



COUNTY OF SAN LUIS OBISPO HEALTH AGENCY
PUBLIC HEALTH DEPARTMENT

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Emergency Medical Services Agency

Bulletin 2024-07 – December 27th, 2024

URGENT

PLEASE POST

EFFECTIVE January 1st, 2025

Policy, Protocol, Formulary, and Procedure Update

The San Luis Obispo County Emergency Medical Services Agency (SLOEMSA) has completed our 2024 Paramedic Update Class. Thank you for your time and participation in making this year's update class successful. Below are the policies, protocols, formularies, and procedures that have been updated and are now live.

Policies:

- **Policy #155:** EMS Helicopter Operations (went live Nov 14th, 2024)
- **Policy #200:** Scene Management
- **Policy #217:** Physician On-Scene
- **Policy #218:** Upgrade, Downgrade, or Cancellation of EMS Response
- **Policy #205 Attachment A (EMS Equipment and Supply List):** Edited Lidocaine. Updated to include Ketamine 100 mg/ 1mL, Amiodarone 50mg/mL (9mL vials) OR Amiodarone 150mg/3ml (3mL vials). Whichever vial of Amiodarone (3mL or 9mL) a unit has should be stocked with one concentration only.

Protocols:

- **Protocol #602:** Airway Management- Updated needle decompression.
- **Protocol #603:** Pain Management- Added Ketamine IV/IM.
- **Protocol #619:** Shock (Medical) Hypotension/Sepsis- Added additional fluid bolus, Push-Dose EPI, and EPI Drip under ALS standing orders.

Public Health Department

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- **Protocol #640:** Adult Cardiac Chest Pain/Acute Coronary Syndrome- Added 500mL fluid bolus under standing orders. Added large-bore IV preferred and defib pads out and ready in "STEMI ALERTS."
- **Protocol #641:** Cardiac Arrest (Atraumatic)- Eliminated increasing defib setting and replaced it with all shocks will be at the maximum manufacturer's setting, added Amiodarone replacing Lidocaine, added vector change consideration for refractory VFIB/VTACH, moved Push-Dose EPI, and EPI Drip under ALS standing orders for ROSC.
- **Protocol #643:** Ventricular Tachycardia with Pulses – Replaced Lidocaine with Amiodarone.
- **Protocol #661:** Traumatic Cardiac Arrest- Added bilateral needle decompressions to be performed in traumatic cardiac arrest with any suspicion of chest trauma. Chest trauma doesn't have to be visible to suspect chest trauma and perform bilateral needle decompressions.

Formularies:

- Lidocaine formulary edited
- Amiodarone formulary added
- Ketamine formulary added

Procedures:

- **Procedure #705:** Needle Thoracostomy- Added mid-axillary 4th intercostal space under ALS standing orders.
- **Procedure #710:** Vascular Access and Monitoring- Added humeral head and medial malleolus under ALS standing orders.
- **Procedure #711:** Use of Restraints- Added no restraints of any kind behind the patient's back.

This bulletin provides a brief overview of the changes covered in the 2024 EMS Update Class. Please thoroughly review each policy, protocol, procedure, and formulary in this bulletin.

For any questions regarding this bulletin, please contact:

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Or

SLOEMSA Medical Director Dr. Mulkerin wmulkerin@co.slo.ca.us

POLICY #200: SCENE MANAGEMENT

I. PURPOSE

- A. To clarify the local application of Section 1798 of the Health and Safety Code as it relates to scene management and the related responsibilities of emergency medical service (EMS) first response agencies, transport services, and base hospitals in the County of San Luis Obispo.

II. POLICY

A. AUTHORITY FOR SCENE MANAGEMENT

1. Authority for the management of the scene of an emergency is vested in the appropriate public safety agency having primary investigative authority, law enforcement or fire suppression. Scene management at this highest level includes not only the safety of the EMS team and its patient(s) but other persons who may be exposed to the risks and the public. While public safety officials shall consult emergency medical services personnel in the determination of relevant risks, they retain the authority for scene management and incident command.
2. Responsibility to mitigate criminal activities and hazards lies with the appropriately trained and equipped public safety agency. EMS providers without these responsibilities will not knowingly enter a crime scene or a hazardous scene until the appropriate public safety agency has arrived, secured the scene, and deemed it reasonably 'safe to enter'.
3. The appropriate public safety agency is responsible for the non-medical aspects of scene management. When EMS transport personnel have arrived first, there is no apparent hazard, and transport personnel are managing the non-medical aspects of the scene; the responsibility for scene management will pass to public safety personnel upon their arrival and with appropriate information exchange. If in the opinion of the EMS transport personnel, no assistance is needed and no hazards exist at the scene, they shall advise public safety; the decision whether to continue response or cancel shall be left to the public safety agency responding.
4. The Incident Commander shall make all resource ordering and canceling decisions.

B. AUTHORITY FOR PATIENT HEALTH CARE MANAGEMENT

1. Authority for patient health care management in an emergency is vested in any paramedic or other prehospital emergency personnel at the scene of the emergency who is most medically qualified. Authority to provide pre-hospital emergency medical care lies with the emergency medical technician (EMT) or paramedic (EMT-P) who initiates patient health care management. In the absence of these licensed or certified health care personnel authority shall be vested in the most appropriate medically qualified representative of public safety. All personnel will transfer authority for patient health care management

to any arriving EMS provider authorized at a higher level, including flight paramedics/registered nurses (RN), when medically appropriate.

2. Having accepted authority for patient health care management, public safety personnel authorized at the same level as EMS transport personnel may transfer the care of individual patients as soon as possible and/or when medically appropriate. The authority for each patient passes with completion of a verbal report and acceptance of the transfer of care.
3. When ALS public safety arrives on scene first and wants to maintain authority for patient healthcare management, public safety must ride into the hospital with the patient and transport personnel. In all cases, regardless of which agency maintains authority for patient healthcare management, information relating to patient healthcare management shall be shared professionally and collaboratively.
4. If there is a disagreement regarding patient care while on scene of an incident, EMS personnel shall work professionally and collaboratively to find a solution. If EMS personnel still cannot agree on patient care, Base Hospital contact shall be made, and orders followed.

C. AUTHORITY FOR PATIENT DISPOSITION

1. Patient disposition, destination, and mode of transport (ground/air) are indicated by patient's preference, clinical needs, and operational requirements. In all cases, EMS personnel, and base hospitals when included, are responsible to collaboratively determine the medically appropriate patient disposition and to advise the Incident Commander (IC) of this conclusion. However, when there is disagreement, destination is primarily a medical decision. As such, EMS personnel will comply with medical direction regarding destination, whether by protocol or base hospital order. Similarly, when there is disagreement, mode of transport is primarily an operational decision. As such, EMS personnel will comply with operational direction from the IC regarding mode of transport.

D. COMMUNICATIONS

1. Ground ambulances will be dispatched by MEDCOM. The MEDCOM dispatch channel is for ambulance dispatch, ambulance status changes (responding, at scene, available, etc), routine non-emergency traffic, and reporting new incidents (when already assigned to an incident and there is a need to report a new emergency, it shall be done on the command channel assigned by the AHJ). MEDCOM is not used for incident related communications. Ground ambulances shall always monitor their dispatch channel.

Upon dispatch, EMS transport personnel shall immediately monitor the fire command/tactical frequencies as assigned by the Authority Having Jurisdiction (AHJ). The ordering point for EMS incidents is the ECC/PSAP of the AHJ. All communication related to the incident shall be on the fire command/tactical channels assigned by the AHJ. EMS transport personnel shall respond to all AHJ radio communications if hailed while enroute, on scene of, or staging for an incident. While on scene of an incident, EMS

transport personnel shall bring their fire radio to the scene and on the appropriate command/tactical channel. Clear text (plain English) communication shall be utilized during radio communications with AHJ.

E. UNIT IDENTIFICATION

1. All EMS Transport Units shall have their radio identifier (ie M11, M31, etc) displayed on 4 sides of the ambulance in at least 4" tall numbers.
2. All EMS Transport Personnel shall have the radio identifier of their Ambulance displayed on both sides of their helmet.

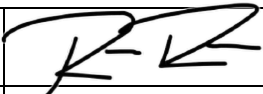

F. MEDICALLY TRAINED BYSTANDERS

1. When a bystander at the scene of an emergency identifies themselves as a registered nurse, off-duty EMS, or other medical professionals, emergency medical services personnel may request documentation of medical expertise (i.e., medical license or appropriate certificate) to determine the person's area of medical expertise and if appropriate, request their assistance with patient care. Emergency medical services personnel may allow correctly identified medical personnel to assist with patient care in an advisory or BLS capacity but shall maintain overall patient management. Emergency medical services personnel shall document on the patient care report the individual's name and medical qualifications if such assistance was utilized. If the bystander on scene is a physician, reference SLOEMSA Policy #217: Physician On-Scene.

III. AUTHORITY

- California Health and Safety Code, Division 2.5, Section 1797 – 1799.207
- California Code of Regulations, Title 22, Social Security, Division 9, Prehospital Emergency Medical Services

Approvals:

EMS Agency, Administrator	
EMS Agency, Medical Director	

POLICY #218 UPGRADE DOWNGRADE OR CANCELLATION OF EMS RESPONSE

I. PURPOSE

- A. To define the parameters by which on scene first response personnel may upgrade, downgrade, or cancel an EMS response within San Luis Obispo County.

II. POLICY

A. Cancelling an EMS Response

- 1. The IC or designee on scene of an incident may cancel a responding EMS resource upon determination of any of the following:

- a. A patient cannot be located.
- b. That the incident does not involve an injury or illness which would require assessment, treatment, or transport.
- c. When the patient is a competent adult and is refusing EMS assessment and or transport.
- d. The patient meets the criteria in III. C. for SLOEMSA Policy #125: Prehospital Determination of Death / Do Not Resuscitate (DNR)/End of Life Care (obvious death or no signs of life and has a verified DNR order).

B. Downgrading an EMS Response

- 1. The IC or designee on scene of an incident may reduce a responding EMS resource from code 3 to code 2 upon determination that, in the best judgment of the IC or designee, the illness or injury is not immediately life threatening and that the difference in code 3 and code 2 response time would not likely have an impact on patient safety/outcome. Consider hemodynamic stability, stable/unstable; see Policy #601: Universal Attachment A.

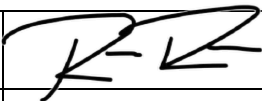

C. Upgrading an EMS Response

- 1. The IC or designee on the scene of an incident may upgrade a responding EMS resource from code 2 to code 3 upon determination that, in the best judgment of the IC or designee, the illness or injury is immediately life threatening or that the difference in code 2 and code 3 response time would potentially have a positive impact on patient safety/outcome. Consider hemodynamic stability, stable/unstable; see Policy #601: Universal Attachment A.

III. AUTHORITY

- California Health and Safety Code, Division 2.5, Sections 1797.204, 1797.220, & 1798
- California Code of Regulations, Title 22, Division 9, Chapter 4, Sections 100147, 100169 & 100170

Approvals:

EMS Agency, Administrator	
EMS Agency, Medical Director	

POLICY #217: PHYSICIAN ON-SCENE

I. POLICY

- A. In accordance with established procedures, appropriate emergency medical service personnel may utilize the assistance of an “on-scene” physician in patient care within San Luis Obispo County.

II. PROCEDURE

- A. When at the scene of a call, if an individual offers their assistance and introduces themselves as a licensed physician in the State of California, emergency medical services personnel shall:
1. If emergency medical services personnel do not know the physician’s identity, request identification. If the patient is in extremis, defer any procedure for identification and immediately allow the physician to assist or direct patient care to the level that the physician desires.
 2. Provide the physician the opportunity to read the California Medical Association “Note to Physicians on Involvement with EMS personnel” card/ Policy #217 Attachment A and describe for the physician the three levels of possible physician involvement.
 3. Advise the base hospital physician of the situation and of the on-scene physician’s level of involvement.
 4. If appropriate, allow the physician to speak with the base hospital physician.
 5. Follow the direction of the base hospital.
 6. In cases of controversy between the on-scene physician and emergency medical services personnel regarding patient care, the base hospital physician will be the final arbitrator for medical direction of the paramedic.
- B. Options for Physician Assistance Include:
1. Offers Assistance Only- A physician may offer BLS level assistance as another pair of eyes or hands or in making suggestions but allows medical direction to remain with the base hospital or standard SLOEMSA prehospital protocols. In this situation, prehospital personnel shall follow their normal operational policies and procedures.
 2. Offers Medical Advice and Assistance- A physician may request to speak to the base hospital physician and offer medical advice and assistance. In this situation, prehospital personnel shall follow the direction of the base hospital physician.
 3. Takes Total Responsibility- A physician may take total responsibility for the care given to the patient and, if safety allows, physically accompany the patient until the patient arrives at a hospital, and the receiving physician assumes responsibility.

C. Physician Request to Utilize ALS Drug or Equipment

If a physician at the scene of a patient in extremis requests to use the prehospital unit's drug and/or equipment inventory, the requested drugs and/or equipment should be made available immediately. If a physician at the scene of a stable patient request to use the prehospital unit's drug and/or equipment inventory, the requested drugs and/or equipment should be made available after the physician is either recognized by the prehospital personnel or provides appropriate identification.

D. Role of the Paramedic

ALS personnel shall function within their accredited scope of practice only. Initially, ALS personnel should provide care identified in the "standing orders" portion of the paramedic treatment protocols. The base hospital physician should be immediately notified and informed of the patient's progress and treatment being provided. If the on-scene physician is requesting ALS personnel to perform treatment outside the accredited scope of practice or treatment only allowed with base hospital approval, ALS personnel should inform the physician of their limitations and the need to notify the base hospital physician.

The base hospital physician may direct ALS personnel to actively assist the physician as appropriate with patient care. The on-scene physician shall sign the Prehospital Care Report for all instructions given.

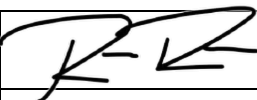

III. AUTHORITY

- Health and Safety Code, Division 2.5, Sections 1798 & 1798.6
- California Code of Regulations, Title 22, Division 9, Section 100175

IV. ATTACHMENTS

A. Note to Physicians on Involvement with EMS personnel

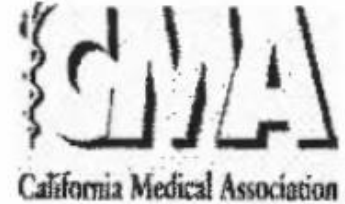
Approvals:

EMS Agency, Administrator	
EMS Agency, Medical Director	

NOTE TO PHYSICIANS ON INVOLVEMENT WITH EMS PERSONNEL CARD



STATE OF CALIFORNIA



FRONT

BACK

**NOTE TO PHYSICIANS ON INVOLVEMENT WITH
EMS PERSONNEL**

EMS personnel operate under standard policies and procedures developed by the Local EMS Agency and approved by their Medical Director under Authority of Division 2.5 of the California Health and Safety Code. The drugs they carry and procedures they can do are restricted by law and local policy.

If you want to assist, this can only be done through one of the alternatives listed on the back of this card. These alternatives have been endorsed by CMA, State EMS Authority and CCLHO.

Assistance rendered in the endorsed fashion, without compensation, is covered by the protection of the "Good Samaritan Code" (see Business and Professional Code, Sections 2144, 2395-2298 and Health and Safety Code, Section 1799.104).

**ENDORSED ALTERNATIVES FOR PHYSICIAN
INVOLVEMENT**

After identifying yourself by name as a physician licensed in the State of California, and, if requested, showing proof of identity, you may choose one of the following:

1. Offer your assistance with another pair of eyes, hands or suggestions, but let EMS personnel remain under base hospital control; or,
2. Request to talk to the base station physician and directly offer your medical advice and assistance; or,
3. Take total responsibility for the care given by EMS personnel and physically accompany the patient until the patient arrives at a hospital (if safety allows) and responsibility is assumed by the receiving physician. In addition, you must sign for all instructions given in accordance with local policy and procedures.

EMS Equipment and Supply List

Description	Strength/Size	ALS Transport Minimum	ALS First Responder Minimum	ALS Special Use Medic Minimum	ALS Wildland Unit Minimum	BLS First Responder Minimum † Elective skills as required
MEDICATIONS						
Activated charcoal	50 gm bottle (aqueous solution)	1	1	0	0	0
Adenosine	6 mg/2 mL	5	3	3	3	0
Albuterol unit dose	2.5 mg/3 mL solution	4	2	2	2	0
Amiodarone	50mg/mL (9mL vials)	3	2	1	1	0
	OR					
Amiodarone	150mg/3ml (3ml vials)	6	4	3	3	0
Aspirin	81 mg nonenteric coated chewable	1 bottle	1 bottle	4 tablets	4 tablets	1 bottle
Atropine	1 mg/10 mL	2	2	2	2	0
Atropine	8 mg multi-dose vial	1	1	0	0	0
Calcium Chloride 10%	1 gm/10 mL	1	1	0	0	0
Dextrose 10%	25 gm/250 mL bag	2	2	1	1	0
*Dextrose 50%	25 gm/50 mL	2	2	1	0	0
Diphenhydramine	50 mg/1 mL	2	2	2	2	0
Epinephrine	1:1,000 1 mg/1 mL	4	2	2	2	0
†Epinephrine Auto-Injector	Pediatric and Adult	0	0	0	0	†1 each
Epinephrine	1:10,000 1 mg/10 mL (10 mL preload)	8	6	3	6	0
Fentanyl	100 mcg/2 mL	2	2	2	2	0
Glucagon	1 mg/1 mL	1	1	0	0	0
Glucose gel	15 gm	2 tubes	2 tubes	2 tubes	2 tubes	2 tubes
Lidocaine 2%	100 mg/ 5 mL	2	1	1	1	0
Ketamine	100 mg/ 1mL	2	1	1	1	0
Midazolam	5 mg/1 mL	2	1	1	1	0
Naloxone	2 mg (vial or pre-load)	2	2	2	2	0
†Naloxone IN Kit	§2 mg pre-load and Atomizer	0	0	0	0	†2
Nitroglycerine	SL tablets or spray	2	1	1	1	0
Nitro Paste 2%	1 gm single dose packet	3	3	0	0	0
Ondansetron	4 mg /2 mL injectable	3	3	0	0	0
	4 mg dissolvable tablets	3	3	1	1	0
Sodium Bicarbonate	50 mEq/50 mL	2	2	0	0	0
Tranexamic Acid (TXA)	100 mg/1 mL 10 mL vial	2	1	0	1	0
Variations in the concentration of medications being stocked, due to medication supply shortages, must be approved by Medical Director						
†Elective skills equipment required for participating agencies						
Alternate Medications to be Stocked <u>ONLY</u> with Medical Director Approval						
§Other pre-packaged single dose intranasal naloxone delivery devices that may be used with Medical Director Approval		0	0	0	0	†2
Diazepam (alternate to be stocked by order of Med Dir ONLY)	10 mg	2	1	1	1	0
Morphine (alternate to be stocked by order of Med Dir ONLY)	10 mg	3	2	2	2	0

EMS Equipment and Supply List

Description	Strength/Size	ALS Transport Minimum	ALS First Responder Minimum	ALS Special Use Medic Minimum	ALS Wildland Unit Minimum	BLS First Responder Minimum † Elective skills as required
Lidocaine 2% (alternate to be stocked during Amiodarone shortage by order of Med Dir ONLY)	100mg / 5ml	6	4	3	3	0
IV SOLUTIONS/EQUIPMENT						
0.9% Normal Saline	1,000 mL bag (or equivalent total volume)	6	4	2	4	0
100 mL Saline Delivery Equipment	0.9% NS 100 mL bag	4	2	1	1	0
0.9% Normal Saline	10 mL Vials/Flush	5	5	2	2	0
IV Tubing	10-20gtt/mL	6	3	2	2	0
IV Catheters	Sizes 14, 16, 18, 20, 22, 24 gauge	2 each	2 each	2 each	2 each	0
Syringes	Assorted - 1mL, 3mL, 6mL-20mL	2 each	2 each	1 each	1 each	0
Needles Assorted	- ½", 1", 1 ½" - 18-30 gauge	2 each	2 each	2 each	2 each	0
Intraosseous (IO) single needle device	(FDA approved) adult and pediatric	1 each	1 each	1 each	1 each	0
Tourniquets (for IV start)		2	2	2	2	0
Saline locks		4	2	2	2	0
Luer-Lock adaptors	(Not required but recommended for use with STEMI patients)	2	2	0	0	0
Alcohol and betadine swabs		10 each	10 each	10 each	10 each	†10 each
TRAUMA						
Bandages and bandaging supplies:						
Band-aids	Assorted	10	10	5	5	10
Sterile bandage compresses or equivalent	4"x4"	12	10	10	10	10
Trauma dressing	10"x30" or larger universal dressing	2	2	2	2	2
Roller gauze	3" or 4"	12 rolls	8 rolls	2 rolls	2 rolls	8 rolls
Cloth adhesive tape	1, 2, or 3"	1 roll	1 roll	1 roll	1 roll	1 roll
Triangular bandages with safety pins		4	2	1	1	2
Tourniquet	See approved list for commercial devices	2	2	1	1	2
Vaseline gauze	3"x8", or 5"x9"	2	2	1	1	2
Tongue blade or bite stick		2	2	2	2	2
Burn Sheets (sterile or clean) –	may be disposable or linen (with date of sterilization indicated)	2	2	0	2	2
Cervical collars	Stiff: Sizes to fit all patients over one year old	1each	1 each	1 each	1 each	1 each
Cold packs		2	2	2	2	2
Irrigation equipment and supplies:						
Saline, sterile	250mL	4	2	1	2	2
Long spine board and light weight head immobilizer blocks	(or equivalent immobilization device)	2	1	0	0	1

EMS Equipment and Supply List

Description	Strength/Size	ALS Transport Minimum	ALS First Responder Minimum	ALS Special Use Medic Minimum	ALS Wildland Unit Minimum	BLS First Responder Minimum † Elective skills as required
Straps to secure patient to boards		2 sets	1 set	0	0	1 set
TRAUMA CONT.						
Splints, traction	Adult and pediatric (or a single device suitable for both)	1 each	1 each	0	0	1 each
Splints, cardboard or equivalent	arm and leg splint	2 each	2 each	1 each	2 each	2 each
K.E.D. or equivalent		1	1	0	0	0
Pediatric spinal immobilization board	(or equivalent immobilization device)	1	1	0	0	0
Sheet or commercial pelvic binder		1	1	0	0	1
Infection Control						
Meet the minimum requirement per crew member as stated in the California Code of Regulations Title 8 (All Providers)						
Transportation Equipment						
Collapsible gurney cot with adjustable contour feature		1	0	0	0	0
Stair chair or equivalent device		1	0	0	0	0
Sheets, pillow, pillow case, towels, blankets (cloth or disposable)		2	0	0	0	0
Scoop stretcher with straps		1	0	0	0	0
Flat vinyl/canvas stretchers with		1	0	0	0	0
MISCELLANEOUS						
Blood pressure cuffs (portable):	Adult	1	1	1	1	1
	Large adult or thigh	1	1	0	0	1
	Pediatric	1	1	0	1	1
Obstetrical kit - sterile, prepackaged		1	1	0	0	1
Restraints - non-constricting wrist and ankle		1 set each	1 set each	0	0	1 set each
Stethoscope		1	1	1	1	1
Trash bags/receptacles		2	2	1	1	2
Blanket	Disposable	1 each	1 each	1 each	1 each	1 each
Bandage scissors (heavy duty)		1	1	1	1	1
Emesis basins or emesis bags with containers		2	2	1	1	2
Water, potable		1 liter	1 liter	0	1 liter	1 liter
Maps, entire county		1	1	0	0	1
Penlight		1	1	1	1	1
Triage tags		20	20	20	20	20
Bed pan		1	0	0	0	0
Urinal		1	0	0	0	0
†Glucometer	with ≥10 test strips, lancets, and other appropriate supplies	1	1	1	1	†1

EMS Equipment and Supply List

Description	Strength/Size	ALS Transport Minimum	ALS First Responder Minimum	ALS Special Use Medic Minimum	ALS Wildland Unit Minimum	BLS First Responder Minimum † Elective skills as required
Puncture proof sharps container	small	2	2	1	1	†1
MISCELLANEOUS CONT.						
Thermometer		1	1	0	0	0
Automatic External Defibrillator	With AED pads	* For EMT-D Provider Agencies (1)				
AIRWAY						
Endotracheal tubes:	sizes-3.0, 5.0, 5.5, 6.0, 6.5, 7.0, 7.5, 8.0, 8.5, 9.0	1 each	1 each	1 each	1 each	0
Laryngoscope handles, with extra batteries		2	2	1	1	0
Laryngoscope blades:	Miller # 0, 1, 2, 3, 4 Macintosh # 1, 2, 3, 4	1 each	1 each	1 each	1 each	0
i-Gel Supraglottic Airways	Size 3 and Size 5	1 each	1 each	1 each	1 each	0
i-Gel Supraglottic Airways	Size 4	2 each	2 each	1 each	1 each	0
Magill forceps (pediatric and adult)		1 each	1 each	1 each	1 each	0
Adult stylets		2 each	1 each	1 each	1 each	0
10-20 mL syringe, sterile lubricant		2 each	1 each	1 each	1 each	0
Needle Cricothyrotomy kit with:	10 or 12 ga needle, 10-20 mL syringe, alcohol and betadine wipes and oxygen supply adapter	1	1	1	1	0
	Or other FDA approved percutaneous cricothyrotomy kit	1	1	1	1	0
Capnography Device	Qualitative or Quantitative	1	1	1	1	0
Hand held nebulizer for inhalation therapy		2	2	1	1	0
Medrafter or equivalent		1	1	0	0	0
Portable, battery powered, cardiac monitor-defibrillator with 12-lead ECG capability with the ability to perform computerized ECG readings and provide hard copy ECG tracings, with:		1	1	1	AED w.manal defib and w/EKG	0
	Patient ECG cable	1	1	1	0	0
	ECG recording chart paper	1	1	1	0	0
	Adult ECG electrodes	4 sets	4 sets	2 sets	2 sets	0
	Defibrillation pads or equivalent - Adult and Pediatric	1 set each	1 set each	1 set each	1 set each	0
	Conductive defibrillation pads, or tubes of conductive gel	4	4	2	2	0
		2	2	1	1	0
IV catheter for pleural decompression	10 gauge/3 inch	2	2	1	1	0
Asherman chest seal or equivalent open wound dressing		1	1	1	1	1
Pulse oximeter		1	1	1	1	1
†Continuous Positive Airway Pressure (CPAP) Ventilator	portable/adjustable pressure settings, FDA Approved with an oxygen supply	1	1	0	0	†1

EMS Equipment and Supply List

Description	Strength/Size	ALS Transport Minimum	ALS First Responder Minimum	ALS Special Use Medic Minimum	ALS Wildland Unit Minimum	BLS First Responder Minimum † <i>Elective skills as required</i>
Nasopharyngeal airways (soft rubber)	Medium and Large adult sizes	2 each	2 each	1 each	1 each	2 each
AIRWAY CONT.						
Lubricant, water-soluble jelly (K-Y)		2	2	2	2	2
Oropharyngeal airways	(sizes 5.5 – 12 or equivalent)	2 each	1 each	1 each	1 each	1 each
Adult non-rebreather masks		2	2	1	1	2
Pediatric/infant non-rebreather mask		2	2	1	1	2
Adult nasal cannula		4	2	1	1	2
Oxygen Cylinders	D or E size cylinder with regulator capable of delivering 2-15 LPM	1	1	1	1	1
	M, H, or K cylinder with wall outlet(s) and constant flow regulator(s)	1	0	0	0	0
Oxygen reserve:						
	D or E cylinders	1	1	0	0	1
Face masks for resuscitation (clear)		2	1	1	1	1
Bag-valve mask with O2 reservoir and supply tubing						
	Adult	1	1	1	1	1
	Pediatric	1	1	1	1	1
	Infant	1	1	1	0	1
Suction equipment and supplies:						
Rigid pharyngeal tonsil tip		2	2	0	0	2
Spare suction tubing		1	1	0	0	1
Suction apparatus (portable)		1	1	1	1	1
Suction catheters	at least 2 sizes suitable for adult and pediatric endotracheal suctioning	2 each	1 each	1 each	1 each	1 each

AIRWAY MANAGEMENT	
ADULT	PEDIATRIC (≤34 kg)
BLS	
<ul style="list-style-type: none"> • Universal Protocol #601 • Administer O₂ as clinical symptoms indicate (see notes below) • Pulse oximetry • Patients with O₂ Sat ≥ 94% without signs or symptoms of hypoxia or respiratory compromise should not receive O₂ • When applying O₂ use the simplest method to maintain O₂ Sat ≥ 94% • Do not withhold O₂ if patient is in respiratory distress • Foreign Body/Airway Obstruction <ul style="list-style-type: none"> ○ Use current BLS choking procedures ○ Basic airway adjuncts and suctioning as indicated and tolerated 	<p>Same as Adult (except for newborns)</p> <ul style="list-style-type: none"> • Newborn (< 1 day) follow AHA guidelines – Newborn Protocol #651
BLS Elective Skills	
<ul style="list-style-type: none"> • Moderate to Severe Respiratory Distress <ul style="list-style-type: none"> ○ CPAP as needed – CPAP procedure #703 	CPAP not used for patients ≤34 kg
ALS Standing Orders	
<ul style="list-style-type: none"> • Foreign Body/Airway Obstruction If obstruction not relieved with BLS maneuvers <ul style="list-style-type: none"> ○ Visualize and remove obstruction with Magill forceps ○ If obstruction persists, consider – Needle Cricothyrotomy Procedure #704 ○ Upon securing airway monitor O₂ Sat and ETCO₂ – Capnography Procedure #701 • Endotracheal intubation – as indicated to control airway – Procedure #717 • Supraglottic Airway – as indicated to control airway – Procedure #718 • Needle thoracostomy with symptoms of tension pneumothorax or traumatic arrest with suspicion of chest trauma – Needle Thoracostomy Procedure #705 & Traumatic Cardiac Arrest Protocol #661 	<ul style="list-style-type: none"> • Foreign Body/Airway Obstruction If obstruction not relieved with BLS maneuvers <ul style="list-style-type: none"> ○ Visualize and remove obstruction with Magill forceps ○ If obstruction persists, consider – Needle Cricothyrotomy Procedure #704 ○ Upon securing airway monitor O₂ Sat and ETCO₂ – Capnography Procedure #701 • Needle thoracostomy with symptoms of tension pneumothorax – Needle Thoracostomy Procedure #705
Base Hospital Orders Only	
<ul style="list-style-type: none"> • Symptomatic Esophageal Obstruction 	<ul style="list-style-type: none"> • Symptomatic Esophageal Obstruction

<ul style="list-style-type: none">○ Glucagon 1mg IV followed by rapid flush. Give oral <u>fluid</u> challenge 60 sec after admin - check a blood sugar prior• As needed	<ul style="list-style-type: none">○ Glucagon 0.1mg/kg IV not to exceed 1mg followed by rapid flush.○ Give oral <u>fluid</u> challenge 60 sec after admin - check a blood sugar prior• As needed
Notes	
<ul style="list-style-type: none">• Oxygen Delivery<ul style="list-style-type: none">○ Mild distress – 0.5-6 L/min nasal cannula○ Severe respiratory distress – 15 L/min via non-rebreather mask○ Moderate to severe distress – CPAP 3-15 cm H2O○ Assisted respirations with BVM – 15 L/min• Patients requiring an advanced airway, providers shall decide which ALS airway to utilize based on discretion.• After placement of any advanced airway, providers shall verify placement of the advanced airway by waveform capnography and a minimum of one additional method. This additional method can be any of the following:<ul style="list-style-type: none">○ Auscultation of lung and stomach sounds.○ Colorimetric CO2 Detector Device.○ Esophageal Bulb Detection Device.	

PAIN MANAGEMENT	
ADULT	PEDIATRIC (≤34 kg)
BLS	
<ul style="list-style-type: none"> Universal Protocol #601 Pulse Oximetry <ul style="list-style-type: none"> O₂ administration per Airway Management Protocol #602 Medical (non-cardiac) <ul style="list-style-type: none"> Position of comfort Nothing by mouth Cardiac chest pain – Chest Pain/Acute Coronary Syndrome Protocol #640 Trauma – General Trauma Protocol #660 <ul style="list-style-type: none"> Splint, ice, elevate as indicated 	<ul style="list-style-type: none"> Universal Protocol #601 All causes of pain - consider age/situation appropriate distraction techniques. <ul style="list-style-type: none"> Video Viewing Calm environment Caregiver support Medical <ul style="list-style-type: none"> Position of comfort Nothing by mouth Otherwise, same as adult
ALS Standing Orders	
<p>MODERATE or SEVERE PAIN</p> <p>Acute Pain:</p> <ul style="list-style-type: none"> Fentanyl 50-100 mcg SLOW IV (over 1 min.), may repeat after 5 min. if needed (not to exceed 200 mcg total) <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> Ketamine 0.3mg/kg (max of 30mg) in 100mL Normal Saline, administer IV/IO over 10 minutes one time dose. <p style="text-align: center;">IF DIFFICULTY OBTAINING IV</p> <ul style="list-style-type: none"> Fentanyl 50-100 mcg IM/IN (use 1 mcg/kg as guideline), may repeat after 15 min. if needed (not to exceed 200 mcg total) <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> Ketamine 0.5mg/kg (max of 40mg) IM one time dose. <p>Acute Pain – multisystem trauma with head/thoracic/abdominal injuries, significant extremity trauma:</p> <ul style="list-style-type: none"> Ketamine 0.3mg/kg (max of 30mg) in 100mL Normal Saline, administer IV/IO over 10 minutes one time dose. <p style="text-align: center;">OR</p>	<p>MODERATE or SEVERE PAIN</p> <p>(Acute Pain – BP > age-based min., unimpaired respirations, GCS normal for age:</p> <ul style="list-style-type: none"> Fentanyl 1.5 mcg/kg IN (split between nares) Fentanyl 1 mcg/kg 1M (IN and 1M routes) may repeat after 15 min. if needed (not to exceed 4 doses) <p style="text-align: center;">IF IV ALREADY ESTABLISHED</p> <ul style="list-style-type: none"> Fentanyl 1 mcg/kg SLOW IV (over 1 min), may repeat after 5 min. if needed (not to exceed 4 doses)

<ul style="list-style-type: none"> Ketamine 0.5mg/kg (max of 40mg) IM one time dose. <p>Contraindications for Fentanyl include SBP < 90 mmHg, hypoxia, and impaired respiration.</p> <p>Contraindications for Ketamine include pregnancy, HX of Schizophrenia, hypertensive emergencies, and coronary chest pain.</p> <p>Pain Management following IO Placement:</p> <ul style="list-style-type: none"> Lidocaine 0.5mg/kg (Total max dose of 40mg) slow IO push over 60 seconds. 	
Base Hospital Orders Only	
<ul style="list-style-type: none"> Fentanyl administration with <ul style="list-style-type: none"> ALOC SBP < 90 mmHg Chronic pain Additional doses of Fentanyl One additional dose of Ketamine As needed 	<ul style="list-style-type: none"> Same as adult As needed.
Notes	
<ul style="list-style-type: none"> Consider doses of Fentanyl 25 mcg for initial dose in elderly (>65 y/o) and for maintenance doses Use clinical judgement if a patient has difficulty using pain scale, or their reported pain is inconsistent with clinical impression. <ul style="list-style-type: none"> Consider using FACES scale in adults with barriers to communication (below) Do not withhold appropriate pain medication due to short transport times. Strongly consider initiating pain management on scene if movement is expected to be painful for patient (unless unstable condition requires rapid transport). Ketamine is a potent anesthetic and dissociative agent in higher doses and is associated with higher incidents of significant adverse effects. This is <u>NOT</u> an approved use for prehospital care in the County of San Luis Obispo. Ketamine may be considered as preferable to fentanyl for patients that may have opioid tolerance due to habituation or addiction, and in patients where fentanyl use has other significant precautions. Ketamine should be considered as first line analgesic agent when fentanyl is contraindicated due to hypotension, pathology, or injury inhibiting respiration, or multisystem trauma with high potential for internal hemorrhage. Ketamine administration to pediatric patients is <u>NOT</u> approved for use in the County of San Luis Obispo. When mixing Ketamine into 100mL bag, label the bag with "Ketamine/mg amount". 	

SHOCK (MEDICAL) - HYPOTENSION/SEPSIS	
ADULT	PEDIATRIC (≤34 KG)
BLS	
<ul style="list-style-type: none"> • Universal Algorithm #601 • Pulse Oximetry • O2 administration per Airway Management Protocol #602 • Place in supine position if tolerated 	Same As Adult
BLS Optional Scope	
Pulse Oximetry - O2 administration per Airway Management Policy # 602	
ALS Standing Orders	
<p>SBP < 100 mmHg or other signs of hypotension</p> <ul style="list-style-type: none"> • Normal Saline 500 mL IV/IO <ul style="list-style-type: none"> - Repeat x1 if hypotension persists • Consider establishing secondary IV access • Consider 12-lead ECG • If shock is due to trauma refer to General Trauma Protocol #660 <p>Persistent Hypotension</p> <ul style="list-style-type: none"> • Push-Dose Epinephrine 10mcg/mL 1 mL IV/IO every 1-3 minutes <ul style="list-style-type: none"> - Repeat as needed titrated to SBP >90mmHg - <u>See notes for mixing instructions</u> <p>OR</p> <ul style="list-style-type: none"> • Epinephrine Drip starting at 10mcg/min IV/IO infusion <ul style="list-style-type: none"> - Consider for extended transport - <u>See formulary for mixing instructions</u> 	<p>Signs of hypotension specific to age - see Universal Protocol #601 Attachment A</p> <ul style="list-style-type: none"> • Normal Saline 20 mL/kg IV/IO not to exceed 500 mL <ul style="list-style-type: none"> - Repeat x1 if hypotension persists • Consider establishing secondary IV access • If shock is due to trauma refer to General Trauma Protocol #660
Base Hospital Orders Only	
<ul style="list-style-type: none"> • As needed 	<ul style="list-style-type: none"> • As needed
Notes	
<ul style="list-style-type: none"> • <u>Mixing Push-Dose Epinephrine 10 mcg/mL (1:100,000): Mix 9mL of Normal Saline with 1mL of Epinephrine 1:10,000, mix well</u> • Fluids should always be given prior to initiating Push-Dose Epinephrine • Consider the underlying causes of shock • Use caution with fluid challenges if signs of CHF of liver or renal failure • Keep patient warm • Treatable/Reversible considerations: <ul style="list-style-type: none"> - Hypoxemia 	

- | |
|---|
| <ul style="list-style-type: none">- Tachycardia/Bradycardia- Hyper/Hypothermia- Hypovolemia- Altered Mental Status- Fractures/Bleeding/Tension Pneumothorax- Anaphylaxis- Chest pain- Overdose |
|---|

Ketamine Hydrochloride (Ketalar®)

Classification: Nonopioid Analgesic (sub-dissociative doses)

Actions: In sub-dissociative doses, provides analgesia by non-competitively blocking NMDA receptors to reduce glutamate release and by binding to sigma-opioid receptors.

Indications: **Moderate to Severe pain due to:**

1. Multisystem trauma with head, thoracic, or abdominal injuries.
2. Significant extremity trauma, dislocations, or burns.
3. Acute pain management for medical patients.
4. Pain management substitute for patients with an opioid tolerance.

Contraindications:

1. Conditions in which an increase in blood pressure would be hazardous (see notes)
2. Hypersensitivity
3. Known history of schizophrenia
4. Acute Coronary Syndrome
5. Pregnancy

Precautions: 1. History of severe Coronary Artery Disease

Adverse Effects: >10%

Cardiovascular: Tachycardia, hypertension, increase in cardiac output
Neurological: Dizziness, Tonic-Clonic Movement (non-seizure)

1-10%

Cardiovascular: Bradycardia, hypotension
Neurological: Dysphoria, partial dissociation, nystagmus

<1%

Anaphylaxis, arrhythmia, hypersalivation, hypertonia, laryngospasm*, respiratory depression/apnea, dysuria

Administration:

ADULT DOSE**Pain Management**

1. 0.3 mg/kg (max of 30mg) in 100mL Normal Saline, administer IV/IO over 10 minutes one time dose.
2. 0.5mg/kg (max of 40mg) IM

When mixing Ketamine into 100mL bag, **label the bag** with "Ketamine/mg amount".

PEDIATRIC DOSE*****Ketamine usage is not allowed for pediatric patients*****

Onset: IV onset 30-60 seconds, peak in less than 5 minutes.

Duration: Distribution half-life: 15 minutes
Duration of analgesia: 20-45 minutes

Notes:

- Risk of adverse neurological events is decreased with sub-dissociative doses and slow rate of administration.
- Mix adult dose of ketamine in 100mL bags of normal saline.
- Ketamine may cause a slight increase in blood pressure and shall be avoided in hypertensive emergencies, dissecting aneurysms, hypertensive heart failure, and acute coronary syndrome.
- Ketamine should be considered as first line analgesic agent when fentanyl is contraindicated due to hypotension, pathology or injury inhibiting respiration, evidence of hypovolemic/hemorrhagic shock, or multisystem trauma with high potential for internal hemorrhage.
- Ketamine may be considered as preferable to fentanyl for patients that may have opioid tolerance due to habituation or addiction, and in patients where fentanyl use has other significant precautions.
- Ketamine is a potent anesthetic and dissociative agent in higher doses and is associated with higher incidents of significant adverse effects. This is **NOT** an approved use for prehospital care in the County of San Luis Obispo.

ADULT CARDIAC CHEST PAIN/ACUTE CORONARY SYNDROME	
FOR USE IN ADULT PATIENTS	
BLS	
<ul style="list-style-type: none"> Universal Protocol #601 Pulse Oximetry <ul style="list-style-type: none"> O₂ administration per Airway Management Protocol #602 Aspirin 162 mg PO (non-enteric coated) chewable tablets May assist with administration of patient's prescribed Nitroglycerin with SBP ≥ 100 mmHg 	
ALS Standing Orders	
<ul style="list-style-type: none"> Obtain 12-lead ECG early Nitroglycerin 0.4 mg SL tablet or spray <ul style="list-style-type: none"> Repeat every 5 min Nitroglycerin Paste 1 inch (1 Gm) may be considered after initial dose(s) of SL Nitroglycerin HOLD NITROGLYCERIN and consult base if: <ul style="list-style-type: none"> 500 mL fluid bolus has been administered and SBP is trending towards or drops < 100 mmHg <u>or</u> in the presence of other signs/symptoms of hemodynamic instability. Evidence of Right Ventricular Infarction (RVI) – see Notes 	
MODERATE or SEVERE PAIN	
<ul style="list-style-type: none"> Refractory to Nitroglycerin <ul style="list-style-type: none"> Fentanyl 25-50 mcg SLOW IV (over 1 min), titrated to pain improvement, maintain SBP ≥ 100 mmHg <ul style="list-style-type: none"> May repeat after 5 min if needed (not to exceed 200 mcg total) 	
If difficulty obtaining IV	
<ul style="list-style-type: none"> Fentanyl 50-100 mcg IM/IN (use 1 mcg/kg as guideline) <ul style="list-style-type: none"> May repeat after 15 min if needed (not to exceed 200 mcg total) 	
Base Hospital Orders Only	
<ul style="list-style-type: none"> Nitroglycerin with <ul style="list-style-type: none"> Significant decrease in SBP after administration Patients taking erectile dysfunction medications Atrial fibrillation with RVR Evidence of RVI Additional Fentanyl 	
Persistent hypotension	
<ul style="list-style-type: none"> Additional Normal Saline bolus up to 500 mL Push-Dose Epinephrine 10 mcg/mL 1mL IV/IO every 1-3 min <ul style="list-style-type: none"> Repeat as needed to maintain SBP >90 mmHg See notes for mixing instructions 	
OR	
<ul style="list-style-type: none"> Epinephrine Drip start at 10 mcg/min IV/IO infusion <ul style="list-style-type: none"> Consider for extended transport <u>See formulary for mixing instructions</u> As needed 	
Notes	
<ul style="list-style-type: none"> Acute Coronary Syndrome – a group of conditions resulting from acute myocardial ischemia – including: chest/upper body discomfort, shortness of breath, nausea/vomiting, or diaphoresis Evidence for RVI: All inferior STEMI should be evaluated for ST elevation in V4R 	

- Atrial fibrillation with RVR is atrial fibrillation with a ventricular rate > 100
- Early notification of the SRC with "STEMI Alert" with a 12-lead ECG reading of ***Acute MI Suspected*** or equivalent based on monitor type.
- Large bore IVs are preferred in "STEMI Alerts".
- "STEMI Alerts" consider a secondary large bore IV with NS lock to assist the Cath Lab in tubing changes
- Have defibrillation pads out and ready on all "STEMI Alerts".
- On "STEMI Alerts," clear the patient's chest of clothing or any obstructions to the rapid placement of defibrillation pads, not including safety harnesses.
- **Mixing Push-Dose Epinephrine 10 mcg/mL (1:100,000): Mix 9 mL of Normal Saline with 1 mL of Cardiac Epinephrine 1:10,000 (0.1 mg/mL), mix well**

CARDIAC ARREST (ATRAUMATIC)	
ADULT	PEDIATRIC (≤34 KG)
BLS Procedures	
<ul style="list-style-type: none"> Universal Algorithm #601 High Performance CPR (HPCPR) (10:1) per Procedure #712 <ul style="list-style-type: none"> Continuous compressions with 1 short breath every 10 compressions AED application (if shock advised, administer 30 compressions prior to shocking) Pulse Oximetry <ul style="list-style-type: none"> O₂ administration per Airway Management Protocol #602 	<ul style="list-style-type: none"> Same as Adult CPR compression to ventilation ratio <ul style="list-style-type: none"> Newborn - CPR 3:1 Neonate - 1 day to 1 month – CPR 15:2 >1 month – HPCPR 10:1 AED – pediatric patient >1 year Use Broselow tape or equivalent if available
ALS Procedures	
<p>Rhythm analysis and shocks</p> <ul style="list-style-type: none"> At 200 compressions begin charging the defibrillator while continuing CPR Once fully charged, stop CPR for rhythm analysis Defibrillate V-Fib/Pulseless V-tach – Shock at the maximum manufacturer setting and immediately resume CPR. Subsequent shocks will also be at the maximum manufacturer setting. After 3rd shock, pt remains in refractory V-Fib or V-Tach, consider vector change defibrillation. (See notes) No shock indicated – dump the charge and immediately resume CPR <p>V-Fib/Pulseless V-Tach and Non-shockable Rhythms</p> <ul style="list-style-type: none"> Epinephrine 1:10,000 1mg IV/IO repeat every 3-5 min <ul style="list-style-type: none"> Do not give epinephrine during first cycle of CPR <p>V-Fib/Pulseless V-Tach</p> <ul style="list-style-type: none"> Amiodarone 300mg IV/IO push; if rhythm persists after 5 min, administer 150mg IV/IO push refractory dose. <p>ROSC with Persistent Hypotension</p> <ul style="list-style-type: none"> Push-Dose Epinephrine 10 mcg/ml 1ml IV/IO every 1-3 min 	<ul style="list-style-type: none"> <u>Emphasize resuscitation and HPCPR rather than immediate transport</u> <p>Rhythm analysis and shocks</p> <ul style="list-style-type: none"> Coordinate compressions and charging same as adult Defibrillate V-Fib/Pulseless V-Tach – shock at 2 J/kg and immediately resume CPR <ul style="list-style-type: none"> Subsequent shock, after 2 mins of CPR: 4J/kg Recurrent V-Fib/Pulseless V-tach use last successful shock level No shock indicated – dump the charge and immediately resume CPR <p>V-Fib/Pulseless V-Tach and Non-shockable Rhythms</p> <ul style="list-style-type: none"> Epinephrine 1:10,000 0.01 mg/kg (0.1 ml/kg) IV/IO not to exceed 0.3mg, repeat every 3-5 min <ul style="list-style-type: none"> Do not give epinephrine during first cycle of CPR <p>V-Fib/Pulseless V-Tach</p> <ul style="list-style-type: none"> Amiodarone 5mg/kg IV/IO push; repeat every 5 min to a max of 15mg/kg.

<ul style="list-style-type: none"> • Repeat as needed titrated to SBP >90mmHg • <u>See notes for mixing instructions</u> <p><u>OR</u></p> <ul style="list-style-type: none"> • Epinephrine Drip start at 10 mcg/min IV/IO infusion • Consider for extended transport • <u>See formulary for mixing instructions</u> 	
Base Hospital Orders Only	
<p>Contact STEMI Receiving Center (French Hospital)</p> <ul style="list-style-type: none"> • Refractory V-Fib or V-Tach not responsive to treatment • Request for a change in destination if patient rearrests en route • Termination orders when unresponsive to resuscitative measures • As needed <p>Contact appropriate Base Station per Base Station Report Policy #121</p>	<p>Contact closest Base Hospital for additional orders</p> <p>ROSC with Persistent Hypotension for Age</p> <ul style="list-style-type: none"> • Push-Dose Epinephrine 10 mcg/ml 1 ml IV/IO (0.1 ml/kg if <10kg) every 1-3 min <ul style="list-style-type: none"> • Repeat as needed titrated to age appropriate SBP • <u>See notes for mixing instructions</u> <p><u>OR</u></p> <ul style="list-style-type: none"> • Epinephrine Drip start at 1 mcg/min, up to max of 10 mcg/min IV/IO infusion • Consider for extended transport • <u>See formulary for mixing instructions</u> • As needed
Notes	
<ul style="list-style-type: none"> • <u>Mixing Push-Dose Epinephrine 10 mcg/ml (1:100,000):</u> Mix 9 ml of Normal Saline with 1 ml of <u>Epinephrine 1:10,000</u>, mix well. • Use manufacturer recommended energy settings if different from listed. • Assess for reversible causes: tension PTX, hypoxia, hypovolemia, hypothermia, hyperkalemia, hypoglycemia, overdose. • Vascular access – IV preferred over IO – continue vascular access attempts even if IO access established). • Consider Oral Intubation or Supraglottic Airways (Adults), provider discretion. • If the provider cannot accomplish an ALS airway, they should document in the PCR why an ALS airway wasn't accomplished. • Once an SGA has been placed, it should not be removed for an ETI. • <u>Stay on scene</u> to establish vascular access, provide for airway management, and administer the first dose of epinephrine followed by 2 min of HPCPR. • Adult ROSC that is maintained: 	

- Obtain 12-lead ECG and vital signs.
- Transport to the nearest STEMI Receiving Center ***regardless of 12-lead ECG reading.***
- Maintain O2 Sat greater than or equal to 94%.
- Monitor ETCO2
- Termination for patients > 34 kg – Contact SRC (French Hospital) for termination orders.
- If the patient remains pulseless and apneic following 20 minutes of resuscitative measures, with persistent ETCO2 values < 10 mmHg, consider termination of resuscitation.
- Documentation shall include the patient's failure to respond to treatment and of a non-viable cardiac rhythm (copy of rhythm strip).
- Contact and transport to the nearest Base Hospital.
- Receiving Hospital shall provide medical direction/termination for pediatric patients.
- Lidocaine may be substituted for Amiodarone with SLOEMSA authorization (via Policy #205 Attachment C) when Amiodarone stock is unavailable. Refer to Lidocaine Formulary for dosages.
- Lidocaine may be substituted for Amiodarone with SLOEMSA authorization (via Policy #205 Attachment C) when Amiodarone stock is unavailable. Refer to Lidocaine Formulary for dosages.
- While treating Cardiac Arrest, only one antiarrhythmic may be given to one patient. ALS providers shall not switch between Amiodarone and Lidocaine for the treatment of Cardiac Arrest.
- **Vector change defibrillation:** The two pad placements are anterior-lateral and anterior-posterior. Vector change is the change in pad position placement from one to the other.

VENTRICULAR TACHYCARDIA WITH PULSES	
ADULT	PEDIATRIC (≤34 KG)
BLS	
<ul style="list-style-type: none"> Universal Protocol #601 Pulse Oximetry <ul style="list-style-type: none"> O₂ administration per Airway Management Protocol #602 	Same as Adult
ALS	
<p>Stable</p> <ul style="list-style-type: none"> Amiodarone 150mg IV/IO drip over 10 min; if rhythm persists after 5 min, administer a refractory dose of 150mg for a total of 300mg. Using a 100cc bag of Normal Saline and macro tubing (10gtts/ml): add Amiodarone and mix well. Run at 1.5gtts/second. <p>Unstable</p> <ul style="list-style-type: none"> Consider Midazolam up to 2mg slow IV or 5 mg IN (split into two doses 2.5 mg each nostril) to pre-medicate Synchronized/Unsynchronized cardioversion sequences (see notes) After first cardioversion: <ul style="list-style-type: none"> Amiodarone 150mg IV/IO drip over 10 min; if rhythm persists after 5 min, administer a refractory dose of 150mg for a total of 300mg. 	<p>Stable</p> <ul style="list-style-type: none"> Amiodarone 5mg/kg IV/IO drip over 30 minutes. Using a 100cc bag of Normal Saline and macro drip tubing (10gtts/ml): add Amiodarone and mix well. Run at 1gtt every 2 seconds. <p>Unstable</p> <ul style="list-style-type: none"> Synchronized/Unsynchronized cardioversion sequences (see notes) Midazolam 0.1 mg/kg IV/IN not to exceed 2 mg to pre-medicate prior to cardioversion. After first cardioversion: <ul style="list-style-type: none"> Amiodarone 5mg/kg IV/IO drip over 30 minutes.
Base Hospital Orders Only	
<ul style="list-style-type: none"> Additional Amiodarone As needed 	<ul style="list-style-type: none"> Additional Amiodarone As needed
Notes	
<ul style="list-style-type: none"> Obtain a 12-lead ECG before and after conversion, if possible. Vascular access may be omitted prior to cardioversion if in extremis. QRS ≥ 0.12 seconds typical for VT in adults QRS ≥ 0.09 seconds typical for VT in pediatrics Malignant PVCs – that may pose heightened risk of precipitating sustained dysrhythmias: short coupling interval <0.3 seconds, multifocal, couplets, and frequent occurrence, call base for possible Amiodarone. Irregular Wide-complex tachycardia (Torsade's de Pointes) requires unsynchronized cardioversion. Synchronized/Unsynchronized Sequences (if synchronized mode is unable to capture use unsynchronized cardioversion) Lidocaine may be substituted for Amiodarone with SLOEMSA authorization (Policy #205 Attachment C) when Amiodarone stock is unavailable. Refer to Lidocaine Formulary for dosages. 	

- While treating Ventricular Tachycardia with Pulses, only one antiarrhythmic may be given to one patient. ALS providers shall not switch between Amiodarone and Lidocaine for the treatment of Ventricular Fibrillation/Pulsating Ventricular Tachycardia.
- Use manufacturer recommended energy setting if different from below.

Adult	Pediatric
100 J	1 J/kg
120 J	2 J/kg
150 J	2 J/kg
200 J	

(*start at 120J unsynchronized in adult patients with Torsade's de Pointes)

AMIODARONE (Cordarone®)

Classification: Class III Antiarrhythmic

Action: Prolongs cardiac repolarization. Also has sodium channel blockade, beta adrenergic blockade, and calcium channel blockade effects.

Indications:

1. Cardiac Arrest with Ventricular Fibrillation or Ventricular Tachycardia without Pulses
2. Ventricular Tachycardia with Pulses

Contraindications:

1. **Second Degree Type II Heart Block**
2. **Third Degree Heart Block**
3. **Junctional Bradycardia**
4. **Ventricular ectopy associated with bradycardia.**
5. **Idioventricular rhythm**
6. **Known allergy or sensitivity to Amiodarone.**

Adverse Effects: CNS: Hypotension, Rhythm Disturbances, Bradycardia, CHF, Cardiac Arrest, Shock, Heart Block, SIADH
Respiratory: Respiratory Depression, Pulmonary Toxicity
GI: Vomiting, Hepatotoxicity
Skin: Rash
Integumentary: Anaphylaxis
Musculoskeletal: Rhabdomyolysis
Renal: Acute Renal Failure

Administration: **ADULT DOSE**

Ventricular Fibrillation/ Ventricular Tachycardia without Pulses:

- 300mg (50 mg/ml) IV/IO push; if rhythm persists 5 minutes after initial dose, 150mg IV/IO push refractory dose.

Ventricular Tachycardia with Pulses:

- 150mg IV/IO drip over 10 min; repeat in 5 min to a total of 300mg.

****Add amiodarone to a 100cc bag of Normal Saline with macro drip tubing and mix well.**

PEDIATRIC DOSE**Ventricular Fibrillation/ Ventricular Tachycardia without Pulses:**

- 5mg/kg IV/IO push; repeat every 5 min to a max of 15mg/kg

Ventricular Tachycardia with Pulses:

- 5mg/kg IV/IO over 30 min (using 100cc bag Normal Saline)

****Add Amiodarone to a 100cc bag of Normal Saline with macro drip tubing and mix well.**

Onset: Immediate

Duration: 10-20 Minutes

LIDOCAINE (Xylocaine®)**Classification:** Antidysrhythmic agent**Action:** Suppresses ventricular ectopy by stabilizing the myocardial cell membrane.**Indications:**

1. Cardiac arrest with ventricular fibrillation or pulseless ventricular tachycardia
2. Post conversion or defibrillation of ventricular rhythms with base contact.
3. Ventricular tachycardia with pulse present
4. Symptomatic/malignant ventricular ectopy
5. Pain Management following IO Placement

Contraindications:

1. 2° degree type II heart block
2. 3° degree heart block
3. Junctional bradycardia
4. Ventricular ectopy associated with bradycardia
5. Idioventricular rhythm
6. Known allergy to Lidocaine or sensitivity to other anesthetics (report to base).

Adverse Effects:**Cardiovascular**

Bradycardia
Hypotension
Arrest
Blurred vision

Respiratory

Dyspnea
Depression
Apnea

Gastrointestinal

Nausea/vomiting

Neurological

Dizziness
Drowsiness
Paresthesia
Restlessness
Slurred speech
Disorientation
Seizures
Lightheadedness
Tinnitus
Muscle twitching

Administration:**ADULT DOSE**

1. **V-Fib/pulseless V-Tach (with SLOEMSA Authorization):** 1.5 mg/kg IVP/IO, repeat every 3-5 minutes, not to exceed 3 mg/kg.
2. **V-Tach with a pulse (with SLOEMSA Authorization):** 1.5 mg/kg IVP, may repeat with 0.75 mg/kg IVP every 5-10 minutes, not to exceed 3 mg/kg.
3. **Pain Management following IO Placement:** 0.5mg/kg (total max dose of 40mg) slow IO push over 60 seconds.

PEDIATRIC DOSE

1. **V-Fib/pulseless V-Tach (with SLOEMSA Authorization):** 1 mg/kg IVP/IO. May repeat every 5 minutes, not to exceed 3 mg/kg.
2. **V-Tach with a pulse (with SLOEMSA Authorization):** 1 mg/kg IVP/IO, may repeat with 0.5 mg/kg IVP/IO every 5-10 minutes, not to exceed 3 mg/kg.
3. **Pain Management following IO Placement:** 0.5mg/kg (total max dose of 40mg) slow IO push over 60 seconds.

Onset: 30 - 90 seconds

Duration: 10 - 20 minutes

Notes:

- Lidocaine may be used as backup to Amiodarone with SLOEMSA authorization (using Policy #205 Attachment C) in cases where Amiodarone stock is unavailable. In cases when Lidocaine is substituted for Amiodarone, the minimum stock of Lidocaine shall mimic the same numbers as Amiodarone.
- In cases of premature ventricular contractions, assess need and treat underlying cause. Needs include: chest pain, syncope, R on T situations, multifocal and paired PVCs, bigeminy and trigeminy, and PVCs at 6-12 per minute. See appropriate protocols as needed.
- Lidocaine is to be administered no faster than 50mg/min, except in patients in cardiac arrest.

TRAUMATIC CARDIAC ARREST	
ADULT	PEDIATRIC (≤34KG)
BLS	
<ul style="list-style-type: none"> Universal Protocol #601 Obvious Death – see Prehospital Determination of Death Policy #125 Follow HPCPR guidelines for CPR (10:1) and minimize interruptions (< 5 seconds) 	Same as Adult
BLS Optional	
Pulse Oximetry – O ₂ administration per Airway Management Protocol #602	
ALS Standing Orders	
<p>Trauma patients who arrest after EMS arrival on scene and < 20 min from trauma center</p> <ul style="list-style-type: none"> Do not delay transport Perform ALS treatments en route Normal Saline up to 500 mL – repeat x1 if no ROSC or SBP of < 90 mmHg <u>Do not use Epinephrine or Amiodarone</u> unless the arrest is suspected to be of medical origin Resuscitate and treat for reversible causes, i.e. hypoxia, hypovolemia, tension pneumothorax Traumatic arrest with the suspicion of chest trauma, perform bilateral needle thoracostomy. See Needle Thoracostomy Procedure #705. <p>Traumatic arrest <u>with absent</u> signs of life on EMS arrival</p> <ul style="list-style-type: none"> With absent signs of life consider non-initiation – Prehospital Determination of Death Policy #125 	<p>Same as Adult (except as noted below)</p> <ul style="list-style-type: none"> Normal Saline 20 mL/kg IV/IO – reassess and repeat
Base Hospital Orders Only	
<ul style="list-style-type: none"> Trauma patients who arrest after EMS arrival on scene <u>and</u> > 20 min from trauma center or hospital <ul style="list-style-type: none"> Contact SLO Trauma Center for treatment and/or destination Termination of resuscitation As needed 	Same as Adult
Notes	

- Absent signs of life assessment include: pulseless, apneic, lack of heart and lung sounds, fixed and dilated pupils.
- Trauma Center is the preferred destination if equal or near equal distance.
- Do not delay transport for advanced airway or other treatment modalities.
- Consider medical origin in older patients with low probable mechanism of injury.
- Unsafe scene or other circumstances may warrant transport despite low potential for survival.
- Minimize disturbance of potential crime scene.
- Consider Oral Intubation or Supraglottic Airways (Adults), provider discretion.
- If the provider cannot accomplish an ALS airway, they should document in the PCR why an ALS airway wasn't accomplished.

NEEDLE THORACOSTOMY	
ADULT	PEDIATRIC (≤34KG)
BLS	
Universal Protocol #601	
BLS Optional	
Pulse Oximetry – O ₂ administration per Airway Management Protocol #602	
ALS Standing Orders	
<ul style="list-style-type: none"> • Locate mid-clavicular 2nd intercostal space or mid-axillary 4th intercostal space on affected side • Prep site with povidone-iodine and alcohol • With syringe attached, insert large bore IV catheter (maximum 10 Ga.) at a 90° angle slightly superior to the rib • Once in the pleural space diminished resistance should be noted with air and/or blood return • Holding the needle, advance the catheter and remove the needle allowing pressure to be relieved • Secure the catheter and provide for a one-way valve • Assess and reassess lung sounds 	
Base Hospital Orders Only	
<ul style="list-style-type: none"> • As needed 	
Notes	
<p>Indication: Tension pneumothorax with significant respiratory compromise, traumatic cardiac arrest.</p> <ul style="list-style-type: none"> • Signs and symptoms may include: <ul style="list-style-type: none"> ○ Deteriorating respiratory status ○ Decreased SBP, increased pulse ○ Diminished lung sounds on affected side ○ Jugular vein distension ○ Hyper-resonance to percussion on affected side ○ Tracheal shift away from affected side (difficult to assess) ○ Increased resistance with ventilation (BVM, ET) • Equipment <ul style="list-style-type: none"> ○ Large IV catheter (10-12 Ga.) with a syringe ○ One-way valve i.e. Asherman Seal ○ Antiseptic products, povidone-iodine/alcohol swabs • Indication: Trauma patients who arrest after EMS arrival on scene and < 20 min from trauma center or hospital, with the suspicion of chest trauma, perform bilateral needle thoracostomy. 	

VASCULAR ACCESS AND MONITORING	
ADULT	PEDIATRIC (≤34KG)
BLS	
<ul style="list-style-type: none"> • Universal Protocol #601 • In stable patients, providers may monitor and turn off IV lines of isotonic balanced salt solutions without medication or electrolyte additives and flowing at a maintenance rate 	
BLS Optional	
Pulse Oximetry – O ₂ administration per Airway Management Protocol #602	
ALS Standing Orders	
<ul style="list-style-type: none"> • Establish IV with drip set or saline lock as appropriate. • Tibial plateau, humeral head, or medial malleolus Intraosseous (IO) placement may be utilized for: <ul style="list-style-type: none"> ○ Patients in extremis or cardiac arrest with hemodynamic instability/respiratory distress/cardiac arrest. AND ○ Unable to establish following attempt(s) or general suspicion of the inability to establish vascular access. • Attempts to establish vascular access shall be continued even if IO is successful. • If patient becomes responsive to painful stimuli following IO administration: <ul style="list-style-type: none"> ○ Lidocaine 0.5mg/kg (Total max dose of 40mg) slow IO push over 60 seconds. • ALS providers can monitor and administer medications through a Pre-existing Vascular Access Device (PVAD). These pre-existing catheters are: <ul style="list-style-type: none"> ○ Peripheral Inserted Central Catheter (PICC Line) ○ Midline IV Catheters • PVAD access procedure: <ul style="list-style-type: none"> ○ Wipe the access port with an alcohol pad to ensure aseptic technique. ○ Ensure that if your line is a dual lumen line that it is the line designated for medication administration (do not use the line utilized for blood, this can be identified by a red colored catheter or stated on the catheter). ○ Attach a 10ml syringe and draw up 5-10ml of fluid out of the line until blood is noted in the syringe. This is to ensure the line is not pre-loaded with heparin. ○ Discard the filled syringe and flush the line with an entire 10cc saline flush. This is to ensure that the line is clean and ready for medication administration. ○ Connect the syringe with the desired medication and administer according to the appropriate formulary. Follow the medication administration with an entire 10cc saline flush. ○ If any sort of cap was used to cover the port, ensure the cap is wiped down and placed back on the port following use. ○ If the patient needs an infusion from a saline bag, ALS Providers may connect the IV line to the PVAD after the line has been aspirated per instructions listed above. After the infusion is finished, ensure the line is flushed with a 10cc saline flush, and wipe the port with an alcohol pad. If any sort of cap was used to cover the port, ensure the cap is wiped down and placed back on the port following use. 	

Base Hospital Orders Only	
<ul style="list-style-type: none">• Access to tunneled/non-tunneled Central Lines for patients in extremis or cardiac arrest. Access of these central lines shall follow the PVAD access procedure listed above.• As needed	
Notes	
<ul style="list-style-type: none">• Peripheral IV placement is preferred to IO placement – including the external jugular.• When establishing IV/IO access in a patient in extremis or cardiac arrest, ALS Providers will take the following into consideration:<ul style="list-style-type: none">○ When assessing a patient’s vasculature and determining access to be difficult, an ALS Provider may proceed straight to IO access. Further IV attempts will continue following IO placement.○ If the first attempt at IV placement fails, an ALS provider may consider placement of an IO prior to a second attempt.• External Jugular (EJ) access should always be considered prior to IO placement.	

USE OF RESTRAINTS	
ADULT	PEDIATRIC (≤34KG)
BLS	
<ul style="list-style-type: none"> Universal Protocol #601 Pulse Oximetry – O₂ administration per Airway Management Protocol #602 Application of restraints – see Notes Evaluate restrained extremities for pulse quality, capillary refill, color, nerve and motor function every 15 minutes 	
ALS Standing Orders	
Severely agitated or aggressive patients that interfere with patient care, or patient/crew safety refer to Behavioral Protocol #613	
Base Hospital Orders Only	
As needed	
Notes	
<ul style="list-style-type: none"> Restraints for prehospital use must be either padded leather or a soft material and allow for quick release <ul style="list-style-type: none"> No hard plastic ties No “sandwiching” the patient between backboards or like devices No restraining hands and feet behind the patient (“hog-tying”) No methods or material applied in a manner that cause respiratory, vascular or neurological compromise Patient may not be transported in the prone position No handcuffs or restraints of any kind behind patient’s back. Indications <ul style="list-style-type: none"> For patients who are violent, or may harm themselves or others during field treatment or transport Documentation shall include: <ul style="list-style-type: none"> Reasons and time restraints were applied Which agency/personnel applied the restraint Evaluation of restrained extremities for pulse quality, capillary refill, color, nerve and motor function every 15 minutes Evaluation of respiratory status Method of application shall allow for monitoring of vital signs and shall not restrict the ability to protect the patient’s airway, or compromise neurological or vascular status Restraints applied by law enforcement and not approved for use by EMS personnel: <ul style="list-style-type: none"> Require the officer to remain available at the scene or during transport to remove or adjust restraints for patient safety Must allow for straightening of the abdomen and chest to allow for full tidal volume respirations Aggressive or violent behavior may be a symptom of medical conditions such as head trauma, alcohol, drug related problems, metabolic disorders, stress or psychiatric disorders. 	