appropriate)
 - E. Obtain blood glucose level, as indicated
 - F. Transport
 - G. Follow ALS treatment protocols as indicated

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**San Joaquin County
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ALS Advanced Airway Management

AUTHORITY: Division 2.5, Health and Safety Code, Sections 1797.220 & 1798 et seq.

DEFINITIONS:

- A. **“Attempt”** is defined as the introduction of a laryngoscope blade past the patient’s teeth.
- B. **“Successful Attempt”** is defined as verified placement and securing of the endotracheal tube into the patient’s trachea.
- C. **“Successful Attempt with Complications”** is defined as verified placement and securing of the endotracheal tube into the patient’s trachea with any of the following:
1. Failure to perform and document meticulous BLS airway management skills prior to ALS intervention, as well as justification for ALS airway.
 2. Failure to maintain continuous pulse oximetry and EKG monitoring, for at least 1 minute before the attempt and continuously thereafter.
 3. Deviations in vital signs associated with intubation suggestive of prolonged hypoxia, such as bradycardia or desaturation.
 4. Subsequent dislodgement of the endotracheal tube recognized by the receiving hospital.
 5. Subsequent diagnosis of mainstem intubation recognized by the receiving hospital.
 6. Subsequent diagnosis of severe airway complications likely associated with the prehospital intubation, such as pharyngeal or esophageal perforation, laryngeal trauma, such as vocal cord paralysis, or aspiration pneumonia.

POLICY:

- I. The approved airway management procedure for the adult consists of BLS airway management skills, endotracheal intubation, and if not successful, insertion of an esophageal-tracheal double lumen airway (ETDLA) device.
- II. Intubation in the pediatric patient should only be performed if unable to ventilate and oxygenate the patient using two-person BVM ventilation. In cardiac arrest, oximetry will not be accurate, so intubation in this case should only occur if the patient cannot be ventilated by BVM.

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- III. Do not delay transport to establish an advanced airway in trauma patients except in the case of complete airway obstruction, as evidenced by complete inability to ventilate the patient using BLS maneuvers.
- IV. If unable to establish airway due to complete airway obstruction not relieved by BLS maneuvers, begin code three transport, and consider insertion of EDTLA, or needle cricothyrotomy if the EDTLA does not result in successful ventilation. Do not delay transport for arrival of helicopter in this case unless helicopter crew is on scene and already treating the patient- transport immediately to nearest ED.

V. INDICATIONS FOR INTUBATION:

Treatment indicators to the placement of an advanced airway device include:

- A. Inability of the patient to protect the airway (coma, decreased level of consciousness with non-intact gag reflex).
- B. Inability of the ALS personnel to adequately ventilate or oxygenate the patient;
- C. Cardiac arrest, including traumatic arrest.
- D. Failing respirations (irregular and shallow), respiratory arrest.

VI. APPROVED ADVANCED AIRWAY PROCEDURE:

A. Endotracheal Intubation:

- 1. No more than two (2) attempts per patient with preoxygenation and continuous oximetry monitoring prior to each attempt.
- 2. Each attempt should last no longer than 30 seconds. If during any attempt patient desaturates below 90%, immediately cease and reventilate to increase saturation.
- 3. Consider advanced airway rescue device (EDTLA), and begin immediate transport to nearest ED if not already enroute if unsuccessful after two endotracheal intubation (2) attempts.
- 4. Ventilate with 100% oxygen for one minute prior to attempting to intubate. Monitor pulse oximetry continuously.

B. Advanced Airway Rescue Device (EDTLA):

- 1. After two (2) unsuccessful attempts at endotracheal intubation, consider placement an esophageal-tracheal double lumen airway (ETDLA) device.
- 2. The ETDLA device comes in two sizes. Only use the small adult patient size. *Note: The ETDLA is not used in adults < 4' tall or children.*
- 3. Use a tongue blade or laryngoscope to facilitate placement.
- 4. Remove and replace the ETDLA if resistance is met.

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VII. CONFIRMATION OF TUBE PLACEMENT:

- A. All intubations must be confirmed by end tidal CO₂ detector (colorimetric or capnography) and/or esophageal detection device (EDD).
- B. After placement of an endotracheal tube or rescue device (ETDLA), immediately confirm tube placement by auscultating bilateral lung fields for breath sounds, observe for chest rise and fall with ventilations, and listen for air flow into the epigastric area.
- C. If there is any doubt as to proper placement of the endotracheal tube, visualize the pharynx and vocal cords with laryngoscope. If still in doubt, suction the patient, deflate the cuff, and remove the endotracheal tube.
- D. Reconfirm ET Tube placement prior to transferring patient care.

VIII. CONTINUOUS QUALITY IMPROVEMENT:

- A. All ALS providers will submit monthly airway reports to the EMS Agency QI Coordinator.

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ALS Adult Pain Management

AUTHORITY: Division 2.5, Health and Safety Code, Sections 1797.220 & 1798 et seq.

DEFINITIONS:

- A. **Pain:** Pain is a significantly unpleasant sensation, occurring in varying degrees of severity, which results because of injury, disease, or emotional disorder.

POLICY:

- I. The use of morphine to manage moderate to severe pain is an advanced life support procedure that is indicated for patients who are complaining of moderate to severe pain in the presence of adequate vital signs and level of consciousness.
- II. Morphine may be used to treat stable patients when extrication, movement, or transport is required and is anticipated to cause considerable pain to the patient when there are no known contraindications to administering analgesia.
- III. Morphine is a potent analgesic and should be used with caution.
- IV. Procedure:
- A. Perform routine ALS/BLS medical care as directed in EMS Policy No. 5502, Routine BLS Care and EMS Policy No. 5701, Routine ALS Care.
 - B. Monitor patient closely.
 - C. Establish IV access (IV NS or NS lock as appropriate).
 - D. Obtain full set of vital signs.
 - E. Administer Morphine 2-4mg IV every five minutes as needed to relieve pain to a maximum dose of 20mg. If unable to secure IV access, administer Morphine 5-10mg IM, may repeat one dose in 30 minutes. Document pain scale before and after medication administration.
 - F. Monitor patient and vital signs carefully; ensure patent airway. Do not administer morphine sulfate for pain if systolic blood pressure is < 90 or respirations are < 12 without base hospital physician order.
- V. Base Physician Order Requirements:

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- A. Concomitant administration of midazolam requires a base hospital physician order.
- B. Contact the base hospital physician prior to administering any pain medication to the following types of patients:
 - 1. Any patient with hypotension, respiratory rate < 12, or altered mental status
 - 2. Women in labor

VI. Contraindications:

- A. Absolute: Allergy or sensitivity to the medication being administered.
- B. Relative:
 - 1. Nausea/Vomiting
 - 2. Altered level of consciousness
 - 3. Hypotension
 - 4. Suspected drug and/or alcohol intoxication
 - 5. Head injury
 - 6. Pregnancy
 - 7. Multiple systems trauma

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Cardiac

San Joaquin County
Emergency Medical Services Agency



ALS Ventricular Fibrillation/Pulseless VTach

AUTHORITY: Division 2.5, Health and Safety Code, Sections 1797.220 & 1798 et seq.

POLICY:

- I. Perform routine ALS/BLS medical care while confirming pulselessness and appropriate rhythm on the cardiac monitor.

- II. Treatment:
 - A. If unwitnessed arrest, perform and complete initial CPR sequence (5 cycles/2 minutes) while preparing equipment.
 - B. Defibrillate patient one time using manufacturer recommended dose of energy (usually 120-200 joules in biphasic defibrillators). If not stated, use 200 joules (biphasic); or 360 joules (monophasic); then resume CPR immediately.
Note: CPR should be administered for complete sequences of 5 cycles/2 minutes, **between each shock**. During 5 cycles/2 minutes, establish IV/IO and give Epinephrine during CPR (before or after shock).
 - C. Intubate and establish IV of normal saline TKO.
 - D. Administer Epinephrine via IV/IO and continue CPR.
 1. 1 mg (1:10,000) IV/IO. Repeat every 3-5 minutes
 2. If unable to establish IV/IO, may be given via ETT, 2 mg (1:1000) diluted in 10 ml NS. Repeat every 3-5 minutes.
 - E. Defibrillate 1 x @ 120 - 200 joules (biphasic); or 1 x @ 360 joules (monophasic); resume CPR immediately after the shock.
 - F. Administer Lidocaine 1mg/kg IVP (may repeat x 1 in 3-5 minutes).
 - G. For return of spontaneous circulation see EMS Policy No.5726, Return of Spontaneous Circulation.
 - H. If no return to spontaneous circulation continue CPR and follow appropriate rhythm specific treatment protocol.

- III. Special Considerations:
 - A. Suspected hyperkalemia in renal dialysis patients – Consider IV administration of 500 mg of 10% Calcium Chloride and 1 mEq/kg of Sodium Bicarbonate, consult Base Hospital Physician to discuss further management.

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ALS Wide Complex Tachycardia with a Pulse

AUTHORITY: Division 2.5, Health and Safety Code, Sections 1797.220 & 1798 et seq.

PROCEDURE:

- I. Perform routine ALS/BLS medical care as directed in EMS Policy No. 5502, Routine BLS Care and EMS Policy No. 5701, Routine ALS Care.

- II. Patients with Serious Signs and Symptoms (Chest Pain, B/P < 90 systolic, decreased LOC, shortness of breath, signs of shock):
 - A. Consult with base hospital physician.
 1. Consider precardioversion sedation with Midazolam 1-2 mg slow IVP titrated to effect if patient is awake.
 2. Synchronized cardioversion at 100 joules (monophasic energy dose or equivalent biphasic energy dose).
 3. If no response: repeat synchronized cardioversion at 200 joules (or biphasic equivalent).
 4. If no response: repeat synchronized cardioversion at 300 joules (or biphasic equivalent).
 5. If no response: repeat synchronized cardioversion at 360 joules (or biphasic equivalent).
 6. If rhythm does not convert with cardioversion administer Lidocaine 1 mg/kg IVP (may repeat x 1 in 3-5 minutes).
 - B. Consult with base hospital physician for further pharmacotherapy.

- III. Patients without Serious Signs and Symptoms:
 - A. Consider 12 Lead ECG if available.
 - B. Administer Lidocaine 1 mg/kg IVP (may repeat x 1 in 3-5 minutes).
 - C. Consult with base hospital physician for further electrical or pharmacotherapy.

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ALS Narrow Complex Tachycardia; AFib/AFlutter

AUTHORITY: Division 2.5, Health and Safety Code, Sections 1797.220 & 1798 et seq.

DEFINITIONS:

- A. **Atrial Fibrillation**: A narrow complex, irregularly irregular rhythm with variations in both R wave to R wave interval and amplitude. If QRS width > 0.12, go to Wide Complex protocol.
- B. **Atrial Flutter**: A narrow complex rhythm with the appearance of a classic saw tooth pattern rhythm. Ventricular response rates are rarely > 150 to 180. If QRS width > 0.12, go to Wide Complex protocol.

PROCEDURE:

- I. Perform routine ALS/BLS medical care as directed in EMS Policy No. 5502, Routine BLS Care and EMS Policy No. 5701, Routine ALS Care.
- II. Patients with Serious Signs and Symptoms: Chest Pain, B/P < 90 systolic, decreased LOC, shortness of breath, signs of shock.
- A. Consult base hospital physician.
1. Consider precardioversion sedation with Midazolam 1-2 mg slow IVP titrated to effect.
 2. Synchronized cardioversion at 100 joules (monophasic energy dose or equivalent biphasic energy dose).
 3. If no response: repeat synchronized cardioversion at 200 joules (or biphasic equivalent).
 4. If no response: repeat synchronized cardioversion at 300 joules (or biphasic equivalent).
 5. If no response: repeat synchronized cardioversion at 360 joules (or biphasic equivalent).
- III. Patients without Serious Signs and Symptoms
- A. Consider 12 Lead ECG if available.
- B. Monitor and transport patient.
- C. Consider reversible causes of tachycardia.
- D. Consult with base hospital physician for medication orders if transport time > 10 minutes or change in patient condition.

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ALS Narrow Complex Tachycardia; SVT

AUTHORITY: Division 2.5, Health and Safety Code, Sections 1797.220 & 1798 et seq.

DEFINITION:

- A. “**Narrow complex tachycardia**” indicates a regular rhythm with a rate >150 beats/minute and a QRS duration < 0.12 and no P wave.

PROCEDURE:

- I. Perform routine ALS/BLS medical care as directed in EMS Policy No. 5502, Routine BLS Care and EMS Policy No. 5701, Routine ALS Care.
- II. Patients with Serious Signs and Symptoms (Chest Pain, B/P < 90 systolic, decreased LOC, shortness of breath, signs of shock):
 - A. Consider reversible causes of tachycardia such as hypoxia and hypovolemia.
 - B. Consult base hospital physician.
 1. Consider precardioversion sedation with Midazolam 1-2mg slow IVP titrated to effect.
 2. Synchronized cardioversion at 100 joules monophasic energy dose (or equivalent biphasic energy dose).
 3. If no response: repeat synchronized cardioversion at 200 joules (or biphasic equivalent).
 4. If no response: repeat synchronized cardioversion at 300 joules (or biphasic equivalent).
 5. If no response: repeat synchronized cardioversion at 360 joules (or biphasic equivalent).
- III. Patients without Serious Signs and Symptoms:
 - A. Consider reversible causes of tachycardia including hypoxia and hypovolemia and treat accordingly.
 - B. Perform Valsalva’s maneuver.
 - C. Administer Adenosine 6mg RAPID IVP immediately followed by 20 ml of normal saline.

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- D. If no response after 2 minutes: Administer Adenosine 12mg rapid IVP immediately followed by 20 ml of normal saline.
- E. If no response after 2 minutes: Administer Adenosine 12mg rapid IVP immediately followed by 20 ml of normal saline.
- F. Consider 12 Lead ECG if available.
- G. Consult with base hospital physician.

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ALS Asystole

AUTHORITY: Division 2.5, Health and Safety Code, Sections 1797.220 & 1798 et seq.

DEFINITION:

- A. “**Asystole**” indicates an absence of electromechanical activity within the heart verified in at least two leads.

PROCEDURE:

- I. Confirm pulselessness and rhythm. If rhythm is unclear and possibly ventricular fibrillation, defibrillate as for ventricular fibrillation.
- II. Perform immediate, effective CPR.
- III. Treatment:
- A. Continue CPR, maintain adequate airway.
- B. Initiate normal saline infusion via IV/IO.
- C. Consider reversible causes and treat as indicated:
1. Hypovolemia – Start two large bore IV lines and administer rapid 2 liter volume infusion of NS, then 250 ml boluses until systolic B/P is >90 mmHg .
 2. Hypoxia – Administer 100% oxygen
 3. Tension pneumothorax – See Needle Thoracostomy protocol.
 4. IDDM and Dialysis(Acidosis) – Administer 1 mEq/kg of Sodium Bicarbonate IV
 5. Cardiac tamponade – Continue CPR
 6. Drug overdoses – Administer reversal agents as indicated. Contact base hospital physician for orders if necessary.
 7. Hypothermia – Initiate rewarming activities.
 8. Renal Failure/Dialysis (Hyperkalemia) - Administer 500 mg of 10% Calcium Chloride and 1 mEq/kg of Sodium Bicarbonate IV
- D. If unable to establish IV/IO **and** unable to intubate, begin transport and continue CPR while transporting patient.

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- E. Administer Epinephrine 1 mg (1:10,000) IV/IO or 2 mg (1:1000) diluted in 10 ml NS via ETT. Repeat every 3-5 minutes.
- F. Continue CPR for 5 cycles/2 minutes and recheck pulse/rhythm.
- G. Administer Atropine 1 mg IVP or 2 mg ETT, repeat every 3-5 minutes to a total of 3mg.
- H. Continue CPR for 5 cycles/2 minutes and recheck pulse/rhythm.
- I. Consider base contact for field determination of death if patient remains asystolic after twenty (20) minutes of continuous and appropriate advance cardiac life support (ACLS) intervention.

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ALS Pulseless Electrical Activity (PEA)

AUTHORITY: Division 2.5, Health and Safety Code, Sections 1797.220 & 1798 et seq.

PROCEDURE:

- I. Confirm pulselessness and rhythm.
- II. Perform immediate, effective CPR.
- III. Continue CPR, maintain patent airway with 100% oxygen via BVM. Perform endotracheal intubation.
- IV. Establish IV access. Administer rapid infusion of NS until systolic B/P is >90 mmHg or 2 liters infused; then TKO.
- V. Consider reversible causes and treat as indicated:
 - A. Hypovolemia – Start two large bore IV lines and administer rapid 2 liter volume infusion of NS, then 250 ml boluses until systolic B/P is >90 mmHg .
 - B. Hypoxia – Administer 100% oxygen
 - C. Tension pneumothorax – See Needle Thoracostomy protocol.
 - D. IDDM and Dialysis(Acidosis) – Administer 1 mEq/kg of Sodium Bicarbonate IV
 - E. Cardiac tamponade – Continue CPR
 - F. Drug overdoses – Administer reversal agents as indicated. Contact base hospital physician for orders if necessary.
 - G. Hypothermia – Initiate rewarming interventions.
 - H. Renal Failure/Dialysis (Hyperkalemia) - Administer 500 mg of 10% Calcium Chloride and 1 mEq/kg of Sodium Bicarbonate IV
- VI. Administer Epinephrine 1 mg (1:10,000) IV/IO or ETT 2 mg (1:1000) diluted in 10 ml of NS. Repeat every 3-5 minutes.
- VII. Continue CPR for 5 cycles/2 minutes and recheck pulse/rhythm.
- VIII. For heart rate < 50, consider Atropine 1mg IV. May repeat every 5 minutes.

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ALS Bradycardias

AUTHORITY: Division 2.5, Health and Safety Code, Sections 1797.220 & 1798 et seq.

DEFINITION:

- A. “**Bradycardia**” indicates a heart rate that is < 60 and symptomatic (poor perfusion or signs of shock).

PROCEDURE:

- I. Perform routine ALS/BLS medical care as directed in EMS Policy No. 5502, Routine BLS Care and EMS Policy No. 5701, Routine ALS Care.
- II. Patients with Serious Signs and Symptoms (systolic B/P < 90, signs of shock, decreased level of consciousness, chest pain, and shortness of breath):
- A. May administer Atropine 0.5mg IV while preparing transcutaneous pacer.
- B. Consult Base Hospital Physician.
1. Initiate transcutaneous pacing. Repeat dose q 5 min. prn (max 3 mg).
 2. Provide sedation with Midazolam 1-2 mg and/or Morphine Sulfate 1-2 mg slow IVP, titrate to effect.
 3. If capture maintained but patient remains symptomatic, consider fluid challenges of 250 ml NS. Recheck vital signs every 250ml or more frequently as needed.
 4. If inadequate response to Atropine and pacing, consider administering Dopamine 400 mg/250 cc premix. Start at 10 mcg/kg/min and titrate to systolic blood pressure of 90. (See page 2 for Dopamine dosage chart).
- C. For Renal Failure/Dialysis (suspected Hyperkalemia) – Consult with base hospital physician to obtain order for administration of 500 mg of 10% Calcium Chloride and 1 mEq/kg of Sodium Bicarbonate IV.
- III. Patients without Serious Signs and Symptoms:
- A. Monitor patient and transport.
- B. Consult base hospital physician as needed.

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DOPAMINE			
400 mg in 250 cc NS or D5W 60 drops/min = 60 ml/hr			
Weight (kg)	gtts/min to = 10 mcg/kg/min	Weight (kg)	gtts/min to = 10 mcg/kg/min
35-45	15 gtts/min	85-90	35 gtts/min
45-55	20 gtts/min	95-105	40 gtts/min
60-70	25 gtts/min	110 & up	45 gtts/min
75-80	30 gtts/min		

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ALS Acute Coronary Syndrome

AUTHORITY: Division 2.5, Health and Safety Code, Sections 1797.220 & 1798 et seq.

PROCEDURE:

- I. Perform routine ALS/BLS medical care as directed in EMS Policy No. 5502, Routine BLS Care and EMS Policy No. 5701, Routine ALS Care.

- II. Treatment:
 - A. Oxygen
 - B. If systolic blood pressure is above 100 mmHg, administer nitroglycerin 0.4 mg SL - may repeat every five (5) minutes if signs/symptoms persist and systolic blood pressure remains above 100 mmHg.
 - C. If patient is able to swallow, give Aspirin 325mg po.
 - D. Obtain 12 Lead ECG if available.
 - E. If systolic blood pressure remains above 100 mmHg, administer morphine sulfate 2-4 mg IVP - may repeat in 2 mg doses as needed for pain control if systolic blood pressure remains above 100 mmHg.
 - F. If acute ST Elevation Myocardial infarction (STEMI) is detected on ECG:
 1. Notify receiving facility ASAP
 2. Complete Prehospital Thrombolytic Checklist during transport
 3. Consider establishing a second IV Normal Saline TKO during transport.

- III. Special Considerations:
 - A. If systolic blood pressure less than 100 mmHg, administer a 250 cc fluid bolus.
 - B. If systolic blood pressure less than 90 mmHg, see Cardiogenic Shock protocol.
 - C. Nitroglycerin should **NOT** be administered to patients of either gender who have taken Viagra, (sildenafil citrate) or Levitra (vardenafil HCL) within 24 hours or Cialis (tadalafil) within 36 hours.
 - D. Aspirin should NOT be administered to patients with aspirin allergy or active GI bleed.

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SAN JOAQUIN COUNTY EMS AGENCY
PREHOSPITAL THROMBOLYTIC CHECKLIST

Date: _____ Time: _____ Medic Unit: _____

Patient Name: _____ Age: _____ Wgt: _____ lbs/kgs

Duration of Chest Pain: _____ Hours _____ Minutes

Exclusions

- 1. Is patient on anticoagulants? **Y / N / ?**
- 2. Is systolic blood pressure > 180 mm Hg.? **Y / N / ?**
- 3. Is diastolic blood pressure > 110 mm Hg.? **Y / N / ?**
- 4. GI or GU bleeding in past 10 days? **Y / N / ?**
- 5. Any known bleeding disorders? **Y / N / ?**
- 6. Recent major surgery (within last 2 weeks)? **Y / N / ?**
- 7. Recent trauma (within last 3 months)? **Y / N / ?**
- 8. Recent treatment for CA? **Y / N / ?**
- 9. PMH renal or hepatic disease? **Y / N / ?**
- 10. IDDM or hemorrhagic retinopathy? **Y / N / ?**
- 11. Active menstruation or pregnancy? **Y / N / ?**
- 12. Treatment with thrombolytics in past 6 months? **Y / N / ?**
- 13. Recent history of stroke? **Y / N / ?**

Information provided by _____

ECG: Time: _____ Results: _____

Compatible with AMI? (ST >1mm in 2 contiguous leads) **Y / N / ?**

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ALS Cardiogenic Shock

AUTHORITY: Division 2.5, Health and Safety Code, Sections 1797.220 & 1798 et seq.

PROCEDURE:

- I. Perform routine ALS/BLS medical care as directed in EMS Policy No. 5502, Routine BLS Care and EMS Policy No. 5701, Routine ALS Care.

- II. Treatment:
 - A. Apply Oxygen.
 - B. Obtain 12 Lead ECG if available.
 - C. Treat significant arrhythmias.
 - D. Initiate IV access.
 - E. Administer a NS fluid challenge of up to 1 liter while rechecking vital signs and lung sounds after every 250mls. If patient's lungs are not clear, consult base hospital physician.
 - F. If systolic blood pressure remains < 90 mmHg after fluid challenges or lungs are not clear, consult base hospital physician and consider administering Dopamine 400 mg/250 cc premix.
 - G. Transport without delay.

DOPAMINE			
400 mg in 250 cc NS or D5W 60 drops/min = 60 ml/hr			
Weight	gtts/min to = 10 mcg/kg/min	Weight (kg)	gtts/min to = 10 mcg/kg/min
35-45	15 gtts/min	85-90	35 gtts/min
45-55	20 gtts/min	95-105	40 gtts/min
60-70	25 gtts/min	110 & up	45 gtts/min
75-80	30 gtts/min		

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ALS Hypertension

AUTHORITY: Division 2.5, Health and Safety Code, Sections 1797.220 & 1798 et seq.

PROCEDURE:

- I. Perform routine ALS/BLS medical care as directed in EMS Policy No. 5502, Routine BLS Care and EMS Policy No. 5701, Routine ALS Care.

- II. Treatment:
 - A. Apply oxygen.
 - B. Obtain 12 Lead ECG if available.
 - C. Treat significant arrhythmias.
 - D. Consider IV access.
 - E. Treat associated syndromes.
 - F. Consult base hospital physician for patient in hypertensive crisis.

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Inappropriate Shock from an Implanted Defibrillator

AUTHORITY: Division 2.5, Health and Safety Code, Sections 1797.220 & 1798 et seq.

PROCEDURE:

- I. Perform routine ALS/BLS medical care as directed in EMS Policy No. 5502, Routine BLS Care and EMS Policy No. 5701, Routine ALS Care.

- II. Treatment:
 - A. Apply magnet directly over center of the defibrillator.
 - B. Tape magnet in place.
 - C. If another shock is delivered, magnet may have to be moved; re-center over defibrillator, and tape in place.
 - D. The defibrillator device is now non-functional; however the pacer may still function.
 - E. Treat associated syndromes.

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ALS Ventricular Ectopy

AUTHORITY: Division 2.5, Health and Safety Code, Sections 1797.220 & 1798 et seq.

DEFINITIONS:

- A. **Ventricular ectopy:** Ventricular ectopic beats that present as couplets, multifocal PVCs > 6 minute, or non-sustained runs of ventricular tachycardia.

PROCEDURE:

- I. Perform routine ALS/BLS medical care as directed in EMS Policy No. 5502, Routine BLS Care and EMS Policy No. 5701, Routine ALS Care.
- II. Treatment:
- A. Obtain 12 lead ECG, if available.
 - B. In the presence of continuous chest pain, administer Lidocaine 1mg/kg IVP.
 - C. Consult Base Hospital if transport time may exceed 20 minutes.

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ALS Return of Spontaneous Circulation

AUTHORITY: Division 2.5, Health and Safety Code, Sections 1797.220 & 1798 et seq.

POLICY:

- I. Perform routine ALS/BLS medical care while confirming palpable carotid pulse and blood pressure.
- II. Monitor for reoccurrence of arrest rhythm.
- III. Treatment:
 - A. B/P > 90 systolic
 1. Monitor cardiac rhythm and vital signs
 2. If patient was resuscitated from VF/VT or ventricular ectopy is present consider consulting base hospital physician for antiarrhythmic infusion order.
 - B. B/P < 90 systolic
 1. Administer fluid challenge of 500ml IV.
 2. If pulse is < 60
 - a. Administer Atropine 0.5mg IV. Repeat every 5 minutes as needed (maximum dose of 3 mg).
 - b. Initiate transcutaneous pacing if HR and B/P not improved with Atropine.
 3. Consider Dopamine infusion. Start at 5mcg/kg/min and titrate to systolic B/P > 89.

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Environmental

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ALS Allergic Reaction/Anaphylaxis

AUTHORITY: Division 2.5, Health and Safety Code, Sections 1797.220 & 1798 et seq.

PROCEDURE:

- I. Perform routine ALS/BLS medical care as directed in EMS Policy No. 5502, Routine BLS Care and EMS Policy No. 5701, Routine ALS Care.

- II. Treatment:
 - A. Remove allergen if possible.
 - B. **Mild reaction** (urticaria only):
 1. Consider diphenhydramine 50mg IM
 - C. **Moderate to severe reaction** (Urticaria with one or more of the following: swelling of mucous membranes, dyspnea, wheezing, chest or throat tightness, abdominal cramps).
 1. Consider epinephrine 1:1000, 0.01mg/kg SQ. Maximum dose 0.5mg. (Use with caution in patients over the age of 35 years and in patients with known coronary artery disease or HTN.)
 2. If wheezing, initiate hand held nebulizer dose of Albuterol 5mg in 6 ml NS. May repeat as needed.
 3. Consider IV NS TKO or saline lock.
 4. Administer diphenhydramine 1mg/kg to maximum dose of 50mg IM or IVP.
 - D. **Anaphylaxis** (Urticaria and signs of shock with any or all of the following: swelling of mucous membranes, dyspnea, wheezing, chest or throat tightness, abdominal cramps).
 1. Administer epinephrine 1:1000, 0.01mg/kg SQ. Maximum dose 0.5mg. (Use with caution in patients over the age of 35 years and in patients with known coronary artery disease or HTN.)
 2. Establish large bore IV of NS and administer 250ml fluid boluses as indicated.
 3. If wheezing, initiate hand held nebulizer dose of Albuterol 5mg in 6 ml NS. May repeat as needed.
 4. Administer diphenhydramine 1mg/kg to maximum dose of 50mg IM or IVP.
 5. Consider intubation.
 6. If patient is unresponsive with no palpable pulses, administer epinephrine (1:10,000) 0.01mg/kg to max dose of 0.5mg IV.
 7. Consult base hospital physician for further orders.

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ALS Poisoning/Overdose

AUTHORITY: Division 2.5, Health and Safety Code, Sections 1797.220 & 1798 et seq.

DEFINITIONS:

- A. **Poisoning/Overdose:** Ingestion and/or exposures to one or more toxic substances, including alcohol.

PROCEDURE:

- I. Perform routine ALS/BLS medical care as directed in EMS Policy No. 5502, Routine BLS Care and EMS Policy No. 5701, Routine ALS Care.
- II. Identify substance. Bring any containers, labels or a sample (if safe) into the hospital with the patient. Determine type, amount and time of the exposure.
- III. Treatment:
- A. I.V. NS TKO or saline lock if indicated.
- B. Initiate early transport and receiving hospital notification.
- IV. Substance Specific Treatment:
- A. **Hydrocarbons** (kerosene, gasoline, lighter fluid, turpentine, furniture polish, etc):
1. Do not induce vomiting-transport immediately.
- B. **Caustic Substances** (acids/alkalis):
1. Do not induce vomiting.
- C. **Insecticides** (organophosphates, carbonates):
1. Skin exposure: decontaminate patient as soon as possible (remove clothes, wash skin).
 2. Avoid contamination of prehospital personnel.
 3. Assess for SLUDGE (salivation, lacrimation, urination, diaphoresis/diarrhea, gastric hypermotility, and emesis/eye [small pupils and/or blurry vision]).
 4. If indicated, administer Atropine 2.0 mg I.V. slowly. If no tachycardia or pupil dilation, give second dose of 2.0mg I.V. Note: Atropine does not reverse muscle weakness that leads to respiratory failure.

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5. Atropine can be toxic and **repeat doses above 4 mg** should be given by **BASE HOSPITAL PHYSICIAN ORDER ONLY.**
- D. **Cyclic Antidepressants:**
1. IV NS TKO, start immediately.
 2. Anticipate rapid deterioration of condition.
 3. In the presence of life-threatening dysrhythmias:
 - a. Hyperventilate if assisting ventilation or if intubated.
 - b. Administer Sodium Bicarbonate 1mEq/kg IVP.
 4. For seizures, see EMS Policy, No. 5753, Seizures.
 5. For signs of shock see EMS Policy No. 5720, Cardiogenic Shock.
- E. **Phenothiazine Reactions:**
1. IV NS TKO.
 2. Administer Diphenhydramine 1 mg/kg IV to a maximum of 50 mg. If unable to establish IV access, administer IM.
- F. **Other Non-Caustic Drugs:**
1. If patient is awake and alert consider activated charcoal orally—1gm/kg PO, not to exceed 50gms if within the first 60 minutes of ingestion.
 2. Consider contacting Poison Control Center.
- G. **Beta Blockers:**
1. Consider activated charcoal 1gm/kg PO, not to exceed 50gms given orally (if within the first 60 minutes of ingestion).
 2. Obtain blood glucose level.
 2. If bradycardic and/or hypotensive, consult base hospital physician for order to administer Glucagon 1mg Slow IVP or IM.
- H. **Calcium Channel Blockers:**
1. Consider activated charcoal 1gm/kg PO, not to exceed 50gms given orally (if within the first 60 minutes of ingestion).
 2. If bradycardic and/or hypotensive, consult base hospital physician for order to administer Calcium Chloride 500mg slow IVP over 5 minutes. May repeat x 1 in ten minutes.
- I. **Opiates:**
1. Manage airway and adequate ventilation.
 2. Administer Naloxone titrated to maintain adequate ventilation and airway control. Initial dose is 0.4mg - 2 mg IV (maximum dose of 4mg). May administer IM, SL or via ET if unable to start IV.
- J. **Cocaine/Amphetamines:**
1. Consider activated charcoal 1gm/kg PO, not to exceed 50gms given orally (if within the first 60 minutes of ingestion).
 2. Monitor for seizures and/or dysrhythmias and treat accordingly.
 3. For immediate control of psychomotor agitation, consult base hospital physician for sedative order.

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ALS Drowning/Near Drowning

AUTHORITY: Division 2.5, Health and Safety Code, Sections 1797.220 & 1798 et seq.

DEFINITIONS:

- A. **Drowning**: Loss of consciousness in water, now in full cardiopulmonary arrest.
- B. **Near Drowning**: Loss of consciousness in water, not in full cardiopulmonary arrest.

PROCEDURE:

- I. Perform routine ALS/BLS medical care as directed in EMS Policy No. 5502, Routine BLS Care and EMS Policy No. 5701, Routine ALS Care.
- II. All cold-water drowning/near drowning patients must be transported to the emergency department for determination of death.
- III. Treatment:
 - A. Drowning: Treat as cardiopulmonary arrest, using specific dysrhythmia treatment guideline, with consideration for hypothermia and spinal precautions.
 - B. Near Drowning:
 - 1. Anticipate vomiting; take precautions against aspiration, be prepared for suctioning.
 - 2. Remove wet clothing; keep patient warm and dry.
 - 3. Transport with out delay to the nearest appropriate facility.

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ALS Heat Illness

AUTHORITY: Division 2.5, Health and Safety Code, Sections 1797.220 & 1798 et seq.

DEFINITIONS:

- A. **Heat Cramps:** Cramping of the most worked muscles following replacement of exertion induced fluid losses (sweating) with water; exhaustion, fatigue, flu-like symptoms, normal/slightly elevated body temperature, normal mental status with clear lung sounds.
- B. **Heat Stroke:** Triad of exposure to heat stress, altered mental status and elevated body temperature; often associated with absence of sweating, tachycardia and hypotension.

PROCEDURE:

- I. Perform routine ALS/BLS medical care as directed in EMS Policy No. 5502, Routine BLS Care and EMS Policy No. 5701, Routine ALS Care.
- II. Specific Heat Cramps/Heat Exhaustion Treatment:
 - A. Move patient to cool environment and initiate passive cooling measures.
 - B. If lungs clear, give fluid challenge of 250mls of NS. May repeat x 4.
 - C. Recheck vital signs and lungs after every 250 mls.
- III. Specific Heat Stroke Treatment:
 - A. Move to cool environment and begin cooling measures:
 1. Remove clothing and splash/sponge with water.
 2. Place cool packs on neck, axilla, and inguinal areas.
 3. Promote cooling by fanning.
 4. IV NS 10 cc/kg (maximum of 2 liters) while repeating vital signs and listening to lung sounds after every 250 mls.

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ALS Hypothermia

AUTHORITY: Division 2.5, Health and Safety Code, Sections 1797.220 & 1798 et seq.

PROCEDURE:

- I. Perform routine ALS/BLS medical care as directed in EMS Policy No. 5502, Routine BLS Care and EMS Policy No. 5701, Routine ALS Care.

- II. Treatment:
 - A. Early receiving hospital notification.
 - B. Ensure patent airway.
 - C. Move to sheltered area minimizing physical exertion or movement, remove wet clothing and cover with warm, dry sheet or blankets (handle gently).
 - D. If lungs clear, consider fluid challenge of 10 ml/kg warm NS. Recheck every 250 mls.
 - E. Severe hypothermia (stuporous or comatose, dilated pupils, hypotensive or pulseless, slowed to absent respirations):
 1. Prepare to support ventilations using appropriate airway adjuncts. If spontaneous respirations are present, intubate only if necessary to prevent aspiration or if ventilations are inadequate (4-6/min may be adequate).
 2. Ventilate using warm, humidified oxygen if available. Avoid hyperventilating the patient.
 3. Observe for organized rhythm and pulses for one minute. If organized rhythm present, move quickly but gently to warm environment (ambulance) and follow rhythm appropriate treatment protocol.

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ALS Envenomation

AUTHORITY: Division 2.5, Health and Safety Code, Sections 1797.220 & 1798 et seq.

PROCEDURE:

- I. Perform routine ALS/BLS medical care as directed in EMS Policy No. 5502, Routine BLS Care and EMS Policy No. 5701, Routine ALS Care.

- II. Treatment:
 - A. Refer to EMS Policy No. 5535, Basic Life Support Envenomation.
 - B. Insect bite:
 - 1. Scrape away stinger (if appropriate).
 - 2. Observe for Allergic Reaction/Anaphylaxis and treat accordingly (EMS Policy No. 5731).
 - 3. Apply cold packs for pain management.
 - C. Snake bite:
 - 1. Immobilize extremity at or below heart level.
 - 2. Circle swelling and note time.
 - 3. Apply a light constricting band about 2" above and below the bite. The purpose of constricting bands is to restrict lymphatic flow, not blood, so they should not be too tight. Check pulses below the bands and readjust the bands as necessary when they tighten due to swelling.
 - 4. Consider pain management.
 - 5. Initiate early receiving hospital notification.
 - 6. Expedite transport.

- For snakebite, do **NOT**:

 - 1. Apply ice to site.
 - 2. Make incisions over bite.
 - 3. Apply a tourniquet.
 - 4. Delay transport to initiate IV.

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Neurological

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ALS Altered Level of Consciousness (ALOC)

AUTHORITY: Division 2.5, Health and Safety Code, Sections 1797.220 & 1798 et seq.

PROCEDURE:

- I. Perform routine ALS/BLS medical care as directed in EMS Policy No. 5502, Routine BLS Care and EMS Policy No. 5701, Routine ALS Care.
- II. Obtain a complete patient history including current medications.
- III. Identify and document neurological deficits.
- IV. Consider indications for spinal immobilization precautions.
 - I. Consider potential causes (hypoglycemia, stroke, neurological injury, syncope, overdose, and sepsis).
 - II. Treatment:
 - A. Establish IV of normal saline and administer 10ml/kg bolus if signs of shock are present (maximum infusion of 2 liters).
 - B. Check blood glucose.
 1. If blood sugar < 70 mg/dl, administer Dextrose 50% 25 Gms IV.
 2. If unable to establish an IV, after a minimum of two attempts, may administer Glucagon 1mg IM or Sub-Q.
 3. Glucose paste may be administered if the patient is a known diabetic, can hold head upright, can self administer medication, and has an intact gag reflex.
 - C. If narcotic overdose is suspected, administer Naloxone 0.4mg-2mg IV titrated to achieve effective respirations (maximum dose 4 mg).
 - D. If unable to obtain IV access, may administer Naloxone 2 mg IM.
 - E. Treat rhythm disturbances as appropriate.
- VI. Transport immediately if progressive neurologic deficit is evident or unable to maintain effective airway.

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ALS Seizures

AUTHORITY: Division 2.5, Health and Safety Code, Sections 1797.220 & 1798 et seq.

PROCEDURE:

- I. Perform routine ALS/BLS medical care as directed in EMS Policy No. 5502, Routine BLS Care and EMS Policy No. 5701, Routine ALS Care.
- II. Protect from injury.
- III. Initiate cooling measures if patient febrile.
- IV. Treatment:
 - A. If witnessed by prehospital personnel to be seizing for > 2 minutes or patient has two or more seizures without regaining consciousness;
 1. Administer Midazolam 2 mg slow IVP.
 - a. If unable to obtain vascular access, may administer IM.
 - b. May be repeated if necessary every 5 minutes (total maximum dose not to exceed 10 mg).
 - B. Obtain blood glucose level.
 1. If glucose < 70mg/dl, administer Dextrose 50% 25Gms IV.
 2. If unable to establish IV, and blood sugar < 70 mg/dl may administer Glucagon 1mg IM or Sub-Q.
 - C. If narcotic overdose suspected:
 1. Administer Naloxone IV in 0.4 mg increments titrated to achieve effective respirations (maximum dose 4 mg).
 2. If unable to establish an IV **and** narcotic overdose suspected, may administer Naloxone 2mg IM, SQ, or SL.
 - D. If the patient is pregnant, refer to EMS Policy No. 5763, Severe Pre-Eclampsia/Eclampsia.
- V. Continued Seizure Activity:
 - A. Be prepared to assist ventilations.
 - B. Make base contact if seizures continue after total Midazolam dosing.

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ALS Acute Stroke

AUTHORITY: Division 2.5, Health and Safety Code, Sections 1797.220 & 1798 et seq.

PROCEDURE:

- I. Perform routine ALS/BLS medical care as directed in EMS Policy No. 5502, Routine BLS Care and EMS Policy No. 5701, Routine ALS Care.
- II. Assess patient using the Cincinnati Prehospital Stroke Scale (CPSS) and document findings. The patient is considered a possible stroke if any of the tested signs/symptoms is positive.

Cincinnati Prehospital Stroke Scale (CPSS)			
Sign/Symptom	How tested	Normal	Abnormal
Facial Droop	Have the patient show their teeth or smile	Both sides of the face move equally	One side of the face does not move as well as the other
Arm Drift	The patient closes their eyes and extends both arms straight out for 10 seconds	Both arms move the same, or both do not move at all.	One arm either does not move, or one arm drifts downward compared to the other.
Speech	The patient repeats "The sky is blue in Cincinnati".	The patient says correct words with no slurring of words.	The patient slurs words, says the wrong words, or is unable to speak

Reference: Cincinnati Prehospital Stroke Scale (CPSS), Kothari, et al., Annals of Emergency Medicine, Volume 33, April 1999

- I. Initiate early notification and transport to the receiving hospital.
- II. Treatment according to ALOC protocol, including blood glucose level determination.
- VI. Transport without delay if progressive neurologic deficit is evident or unable to maintain effective airway.

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OB/Gyn

**San Joaquin County
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ALS Vaginal Hemorrhage without Shock

AUTHORITY: Division 2.5, Health and Safety Code, Sections 1797.220 & 1798 et seq.

PROCEDURE:

- I. Perform routine ALS/BLS medical care as directed in EMS Policy No. 5502, Routine BLS Care and EMS Policy No. 5701, Routine ALS Care.
- II. Obtain appropriate gynecological medical history.
- III. Treatment:
 - A. Non-pregnant patient:
 1. Initiate IV of NS at TKO rate.
 2. If post-partum and placenta has delivered, perform fundal massage and put infant to breast (as appropriate).
 - B. Pregnant patient:
 1. Place patient in left lateral position.
 2. If any bleeding in third trimester, initiate two large bore IVs of NS at TKO rate.
 3. Consult base hospital.

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ALS Vaginal Hemorrhage with Shock

AUTHORITY: Division 2.5, Health and Safety Code, Sections 1797.220 & 1798 et seq.

DEFINITIONS:

A. **Vaginal Hemorrhage with Shock:** Profuse vaginal bleeding with signs of shock.

PROCEDURE:

- I. Perform routine ALS/BLS medical care as directed in EMS Policy No. 5502, Routine BLS Care and EMS Policy No. 5701, Routine ALS Care.
- II. Obtain appropriate gynecological medical history.
- III. Transport without delay.
- IV. Treatment:
 - A. Non-pregnant patient:
 1. Start a large bore IV. Administer a NS fluid challenge of 10 ml/kg. Recheck vital signs after every 250 mls.
 2. Consider second large bore IV of NS.
 3. If post-partum and placenta delivered, perform fundal massage and put infant to breast (as appropriate).
 - B. Pregnant Patient:
 1. Position in left lateral position if concern for spinal injury is not present. If concern is present, keep in spinal precaution and manually attempt movement of uterus towards left side with gentle traction.
 2. Start a large bore IV. Administer a NS fluid challenge of 10 ml/kg. Recheck vital signs after every 250 mls.
 3. Consider second IV NS. **If any bleeding in third trimester, insert second large bore IV.**

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ALS Severe Pre-Eclampsia/Eclampsia

AUTHORITY: Division 2.5, Health and Safety Code, Sections 1797.220 & 1798 et seq.

DEFINITIONS:

- A. **Severe Pre-Eclampsia**: Third trimester pregnancy with hypertension (BP systolic > 160, diastolic > 110), mental status changes, visual disturbances and/or peripheral edema.
- B. **Eclampsia**: Third trimester pregnancy with hypertension (BP systolic > 160, diastolic > 110), mental status changes, visual disturbances, peripheral edema, seizures and/or coma.

PROCEDURE:

- I. Perform routine ALS/BLS medical care as directed in EMS Policy No. 5502, Routine BLS Care and EMS Policy No. 5701, Routine ALS Care.
- II. Treatment:
 - A. Position patient on left side.
 - B. Transport quickly with a quiet environment (no siren).
 - C. Initiate IV of NS at TKO rate (started while enroute to hospital).
 - D. Treat seizures according to EMS Policy No. 5753, Seizures.
 - E. Consult base hospital physician to obtain order for Magnesium Sulfate 4Gms administered IVPB over 10 minutes.

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ALS Imminent Delivery

AUTHORITY: Division 2.5, Health and Safety Code, Sections 1797.220 & 1798 et seq.

DEFINITIONS:

- A. **Imminent Delivery**: Regular contractions, bloody show, low back pain, feels like bearing down, crowning.
- B. **Breech Presentation**: Presentation of buttocks or both feet.
- C. **Limb Presentation**: Presentation of single extremity.

PROCEDURE:

- I. Perform routine ALS/BLS medical care as directed in EMS Policy No. 5502, Routine BLS Care and EMS Policy No. 5701, Routine ALS Care.
- II. Obtain obstetrical history including length of pregnancy, gravida/para, and name of obstetrical healthcare practitioner.
- III. Treatment:
 - A. Imminent Delivery:
 - 1. Follow EMS Policy No. 5562, BLS Imminent Delivery.
 - 2. Initiate an IV of NS at TKO rate, if time allows.
 - B. Complicated Delivery:
 - 1. Apply high flow oxygen.
 - 2. Follow EMS Policy No. 5561, BLS Complication of Pregnancy and/or Field Delivery.
 - 3. Initiate an IV of NS at TKO rate, if time allows.
 - 4. Begin rapid transport to a Neonate/High Risk Pregnancy receiving facility with early base contact.
 - 5. Prepare for neonatal resuscitation.

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Respiratory

**San Joaquin County
Emergency Medical Services Agency**



ALS Bronchospasm

AUTHORITY: Division 2.5, Health and Safety Code, Sections 1797.220 & 1798 et seq.

DEFINITIONS:

- A. **Bronchospasm:** Acute onset of respiratory difficulty, including toxic inhalation, asthma, COPD and other etiologies that may induce bronchospasm.

PROCEDURE:

- I. Perform routine ALS/BLS medical care as directed in EMS Policy No. 5502, Routine BLS Care and EMS Policy No. 5701, Routine ALS Care.
- II. Treatment:
 - A. Mild to Moderate bronchospasm:
 - 1. Initial nebulizer dose:
 - a. Albuterol 2.5mg in 3cc NS
 - b. Ipratropium 0.5mg in 3 cc NS
 - 2. Repeat Albuterol prn.
 - B. Severe bronchospasm:
 - 1. Assist Ventilations with 100% oxygen and initiate an inline nebulizer treatment.
 - a. Albuterol 2.5 mg in 3 cc NS
 - b. Ipratropium 0.5mg
 - 2. Continue Albuterol 2.5 mg nebulizer/bag-valve-mask.
 - 3. Epinephrine 1:1000, 0.01 mg/kg SQ. Maximum dose 0.5 mg. (Use with caution in patients over 35 years of age and in patients with coronary artery disease).
 - 4. Ensure early receiving hospital notification

NOTE: Intubation of the severe asthmatic is extremely difficult and all other measures should be exhausted first.

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ALS Acute Pulmonary Edema

AUTHORITY: Division 2.5, Health and Safety Code, Sections 1797.220 & 1798 et seq.

DEFINITIONS:

- A. **Acute Pulmonary Edema:** Acute onset of respiratory difficulty with systolic blood pressure over 120. May have history of cardiac disease, rales, or occasional wheezes.

PROCEDURE:

- I. Perform routine ALS/BLS medical care as directed in EMS Policy No. 5502, Routine BLS Care and EMS Policy No. 5701, Routine ALS Care.
- II. Treatment:
- A. Oxygen
 - B. Initiate IV access.
 - C. Nitroglycerin 0.4 mg spray, repeat every 5 minutes if systolic blood pressure remains greater than 100mmHg.
 - D. Administer Furosemide 40 mg IV. If patient takes Furosemide regularly, give 80 mg IV.

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ALS Airway Obstruction

AUTHORITY: Division 2.5, Health and Safety Code, Sections 1797.220 & 1798 et seq.

DEFINITION:

- A. **Severe obstruction:** Signs of severe obstruction include poor air exchange, increased breathing difficulty, silent cough, cyanosis, and/or inability to speak or breathe.

PROCEDURE:

- I. Perform routine ALS/BLS medical care as directed in EMS Policy No. 5502, Routine BLS Care and EMS Policy No. 5701, Routine ALS Care.
- II. Follow EMS Policy No. 5573, BLS Obstructed Airway – Adult.
 - I. **If no signs of severe obstruction present**, maintain airway and apply oxygen.
 - II. **If patient has signs of severe obstruction and/or is unconscious:**
 - A. Continue abdominal and chest thrusts.
 - B. Assist ventilation with BVM.
 - C. Use direct laryngoscopy and Magill forceps to remove foreign body.
 - D. If unsuccessful, attempt endotracheal intubation.
 - E. If unsuccessful and unable to ventilate adequately with BVM, consider Needle Cricothyrotomy (EMS Policy No. 5926).

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Trauma

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Emergency Medical Services Agency



ALS Amputation

AUTHORITY: Division 2.5, Health and Safety Code, Sections 1797.220 & 1798 et seq.

PROCEDURE:

- I. Perform routine ALS/BLS medical care as directed in EMS Policy No. 5502, Routine BLS Care and EMS Policy No. 5701, Routine ALS Care.

- II. Treatment:
 - A. Elevate, splint the injured extremity, and control bleeding.
 - B. Initiate BLS medical care according to EMS Policy No. 5584, BLS Amputation.
 - C. Initiate an IV of NS at TKO rate.
 - D. If systolic blood pressure < 90, treat as a Major Trauma patient (EMS Policy No. 5783).
 - E. For pain management, in absence of hypotension and no narcotic allergies, administer Morphine Sulfate per EMS Policy No. 5707, Adult Pain Management.

- III. Care of the amputated part:
 - A. When load and transport time is **less** than 20 minutes:
 1. Place the amputated part in a sterile saline gauze wrap.

 - B. When load and transport time is **more** than 20 minutes:
 1. Place the amputated part in a plastic container. **Do not add ice or saline to the container in which the amputated part has been placed.**
 2. Place that container in a second plastic container and then place on iced saline. Ensure that there are two layers of protection between the amputated part and the iced saline.

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Approved: Signature on file
Medical Director

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EMS Administrator

**San Joaquin County
Emergency Medical Services Agency**



ALS Burn Care

AUTHORITY: Division 2.5, Health and Safety Code, Sections 1797.220 & 1798 et seq.

PROCEDURE:

- I. Perform routine ALS/BLS medical care as directed in EMS Policy No. 5502, Routine BLS Care and EMS Policy No. 5701, Routine ALS Care.

- II. Treatment:
 - A. Stop the burning process.
 - B. Follow EMS Policy No. 5586, Basic Life Support Burns.
 - C. Consider early advanced airway intervention if airway and/or facial burn is involved.
 - D. Superficial burns:
 1. Consider initiating IV of NS at TKO rate.
 2. For pain management, in absence of hypotension and no narcotic allergies, administer Morphine Sulfate per Adult Pain protocol.
 - E. Major burns (>20% total body surface area [BSA]):
 1. Initiate large bore IV access. Initiate fluid replacement using the Parkland Formula.
 2. For pain management, in absence of hypotension and no narcotic allergies, administer Morphine Sulfate per EMS Policy No. 5707, Adult Pain Management.

- III. Initiate early notification of receiving hospital and consult with base hospital as appropriate.

Parkland Formula: Amount of IV fluid infused during the first 24 hours = weight in kg X 4 ml X % BSA burned. Administer one-half of the calculated fluid during the first 8 hours. Note: The starting time is considered the time at which the burn occurred and not the time at which medical care is initiated. **To obtain an initial hourly infusion rate, use the following formula:**

$$(2\text{ml} \times \text{kg} \times \% \text{BSA}) / 8$$

Example: 120kg male with 20% BSA burn = $(2 \times 120 \times 20) / 8 = 600\text{ml/hr}$ infusion rate

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ALS Major Trauma

AUTHORITY: Division 2.5, Health and Safety Code, Sections 1797.220 & 1798 et seq.

PROCEDURE:

- I. Perform routine ALS/BLS medical care as directed in EMS Policy No. 5502, Routine BLS Care and EMS Policy No. 5701, Routine ALS Care.
- II. Do not delay transport.
- III. Transport in accordance with trauma destination policies and receiving facility early.
- IV. Treatment:
 - A. Secure airway using the simplest, effective method, while maintaining C-Spine immobilization, if indicated.
 - B. Establish 1-2 large bore IV(s) of normal saline on blood Y tubing.
 1. If patient is hypotensive, administer NS wide open until systolic blood pressure >90 or 2 liters infused, then TKO.
 2. If systolic blood pressure remains < 90 after initial bolus, give 250 ml boluses until BP 90-100.
 3. Reassess the patient after each bolus.
 - C. For pain management, in absence of hypotension and no narcotic allergies, administer Morphine Sulfate per EMS Policy No. 5707, Adult Pain Management.
 - D. Head, Neck, and Facial Trauma Considerations:
 1. Elevate the head of brain injured patient, if no signs of shock are present.
 2. Maintain patent airway. If intubation is indicated and time allows, premedicate brain injury patients with Lidocaine 1.5mg/kg IV prior to intubation.
 - E. Chest Trauma Considerations:
 1. Impaled object – Immobilize and leave in place, unless it interferes with CPR.
 2. Flail chest – Stabilize chest, observe for tension pneumothorax.
 3. Open chest wound – Cover wound with loose dressing (do not seal). Continuously monitor patient for tension pneumothorax.

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- 4. Tension pneumothorax – Perform Needle Thoracostomy or remove any occlusive dressing covering an open chest wound (EMS Policy No. 5924, Needle Thoracostomy).
- 5. Cardiac Tamponade – If systolic BP < 90, treat as traumatic shock.
- 6. Cardiac Contusion – Monitor for dysrhythmias and treat accordingly.
- F. Abdominal Trauma Considerations:
 - 1. Impaled object – Immobilize and leave in place, unless it interferes with CPR.
 - 2. Evisceration of organs – Cover eviscerated organs with saline soaked gauze. Do not attempt to replace organs into the abdominal cavity.
 - 3. Genital injuries – Cover genitalia with saline soaked gauze. If necessary, apply direct pressure to control bleeding. Treat amputation as extremity amputation.
- G. Extremity Trauma Considerations:
 - 1. Follow EMS Policy No. 5582, BLS Trauma Care.

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ALS Traumatic Arrest

AUTHORITY: Division 2.5, Health and Safety Code, Sections 1797.220 & 1798 et seq.

PROCEDURE:

- I. Perform immediate CPR.
- II. Do not delay transport to an appropriate receiving facility.
- III. Notify receiving facility early.
- IV. Treatment:
 - A. Secure airway using the simplest, effective method, while maintaining C-Spine immobilization, if indicated. Consider intubation while en route.
 - B. Establish two large bore IV(s) of normal saline on blood Y tubing and infuse fluids wide open.
 - C. Monitor and treat dysrhythmias according to ALS treatment guidelines.
 - D. If blunt trauma arrest and patient is in asystole or pending difficult/prolonged extrication, consult base hospital physician for determination of death order.
 - E. All patients that are in traumatic arrest that present with pulseless electrical activity with an organized rhythm > 30 beats per minute shall be treated and transported without delay as a Major Trauma (EMS Policy No. 5783) patient.

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