Operations Subcommittee
of the Emergency Medical Care Committee

Meeting Agenda:
9 A.M., October 2, 2025
Location: SLOEMSA Conference Room
2995 McMillan Ave, STE #178, San Luis Obispo

Members
Jay Wells, *Sheriff's Department, CHAIR*
Tim Nurge, *Ambulance Providers*
Scotty Jalbert, *Office of Emergency Services*
Jennifer Mebane, *Med-Com*
Adam Forrest, M.D., *Hospitals*
Kris Strommen, *Ambulance Providers*
Rob Jenkins, *Fire Service*
Lisa Epps, *Air Ambulance Providers*
Dennis Rowley, *Air Ambulance Providers*
Jon Ontiveros, *CHP*
Deputy Chief Sammy Fox, *Fire Service*
Vacant, *Law Enforcement*
Chief Casey Bryson, *Fire Service*
Chief Dan McCrain, *Fire Service*
Roger Colombo, *Field Provider-Paramedic*
Heidi Hutchison, M.D., *Hospitals*

Staff
STAFF LIAISON, Ryan Rosander, *EMS Director*
Bill Mulkerin, M.D., *Medical Director*
Rachel Oakley, *EMS Coordinator*
Kaitlyn Blanton, *EMS Coordinator*
Eric Boyd, *EMS Coordinator*
Alyssa Vardas, *Administrative Assistant*

AGENDA	ITEM	LEAD
Call to Order	Introductions Public Comment	Jay Wells
Summary Notes	Review of Summary Notes April 3, 2025	
Discussion	**Policy Revisions:** • 221 Leave Behind Naloxone • 222 Mechanical CPR Devices	Ryan Rosander
Discussion	**Protocol Revisions:** • 622 Opioid Withdrawal • 618 Respiratory Distress – Opioid Overdose • 641 Pulseless Cardiac Arrest Atraumatic • 661 Traumatic Cardiac Arrest • 718 Supraglottic Airway Device • 602 Airway Management • 717 Endotracheal Intubation • 601 Universal	Ryan Rosander

	• 663 Drowning • 645 Atrial Fibrillation • 642 Supraventricular Tachycardia • 619 Shock Hypotension Sepsis • 622 Opioid Withdrawal	
Adjourn	Declaration of Future Agenda Items: - Roundtable Next Meeting Date: December 4, 2025, 9:00 A.M. Location: SLOEMSA Conference Room 2995 McMillan Ave, STE #178, San Luis Obispo	Jay Wells

Operations Subcommittee

Meeting April 3, 2025
2995 McMillan Way, Suite 178
San Luis Obispo, CA 93401

MINUTES

MEMBERS PRESENT:
Chair Jay Wells, Sheriff's Department
Rob Jenkins, Fire Service
Kris Strommen, Ambulance Providers
Scotty Jalbert, OES
Jennifer Mebane, Med-Com
Shannon Wilkinson, SLOSO
Jon Ontiveros, CHP
Anthony Gutierrez, Fire Service
Dan McCrain, Fire Service
Roger Columbo, Field Providers
Scott Hallett, Fire Service
Casey Bryson, Fire Service
Heidi Hutchison, Hospitals

MEMBERS ABSENT:
Tim Nurge, Ambulance Providers
Jennifer Mebane, Med-Com
Adam Forrest, Hospitals
Dennis Rowley, Air Ambulance providers
Lisa Epps, Air Ambulance Providers
Heidi Hutchison, Hospitals

EMS AGENCY STAFF PRESENT:
Alyssa Vardas, EMS Administrative Assistant
Rachel Oakley, EMSA
Kaitlyn Blanton, EMSA
Eric Boyd, EMSA
Ryan Rosander, EMSA
Bill Mulkerin, EMS Medical Director

PUBLIC COMMENTORS:
Scott Hallet, FCFA
Anthony Simonian, CHP

1. CALL TO ORDER

Chair Jay Wells called the meeting to order at 8:56 a.m. He led the review of the meeting protocols and the meeting agenda.

2. REVIEW AND APPROVAL OF February 6th, 2025, MINUTES

Action: Scotty Jalbert moved approval of February 6th, 2025, Operations Subcommittee Meeting Minutes. Rob Jenkins seconded. The motion carried unanimously with no abstentions.

3. Protocols/Policies

158 Ambulance Offload Time: Ambulance Patient Offload Time (APOT) is the interval from when an ambulance arrives at an emergency department (ED) to when the patient is transferred to hospital staff and the ambulance is available for the next call. Excessive APOT negatively impacts EMS system efficiency, delays emergency responses, and contributes to ambulance shortages. In the County of San Luis Obispo, all prolonged APOT times negatively impact the system due to the number of ambulances available; for this reason, SLOEMSA is seeking stakeholder feedback for a 20-minute standard.

Discussion:
Kris Strommen says Crews are noticing that hospitals acknowledge us but don't transfer.

Ryan Rosander says that's happening throughout the state.

Bill Mulkerin says the signature is the transfer of care.

Kris Strommen says that might be something to have in image trend.

Bill Mulkerin mentions that there is always the issue that ems is not allowed to do care in the hospital.

Ryan Rosander says that the state is supposed to visit hospitals with delays.

Dan McCrain says Overall, it's a good policy.

Rob Jenkins asks if this has the hospital making contact with the field sup?

Ryan Rosander says we can have the hospital contact them.

Bill Mulkerin mentions we want to be as clear as possible.

Policy 203, Patient Refusal of Treatment:
Policy 203, Patient Refusal of Treatment and/or Transport was last revised on April 15th, 2017. The main reason for the recent revision was to change language regarding patient "competency" to "mental capacity".

Discussion:
Rob Jenkins says that the patient definition. does not match the patient definition in theory. Refusal discussion at the state level, the general move has been to move away from AMA to refusal of care.

Bill Mulkerin says Refusal of care is probably better.

Rob Jenkins says majority is on side of refusal of care.

Bill Mulkerin says that sounds good.

Rob Jenkins mentions adding something about non-patient involved parties. We have a worksheet that lets us collect info on them. In the document Guidelines, we would be double-documenting on the refusal and non-patient form. let those 2 stand separately. For me, on the refusal form, I am looking for competency from patient not history.

Kris Strommen asks what would be expectation of base contact?

Bill Mulkerin says I would call a high-risk refusal.

Kris Strommen says I don't think they are making base as much as they could be.

Roger Columbo says the hospitals don't want to be involved with/ a patient they won't see.

Scotty Jalbert says that when we do these reviews we should have it redlined to see the old language.

Dan McCrain says to make EMS ALS.

Roger Columbo asks if when someone is in custody do we need to make law enforcement sign?

Rob Jenkins says patient can sign, law enforcement witnesses.

341/342 Paramedic Accreditation/Reaccreditation:

Paramedic policies 341 and 342 for initial accreditation and reaccreditation were last revised on March 1, 2023. Since that time there have been many conversations regarding clarifying information currently in policy and also making a few changes. On December 5th of 2024, EMS personnel policy revisions were discussed with the Operations Subcommittee. The following revisions were brought to our attention and included in the draft policies attached.

Discussion:

Rachel Oakley asks if PALS should be included.

Dan McCrain says we should add them for re-accreditation.

Rob Jenkins says he doesn't think PALS and ACLS will work.

Rachel Oakley says we can add PALS/ACLS to re-accreditation.

Rob Jenkins says we don’t have programs set up for that now. We have guys off work for 2 years due to workers comp. It’s a major obstacle to get them working again. I almost feel a better way to say that would be for expired licenses.

Dan McCrain says maybe just leave ACLS and PALS out.

Scotty Jalbert mentions that maybe we could define what a LOA is.

Rachel Oakley says no matter how long a LOA is to just require employers a return to work plan.

Rob Jenkins mentions that it makes more sense to me would be if they are gone for a year they require an update class.

Bill Mulkerin says that writing it in here would make sense.

Rob Jenkins says the way we define these breaks is confusing. The local training requirement is where you have more ground to stand on. Take out the initial accreditation and add the employer's return to work and update class. Make agencies check skills sheets every year. This seems like this is captured already with what we have to do already.

Rachel Oakley says to just take out A from S. Added in ID. changed skills so one sheet Skills can be in-field or done by FTO checking

Dan McCrain says maybe just put can't do more than one intubation in a day.

Kris Strommen says there is a logistics component where we do this training.

Rob Jenkins says a three-month thing would be hard due to having people on fires.

Dan McCrain says to put skills should be done every month when practical.

Protocol 704 Needle Cricothyrotomy:
Procedure 704 needle Cricothyrotomy has been updated with language approving ALS providers to follow manufacturers' guidelines for brand-specific instructions on their equipment.

Discussion:

None

Protocol XXX Opioid Withdrawal:
In conjunction with the County's Strategic Plan for 2025, the introduction of Protocol #XXX (no currently assigned numeric) for Opioid Withdrawal has been drafted. This new protocol will include the addition of Suboxone to our County as an ALS pre-hospital medication with Base Orders. Aligned with the California Bridge Program ideals, this draft protocol has been created to benefit patients experiencing Opioid withdrawal symptoms, with the intent of seeking resources for treatment

Discussion:

Bill Mulkerin mentions cows score is a lot but there is imagetrend worksheet.

Rob Jenkins says looking at what is available, Boundtree and what is available is a film.

Katy Blanton says we can change to film.

Bill Mulkerin mentions this wont work for everyone

Rob Jenkins asks How many times are we treating a repeat person in a day? Where are they going after this?

Bill Mulkerin says we don't have an after this.

Rob Jenkins says price is $579 for box of 30.

Policy 125 Determination of Death:
The Policy #125 (last rev. 4/15/2017) revisions were deemed necessary to address issues related to the interpretation of the current obvious death criteria. Proposed changes are intended to clarify procedures on how death is determined in the field, not overhaul current practices.

Discussion:

Scotty Jalbert asks why not take 30 extra seconds?

Bill Mulkerin says one minute in hospital is standard.

Dan McCrain says to put 30 to 60 seconds for both.

Scotty Jalbert says if that is hospital standard, why not stay consistent?

4. ADJOURNMENT

Action: Rob Jenkins moved to approve with changes. Dan McCrain seconded. The motion carried unanimously.

Jay Wells adjourned the meeting at 10:20 a.m.

MEETING DATE	October 2nd, 2025
STAFF CONTACT	Ryan Rosander, EMS Director 805.788.2512 rrosander@co.slo.ca.us
SUBJECT	Mechanical CPR devices, leave behind Naloxone, A-FIB, drowning, fluid admin in the normotensive patient, SGA for EMTs, and pediatric SGA for paramedics.
SUMMARY	During the 2024 EMS Update class, SLOEMSA frequently received questions about fluid challenges in normotensive patients. Currently, paramedics are authorized to administer a 500 mL bolus; however, if the patient is normotensive and requires an additional 500 mL, they must call the base for approval. With the recent changes to Protocol #601: Universal and Protocol #619: Shock/Hypotension, paramedics can now use their discretion to administer up to 1 liter of fluid. During the 2024 EMS Update class, in addition to the request for expanded fluid administration protocols, SLOEMSA received multiple inquiries regarding the development of a standalone atrial fibrillation (A-FIB) protocol. These requests stemmed from the recognition that cardioversion of A-FIB with rapid ventricular response (RVR) has historically required a base hospital order. In time-critical situations where a patient is in A-FIB RVR and is in extremis, delays can be life-threatening. In response, SLOEMSA has created a dedicated A-FIB protocol, granting paramedics the ability to perform synchronized cardioversion for A-FIB RVR as a standing order for patients in extremis. A couple months ago, SLOEMSA was approached by a paramedic who also serves as a certified lifeguard. This individual conducted comprehensive research and engaged in consultations with leading drowning experts from various regions across the nation. Upon review, it was identified that SLOEMSA did not have a dedicated, standalone protocol addressing drowning incidents. In response, SLOEMSA collaborated with these experts to develop a new drowning-specific protocol that integrates current best practices and evidence-based guidelines, optimizing patient outcomes in drowning emergencies. SLOEMSA has received a recommendation for approval from EMCC for the implementation of a prehospital Buprenorphine administration protocol for patients experiencing opioid withdrawal. While the protocol has been approved, SLOEMSA has concurrently been developing a companion Leave-Behind Naloxone policy. This policy is being developed in collaboration with the County of San Luis Obispo's Opioid Safety Coalition and is intended to provide a standardized approach for Naloxone distribution by

	paramedics. The goal is to ensure that all patients at risk of opioid overdose have access to this life-saving intervention. Over the past two years, several agencies have approached SLOEMSA requesting a policy and approval for mechanical CPR devices. While there is no data to prove that mechanical CPR devices yield greater neurological outcomes than manual CPR, Dr. Mulkerin agrees that these devices offer important benefits for crews on scene. Mechanical CPR devices provide consistent, high-quality chest compressions without fatigue, which can be difficult to maintain manually during prolonged resuscitation. They also free up personnel to focus on other critical tasks such as airway management and medication administration. Additionally, these devices improve safety by allowing continuous compressions during patient movement or transport, reducing interruptions common with manual CPR. While this policy is not mandatory, agencies that wish to utilize mechanical CPR devices will have the ability to do so. Multiple stakeholders have requested that SLOEMSA permit SGA use for EMTs and pediatric SGA use for paramedics. EMT SGA use would expand optional skills and improve airway management when ALS is not yet on scene, while pediatric SGA use provides a safe, evidence-based option since pediatric intubation is not permitted in California. These updates align with statewide best practices, strengthen the EMS system, and improve patient outcomes.
REVIEWED BY	Dr. William Mulkerin, SLOEMSA Staff
RECOMMENDED ACTION(S)	Recommended the following for approval by Operations and moved to the Clinical Advisory agenda: Protocol #601: Universal Protocol #602 Airway Management Protocol #619: Shock (Medical) – Hypotension/Sepsis Protocol #641: Cardiac Arrest (Atraumatic) Protocol #642: Supraventricular Tachycardia Protocol #645: Atrial Fibrillation Protocol #661: Traumatic Cardiac Arrest Protocol #663: Drowning Protocol #618: Respiratory Distress – Opioid Overdose Protocol #622: Opioid Withdrawal Protocol #717 Endotracheal Intubation Policy #221: Leave Behind Naloxone Policy #222: Mechanical CPR Devices Procedure #718: Supraglottic Airway Device

ATTACHMENT(S)	Protocol # 601, 602, 619, 641, 642, 645, 661, 663, 618, 622 Policy # 221, 222, Procedure # 718

POLICY #221 LEAVE BEHIND NALOXONE:

I. PURPOSE

A. To establish guidelines and procedures for Emergency Medical Services personnel to leave behind intranasal naloxone kits with at-risk individuals, family members, or other bystanders at the scene of a suspected opioid overdose or in situations where opioid overdose risk is identified.

II. POLICY

EMS personnel may utilize this policy while following any SLOEMSA treatment protocols and may leave behind naloxone kits when any of the following occur:

A. Scene of suspected opioid overdose with patient revived or refusing transport;

B. High-risk individuals identified (e.g., known opioid users, with paraphernalia present);

C. Upon request by patient, family, or bystander;

D. Regardless of overdose involvement, if EMS personnel assess risk in others present.

III. PROCEDURE

A. Assessment and Education

1. Confirm opioid involvement or risk factors.
2. Provide brief training on:
    - Signs/symptoms of opioid overdose
    - Proper intranasal naloxone administration
    - Importance of dialing 911
    - Good Samaritan protections

B. Distribution

1. Provide a SLOEMSA-approved naloxone kit (typically two doses of 4mg intranasal naloxone, naloxone instruction, resource handout, and fentanyl test strips).

C. Documentation

Document in the ePCR:

- Indication for leave behind
- Number of kits left

- Recipient's relationship to patient (if applicable)
- Verbal consent and understanding of use

D. Resupply

Participating agencies are responsible for procuring and supplies through the California DHCS Naloxone Distribution Project or the County of San Luis Obispo's Opioid Safety Coalition.

IV. AUTHORITY

- California Health and Safety Code, Division 2.5,
- Title 22, California Code of Regulations, Division 9
- California Civil Code § 1714.22

Approvals:

EMS Agency, Administrator	
EMS Agency, Medical Director	

OPIOID WITHDRAWAL

ADULT	PEDIATRIC (≤34 KG)
BLS Procedures	
• **Universal Algorithm #601** • Pulse Oximetry - O_2 Administration per Airway Management Protocol #602	• Universal Algorithm
ALS Procedures	
• If suspected opioid withdrawals, use "COWS" score to determine if patient meets criteria to receive Buprenorphine - "COWS" ≥ 8 to qualify - Patient must be agreeable to treatment with goal of seeking resources and counseling • If believed that patient will benefit from Buprenorphine with no contraindications – contact nearest Base Hospital for orders	• Buprenorphine is not permitted in pediatric patients under 16 • For patients 16 and above, same as adult
Base Hospital Orders Only	
• **Buprenorphine** 16mg SL film/tablets (two strips/tablets) – reassess after 10 minutes - Call for secondary 8mg SL dose for persistent or worsening symptoms after 10 minutes - Give water to moisten mucus membranes prior to SL administration	• As needed

Notes

- **SEE PAGE 2 FOR COWS SCORE ASSESSMENT TOOL**
- If Buprenorphine is administered repeat "COWS" score assessment 10 minutes after initial dose and secondary dose if applicable
- Patients should have history of any one of the following:
  - Recent opioid use
  - Chronic opioid use
  - Evidence of illicit drug use (paraphernalia, needles etc)
  - Prescription narcotics in household or on patient
- Consider Policy #221: Leave Behind Naloxone

Clinical Opioid Withdrawal Scale (COWS)

ANXIETY OR IRRATIBILITY *Visually observed during assessment* **0** None **1** Reports increasing irritability or anxiousness **2** Visually irritable or anxious **4** Too irritable to participate or affecting participation	RESTING HEART RATE *Measured after sitting for one (1) minute* **0** ≤80 bpm **1** 81 to 100 bpm **2** 101 to 120 bpm **4** >120 bpm
BONE OR JOINT ACHES *Only new pain attributed to withdrawal is scored* **0** Not present **1** Mild, diffuse discomfort **2** Reports severe, diffuse aching of joints/muscles **4** Patient rubbing joints/muscles and unable to be still	RESTLESSNESS *Visually observed during assessment* **0** Able to be still **1** Report difficulty being still, but able to do so **3** Frequent shifting or extraneous movement of legs/arms **5** Unable to be still for more than a few seconds
SKIN SIGNS *Visually or physically observed during assessment* **0** Skin is smooth **3** Piloerection of skin – can be felt or visible arm hairs standing up **5** Prominent piloerection – "Gooseflesh Skin"	TREMOR *Observation of outstretched hands* **0** No tremors **1** Tremor can be felt but not observed **2** Slight tremor observed **4** Gross tremor or muscle twitching
GATROINTESTINAL UPSET *Within past 30 minutes* **0** No GI symptoms **1** Stomach cramps **2** Nausea or loose stool **3** Vomiting or diarrhea **5** Multiple episodes of diarrhea or vomiting	SWEATING *Over past 30 min – **not** from environment or activity* **0** No reports of chills or flushing **1** Subjective report of chills or flushing **2** Flushed or observable moistness to face **3** Beads of sweat on brow or face **4** Sweat streaming off of face
PUPIL SIZE *Visually observed during assessment* **0** Pupil pinned or normal size for ambient light **1** Pupils possibly larger than normal for ambient light **2** Pupils moderately dilated **5** Pupils very dilated	YAWNING *Visually observed during assessment* **0** No Yawning **1** Yawning once or twice during assessment **2** Yawning three or more times during assessment **4** Yawning several times per minute
RUNNY NOSE OR TEARING *Not accounted for by cold symptoms or allergies* **0** Not present **1** Nasal stuffiness or unusually moist eyes **2** Runny nose or tearing **4** Nose constantly running or tears streaming down face	**TOTAL COWS SCORING** **5 - 12** Mild Withdrawal **13 - 24** Moderate Withdrawal **25 - 36** Moderately Severe Withdrawal **>36** Severe Withdrawal

RESPIRATORY DISTRESS – OPIOID OVERDOSE

ADULT	PEDIATRIC (≤34 KG)
BLS	
• **Universal Protocol #601** • Pulse Oximetry - O_2 administration per Airway Management Protocol #602 • May assist with administration of patient's prescribed medication	Same as Adult
BLS Elective Skills	
Suspected Opiate Overdose with inadequate respirations (O_2 Sat < 94%, rate ≤ 8 bpm) • **Narcan** 4 mg IN in one nare – assess for adequate respirations - may repeat in alternate nare if no improvement after 2 min, max total of 2 doses	
ALS	
Suspected Opiate Overdose with inadequate respirations (O_2 Sat < 94% or $ETCO_2$ > 45 mmHg) • **Narcan** up to 1 mg IV/IM - Repeat as needed • Up to 2 mg IN (split between nares) – assess for adequate respirations - Repeat as needed	**Suspected Opiate Overdose with inadequate respirations** (O_2 Sat < 94% or $ETCO_2$ > 45 mmHg) • **Narcan** 0.1 mg/kg IV/IM/IN (split between nares) up to 1 mg – assess for adequate respirations - Repeat as needed
Base Hospital Orders Only	
• As needed	• As needed
Notes	
• IV is preferred route for Narcan administration • Inadequate airway, and respirations should be supported with BLS adjuncts and ventilations prior to Narcan administration • Poly-mixed drugs may require additional doses of Narcan titrated to maintain respirations • Alternate Narcan dosing for BLS Elective Skills may be added with approval of the EMS Agency Medical Director • Consider Policy #220: Leave Behind Naloxone	

POLICY #222 MECHANICAL CPR DEVICES:

I. PURPOSE

To establish standard procedures and clinical criteria for the deployment, operation, training, and documentation of all mechanical cardiopulmonary resuscitation (CPR) devices (e.g., LUCAS, AutoPulse) by EMS personnel in San Luis Obispo County.

II. POLICY

Manual chest compressions are the standard of care for patients in cardiopulmonary arrest. Studies have shown no mortality benefit to support the use of mechanical CPR devices over high-quality manual chest compressions. However, there are situations where manual CPR is challenging or dangerous for the prehospital provider, and mechanical chest compressions are preferred.

A. Mechanical CPR devices may be used in adult, non-traumatic cardiac arrest patients when continuous, high-quality manual chest compressions are not feasible, or when fatigue is a concern.

B. Mechanical CPR devices are not mandatory and should be used at the provider's discretion.

C. Agencies must inform the SLOEMSA Medical Director in writing prior to deploying mechanical CPR devices in the field.

III. PROCEDURE

A. Training & Competency

1. All personnel operating mechanical CPR devices must complete manufacturer-approved initial training and participate in annual refreshers. Training must include indications (listed herein), contraindications (listed herein), device application, troubleshooting, safety, and patient assessment during use.

B. Clinical Indications

1. Prolonged cardiac arrest with ongoing CPR
2. Unsafe environments for manual CPR
3. Limited staffing or when fatigue is a concern
4. If not already placed, prophylactic application prior to transport in patients with ROSC in case of rearrest. The device should only be activated in the event of rearrest
5. Provider discretion

C. Contraindications

1. Pediatric patients
2. Traumatic cardiac arrest
3. Presence of ventricular assist device (VAD)
4. Incompatible patient body size or anatomy
5. Patients who meet SLOEMSA Policy #125: Prehospital Determination of Death / Do Not Resuscitate (DNR) / End of Life Care

D. Device Application

1. Manual CPR should be performed immediately on patient arrival. Do not delay the initiation of chest compressions to place the mechanical CPR device.
2. Apply the device using deployment to minimize interruptions. Please note that the principles of High Performance CPR (HPCPR) are still the top priority. Limit interruptions of compressions to < 5-10 sec. Confirm proper positioning and secure attachment. Monitor for movement, malfunctions, and signs of ROSC.
3. Follow device-specific manufacturer instructions for application and operation.

E. Documentation

1. Time of device application and removal.
2. Type of device used.
3. Any complications or malfunctions.

IV. AUTHORITY

- California Health and Safety Code, Division 2.5
- Title 22, California Code of Regulations, Division 9

Approvals:

EMS Agency, Administrator	
EMS Agency, Medical Director	

CARDIAC ARREST (ATRAUMATIC)

ADULT	PEDIATRIC (≤34 KG)
BLS	
• **Universal Protocol #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 • Consider Policy #221: Mechanical CPR Devices	• Same as Adult • CPR compression to ventilation ratio - 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	
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 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 **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. **ROSC with Persistent Hypotension**	• **<u>Emphasize resuscitation and HPCPR rather than immediate transport</u>** **Rhythm analysis and shocks** • Coordinate compressions and charging same as adult • **Defibrillate V-Fib/Pulseless V-Tac**h – 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.

• 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	
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 the appropriate Base Station per Base Station Report Policy #121**- Atraumatic cardiac arrest 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
- 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.

TRAUMATIC CARDIAC ARREST

ADULT	PEDIATRIC (≤34KG)
BLS	
• **Universal Protocol #601** • Obvious Death – see Prehospital Determination of Death Policy #125 • Follow HPCPR guidelines for CPR (10:1) and minimize interruptions (< 5 seconds) • Pulse Oximetry - O2 administration per Airway Management Protocol #602	Same as Adult
ALS	
Trauma patients who arrest after EMS arrival on scene and < 20 min from trauma center • 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. **Traumatic arrest <u>with absent</u> signs of life on EMS arrival** • With absent signs of life consider non-initiation – Prehospital Determination of Death Policy #125	Same as Adult (except as noted below) • **Normal Saline** 20 mL/kg IV/IO – reassess and repeat
Base Hospital Orders Only	
• Trauma patients who arrest after EMS arrival on scene <u>and</u> > 20 min from trauma center or hospital - 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.
- Policy #221: Mechanical CPR Devices are contraindicated for traumatic arrests.

Supraglottic Airway Device

BLS

Universal Protocol #601

Pulse Oximetry – O_2 administration per Airway Management Protocol #602

- Optional skills as approved by SLOEMSA

ALS

- Patients who meet indications for **Endotracheal Intubation Procedure #717**
- ALS provider judgement.
- ~~SGA use is not approved for pediatric use. SGA shall only be used for patients >34kg~~.

I-GEL

- Monitor End-tidal capnography throughout use.
- Select appropriate tube size.

Description	Size	Weight Range	Colour
I-Gel supraglottic airway, large adult	5	90+ kg	Orange
I-Gel supraglottic airway, medium adult	4	50 - 90 kg	Green
I-Gel supraglottic airway, small adult	3	30 - 60 kg	Yellow
I-Gel supraglottic airway, large paediatric	2.5	25 - 35 kg	White
I-Gel supraglottic airway, small paediatric	2	10 - 25 kg	Grey
I-Gel supraglottic airway, infant	1.5	5 - 12 kg	Light Blue
I-Gel supraglottic airway, neonate	1	2 - 5 kg	Pink

- While preparing tube, have assistive personnel open the airway, and clear of any foreign objects. Pre-oxygenate with 100% oxygen via BLS airway and BVM.
- Apply water soluble lubricant to the distal tip and posterior aspect (only) of the tube, taking care to avoid introduction of the lubricant into or near the ventilatory openings.
- Grasp the lubricated i-Gel firmly along the integral bite block. Position the device so that the i-Gel cuff outlet is facing towards the chin of the patient.
- Position patient into “sniffing position” with head extended and neck flexed. The chin should be gently pressed down before proceeding to insert the i-Gel.
- For pediatrics consider padding under the shoulders.
- Introduce the leading soft tip into the mouth of the patient in the direction towards the hard palate.
- Glide the device downwards and backwards along the hard palate with a continuous but gentle push until a definitive resistance is felt.
- At this point the tip of the airway should be located into the upper esophageal opening and the cuff should be located against the laryngeal framework. The incisors should be resting on the integral bite-block.
- Attach a BVM. While gently bagging the patient to assess ventilation, carefully withdraw the airway until ventilation is easy and free flowing (large tidal volume with minimal airway pressure).
- Confirm proper position by auscultation, chest movement and verification of ETCO2 by waveform capnography.
- The i-Gel should be secured down per manufacturer recommendation.

- Patients who have an advanced airway established shall have that airway secured with tape or a commercial device. Devices and tape should be applied in a manner that avoids compression of the front and sides of the neck, which may impair venous return from the brain.
- Ensure proper documentation of placement of the i-Gel placement including verification methods.

Base Hospital Orders Only

As needed

Notes

Contraindications

•Gag reflex. •Caustic ingestion. •Known esophageal disease (e.g., cancer, varices, or stricture).

- SGA during cardiac arrest is indicated.
- Once an SGA has been placed, it should not be removed for an ETI.
- If the provider cannot accomplish an ALS airway, they should document in the PCR why an ALS airway wasn't accomplished.
- To verify patency and placement of the SGA Device, providers shall verify placement of the i-Gel device by waveform capnography and a minimum of one additional method. This additional method can be any of the following:
  - Auscultation of lung sounds
  - Colorimetric CO2 Detector Device
  - Esophageal Bulb Detection Device
- During placement of an SGA, apneic oxygenation is recommended to be utilized when available. If appropriate, providers shall place a nasal cannula onto the patient prior to i-Gel placement and continue use of the nasal cannula during placement in order to assist in oxygenation.

AIRWAY MANAGEMENT

ADULT	PEDIATRIC (≤34 kg)
BLS	
• Universal Protocol #601 • Administer O_2 as clinical symptoms indicate (see notes below) • Pulse oximetry • Patients with O_2 Sat ≥ 94% without signs or symptoms of hypoxia or respiratory compromise should not receive O_2 • When applying O_2 use the simplest method to maintain O_2 Sat ≥ 94% • Do not withhold O_2 if patient is in respiratory distress • **Foreign Body/Airway Obstruction** - Use current BLS choking procedures - Basic airway adjuncts and suctioning as indicated and tolerated • Supraglottic Airway – as indicated to control airway– Procedure #718 • Optional skills as approved by SLOEMSA	Same as Adult (except for newborns) • Newborn (< 1 day) follow AHA guidelines – Newborn Protocol #651 • Optional skills as approved by SLOEMSA
ALS	
• **Foreign Body/Airway Obstruction** If obstruction not relieved with BLS maneuvers - Visualize and remove obstruction with Magill forceps - If obstruction persists, consider – Needle Cricothyrotomy Procedure #704 - Upon securing airway monitor O_2 Sat and $ETCO_2$ – 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	• **Foreign Body/Airway Obstruction** If obstruction not relieved with BLS maneuvers - Visualize and remove obstruction with Magill forceps - If obstruction persists, consider – Needle Cricothyrotomy Procedure #704 - Upon securing airway monitor O_2 Sat and $ETCO_2$ – Capnography Procedure #701 • Needle thoracostomy with symptoms of tension pneumothorax – Needle Thoracostomy Procedure #705 & Traumatic Cardiac Arrest Protocol #661 • Supraglottic Airway – as indicated to control airway– Procedure #718
Base Hospital Orders Only	
• **Symptomatic Esophageal Obstruction**	• **Symptomatic Esophageal Obstruction**

- **Glucagon** 1mg IV followed by rapid flush. Give oral <u>fluid</u> challenge 60 sec after admin - check a blood sugar prior • As needed	- **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

- Oxygen Delivery
  - 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:
  - Auscultation of lung and stomach sounds.
  - Colorimetric CO2 Detector Device.
  - Esophageal Bulb Detection Device.

Endotracheal Intubation

FOR USE IN PATIENTS >34 KG

BLS

Universal Protocol #601

Pulse Oximetry – O_2 administration per Airway Management Protocol #602

Supraglottic Airway – as indicated to control airway– Procedure #718

- Optional skills as approved by SLOEMSA

ALS

Indications:

- Patients with a respiratory compromise.
- Patients requiring airway stabilization, including cardiac arrest and ROSC.

Contraindications:

- Intact gag reflex

Policy:

- Prepare, position, and oxygenate the patient with 100% Oxygen. Ideal positioning is keeping the ears in line with the sternal notch.
- Consider use of video laryngoscopy when available.
- Select appropriate size ET tube and consider the need for endotracheal introducer (Bougie); have suction ready.
- Using the laryngoscope, visualize vocal cords.
- Determine how accessible the patient's airway is. If the patient has a complex airway (unable to visualize the vocal cords due to surrounding anatomy) which would be difficult and time consuming to intubate, consider the use of a supraglottic airway device Procedure # 718.
- Visualization of vocal cords will take no longer than 10 seconds.
- Visualize tube/bougie passing through vocal cords.
- Inflate the cuff with 3-10mL of air.
- Apply waveform capnography (reference Policy #701).
- Auscultate for bilaterally equal breath sounds and absence of sounds over the epigastrium.
- If ET intubation efforts are unsuccessful after the 1st attempt, oxygenate and re-evaluate the airway positioning before the 2nd attempt. After first failed attempt, consider use of Supraglottic Airways (reference Procedure #718).
- If ET intubation efforts are unsuccessful after the 2nd attempt, oxygenate and provider shall then proceed to Supraglottic Airway Procedure #718.
- Patients who have an advanced airway established shall have that airway secured with tape or a commercial device. Devices and tape should be applied in a manner that avoids compression of the front and sides of the neck, which may impair venous return from the brain.

- If the patient has a suspected spinal injury:

- Open the airway using a jaw-thrust without head extension.
- If airway cannot be maintained with jaw thrust, use a head-tilt/chin-lift maneuver.
- Manually stabilize the head and neck rather than using an immobilization device during CPR.

- Following placement of the Endotracheal Tube, if the patient is noted to have an ETCO2 less than 10, the ALS Provider shall extubate the patient and oxygenate prior to an additional attempt.

Base Hospital Orders Only

As needed

Notes

- Respiratory compromise is defined as any condition that prevents the movement of oxygenated air into and out of the lungs. This includes cardiac arrests.
- ETI during cardiac arrest is indicated if the ALS provider can accomplish intubation without interruption in HPCPR. With ALS provider judgement, determines ETI cannot be accomplished, provider shall proceed to Supraglottic Airway Procedure #718.
- Once an SGA has been placed, it should not be removed for an ETI.
- If the provider cannot accomplish an ALS airway, they should document in the PCR why an ALS airway wasn't accomplished.
- After placement of the Endotracheal Tube, providers shall verify placement of the ETI by waveform capnography and a minimum of one additional method. This additional method can be any of the following:
  - Auscultation of lung and stomach sounds
  - Colorimetric CO2 Detector Device
  - Esophageal Bulb Detection Device
- During placement of an ETI, apneic oxygenation is recommended to be utilized when available. If appropriate, providers shall place a nasal cannula onto the patient prior to the intubation attempt and continue use of the nasal cannula during placement to assist in oxygenation.

UNIVERSAL

MEDICAL	TRAUMA
BLS	

• Evaluate Scene Safety/Personal Protective Equipment
• Assess, establish and maintain airway
  - Suction as needed
• Pulse Oximetry
  - O_2 administration per Airway Management Protocol #602
• Evaluate breathing and circulation
• Assess chief complaint
• Focused physical exam and vital signs:
  - Pulse
  - Blood pressure
  - Respiratory rate
  - Lung sounds
  - Skin signs
• BLS treatment protocols
	• Evaluate Scene Safety/Personal Protective Equipment
	• Assess, establish and maintain airway
	  - Suction as needed
	• Pulse Oximetry
	  - O_2 administration per Airway Management Protocol #602
	• Evaluate breathing and circulation
	• Control life-threatening bleeding
	• Remove patient's clothing to expose and identify injuries
	• Ensure patient warmth – cover patient after clothing removal to maintain core body temperature
	• Spinal motion restriction (SMR) if indicated per Spinal Motion Restriction Procedure # 702
	• BLS treatment protocols

BLS Elective Skills	
Obtain Blood Glucose Level if indicated by: • Policy #612 ALOC • Policy #620 Seizures • Policy #621 CVA/TIA • As directed by ALS provider	
ALS	

• Vascular access – Procedure #710
• Consider 12-lead ECG early
• Capnography (if available/applicable)
• Blood Glucose Measurement
• Transport Determination
• ALS Treatment Protocols
Adult
• Consider Normal Saline up to 500mL IV/IO
  - May repeat x1 for persistent hypotension.
  - May repeat x1 based on ALS provider discretion for normotensive patients.
Pediatric
• Consider Normal Saline up to 10mL/kg IV/IO, not to exceed 500 mL
  - May repeat x1 for persistent hypotension.
	• Trauma Triage and Destination
	• ALS Treatment Protocols

- May repeat x 1 based on ALS provider discretion for normotensive patients.	
Base Hospital Orders Only	
• Determined on patient needs • If applicable, see Policy #219: Assisting Patients with Their Emergency Medications	• Determined on patient needs
Notes	
• Use Pediatric Policies for patients ≤34 kg and consider use of Broselow tape or equivalent • Rapid transport for Specialty Care patients (Trauma, STEMI, CVA-TIA). Target scene departure ≤ 10 minutes for transport personnel. • Consider Policy #220: Leave Behind Naloxone	

DROWNING

ADULT	PEDIATRIC (≤34 KG)
BLS	
Consider scene safety and additional resources for victims requiring active rescue from aquatic environment • **In-Water Resuscitation:** Trained rescuers may initiate rescue breaths during extrication/rescue process, only if safe and effective, without delaying rapid removal from environment. (No chest compressions) • Obtain accurate time last known well/downtime - Universal Protocol #601 - O2 administration per Airway Management protocol #602 - **Prioritize the immediate reversal of hypoxia** • **ALS Assessment required** for persistent signs and symptoms of cough, abnormal lung sounds, altered mental status, hypoxia, hypotension, or dyspnea • **Apnea or cardiac arrest** - **5 initial rescue breaths prior to ventilation or compressions** - **Minimize interruptions in oxygenation and ventilation.** - PEEP valve with BVM when available - Expect vomiting, have suction ready - May ventilate through “foam” surfactant. • Consider hypothermia and warming measures • For an alert patient with SOB, apply CPAP Procedure #703	**Same as Adult**
ALS	
• **Persistent symptoms: cough, abnormal lung sounds, altered mental status, hypoxia, hypotension, dyspnea**	**Same as Adult**

- CPAP Procedure #703 as indicated - Monitor ETCO2 - Encourage transport and continued monitoring • **Apnea, or Cardiac Arrest** - Team to emphasize early high-quality ventilation, mask seal, and oxygenation techniques on scene - Cardiac Arrest Protocol #641 as indicated - **Early initiation** of ETI Procedure #717 or SGA Procedure #718 as indicated. - If non-shockable rhythms, may forego vector change (minimize ventilation interruptions) • **If high suspicion of trauma,** SMR Procedure #702. Avoid interruptions or delay in ventilation oxygenation during procedure and patient movement.	
Base Hospital Orders Only	
• Consult appropriate base station per EMS Base Station Report policy #121 as needed for patient presentation, downtime, trauma, airway concerns, prolonged resuscitation with PEA and Asystole, cold water immersion.	**Same as Adult**

Notes

- **Definition of drowning:** Respiratory impairment from submersion or immersion in a liquid.
- **Duration of submersion is the most important predictor of outcome.**
- **Hypoxia is the primary reversible cause of morbidity and mortality in drowning.**
- **Signs and symptoms include: cough, abnormal lung sounds, altered mental status, hypoxia, hypotension, dyspnea**
- Encourage transport of all symptomatic patients due to potential worsening over the next 6 hours.
- Early, effective ventilation and initiation of CPR are the most critical for improving survivability and neurologic outcomes.
- Surfactant is fluid from the lungs, usually “foam-like” and may be copious, DO NOT waste time attempting to suction. Ventilate with BVM through foam (suction water and vomit only when present.) Use judgement for need to suction copious fluids versus interrupting ventilation/oxygenation.
- PEA and Asystole Cardiac Arrest may benefit from prolonged resuscitation and/or transport in the presence of drowning/hypoxia. Use provider judgement and consult base as needed.
- Utilize bystanders, lifeguards, or other witnesses for accurate scene report and downtime.
- C-Spine immobilization not recommended except with strong evidence/report of traumatic mechanism.
- AHA guidelines 2024 show in-water rescue breaths leading to increased survival. Rescue phase

breaths should NOT be performed if the rescue agency does not train and/or practice this technique. Should not delay extrication to a controlled and safe working environment.

- Regardless of water temperature – resuscitate all patients with known submersion time of ≤ 25 minutes.
- SCUBA Diving emergencies, collect dive plan/dive computer data if available. Consider pertinent info for hospital or operational hyperbaric chamber.
- Drowning is a global issue with poor documentation and data, documentation should reflect current definitions and guidelines based on patient presentation and terminology.
- Document: witness statements, submersion time, type of water/temperature, initial presentation and neurological status, bystander interventions.
- DO NOT use terminology: “near drowning,” “dry drowning,” “delayed drowning,” “secondary drowning,” “wet drowning” with patients or with documentation as it is not physiologically relevant.

ATRIAL FIBRILLATION

ADULT	PEDIATRIC (≤34 KG)
BLS	
• **Universal Protocol #601** • Pulse Oximetry - O2 administration per Airway Management Protocol #602	Same as Adult
ALS	
Stable • Observe and monitor the patient **Unstable (See Notes)** • Consult the Base Hospital **Extremis (See Notes)** • 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) • Synchronized cardioversion **200 J**. • Use manufacturer-recommended energy settings if different from above	None
Base Hospital Orders Only	
• Unstable pt	• As needed

Notes

- Obtain 12-lead ECG before and after conversion, if possible.
- Vascular access may be omitted prior to cardioversion if unstable.
- Consider and treat underlying causes in unstable patients with atrial fibrillation and atrial flutter, i.e., sepsis, dehydration/hypovolemia, med errors, etc.
- Synchronized/Unsynchronized Sequences
  (If synchronized mode is unable to capture, use unsynchronized cardioversion.)
- Unstable is defined as a pt in A-FIB RVR presenting with signs/symptoms of hemodynamic instability:
  - SBP < 100 mmHg
  - Evidence of poor perfusion – capillary refill, color, temp, etc.
  - Altered Mental Status
  - Shortness of breath
  - Pulmonary edema
- Extremis is defined as a pt in A-FIB RVR, and imminent death is likely

SUPRAVENTRICULAR TACHYCARDIA

ADULT	PEDIATRIC (≤ 34Kg)
BLS	
• **Universal Protocol #601** • Pulse Oximetry - O_2 administration per Airway Management Protocol #602	Same as Adult
ALS	
Stable • Attempt vagal maneuvers • **Adenosine** 6 mg IV followed by 20 mL NS bolus • **Adenosine** 12 mg followed by 20 mL NS bolus o May repeat once **Unstable** • Synchronized cardioversion (see notes) • **Midazolam** up to 2 mg slow IV or 5 mg IN (split into two doses 2.5 mg each nostril) to pre-medicate prior to cardioversion	**Stable** • Attempt vagal maneuvers • **Adenosine** 0.1 mg/kg IV followed by 20 mL NS bolus • **Adenosine** 0.2 mg/kg IV followed by 20 mL NS bolus **Unstable** • Synchronized cardioversion (see notes) • **Midazolam** 0.1 mg/kg slow IV/IN, not to exceed 2 mg to pre-medicate prior to cardioversion
Base Hospital Orders Only	
• ~~Cardioversion of unstable Atrial Fibrillation with RVR~~ • As needed	• ~~As needed~~

Notes

- Obtain 12-lead ECG before and after conversion if possible
- Preferred IV site for Adenosine administration is in a proximal vein with a large bore catheter
- Vascular access may be omitted prior to cardioversion if in extremis
- Typical SVT in adults is a QRS < 0.12 seconds
- Typical SVT in pediatric patients is a QRS < 0.09 seconds with rates >180 for children and >220 in infants
- Avoid Adenosine in atrial fibrillation and atrial flutter
- ~~Consider and treat underlying causes in unstable patients with atrial fibrillation and atrial flutter, i.e. sepsis, dehydration/hypovolemia, medication errors, etc.~~
- Synchronized/Unsynchronized Sequences
  (if synchronized mode is unable to capture use unsynchronized cardioversion)
- Use manufacturer recommended energy settings if different from below

ADULT	PEDIATRIC
50 J	1 J/kg
70/75 J	2 J/kg
100 J	2 J/kg
120 J	
150 J	
200 J	

~~(start at 120J in adult patient with unstable Atrial Fibrillation with RVR)~~

SHOCK (MEDICAL) - HYPOTENSION/SEPSIS

ADULT	PEDIATRIC (≤34 KG)
BLS	
• **Universal Protocol #601** • Pulse Oximetry - O2 administration per Airway Management Protocol #602 • Place in supine position if tolerated	Same As Adult
ALS	

SBP < 100 mmHg or other signs of hypotension
• Normal Saline 500 mL IV/IO
  - 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
Persistent Hypotension
• Push-Dose Epinephrine 10mcg/mL 1 mL IV/IO every 1-3 minutes
  - Repeat as needed, titrated to SBP >90mmHg
  - See notes for mixing instructions
OR
• Epinephrine Drip starting at 10mcg/min IV/IO infusion
  - Consider for extended transport
  - See formulary for mixing instructions
SBP > 100 mmHg
• Consider Normal Saline 500 mL IV/IO
  - May repeat x1 based on ALS provider discretion.
	Signs of hypotension specific to age - see Universal Protocol #601 Attachment A
	• Normal Saline 20 mL/kg IV/IO not to exceed 500 mL
	  - Repeat x1 if hypotension persists
	• Consider establishing secondary IV access
	• If shock is due to trauma refer to General Trauma Protocol #660
	Normotensive specific to age - see Universal Protocol #601 Attachment A
	• Consider Normal Saline 20 mL/kg IV/IO, not to exceed 500 mL
	  - May repeat x1 based on ALS provider discretion

Base Hospital Orders Only	
• As needed	• As needed
Notes	
• **Mixing Push-Dose Epinephrine 10 mcg/mL (1:100,000): Mix 9mL of Normal Saline with 1mL of Epinephrine 1:10,000, mix well** • 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 the patient warm
- Treatable/Reversible considerations:
    - Hypoxemia
    - Tachycardia/Bradycardia
    - Hyper/Hypothermia
    - Hypovolemia
    - Altered Mental Status
    - Fractures/Bleeding/Tension Pneumothorax
    - Anaphylaxis
    - Chest pain
    - Overdose