EMERGENCY MEDICAL CARE COMMITTEE MEETING AGENDA

Thursday, November 21st, 2024, at 8:30 A.M.
2995 McMillan Ave, Ste #178, San Luis Obispo

MEMBERS
CHAIR Jonathan Stornetta, *Public Providers, 2020-2024*
VICE – CHAIR Dr. Brad Knox, *Physicians*, *2022-2026*
Bob Neumann, *Consumers*, *2022-2026*
Matt Bronson, *City Government, 2020-2024*
Alexandra Kohler, *Consumers, 2020-2024*
Chris Javine, *Pre-hospital Transport Providers, 2022-2026*
Michael Talmadge, *EMS Field Personnel, 2020-2024*
Jay Wells, *Sheriff's Department, 2020-2024*
Julia Fogelson, *Hospitals*, *2022-2024*
Diane Burkey, *MICNs*, *2022-2026*
Dr. Rachel May, *Emergency Physicians*, 2022-2026

EX OFFICIO
Ryan Rosander, *EMS Director*
Dr. Bill Mulkerin**,** *EMS Medical Director*
Penny Borenstein, *Health Officer*

STAFF
Maya Craig-Lauer, PHEP Representative
Rachel Oakley, *EMS Coordinator*
Eric Boyd, *EMS Coordinator*
Kaitlyn Blanton, *EMS Coordinator*
Alyssa Vardas, *Administrative Assistant*

AGENDA	ITEM	LEAD
Call To Order	Introductions Public Comment	J. Stornetta
Action/Discussion	Approval of minutes: September 19th, 2024, Minutes (*attached)*	J. Stornetta
	Review of Committee Member Appointments	Committee
	Recommend / Approve Heidi Hutchinson and Jon Ontiveros for Clinical Advisory & Operations Committee	Committee
	Review / Training of Brown Act	B. Dore
Action/Discussion	Protocol Revisions: • 603 – Pain Management • 640 – Chest Pain • 641 – Pulseless Cardiac Arrest Policy Revisions: • 218 – Upgrade/Downgrade Drug Formulary: • Ketamine	R. Rosander
Staff Reports	• Health Officer • EMS Agency Director Report • EMS Medical Director Report • PHEP Staff Report	P. Borenstein R. Rosander B. Mulkerin M. Craig-Lauer
Committee Members' Announcements or Reports	Opportunity for Board members to make announcements, provide brief reports on their EMS-related activities, ask questions for clarification on items not on the agenda, or request consideration of an item for a future agenda (Gov. Code Sec. 54954.2[a][2])	Committee Members
Adjourn	**Next Meeting: TBD**	J. Stornetta

Emergency Medical Care Committee
Meeting Minutes
Thursday September 19th, 2024
2995 McMillan Ave, Ste 178, San Luis Obispo

Members

- ☒ CHAIR Jonathan Stornetta, Public Providers
- ☒ VICE CHAIR Dr. Brad Knox, *Physicians*
- ☒ Bob Neumann, *Consumers*
- ☐ Alexandra Kohler, *Consumers*
- ☒ Matt Bronson, *City Government*
- ☐ Chris Javine, *Pre-Hospital Transport Providers*
- ☒ Michael Talmadge, *EMS Field Personnel*
- ☒ Dr. Rachel May, *Emergency Physicians*
- ☒ Jay Wells, *Sheriff's Department*
- ☒ Julia Fogelson, *Hospitals*
- ☒ Diane Burkey, *MICNs*

Ex Officio

- ☒ Dr. Penny Borenstein, *Acting EMS Division Director*
- ☒ Dr. Bill Mulkerin, *LEMSA Medical Director*

Staff

- ☒ Rachel Oakley, EMS Coordinator
- ☒ Ryan Rosander, EMS Director
- ☒ Maya Craig-Lauer, *PHEP Program Manager*
- ☒ Alyssa Vardas, Administrative Assistant

Guests – Doug Weeda, Natasha Lukasiewich, Josh Taylor, Pete Gavitte, Dennis Rowley

AGENDA ITEM / DISCUSSION	ACTION
CALL TO ORDER	The meeting called to order at 08:32 AM
Introductions	
Public Comment	No comments
Approval of Meeting Minutes – Motion to approve with change to B. Knox's attendance.	B. Knox Motioned, R. May Seconded, call for a vote, Approved.
Staff Report for revisions for Protocol #619, and Policy #200, 155, 320-321 **Revisions:** • SLOEMSA has proposed moving Push Dose Epi from Base Hospital Orders to Standing Orders. • SLOEMSA has proposed revising the EMS helicopter policy. • SLOEMSA has brought back the scene management policy, emphasizing the change in the communications piece. • SLOEMSA has updated the Live Scan attachment and policy to stay compliant with the Department of Justice. **Discussion:** R. May – I think we should up the fluid amount before moving to push dose epi. In more cases than not, there is not enough fluid given. B. Mulkerin – Removing from base is to remove the limits to care. R. May – Minimum should be at least 1 liter, 90 is a little soft. B. Knox- How many patients are actually getting 1 liter of fluid in transport? R. May – Maybe changing the language so that medics give more fluid. R. Rosander – So crossing out the "up to"? B. Knox – I think we make sure they know that is what we are starting at. R. Rosander – Cross out Up to. M. Talmadge – You may never get push dose epi then if you phrase it that way B. Knox – The 1 liter will make it so not everyone is getting it but that is fine. R. May – For Policy 200, what was the reason to move to cleartex? R. Rosander – Medcomm just said they moved to it, I can follow up. J. Stornetta – We have no CAD to CAD and Cleartex allowed that there was no delay because of phone calls. J. Ways – We are always upgrading our systems. B. Knox – For Policy 155, what were the conditions that you added?	R. Rosander/R. Oakley

M. Talmadge – Should we clarify that e is a subset of the others?
B. Knox – Do we have the helicopter resources to actually do this?
R. Rosander – When you call and they aren't here its because they are out of county due to disuse, hopefully with this they wont have to go out of county to stay in business.
B. Mulkerin – One of the concerns is that if they don't get used, they could potentially not be there.
R. May – ACS guidelines, the more current guidelines actually show and ask what resources are available to patients during transport. I think making them an auto-launch is not appropriate. Their recommendation is lower altitudes for diving injuries.
R. Rosander – It is about scope, there is a risk but safety has improved greatly and they monitor safety closely.
B. Mulkerin – ACS put out papers and the goal is to get the high-risk patients out and that you should utilize available resources.
R. May – I will respectfully disagree with you in the case of many of these.
J. Stornetta – I don't see a lot of change in the policy now. If we decide to adopt this we could look at this in a year and see if we are overutilizing it. We are already doing this and we are just putting it into policy.
M. Talmadge – It doesn't look like we are over utilizing and I don't think that adding these are going to drastically over utilize it.
B. Knox – The expedited launch zones is the much more important part of the policy.
J. Stornetta – If it is not expedited it takes much longer for the medic to get out there.
D. Burkey – Seeing we are having this progression is great and adding limitations to it would be a detriment. We are taking a step up doing this.
R. May – Can I propose adding language to specifically add a deeper review of these calls? I think we need fire, physicians, air and ground EMS to see what we are actually using to hold ourselves accountable to review these calls. We could review this in QI committee.
R. Rosander- We can add it to QI Committee to review the calls.
P. Borenstein – We used to look at every single call and can confirm that that's a practice we should get back to.
R. Rosander – Everyone on the ground will know they are being watched and they will get used to the practice.
R. May – I think there was a reason we changed the Heli Language.
R. Rosander- We will keep the heliport/helistop language as is.
J. Stornetta – This just expedites the dispatch services.
D. Weeda – Pg. 5, Patient requires code three transport to hospital. Dry runs cost money, there is a fine line there. They can't just land anywhere, they have to land with help. Hunter ranch is a little close, Maybe the dam would be more appropriate?
R. Rosander – Mercy can land, it was a misconception that they couldn't land without assistance. I would rely on people on scene to make decisions as to where they would go.
J. Stornetta – Hunter and Wellsona already meet the time need and our providers will cancel if we don't need the helicopters.
R. May – It would be helpful to look at the maps.
J. Stornetta – There is nothing to say we can't make adjustments.
D. Rowley – We can self-land, we love having rough L2s, as far as safety is concerned, I can't tell you how much we are involved in that, and we look into everything. For Attachment C, if we could put HotSaw on here?
J. Taylor – They should be contacting the HJ. Should be happening on the fire channel if they are already on the fire channel. Helicopter- A1, multiple times when we need two helicopters, there should be the ability to send two helicopters, one for rescue and one for transport. This makes more sense for the helicopter to be able to get the ambulance back into the system We would be happy to help with GIS Mapping.

J. Wells- I think GIS will be able to capture a lot more of what the zones are. N. Lukasiewich – I think it should be changed back to helistop/heliport. I am in support of auto-launch. It is really important and there is lots of value in looking at initiating the dispatch process and the appropriateness of using air transport. R. May – We don't have any stroke-receiving centers. Stroke doesn't go to the closest center. It would just be faster to drive them instead of air-to-ground transport. J. Stornetta – Valid points of utilization, brought up in paramedic class. D. Weeda – We don't mind having two helicopters go. Motion to approve 619, 200, 155, 320-321 with changes.	Motion to approve: M. Bronson motioned B. Knox Second. Call for a vote, J. Stornetta, B. Knox, M. Bronson, M. Talmadge, J. Wells, J. Fogelson, D. Burkey Approve. R. May Not Approve.
EMS Updates: Backfilling Coordinators' positions. Thank you everyone for your time. **Health Officer Updates:** R. Rosander is the EMS Director, Maya Craig-Lauer is the PHEP Program Manager. Doing ECM, Nurses going into field and giving medical care to folks out in the community**.** **EMS Medical Director Report:** Congratulations. Nothing else to report. **PHEP Staff Report:** Thank you for having me here.	R. Rosander P. Borenstein B. Mulkerin M. Craig-Lauer
Announcements: High-degree heart blocks and consulting French Hospital would be a great thing to look at.	B. Knox
Future Agenda Items: • High-degree heart blocks • Switching out of Committee/subcommittee members • J. Stornetta and J. Fogelson have completed their terms, need to chose next members. • R. May would like literature for review	Adjourn at 10:12 AM.
Next Regular Meeting The next meeting is set for Thursday, November 21st, 2024, at 08:30 AM at the EMS Agency.	

EMCC – Jonathan Stornetta, Chairperson **Term: 2 year with ½ members alternating terms**

POSITION	No. OF REPS	APPOINTING BOARD REPRESENTATIVE	TERM
Public Providers – Jonathan Stornetta	1	Co. Fire Chiefs	2014 - 2016
Consumers - Bob Neumann	1	Co. Health Officer	2015 -2017
Consumers – Alexandra Kohler	1	Co. Health Officer	2014 - 2016
City Government – Matthew Bronson	1	City Managers	2014 - 2016
EMS Field Personnel – Michael Talmadge	1	Co. Health Officer	2014 - 2016
Physicians – Dr. Brad Knox	1	Co. Medical Association	2015 - 2017
Sheriff's Department – Jay Wells	1	Co. Sheriff	2014 - 2016
Prehospital Transport Providers - Chris Javine	1	Prehospital Transport Providers	2015 – 2017
Hospitals – Julia Fogelson	1	Hospital Council of Northern and Central California	2015 – 2017
ED Physicians – Dr. Rachel May	1	Co. Health Officer	2015 – 2017
MICN – Diane Burkey	1	Co. Health Officer	2015 - 2017

COUNTY OF SAN LUIS OBISPO HEALTH AGENCY
PUBLIC HEALTH DEPARTMENT
Nicholas Drews *Health Agency Director*
Penny Borenstein, MD, MPH *Health Officer/Public Health Director*

MEETING DATE	November 21st, 2024
STAFF CONTACT	Ryan Rosander, EMS Director 805.788.2512 rrosander@co.slo.ca.us
SUBJECT	Upgrade/downgrade, atraumatic cardiac arrest, cardiac chest pain.
SUMMARY	The upgrade/downgrade policy was first introduced in the last Operations Subcommittee. After much debate, it was suggested that it be tabled and returned to the agenda for the following Operations Subcommittee. All language regarding Law Enforcement was removed from this policy. Several stakeholders and clinicians within San Luis Obispo County have requested that SLOEMSA consider adding vector change defibrillation to treat refractory VFIB and pulseless VTACH. Furthermore, why San Luis Obispo County starts defibrillation at a lower setting was brought forward. Both of these concerns have been addressed in the draft protocol for atraumatic cardiac arrest. Push-dose epinephrine was also placed in standing orders for paramedics in treating ROSC patients, allowing the paramedics within SLO County to use discretion in treating their patients without calling for an order. After conducting SLOEMSA's STEMI work group, concerns were voiced about several items within the Cardiac Chest Pain protocol. One concern was the need to call a base hospital for orders to give a fluid bolus after nitro administration. The STEMI work group also requests that SLOEMSA consider adding large-bore IVs (bilaterally preferred) to the protocol because it will benefit the patient if they go to the Cath lab. Finally, there has been growing concern over patients who are brought into FHMC for STEMI not having cardiac defibrillation pads out and ready by the patient. All these concerns have been addressed within the draft protocol. Lastly, during EMCC, Ketamine for pain management was approved for IM in addition to the IV/IO route. To be transparent in making decisions, SLOEMSA wants to discuss the IM/dosage for Ketamine in CAC and EMCC. Changes will then be applied to the pain management protocol and Ketamine formulary. All policy and protocol changes will go into effect on January 1st, after the 2024 EMS Update class.
REVIEWED BY	Dr. William Mulkerin, SLOEMSA Staff, Operations Subcommittee, Clinical Advisory Subcommittee

RECOMMENDED ACTION(S)	Policy #218: Upgrade/Downgrade or Cancellation of EMS Response, Protocol #641: Cardiac Arrest (Atraumatic), Protocol #640 Adult Cardiac Chest Pain/Acute Coronary Syndrome, Protocol #603: Pain Management, Ketamine Formulary, recommendation for approval by EMCC and will go into effect January 1st, 2025.
ATTACHMENT(S)	Policy #218: Upgrade/Downgrade or Cancellation of EMS Response, Protocol #641: Cardiac Arrest (Atraumatic), and Protocol #640 Adult Cardiac Chest Pain/Acute Coronary Syndrome, Protocol #603: Pain Management, Ketamine Formulary.

PAIN MANAGEMENT

ADULT	PEDIATRIC (≤34 kg)
BLS	

• Universal Protocol #601
• **Pulse Oximetry**
  ○ O_2 administration per Airway Management Protocol #602
• **Medical** (non-cardiac)
  ○ Position of comfort
  ○ Nothing by mouth
• **Cardiac chest pain –** Chest Pain/Acute Coronary Syndrome Protocol #640
• **Trauma –** General Trauma Protocol #660
  ○ Splint, ice, elevate as indicated
	• Universal Protocol #601
	• **All causes of pain -** consider age/situation appropriate distraction techniques.
	  ○ Video Viewing
	  ○ Calm environment
	  ○ Caregiver support
	• **Medical**
	  ○ Position of comfort
	  ○ Nothing by mouth
	• Otherwise, same as adult

ALS Standing Orders	
MODERATE or SEVERE PAIN **Acute Pain –** SBP ≥ 90 mmHg, unimpaired respirations, GCS normal for baseline: • Fentanyl 50-100 mcg SLOW IV (over 1 min.), may repeat after 5 min. if needed (not to exceed 200 mcg total) OR • Ketamine 0.3mg/kg (max of 30mg) in 100ml Normal Saline, administer IV/IO over 10 minutes one time dose. **IF DIFFICULTY OBTAINING IV** • 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) OR • Ketamine 0.5mg/kg (max of 40mg) IM one time dose. **Acute Pain –** multisystem trauma with head/thoracic/abdominal injuries, significant extremity trauma refractory to or contraindicated to Fentanyl: • Ketamine 0.3mg/kg (max of 30mg) in 100ml Normal Saline, administer IV/IO over 10 minutes one time dose.	**MODERATE or SEVERE PAIN** (Use age-appropriate indicators) **Acute Pain –** BP > age-based min., unimpaired respirations, GCS normal for age: • 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) **IF IV ALREADY ESTABLISHED** • Fentanyl 1 mcg/kg SLOW IV (over 1 min), may repeat after 5 min. if needed (not to exceed 4 doses)

OR • Ketamine 0.5mg/kg (max of 40mg) IM one time dose.	
Base Hospital Orders Only	

• **Fentanyl administration with**
  ○ ALOC
  ○ SBP < 90 mmHg
  ○ Chronic pain
• Additional doses of Fentanyl
• One additional dose of Ketamine
• As needed
	• Same as adult
	• As needed.

Notes

- Consider doses of Fentanyl 25 mcg for initial dose in elderly (>65 y/o) and for maintenance doses
- Request orders, as appropriate, for obviously painful conditions not covered by standing orders.
- Use clinical judgement if a patient has difficulty using pain scale, or their reported pain is inconsistent with clinical impression.
  - Consider using FACES scale in adults with barriers to communication (below)
- Non-pharmacologic interventions should be provided concurrently or prior to medication administration.
- 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).
- Risk of adverse neurological events with Ketamine use is decreased with sub-dissociative doses and SLOW rate of administration.
- 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 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.
- 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, evidence of hypovolemic/hemorrhagic shock, or multisystem trauma with high potential for internal hemorrhage.
- Ketamine administration to pediatric patients is **NOT** approved for use in the County of San Luis Obispo.

ADULT CARDIAC CHEST PAIN/ACUTE CORONARY SYNDROME

FOR USE IN ADULT PATIENTS

BLS

- Universal Protocol #601 Pulse Oximetry
  - O_2 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

- Obtain 12-lead ECG early
- **Nitroglycerin** 0.4 mg SL tablet or spray
  - 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:
  - 500 mL fluid bolus has been administered and SBP is trending towards or drops < 100 mmHg or in the presence of other signs/symptoms of hemodynamic instability.
  - Evidence of Right Ventricular Infarction (RVI) – see Notes

MODERATE or SEVERE PAIN

- **Refractory to Nitroglycerin**
  - **Fentanyl** 25-50 mcg SLOW IV (over 1 min), titrated to pain improvement, maintain SBP ≥ 100 mmHg
    - May repeat after 5 min if needed (not to exceed 200 mcg total)

If difficulty obtaining IV

  - **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)

Base Hospital Orders Only

- **Nitroglycerin** with
  - Significant decrease in SBP after administration
  - Patients taking erectile dysfunction medications
  - Atrial fibrillation with RVR
  - Evidence of RVI
- Additional **Fentanyl**

Persistent hypotension

- **Additional Normal Saline** bolus up to 500 mL
- **Push-Dose Epinephrine 10 mcg/mL** 1mL IV/IO every 1-3 min
  - Repeat as needed to maintain SBP >90 mmHg
  - See notes for mixing instructions

OR

- **Epinephrine Drip** start at 10 mcg/min IV/IO infusion
  - Consider for extended transport
  - See formulary for mixing instructions
- As needed

Notes

- 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	

• Universal Algorithm #601
• High Performance CPR (HPCPR) (10:1) per Procedure #712
  • Continuous compressions with 1 short breath every 10 compressions
• AED application (if shock advised, administer 30 compressions prior to shocking)
• Pulse Oximetry
  • O_2 administration per Airway Management Protocol #602
	• Same as Adult (except for neonate)
	• Neonate (<1 month) follow AHA guidelines
	• CPR compression to ventilation ratio
	  • Newborn – CPR 3:1
	  • 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	

Rhythm analysis and shocks
• 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 ~~120J~~ 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)
  • ~~Subsequent shock, after 2 mins of CPR: 150J, then 200J~~
  • ~~Recurrent V-fib/Pulseless V-tach use last successful shock level~~
• **No shock indicated** – dump the charge and immediately resume CPR
 	
V-Fib/Pulseless V-Tach and Non-shockable Rhythms
• **Epinephrine 1:10,000** 1mg IV/IO repeat every 3-5 min
  • Do not give epinephrine during first cycle of CPR
 	
V-Fib/Pulseless V-Tach
• **Amiodarone** 300mg IV/IO push; if rhythm persists after 5 min, administer 150mg IV/IO push refractory dose.
	• **Emphasize resuscitation and HPCPR rather than immediate transport**
	
	Rhythm analysis and shocks
	• Coordinate compressions and charging same as adult
	• **Defibrillate V-Fib/Pulseless V-Tach** – shock at 2 J/kg and immediately resume CPR
	  • 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
	
	V-Fib/Pulseless V-Tach and Non-shockable Rhythms
	• **Epinephrine 1:10,000** 0.01 mg/kg (0.1 ml/kg) IV/IO not to exceed 0.3mg, repeat every 3-5 min
	  • Do not give epinephrine during first cycle of CPR
	
	V-Fib/Pulseless V-Tach
	• **Amiodarone** 5mg/kg IV/IO push; repeat every 5 min to a max of 15mg/kg.

ROSC with Persistent Hypotension

- Push-Dose Epinephrine 10 mcg/ml 1ml IV/IO every 1-3 min
  - Repeat as needed titrated to SBP >90mmHg
  - See notes for mixing instructions

OR

- Epinephrine Drip start at 10 mcg/min IV/IO infusion
  - Consider for extended transport
  - See formulary for mixing instructions

Base Hospital Orders Only

~~ROSC with Persistent Hypotension~~

- ~~**Push-Dose Epinephrine 10 mcg/ml** 1ml IV/IO every 1-3 min~~
  - ~~Repeat as needed titrated to SBP >90mmHg~~
  - ~~See notes for mixing instructions~~

~~***OR***~~

- ~~**Epinephrine Drip** start at 10 mcg/min IV/IO infusion~~
  - ~~Consider for extended transport~~
  - ~~See formulary for mixing instructions~~

Contact STEMI Receiving Center (French Hospital)

- 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

Contact appropriate Base Station per Base Station Report Policy #121 – Atraumatic cardiac arrests due to non-cardiac origin (OD), drowning, etc.)

Contact closest Base Hospital for additional orders

ROSC with Persistent Hypotension for Age

- **Push-Dose Epinephrine 10 mcg/ml** 1 ml IV/IO (0.1 ml/kg if <10kg) every 1-3 min
  - Repeat as needed titrated to age appropriate SBP
  - See notes for mixing instructions

OR

- **Epinephrine Drip** start at 1 mcg/min, up to max of 10 mcg/min IV/IO infusion
  - Consider for extended transport
  - See formulary for mixing instructions

- As needed

Notes

- **Mixing Push-Dose Epinephrine 10 mcg/ml (1:100,000):** Mix 9 ml of Normal Saline with 1 ml of **Epinephrine 1:10,000**, 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.
- Stay on scene 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
- ~~With BP < 100 mmHg, contact SRC (French Hospital) for fluid, or pressors.~~
- 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.
- 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).
- Pediatric patients less than or equal to 34 kg.
- Evaluate and treat for respiratory causes.
- Use Broselow tape if available.
- 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.

ROSC with Persistent Hypotension

- **Push-Dose Epinephrine 10 mcg/ml** 1ml IV/IO every 1-3 min
  - Repeat as needed titrated to SBP >90mmHg
  - See notes for mixing instructions

OR

- **Epinephrine Drip** start at 10 mcg/min IV/IO infusion
  - Consider for extended transport
  - See formulary for mixing instructions
- **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.

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:
    a. Refractory to fentanyl
    b. When fentanyl is contraindicated (see notes)
3. Acute pain management for medical patients:
    a. Refractory to fentanyl
    b. When fentanyl is contraindicated (see notes)
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

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.

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.

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.

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	