Sierra – Sacramento Valley EMS Agency
Regional Emergency Medical Advisory Committee
(REMAC)

MEETING AGENDA

MEETING DATE & TIME INFORMATION

- **Tuesday, January 28, 2025, 9:00 am – 12:00 pm**

MEETING LOCATION & ALTERNATE ATTENDANCE INFORMATION

- **Primary Meeting Location:** 535 Menlo Drive, Suite A, Rocklin, CA 95675
- **Alternate Meeting Location:** 1255 East Street, 2nd Floor, Redding, CA 96001
- **Zoom:** https://us02web.zoom.us/j/81034050260?pwd=JSocr6VXoZtJF8cSHFaV5mW2iOUtvx.1
- **Telephone:** (669) 900-9128, **Meeting ID:** 810 3405 0260, **Passcode:** 1702

Zoom/telephone attendee notification: Please remain on mute unless actively speaking/interacting. If joining by telephone, dial *6 on your keypad to mute/unmute your line.

IMPORTANT NOTIFICATONS

- Public comments on proposed policy/protocol actions listed on this agenda will be taken during the review/discussion of the applicable item. Individuals unable to attend the meeting may provide written public comment on any item listed on this agenda, no later than seven (7) calendar days prior to the scheduled meeting date, by using the following comment form link: https://www.ssvems.com/s-sv-ems-remac-public-comment/.
- Policy/protocol actions listed on this agenda may be approved by a majority vote of the REMAC members present at the meeting. If necessary, proposed policy/protocol actions may be continued to subsequent REMAC meetings until consensus is reached by the committee.
- All REMAC approved policy/protocol actions shall also be approved by the S-SV EMS Medical Director and Regional Executive Director prior to implementation. S-SV EMS may make non-substantive corrections to approved policy/protocol actions to address any technical defect, error, irregularity, or omission prior to final publication.
- EMS system participants will be notified of approved policy/protocol actions a minimum of 30 calendar days prior to the effective implementation date. Policy/protocol action updates are routinely published on a bi-annual basis as follows:
  - October & January meeting approved policy actions: April 1st implementation date.
  - March & July meeting approved policy actions: October 1st implementation date.
- Some policy/protocol actions may require immediate action to maintain compliance with statutes/ regulations, or to preserve medical control/integrity of the EMS system. Policy/protocol actions of this type may be implemented by S-SV EMS as urgency measures and scheduled for discussion at the next regularly scheduled REMAC meeting, if necessary.

MEETING AGENDA		
ITEM	**TITLE**	**LEADER**
A	**Call to Order/Introductions**	**Chairperson**
B	**Approval of Previous Meeting Minutes** (October 22, 2024)	**Chairperson**
C	**Approval of Meeting Agenda**	**Chairperson**
D	**Public Comment**	**Attendees**
E	**S-SV EMS Agency Processes**	**John Poland**
F	**S-SV EMS Policy/Protocol Actions**	**S-SV EMS Staff**
(F-1)	**220:** S-SV EMS Policy/Protocol Actions	John Poland
(F-2)	**506:** STEMI Receiving Center Designation Criteria, Requirements & Responsibilities	Michelle Moss
(F-3)	**809:** EMS Naloxone Leave-Behind Program	John Poland
(F-4)	**1007:** EMS Student Field Training	Trenton Quirk
(F-5)	**C-1:** Non-Traumatic Pulseless Arrest	Brittany Pohley
(F-6)	**C-3:** Bradycardia With Pulses	Brittany Pohley
(F-7)	**M-8:** Pain Management	Michelle Moss
(F-8)	**OB-G2:** Obstetric Emergencies	Brittany Pohley
(F-9)	**T-1:** General Trauma Management **See attached 'Rationale for Change Document'**	Michelle Moss
(F-10)	**T-3:** Suspected Moderate/Severe Traumatic Brain Injury (TBI)	Michelle Moss
(F-11)	**T-4:** Hemorrhage	Michelle Moss
(F-12)	**M-2P (formerly C1-N):** Newborn Care/Neonatal Resuscitation	Brittany Pohley
(F-13)	**M-6P:** Pediatric General Medical Treatment	Brittany Pohley
(F-14)	**PR-2:** Airway & Ventilation Management	Brittany Pohley
(F-15)	**PR-3:** Pleural Decompression	Michelle Moss
(F-16)	**1110-F:** Infrequently Used Skills Checklist – Needle Cricothyrotomy	Michelle Moss

Sierra – Sacramento EMS Agency – REMAC Meeting Agenda

ITEM	TITLE	LEADER
(F-17)	**1110-G:** Infrequently Used Skills Checklist – Needle Thoracostomy	Michelle Moss
G	**EMS Aircraft Provider Reports**	**Attendees**
H	**EMS Ground Provider Reports**	**Attendees**
I	**Hospital Provider Reports**	**Attendees**
J	**S-SV EMS Agency Reports**	**S-SV EMS Staff**
(J-1)	EMS Data System Report	Jeff McManus
(J-2)	EMS Quality Management/QI Initiatives Report	Michelle Moss
(J-3)	Regional Specialty Committees Report	Michelle Moss
(J-4)	Operations Report	Patrick Comstock
(J-5)	Regional Executive Director's Report	John Poland
(J-6)	Medical Director's Report	Troy M. Falck, MD
K	**Next Meeting/Adjournment:** April 22, 2025	**Chairperson**

Sierra – Sacramento Valley EMS Agency
Regional Emergency Medical Advisory Committee
(REMAC)

MEETING MINUTES

Meeting Date
Tuesday, October 15, 2024

A. Call to Order/Introductions

- Dr. Royer called the meeting to order at 9:00 am, and all attendees introduced themselves.

B. Approval of Previous Minutes: July 16, 2024

- The minutes were unanimously approved by the committee with no changes.

C. Approval of Agenda

- The committee approved the agenda as written with no change.

D. Public Comment

- Sutter Roseville has its EMS-a-Palooza on 12/16.
- Sierra College is starting a Paramedic program in the spring.

E. S-SV EMS Policy Actions

Policy Actions for Final Review & Approval:

Policy	Name	Motion	Second	Committee Vote
410	**EMS Service Provider Permit** • On page 2, lines 26-27, added "and associated fees," and "paid". Lines 31-32 added "by May 31st of each year", and "by S-SV EMS to current permit holders". • On page 3, lines 3-4, added "All initial and renewal EMS service provider permits will receive an expiration date of June 30th of the following calendar year."	Clayton Thomas	Dr. Morris	Passed Unanimously

508 **508-A**	**Ambulance Patient Diversion** • On page 2, line 2, added "criteria" and "either". Line 8, removed 'one' and added 'either'. Removed lines 13-31 (limited patient diversion). Line 35, added "pursuant to the following procedures:" • Page 3, added new language in lines 15-27. • Pages 4 and 5 some minor language changes.	Clayton Thomas	Rich Lemon	Passed Unanimously
701	**ALS Provider Agency Inventory Requirements** • The only change made was the addition of magnesium sulfate, which is optional. •	Clayton Thomas	Matt Smith	Passed Unanimously
807	**COVID-19 Testing Sample Collection By EMS Personnel** • There are no recommended changes.	Clayton Thomas	Rich Lemon	Passed Unanimously
808 **808-A**	**EMS Personnel Administration Of Intramuscular Influenza &/Or Covid-19 Vaccine** • There are no recommended changes.	Clayton Thomas	Rich Lemon	Passed Unanimously
1007	**EMS Student Field Training** • There are no recommended changes.	Clayton Thomas	Rich Lemon	Passed Unanimously
1110-H	**Infrequently Used Skills Verification Checklist Adult Cardioversion/Defibrillation** • Step 4, changed 25 to 50	Clayton Thomas	Rich Lemon	Passed Unanimously
C-1	**Non-Traumatic Pulseless Arrest** • On page 2, added Magnesium Sulfate, under Shockable Rhythm Defibrillation. • It was suggested to make Magnesium Sulfate mandatory with a proper amount/concentration. • It was recommended that there be Torsade's education for the providers.	Clayton Thomas	Rich Lemon	Passed Unanimously

C-4	**Tachycardia With Pulses** • In the 'Pre-Cardioversion Sedation/Pain Control" box, changed the Midazolam dosage to 5 mg IV/IO, and the Fentanyl dosage to 50 mcg. Added the last bullet point for pts ≥65 yo. • In the bottom left box, readded Amiodarone, and Magnesium Sulfate for the Torsade's. • It was suggested to remove the word 'consider' from the Torsade's sentence.	Clayton Thomas	Debbie Madding	Passed Unanimously
M-3	**Phenothiazine/Dystonic Reaction** • It was recommended to add 'Slow IV push' to the Benadryl.	Matt Smith	Clayton Thomas	Passed Unanimously
M-11P	**Pediatric Behavioral Emergencies** • In the bottom box, removed "for pts <4 yo", a base hospital order is needed no matter the age.	Matt Smith	Clayton Thomas	Passed Unanimously
N-3	**Suspected Stroke** • In the BLS box, added "CPSS is normal, but patient/bystander report stroke symptoms within previous 24 hours". The word either, in "Suspect stroke for either of the following" will be changed to any.	Clayton Thomas	Cindy Bergstrom	Passed Unanimously
OB-G1	**Childbirth** • In the bottom box, added "If severe post-partum hemorrhage is present, consider base/modified base hospital order for TXA administration." 'Delay clamping cord for 2 mins" will be changed to 'Delay clamping cord for 1 min". • It was suggested to change 'gently' to 'firmly' in the bottom box. • It was suggested to add a dose and remove 'base order' from the TXA.	Rich Lemon	Clayton Thomas	Passed Unanimously
OB-G2	**Obstetric Emergencies** • This is a brand-new protocol. • Under Eclampsia, Magnesium Sulfate was added. • It was suggested to remove TXA for pre-delivery under the 'Placenta Previa/Abruptio Placenta' box. • There was a lot of committee discussion.			Due to concerns - this will come back

	• It was suggested to reach out to Hospital OBs to see what common practice is.			
T-4	**Hemorrhage** ○ On page 2, in the top box, added 'post-partum hemorrhage'. • It was recommended to remove 'base order' from the top box.	Clayton Thomas	Rich Lemon	Passed Unanimously
G-1	**Multiple Patient Incidents/S-SV EMS Regional MCI Plan** • This was sent out ahead of time. • There are some common and repetitive issues that have been identified; one person filling too many roles, patients delayed in leaving the scene, general communication issues on scene between providers. • A sub-committee was created from providers from all over the S-SV Region, to help develop this. • This covers an EMS surge event as well. Hospitals can also call an MCI. • Under MCI, there are 3 different levels. This has been adopted nationally. The lower-level MCIs is where a lot of issues were occurring. • This policy absorbs Policy 834. • In the MCI Plan – page 2, S-SV would like to see training and education done every 2 years. S-SV plans on creating an initial training course for the providers so that they can utilize that for their biannual training. Participants will need to track that training. • On page 3, under "Incident positions critical to success are:" these are the 4 critical positions that should be filled at MCIs. • Highlighted in the 8th bullet point, under 'Positions & Responsibilities' is that the first Paramedic on scene will be the IC, but that person cannot effectively/single-handedly manage all of the patient's healthcare. • On page 4, under 'Resources' highlighted in bullet point 3, is the need for better communication between personnel. The fifth bullet point highlights that the Medical Communications Coordinator should remain	Rich Lemon	Debbie Madding	Passed Unanimously

	in close proximity to the IC to maintain effective communication, etc. • The patient tracking sheet was modified so that more patients could fit on it. • Also a map/list of facilities will be added. • It was recommended to change 'Paramedic' to 'ALS Provider'. • There will be ICS training provided. There is also free ICS training on the FEMA website. • It was suggested to move the URVI definition above the MCI definition. • There was a lot of committee discussion on the various positions. • Other LEMSAs have eliminated the technical term 'Medical Group Supervisor'. • All MCIs are reviewed at S-SV, and this addresses a known problem with MCIs. • It was suggested to add that the Transportation Unit Leaders are 'ultimately responsible'.			

F. EMS Aircraft Provider Updates

- Enloe Careflight – working on a largescale clinical protocol update to align their flight treatment protocol with the national standards.
- REACH – REACH 17 in Sacramento will be carrying blood products by the end of the year.
- PHI – Opening their Red Bluff base which should be in service on 11/14.

G. Ground EMS Provider Updates

- Bi-County Ambulance
  - Continuing hiring, working on hiring part-timers
  - Waiting for the Paramedic program at Sierra College so they can send people to it.
- Dignity Healthcare:
  - Continuing to hire
  - They have purchased some good, used, low-mileage ambulances.
  - Working on their airway training and infrequent skills
  - They transitioned to dual medics on many trucks
  - They have an accelerated EMT class starting that is full, and 5 on the waitlist
- Penn Valley FD:
  - Training on airway and video-laryngoscope.
  - Continuing work on the reorganization which should happen by 7/1/25.
- Roseville FD:
  - Recently had a lateral academy, with 9 new employees
  - Lifepack 35s were delivered, and they will be doing training.
  - They have an MCI drill at the Galleria this month.
- Rocklin FD

  - Beta tested last week with AMR to share ePCRs which has been very successful.
- NorCal
  - Hiring
  - Have 4 new ambulances coming in
  - They have in-house tuition reimbursement for Paramedics.
  - They are paying for EMT school in Modesto currently.

H. Hospital Provider Updates

- Sutter Roseville:
  - They appreciated John Poland coming by last week with EMSA to tour and see the APOT process
  - Started meetings with ImageTrend
  - They're surveying to build a new tower.
- Kaiser Roseville Medical Center:
  - Construction continues. The entrance continues to change. These changes will be sent to Patrick Comstock for distribution to the providers.
  - They've done a lot of work with other providers to improve APOT times, and there's been a lot of improvement.
- Mercy Redding:
  - Hosting and MICN class on 10/19, at the Shield center.
  - Finished a Stroke run-review this month and would like to do one on Sepsis in January.
  - They will be doing extensive MCI training and will include EMS field providers every other month, and hospital on the alternating months and then bring everyone together for a review/tabletop event.
- Sutter Auburn Faith
  - Julia Drake introduced herself as the new ED manager.

I. S-SV EMS Agency Reports

- **EMS Data System**
  - An import review was sent out to all ground/air providers. Please send back the counts.
  - The schematron was updated on 9/4. If you haven't updated that on after 1/31/25, it will cause problems.
  - Working on the Patient Registry for the region has been very difficult. Jeff added some new metrics to the month-end dashboard, which covered all of the specialty center's submission to the State.
  - Month-end has been updated and the link will be sent out.
- **EMS Quality Management**
  - S-SV is part of the National EMS Quality Alliance Measure Set (NEMSQA) airway collaborative. This is for one year.
  - S-SV is putting together an MCI training plan for all of the providers. This is not intended to be the only training for this though. Providers should be doing their own training as well.
  - The Regional Training Module next year will be all airway. The PAC committee is currently working on this.
  - There have been some significant delays with helicopters ordered to scenes recently. S-SV is talking to the ECCs regarding this.

- A new pain protocol was recently approved. Dr. Iwai asked for a review since the new protocol has been in place since June. Michelle presented the data.
- Providers need to make sure they're putting the pain scores in the appropriate drop-down and recording at least 2 scores.

- **Regional Specialty Committees**
  - The STEMI QI meeting was held in September.
  - The next Trauma QI meeting will be in December.

- **Operations**
  - Certemy has been fully rolled out, which is the new system for certifying and recertifying. It seems to be working well at this point. Please let Patrick Comstock or Whitney Sullivan know of any issues encountered.
  - For transport providers, inspections are moving from fiscal to calendar year. The majority of inspections have been done. Providers will be contacted in January to schedule new inspections.
  - CE permits and Training permits that are being renewed are due by the end of this year. Trenton has sent out reminders with the applications. Please reach out to Trenton with any questions.

- **Regional Executive Director's Report**
  - AMR took over service in Colusa County about 6 months ago, they have 2 full-time 24-hr units and things are going very well there.
  - Westside Ambulance in Glenn County is in the process of adding a new 12-hr unit for Glenn County 911 responses. They are just waiting for physical delivery of the ambulance itself. They should have it by the end of the month.
  - Glenn/Colusa/Butte Counties applied to run an EMS core EMT training program for underprivileged individuals. This will have 4 cohorts of 20 students each for a total of 80 students. It provides room/board, mental health counseling, as well as job placement assistance. Glenn County is the primary on this project. They plan on implementing their first EMT course in Spring of 2025. S-SV will be working with them on this.
  - AB40 is new legislation that was passed at the end of 2023, regarding ambulance patient offload time (APOT).
    - The development was delayed a little due to the State budget issues. S-SV has participated in a couple of development work groups. EMSA will now take everything into consideration and develop the offload regulations.
    - When the regulations are implemented, there will be a requirement for an electronic turnover of care signature by the receiving hospital. Most of the S-SV providers are already collecting this.
    - March of 2025 is the estimated start date for this. There will also be a new audit tool.
    - The S-SV APOT system for the 90th percentile in September of 2023 was 36 minutes, and in September 2024 was down to 26 minutes (as a system) which is a 28% decrease. The hospitals are doing a lot of work to keep improving this. All of this was with a 5% increase in ambulance volume as well.
  - AB716 has to do with ground ambulance billing and was passed in 2023 as well. S-SV had a listening session with EMSA about a week ago. The only requirement by the EMS Authority is that the rates must be published. S-SV began publishing all the transport (emergent and non-emergent) rates last year.

- AB767 Community Paramedicine and triage to alternate destination – they added post-discharge follow-up to one of the community paramedicine available services, they didn't fix any of the bad pieces of the statutory measures.
    - Sacramento just received approval for alternate destinations for psych and sobering centers. Any questions can be directed to John Poland or Patrick Comstock.
    - The EMS Authority has finalized the renumbering of all 14 chapters of Title 22 of the EMS regulations. They didn't change any of the wording, but did merge chapters together. There is a crosswalk and S-SV will be updating all of the renumbered chapters.
    - They merged Trauma, STEMI, and Stroke into one chapter.
    - Chapter 3 is the new EMS personnel (which includes EMTs, AEMTs, and Paramedics). They're working on proposed updates to this.

J. Medical Director's Report

- Dr. Falck thanked all the hospitals for their hard work with decreasing the APOT times.
- Only about 500 providers have taken the regional training module. Please encourage all to get this done.
- Dr. Falck is pleased with the work of the Pre-hospital Advisory Committee (PAC).
- Dr. Falck thanked all the physicians who attend this meeting and provide physician input.

K. Next Meeting Date & Adjournment

- This committee meets quarterly on the 3rd Tuesday of the month. However, due to Dr. Falck's schedule conflicts, it's being purposed that the meeting be moved to the 4th Tuesday of the month quarterly, at 9:00 am. The purposed new meeting schedule/dates will be sent out to the committee members in the next few weeks. Please check your calendars and provide feedback.
- The meeting was adjourned at 11:37 am.

Sierra – Sacramento Valley Emergency Medical Services Agency

Regional Executive Director
John Poland, Paramedic

Medical Director
Troy M. Falck, MD, FACEP, FAAEM

JPA Board Chairperson
Sue Hoek, Nevada County Supervisor

Address & Contact Information
535 Menlo Drive, Suite A
Rocklin, CA 95765
(916) 625-1702
info@ssvems.com
www.ssvems.com

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S-SV EMS Bulletin

Date: December 30, 2024

To: S-SV EMS Region EMS System Participants

From: John Poland, Regional Executive Director, S-SV EMS Agency
Troy M. Falck, MD, FACEP, FAAEM, Medical Director, S-SV EMS Agency

Subject: S-SV EMS Agency Processes

Over the past two (2) years, S-SV EMS has established a new field provider based Prehospital Advisory Committee (PAC), revised the Regional Emergency Medical Advisory Committee (REMAC) process, and made other changes to respond to EMS system needs and ensure that the EMS care in our region is consistent with best practices and evidence-based medicine. During this time, multiple updates have been made to S-SV EMS policies, protocols, plans and processes, including the following:

- Re-numbering, reorganization and updating of all pediatric protocols.
- Development/implementation of new protocols.
- Transition of several policies to protocol format.
- Implementation of new and/or required prehospital EMS medications/equipment.
- Additional EMS provider education/training requirements.
- Revisions to the S-SV EMS Regional MCI policies/protocol/plan.
- Updating of the S-SV EMS website and mobile applications.
- Implementation of a new vendor supported license management system.
- Changes to our online learning management system.
- Implementation of a new specialty patient data registry.

Although these changes were made to provide better EMS system support and improve the EMS care throughout our region, we acknowledge the impact they have had on EMS system participants. As we continue to refine our processes, we do not anticipate maintaining the same level/frequency of changes that has been made over the past two (2) years.

As part of our EMS system review process, we have identified that most California LEMSAs who publish bi-annual policy/protocol updates utilize an April 1st/October 1st update schedule. S-SV EMS is proposing to transition to a similar April 1st/October 1st policy/protocol update schedule, as we believe this will better meet the needs of our Agency and EMS system participants. A transition to this new schedule will result in the publishing of the next S-SV EMS policy/protocol update with an April 1, 2025 implementation date, and the publishing of the subsequent S-SV EMS policy/protocol update with an October 1, 2025 implementation date. Included below is a listing of the expected April 1, 2025 S-SV EMS policy/protocol updates. We are requesting EMS system participant feedback regarding this proposed change during the January 28, 2025 REMAC meeting. Individuals unable to attend the meeting may provide written feedback related to this proposed change, no later than seven (7) calendar days prior to the scheduled meeting date, by using the following form link: https://www.ssvems.com/s-sv-ems-remac-public-comment/.

Expected S-SV EMS Agency April 1, 2025 Policy/Protocol Manual Updates		
Policy/ Protocol #	**Policy/Protocol Title**	**Update Description/Comments**
220	S-SV EMS Policy/Protocol Actions	Updated policy/protocol action process language & bi-annual update schedule
506	SRC Designation Criteria, Requirements & Responsibilities	Routine review – no substantive changes
809	EMS Naloxone Leave-Behind Program	New policy – optional provider program
1007	EMS Student Field Training	Updates for consistency with applicable regulations
C-1	Non-Traumatic Pulseless Arrest	Minor termination of resuscitation language clarification
C-3	Bradycardia With Pulses	Updated midazolam & fentanyl dosing for consistency with other protocol changes
M-8	Pain Management	Removal of several ketamine contraindications

Policy/ Protocol #	Policy/Protocol Title	Update Description/Comments
OB-G2	Obstetric Emergencies	New protocol – continued from October 2024 REMAC meeting
T-1	General Trauma Management	Updated pelvic binder language
T-3	Suspected Moderate/Severe TBI	Updated glucose administration language
T-4	Hemorrhage	Updated approved tourniquet device & hemostatic agent language
M-2P	Newborn Care/Neonatal Resuscitation	Renumbered. Addition of general newborn care language
M-6P	Pediatric General Medical Treatment	Minor updates to the PO acetaminophen administration language
PR-2	Airway & Ventilation Management	New protocol – transition of last procedure policy (1102) to a protocol format
PR-3	Pleural Decompression	Updated indications & pediatric utilization language
1110-F	Infrequently Used Skills – Needle Cricothyrotomy	Revised to address removal of the jet insufflation & ENK flow modulator devices
1110-G	Infrequently Used Skills – Needle Thoracostomy	Revised to address changes to PR-3 procedure protocol

Sierra – Sacramento Valley EMS Agency Program Policy			
S-SV EMS Policy/Protocol Actions			
	Effective: DRAFT	Next Review: DRAFT	**220**
	Approval: Troy M. Falck, MD – Medical Director		DRAFT
	Approval: John Poland – Executive Director		DRAFT

PURPOSE:

To provide a mechanism for creation, review, revision, or removal of S-SV EMS policies and/or treatment protocols (collectively referred to in this policy as 'policy/protocol action').

AUTHORITY:

A. HSC, Division 2.5, § 1797.107, 1797.171, 1797.172, 1797.176, 1797.202, 1797.220, and 1798.

B. CCR, Title 22.

POLICY:

A. Prehospital provider organizations shall not institute patient care policies/protocols that conflict with those established by the S-SV EMS Agency. This does not apply to treatment protocols developed by air ambulance or ground critical care transport providers for RN personnel.

B. New policies/protocols are developed as necessary based on EMS system needs.

C. Consideration of proposed policy/protocol actions will be given to suggestions/ requests from EMS system participants.

D. Existing S-SV EMS policies/protocols are routinely reviewed a minimum of every three (3) years but may be reviewed on a more frequent basis, as necessary.

PROCEDURE:

A. Policy/protocol action input may be solicited from individuals, organizations, and/or advisory committees. S-SV EMS may also establish an ad hoc committee to recommend policy actions as necessary.

B. Approval of policy/protocol actions will occur as follows:

1. Proposed policy/protocol actions are listed on the S-SV EMS Regional Emergency Medical Advisory Committee (REMAC) meeting agenda for consideration.

2. The REMAC meeting agenda and all proposed policy actions will be distributed to EMS system participants and posted on the S-SV EMS website a minimum of 30 days prior to the applicable REMAC meeting in which they will be considered.

3. *Public comments on proposed policy/protocol actions listed on the applicable REMAC meeting agenda will be taken during the review/discussion of that item. Individuals unable to attend the meeting may provide written public comment on any item listed on the applicable REMAC meeting agenda, no later than seven (7) calendar days prior to the scheduled meeting date, by using a written public comment electronic form link included on the agenda.*

4. Policy/protocol actions listed on the applicable REMAC meeting agenda may be approved by a majority vote of the REMAC members present at the meeting. If necessary, proposed policy actions may be continued to subsequent REMAC meetings until a consensus is reached by the committee.

5. All REMAC approved policy/protocol actions shall also be approved by the S-SV EMS Medical Director and Regional Executive Director prior to implementation.

6. *S-SV EMS may make non-substantive corrections to approved policy/protocol actions to address any technical defect, error, irregularity, or omission prior to final publication.*

C. Implementation of policy actions will occur as follows:

1. New policies/protocols will be assigned an S-SV EMS policy/protocol number.

2. An effective date and next review date will be assigned to all policies/protocols.

3. The S-SV EMS Medical Director and Regional Executive Director will approve and sign the policy/protocol.

4. EMS system participants will be notified of the applicable policy/protocol action and implementation date. Policy/protocol updates are routinely released on a bi-annual basis for either an *April 1st or October 1st* ~~*June 1st or December 1st*~~ implementation but may be released more frequently as necessary.

D. Some policy/protocol actions may require immediate action to maintain compliance with statutes/regulations, or to preserve medical control/integrity of the EMS system. Policy/protocol actions of this type may be implemented by S-SV EMS as urgency measures and scheduled for discussion at the next regularly scheduled REMAC meeting, if necessary.

Sierra – Sacramento Valley EMS Agency Program Policy			
STEMI Receiving Center Designation Criteria, Requirements & Responsibilities			
	Effective: DRAFT	Next Review: DRAFT	**506**
	Approval: Troy M. Falck, MD – Medical Director		DRAFT
	Approval: John Poland – Executive Director		DRAFT

PURPOSE:

To establish STEMI receiving center (SRC) designation criteria, requirements and responsibilities.

AUTHORITY:

A. California Health and Safety Code, Division 2.5, Chapter 2 § 1797.67 & 1797.88, Chapter 6 § 1798.102, 1798.150, 1798.170 and 1798.172.

B. California Code of Regulations, Title 13, § 1105 (c).

C. California Code of Regulations, Title 22, Division 9, Chapter 7.1.

DEFINITIONS:

A. **Percutaneous Coronary Intervention (PCI)** – A procedure used to open or widen a narrowed or blocked coronary artery to restore blood flow supplying the heart, usually done on an emergency basis for a STEMI patient.

B. **Primary PCI –** Urgent balloon angioplasty (with or without stenting), without the previous administration of fibrinolytic therapy or platelet glycoprotein IIb/IIIa inhibitors, to open the infarct-related artery during an acute myocardial infarction with ST-segment elevation.

C. **ST-Elevation Myocardial Infarction (STEMI)** – A clinical syndrome defined by symptoms of myocardial infarction in association with ST-segment elevation on EKG.

D. **STEMI Receiving Center (SRC)** – A licensed general acute care facility that has emergency interventional cardiac catheterization capabilities, meets the minimum STEMI care requirements contained in California Code of Regulations (Title 22, Division 9, Chapter 7.1, § 100270.124), and is designated as a SRC by S-SV EMS.

E. **STEMI Referring Hospital (SRH)** – A licensed general acute care facility that does not have emergency interventional cardiac catheterization capabilities, and transfers STEMI patients to SRCs for PCI services when necessary.

POLICY:

A. Criteria for assessment, identification, treatment and transport of prehospital suspected STEMI patients shall be based on S-SV EMS Chest Pain/Suspected Symptoms of Cardiac Origin Protocol (C-6).

B. The following shall be met for a hospital to be designated as a SRC by S-SV EMS:

1. Be licensed by the California Department of Public Health Services as a general acute care hospital.

2. Have a special permit for basic or comprehensive emergency medical service pursuant to the provisions of California Code of Regulations Title 22, Division 5.

3. Be accredited by a Centers for Medicare and Medicaid Services approved deeming authority.

4. Have a cardiac catheterization laboratory (cath lab) license.

5. Have intra-aortic balloon pump capability.

6. Have cardiovascular surgical services available on site. If cardiovascular surgical services are not available on site, the SRC must have a rapid transfer plan and written agreement in place with a facility that provides cardiovascular surgical services. The expectation is that for emergency cases, the patient will arrive at the cardiac surgical hospital within one (1) hour of the decision to operate.

7. Be available for treatment of STEMI patients twenty-four (24) hours per day, seven (7) days per week, three hundred and sixty-five (365) days per year.

8. Have a communication system for notification of a prehospital suspected STEMI patient, including 12-lead EKG receiving capabilities.

9. Have established protocols for triage, diagnosis, and cath lab activation following notification of a prehospital suspected STEMI patient.

10. Maintain a STEMI team call roster (including a cardiologist with PCI privileges and other appropriate cath lab team members).

11. Have a single call activation system to activate the cath lab team directly.

12. Ensure the cath lab team is available within 30 minutes of call activation.

13. Have written protocols in place for the identification of STEMI patients.

14. Have a process in place for the treatment and triage of simultaneously arriving STEMI patients.

15. Agree to accept all prehospital suspected STEMI patients according to applicable S-SV EMS policies/protocols.

16. Agree to accept all STEMI patients from adjacent SRHs, and have transfer plans/ agreements in place to ensure rapid transport of these patients to the SRC.

17. Perform a minimum of 36 Primary PCI and 200 total PCI procedures annually.

18. Have the following STEMI Program oversight staff:

- One STEMI Program Medical Director who is a physician board certified/ eligible in interventional cardiology with active PCI privileges at the SRC, and one STEMI Program Medical Co-Director who is a physician board certified/ eligible in emergency medicine with active privileges to practice in the emergency department at the SRC.
  - STEMI Program Medical Director/Co-Medical Director responsibilities:
    - Oversight of STEMI program patient care.
    - Participation in development of STEMI Program clinical practice guidelines/protocols.
    - Coordination of STEMI program staff and services.
    - Authority/accountability for STEMI Program quality and performance improvement.
    - Establish and monitor STEMI Program quality control.
    - Regular participation in S-SV EMS Regional STEMI QI Committee activity.
- One STEMI Program Manager who is an RN trained/certified in critical care nursing and affiliated with the cardiac catheterization laboratory at the SRC, and one STEMI Program Co-Manager who is an RN trained/certified in critical care nursing and affiliated with the emergency department at the SRC.
  - STEMI Program Manager/Co-Manager responsibilities:
    - Support the STEMI Program Medical Director/Co-Medical Director functions.
    - Acts as the STEMI Program EMS liaison.
    - Assures EMS-SRC STEMI data sharing.
    - Manages EMS-SRC STEMI QI activities.
    - Authority/accountability for STEMI Program quality and performance improvement.
    - Regular participation in S-SV EMS Regional STEMI QI Committee activity.

19. Have job descriptions and an organizational structure clarifying the relationship between the STEMI medical directors, STEMI program manager, and the STEMI team and hospital administration.

20. Have a quality improvement (QI) process in place to track and improve treatment (acutely and at discharge) with American College of Cardiology (ACC) and American Heart Association (AHA) guidelines-based Class 1 therapies. At a minimum, this process will evaluate performance in meeting the following AHA/ ACC STEMI Receiving Center Achievement Measures:

    - Fibrinolysis within 30 minutes of ED arrival, if administered.
    - SRC Arrival to PCI ≤90 minutes for patients arriving by non-EMS modes of transport.
    - EMS First Medical Contact (FMC) to PCI ≤90 minutes, or ≤120 minutes when transport time is prolonged (≥45 minutes).

21. Have a QI process in place to provide ongoing feedback to adjacent SRHs on patients transferred for STEMI services. At a minimum, this QI process shall evaluate and provide SRH feedback of the following:

    - SRH STEMI patient door-to-first ECG time (goal <10 minutes).
    - SRH STEMI patient door-to-transfer time (goal <30 minutes).
    - SRH STEMI patient door-to-fibrinolysis time, if applicable (goal <30 minutes).
    - Operational issues related to STEMI patient transfer delays.
    - Proportion of STEMI patients receiving fibrinolysis prior to transport when the system cannot achieve times consistent with ACC/AHA guidelines for primary PCI.
    - Proportion of STEMI-eligible patients receiving any reperfusion (PCI or fibrinolysis) therapy.

22. Conduct regularly scheduled multidisciplinary team meetings to evaluate outcomes and quality improvement data. Operational issues should be reviewed, problems identified, and solutions implemented.

23. Provide CE opportunities, minimum of four (4) hours per year, for EMS personnel in areas of 12-lead EKG acquisition and interpretation, as well as assessment and management of STEMI patients.

24. Provide public education about STEMI warning signs and the importance of early utilization of the 9-1-1 system.

25. Comply with all data collection, QI and performance standards as defined in S-SV EMS SRC contracts.

C. SRC diversion of STEMI patients shall only occur during times of an internal disaster or when the cath lab is otherwise unavailable.

1. Notification shall be made to the following entities at least 24 hours prior to any planned event, or as soon as possible for any unplanned event, resulting in the cath lab being unavailable:

   - S-SV EMS.
   - SRC emergency department – to include a status posting on EMResource indicating that the cath lab is unavailable.
   - Appropriate adjacent SRC(s).
   - Appropriate prehospital provider agencies.

2. All appropriate entities shall be notified as soon as possible when the cath lab is subsequently available.

3. An S-SV EMS ambulance patient diversion form describing such events shall be submitted ~~to S-SV EMS~~ *by email to info@ssvems.com* by the end of the next business day.

PROCEDURE:

A. The SRC applicant shall be designated after satisfactory review of written documentation and an initial site survey conducted by S-SV EMS representatives or designees and completion of a contract between the hospital and S-SV EMS.

B. Designated SRCs shall have verification reviews by S-SV EMS representatives or designees conducted every three (3) years.

C. Failure to comply with the criteria and performance standards outlined in this policy and/or SRC contracts may result in probation, suspension or rescission of SRC designation. Compliance will be solely determined by S-SV EMS.

Sierra – Sacramento Valley EMS Agency Program Policy			
EMS Naloxone Leave-Behind Program			
	Effective: DRAFT	Next Review: DRAFT	**809**
	Approval: Troy M. Falck, MD – Medical Director		DRAFT
	Approval: John Poland – Executive Director		DRAFT

PURPOSE:

To establish guidelines for EMS personnel to provide intra-nasal (IN) naloxone delivery devices intended for layperson use to individuals deemed to be at risk of an opioid overdose or individuals who are considered likely to encounter and assist a person experiencing an opioid overdose.

AUTHORITY:

HSC, Div. 2.5. § 1797.220 & 1798.

POLICY:

A. Suspected opioid overdoses shall be treated according to S-SV EMS Agency protocols.

B. EMS providers may stock IN naloxone delivery devices intended for layperson use. These devices may be obtained through the following mechanisms:

1. The California DHCS Naloxone Distribution Project (NDP): https://www.dhcs.ca.gov/individuals/Pages/Naloxone_Distribution_Project.aspx

2. Local public health department or other community organization naloxone distribution programs that exist within the EMS providers' service area.

3. Purchasing through the EMS providers' normal supply chain.

C. EMS personnel are authorized to provide an IN naloxone delivery device intended for layperson use to any individual who is deemed to be at risk of an opioid overdose or individuals who are considered likely to encounter and assist a person experiencing an opioid overdose.

D. EMS personnel may consider offering leave-behind IN naloxone delivery devices to lay persons who request it on a scene or in the following situations:

1. A reversed overdose regardless of further treatment or transport disposition.

2. Prescription opioids, drug paraphernalia, or suspected opioid use are found on a scene, including bystanders who may have been using opioids.

3. An individual who self-identifies as a person who uses illicit substances or prescription opioids.

4. An individual who states that they have close contacts who use illicit substances or prescription opioids.

E. Providers may consider offering leave-behind IN naloxone delivery devices regardless of the nature of the contact between EMS personnel and the subject(s) receiving the device. Leave-behind naloxone distribution is not limited to 911/ emergency calls for service for a suspected opioid overdose.

PROCEDURE:

A. EMS personnel shall provide the following brief instructions, at a minimum, to any recipient of a leave-behind IN naloxone delivery device:

1. Encourage/remind to never use alone, as appropriate.

2. Recognition of opiate overdose and activation of 911.

3. Signs and Symptoms of opiate overdose.

4. Lay-person rescue breathing.

5. Administration of IN naloxone.

6. Post-overdose care.

B. Any EMS provider agency stocking/distribution IN naloxone delivery devices intended for layperson use shall implement and maintain appropriate methods to adequately track the distribution of such devices. This information shall be made available upon request to the S-SV EMS Agency or any organization providing such IN naloxone delivery devices.

Sierra – Sacramento Valley EMS Agency Program Policy			
EMS Student Field Training			
	Effective: DRAFT	Next Review: DRAFT	**1007**
	Approval: Troy M. Falck, MD – Medical Director		DRAFT
	Approval: John Poland – Executive Director		DRAFT

PURPOSE:

To establish requirements for field training of EMT, AEMT and paramedic students (EMS students) in the S-SV EMS region.

AUTHORITY:

A. HSC, Division 2.5, § 1797.170, 1797.171, 1797.172, 1797.204, 1797.206, 1797.208, 1797.213, 1797.218, 1797.220, and 1798.

B. CCR, Title 22, Div. 9, Ch. 3.1, 3.2, & 3.3.

POLICY:

A. ~~ALS~~ prehospital provider agencies shall provide field training to EMS students, in accordance with CCR Title 22, S-SV EMS policies and provider agency agreements.

1. An EMT training course shall consist of not less than 24 hours (with a maximum of 48 hours, unless otherwise approved by the applicable training program) of supervised clinical experience.

   - Prior to beginning the supervised clinical experience, the student shall have successfully completed the didactic and skills portions of the training program.
   - The supervised clinical experience may be completed at ~~a~~ *one or more general* acute care hospital*(s) and/or operational ambulance provider(s) or rescue vehicle provider(s).* ~~ALS prehospital provider agency, or a combination of both.~~
   - The supervised clinical experience shall include a minimum of 10 patient contacts, wherein a patient assessment and other EMT skills are performed and evaluated.

2. An AEMT training course shall consist of not less than 40 hours (with a maximum of 120 hours, unless otherwise approved by the applicable training program) of field internship with an ALS/*LALS* prehospital provider agency.

- Prior to beginning the field internship, the student shall have successfully completed the didactic, skills and hospital clinical education portions of the training program.
- During the field internship, the student shall demonstrate competency in the AEMT scope of practice.
- During the field internship, the student shall have a minimum of 15 LALS patient contacts and shall demonstrate competency as the team leader while delivering EMS patient care at least five (5) times.

3. A paramedic training course shall consist of not less than 480 hours (with a maximum of 720 hours, unless otherwise approved by the applicable training program) of field internship with an ALS prehospital provider agency.

   - Prior to beginning the field internship, the student shall have successfully completed the didactic, skills and hospital clinical education portions of the training program.
   - During the field internship, the student shall demonstrate competency in the paramedic scope of practice.
   - During the field internship, the student shall have a minimum of 40 ALS patient contacts.
     - An ALS patient contact shall be defined as the student performance of one or more ALS skills, except cardiac monitoring and CPR, on a patient.
     - For at least half of the ALS patient contacts, the student shall be required to provide the full continuum of care, beginning with initial patient contact upon arrival at the scene through transfer of care to hospital personnel.
     - The student shall have a minimum of 20 experiences performing the role of team lead during the field internship. A team lead shall be defined as a student who, with minimal to no prompting by the preceptor, successfully takes charge of EMS operation in the field including, at least, the following:
       - Lead coordination of field personnel,
       - Formulation of field impression,
       - Comprehensively assessing patient conditions and acuity,
       - Directing and implementing patient treatment,
       - Determining patient disposition, and
       - Leading the packaging and movement of the patient.
     - When available, up to 10 of the required ALS patient contacts may be satisfied using high-fidelity adult simulation patient contacts.
     - The field internship must be completed within six (6) months from the end of the clinical education portion of the paramedic training program.

4. EMS students are prohibited from being assigned to a field training supervisor/ preceptor who may have a conflict of interest as identified by the supervisor/ preceptor, the student, the training program, the ~~ALS~~ prehospital provider agency, or S-SV EMS

5. No more than one (1) EMS student of any level shall be assigned to an ~~ALS~~ prehospital provider response vehicle at any time.

B. EMS training programs shall enter into written agreements with ~~ALS~~ prehospital provider agencies to facilitate field training of their students.

1. ~~ALS~~ ~~p~~*P*rehospital provider agencies and/or field training supervisors shall not charge field training fees to EMT training programs/students.

2. ALS*/LALS* prehospital provider agencies may charge field internship training fees to AEMT and/or paramedic training programs/students to cover costs associated with providing field internship training, under the following conditions:

- The fees are reasonable, uniform and directly related to the costs of providing field internship training to AEMT and/or paramedic students.
- The ALS*/LALS* prehospital provider agency has a written policy that addresses the process for collection and distribution of field internship training fees.
- To prevent conflicts of interest, AEMT and paramedic students are prohibited from making payments of any kind or offering gratuities directly to field training preceptors.

C. EMS students shall be supervised by a qualified field training supervisor/preceptor throughout all aspects of their field training.

D. EMS training programs shall adequately monitor the field training of their students, in coordination with applicable ~~ALS~~ prehospital provider agencies. A paramedic training program shall conduct and document a minimum of one (1) on-site observation of the paramedic student during the field internship training.

E. Each patient contact by an EMS student shall be adequately documented by the field training supervisor/preceptor and the student in a standardized format (as required/ directed by the training program).

F. All field training supervisors/preceptors shall be authorized by the ~~ALS~~ prehospital provider agency, in coordination with the applicable EMS training program, and shall meet the following minimum qualifications:

1. EMT student field training supervisor minimum qualifications:

- Possess a current *California EMT certification*, *AEMT certification*, or paramedic license ~~and S-SV EMS Paramedic Accreditation~~.
- Not be under an active investigation by the ~~ALS~~ prehospital provider agency, S-SV EMS, *another California LEMSA*, or the California EMS Authority.

- Not be under an active clinical performance improvement plan or clinical education assignment.
- ~~Be functioning as a paramedic for an ALS prehospital provider agency at the time the field training is conducted.~~

2. *AEMT preceptor minimum qualifications:*

- *Possess a current S-SV EMS issued California AEMT certification or California paramedic license and S-SV EMS Paramedic Accreditation.*
- *Be working in the field as a certified AEMT or licensed paramedic for the last two (2) years.*
- *Be working in the S-SV EMS region as an AEMT or paramedic for the last 12 months.*
- *Not be under an active investigation by the prehospital provider agency, S-SV EMS or the California EMS Authority.*
- *Not be under an active clinical performance improvement plan or clinical education assignment.*
- *Be approved by the course director in coordination with the program medical director to provide training and evaluation of an AEMT trainee during field internship with an authorized service provider.*
- *Be under the supervision of a principal instructor, the course director and/or program medical director.*
- *Have completed a field preceptor training program, approved by S-SV EMS. The field preceptor training shall include a curriculum that will result in preceptor competency in the evaluation of AEMT students during the internship phase of the training program and the completion of the following:*
  - *Conduct a daily field evaluation of students.*
  - *Conduct cumulative and final field evaluations of all students.*
  - *Rate students for evaluation using written field criteria.*
  - *Identify LALS contacts and requirements for graduation.*
  - *Identify the importance of documenting student performance.*
  - *Review the field preceptor requirements contained in this policy and CCR Title 22.*
  - *Assess student behaviors using cognitive, psychomotor, and affective domains.*
  - *Create a positive and supportive learning environment.*
  - *Measure students against the standards of an entry level AEMT.*
  - *Identify appropriate student progress.*
  - *Counsel the student who is not progressing.*
  - *Identify training program support services available to the student and the preceptor.*
  - *Provide guidance and procedures to address student injuries or exposure to illness, communicable disease or hazardous material.*

3. ~~AEMT and/or~~ Paramedic preceptor minimum qualifications:

   - Possess a current California paramedic license and S-SV EMS Paramedic Accreditation.
   - Be working in the field as a licensed paramedic for the last two (2) years.
   - Be working in the S-SV EMS region as a paramedic for the last 12 months.
   - Not be under an active investigation by the ALS prehospital provider agency, S-SV EMS or the California EMS Authority.
   - Not be under an active clinical performance improvement plan or clinical education assignment.
   - Have completed a field preceptor training program, approved by S-SV EMS in accordance with CAAHEP Standards and Guidelines for the Accreditation of Educational Programs in the Emergency Medical Services Professions. The field preceptor training shall include a curriculum that will result in preceptor competency in the evaluation of ~~AEMT and/or~~ paramedic students during the internship phase of the training program and the completion of the following:
     - Conduct a daily field evaluation of students.
     - Conduct cumulative and final field evaluations of all students.
     - Rate students for evaluation using written field criteria.
     - Identify ALS contacts and requirements for graduation.
     - Identify the importance of documenting student performance.
     - Review the field preceptor requirements contained in this policy and CCR Title 22.
     - Assess student behaviors using cognitive, psychomotor, and affective domains.
     - Create a positive and supportive learning environment.
     - Measure students against the standards of an entry level ~~AEMT or~~ paramedic ~~(as applicable).~~
     - Identify appropriate student progress.
     - Counsel the student who is not progressing.
     - Identify training program support services available to the student and the preceptor.
     - Provide guidance and procedures to address student injuries or exposure to illness, communicable disease or hazardous material.

G. EMS student responsibilities:

   - Students shall complete all requirements established by the training program and ~~ALS~~ prehospital provider agency prior to the start of their field training.
   - Students shall comply with all instructions and direction of their field supervisor/preceptor for the clinical care and operation of the EMS system.
   - Students shall adhere to all S-SV EMS policies/protocols.
   - Students shall abide by the dress code and appearance standards established by the training program and/or ~~ALS~~ prehospital provider agency.

- Students shall wear adequate identification with their name and the phrase "Student" or "Intern" while performing their field training.
- Students shall only conduct their field training with their assigned field training supervisor(s)/preceptor(s) and assigned ~~ALS~~ prehospital provider agency.
- Students shall not fulfill the minimum staffing requirements of an ambulance or fire apparatus.
- Students shall not function as an AEMT or paramedic student while on duty as an EMT.
- Students shall actively participate in training program required evaluations with their field training supervisor/preceptor.
- Students shall report (to applicable ~~ALS~~ prehospital provider agency management personnel or to S-SV EMS) any conduct of their field training supervisor/preceptor or themselves that may or did result in patient harm, or that would or did have an adverse operational impact on the EMS system.

Sierra – Sacramento Valley EMS Agency Treatment Protocol

Non-Traumatic Pulseless Arrest

C-1

Approval: Troy M. Falck, MD – Medical Director | Effective: 12/01/2024

Approval: John Poland – Executive Director | Next Review: 10/2027

MANUAL CHEST COMPRESSIONS

- Rate: 100-120/min
- Depth: 2 inches – allow full chest recoil
- Minimize interruptions (≤10 secs)
- Rotate compressors every 2 mins
- Perform CPR during AED/defibrillator charging
- Resume CPR immediately after shock

MECHANICAL CHEST COMPRESSION DEVICES

Indications

- Adult pt (≥15 yo)

Contraindications

- Pt does not fit in the device
- 3rd trimester pregnancy

ⓘ Use in accordance with manufacturer indications/ contraindications

ⓘ Apply following completion of at least one manual CPR cycle, or at the end of a subsequent cycle

DEFIBRILLATION & GENERAL PT MANAGEMENT

- Analyze rhythm/check pulse after every 2 min CPR cycle
- Biphasic manual defibrillation detail:
  - Follow manufacturer recommendations
  - If unknown, start at 200 J (subsequent doses should be equivalent or higher)
- Movement of pt may interrupt CPR or prevent adequate depth and rate of compressions
- Consider resuscitation on scene up to 20 mins
- Go to ROSC protocol (C-2) if ROSC is obtained

ADVANCED AIRWAY MANAGEMENT

- Consider/establish advanced airway at appropriate time during resuscitation
- Do not interrupt chest compressions to establish an advanced airway
- Waveform capnography (if available) shall be used on all pts with an advanced airway in place
  - An abrupt increase in $PETCO_2$ is indicative of ROSC
  - Persistently low $PETCO_2$ levels (<10 mmHG) suggest ROSC is unlikely

TREAT REVERSIBLE CAUSES

- **H**ypovolemia
- **H**ypoxia
- **H**ydrogen Ion (acidosis)
- **H**ypo-/hyperkalemia
- **H**ypothermia
- **T**amponade, cardiac
- **T**ension pneumothorax
- **T**hrombosis, pulmonary
- **T**hrombosis, cardiac
- **T**oxins

ⓘ Refer to Hypothermia & Avalanche/Snow Immersion Suffocation Resuscitation Protocol (E-2) or Traumatic Pulseless Arrest Protocol (T-6) as appropriate

ⓘ Contact the base/modified base hospital for consultation & orders as appropriate

ⓘ Consider early transport of pts who have reversible causes that cannot be adequately treated in the prehospital setting

TERMINATION OF RESUSCITATION

Base/Modified Base Hospital Physician Order**

- If resuscitation attempts do not obtain ROSC, consider termination of resuscitation efforts
- BLS termination of resuscitation criteria (all):
  (1) Arrest not witnessed by EMS
  (2) No AED shocks delivered
  (3) No ROSC after 3 rounds of CPR/AED analysis
- ALS Termination of Resuscitation Criteria (all):
  (1) Arrest not witnessed by EMS
  (2) No effective bystander CPR was provided, or effective CPR cannot be maintained
  (3) No AED shocks or defibrillations delivered
  (4) No ROSC after full ALS care

**In the event of communication failure, EMS personnel may terminate resuscitation without a base/modified base hospital physician order on a pt who meets ALS termination of resuscitation criteria.

SEE PAGE 2 FOR TREATMENT ALGORITHM

Non-Traumatic Pulseless Arrest

BLS

- CPR (with BVM &100% O_2) x 2 mins - apply AED as soon as possible
- Deliver ⚡⚡ **AED SHOCK** ⚡⚡, if indicated by AED, & immediately resume CPR
- Analyze rhythm/check pulse after every 2 min CPR cycle

ALS

Cardiac Monitor

ASYSTOLE/PEA

- CPR x 2 mins
- IV/IO NS (may bolus up to 1000 mL)
- Consider advanced airway
- $EtCO_2$ monitoring

Shockable Rhythm?

YES → Treat VF/VT

NO

- CPR x 2 mins
- **Epinephrine:** 1:10,000 – 1 mg IV/IO
- Treat reversible causes

Shockable Rhythm?

YES → Treat VF/VT

NO

If no signs of ROSC:

- Continue CPR followed by rhythm check every 2 mins. If rhythm converts to VF/VT treat according to VF/FT algorithm
- **Epinephrine** 1:10,000 – 1 mg IV/IO every 3-5 mins (max 4 doses)
- Consider termination of resuscitation after 20 minutes of ALS intervention *(see page 1)*

VF/VT

⚡⚡ **DEFIBRILLATION** ⚡⚡

- CPR x 2 mins
- IV/IO NS (may bolus up to 1000 mL)

Shockable Rhythm?

NO → Treat Asystole/PEA

YES

⚡⚡ **DEFIBRILLATION** ⚡⚡

- CPR x 2 mins
- **Epinephrine:** 1:10,000 – 1 mg IV/IO
- Consider advanced airway
- $EtCO_2$ monitoring

Shockable Rhythm?

NO → Treat Asystole/PEA

YES

⚡⚡ **DEFIBRILLATION** ⚡⚡

- CPR x 2 mins
- **Amiodarone:** 300 mg IV/IO
- If Torsades de Pointes: **Magnesium Sulfate:** 2 g in 10 ml NS over 2 mins
- Treat reversible causes

If no signs of ROSC:

- Continue CPR followed by ⚡⚡ **DEFIBRILLATION** ⚡⚡ every 2 mins for continued/relapsed shockable rhythm
- **Epinephrine:** 1:10,000 – 1 mg IV/IO every 3-5 mins (max 4 doses)
- **Amiodarone:** 150 mg IV/IO – 5 mins after initial amiodarone administration
- ~~Consider termination of resuscitation after 20 minutes of ALS intervention~~

Sierra – Sacramento Valley EMS Agency Treatment Protocol	C-3
Bradycardia With Pulses	
Approval: Troy M. Falck, MD – Medical Director	Effective: 06/01/2024
Approval: John Poland – Executive Director	Next Review: 01/2027

- **Symptomatic bradycardia exists clinically when the following 3 criteria are present: 1) The HR is slow (<60/min), 2) The pt has symptoms & 3) The symptoms are due to the slow HR.**
- **Bradycardia that causes symptoms is typically <50/min. The pt's cardiac rhythm should be interpreted in the context of symptoms, & atropine/TCP utilized only for symptomatic bradycardia.**

BLS

- Manage airway & assist ventilations as necessary
- Assess V/S, including SpO_2 - reassess V/S every 3 - 5 min if possible
- O_2 at appropriate rate if hypoxemic (SpO_2 <94%), short of breath, or signs of heart failure/shock

ALS

- Cardiac monitor, 12-lead ECG at appropriate time (do not delay therapy)
- IV/IO NS at appropriate time (may bolus up to 1000 mL for hypotension)

Persistent bradycardia with SBP <90 & any of the following signs/ symptoms of hypoperfusion?
- Acutely altered mental status
- Signs of shock
- Ischemic chest discomfort
- Acute heart failure

YES

NO

- Monitor & reassess
- Contact base/modified base hospital for consultation if necessary

***Transcutaneous Pacing Sedation/Pain Control**

- For pts receiving transcutaneous pacing in need of sedation/pain control, consider one of the following:
  - **Midazolam:** ~~2~~ – ~~5~~ mg IV/IO; **OR**
  - **Fentanyl:** ~~25~~ – ~~50~~ mcg IV/IO
- May repeat dose x 1 after 5 mins
- Fentanyl is preferred for pts with chest pain or suspected MI

**** For pts ≥65yo Midazolam dosing is limited to ~~2~~.5mg. Fentanyl dosing is limited to 25mcg.**

Atropine
- 1 mg IV/IO
- May repeat every 3 - 5 mins (max total: 3 mg)
- Should not be used for wide-complex rhythms or for second-degree Type II or third-degree heart blocks

Wide-complex rhythms, second-degree Type II or third-degree heart blocks, or atropine ineffective:

Transcutaneous Pacing (TCP)
- Set initial rate at 60/minute
- Set initial current at 10 mA and increase by 10 mA increments while assessing for mechanical capture
- Once mechanical capture is achieved, adjust rate based on clinical response - most pts will improve with a rate of 60 - 70/min if the symptoms are primarily due to bradycardia
- Monitor/re-evaluate frequently, increase current as necessary to maintain mechanical capture.
- Consider sedation/pain control as needed*

If SBP remains <90 after atropine/TCP:

Push-Dose Epinephrine
- Eject 1 mL NS from a 10 mL pre-load flush syringe
- Draw up 1 mL epinephrine 1:10,000 concentration and gently mix
- Administer 1 mL IV/IO push every 1 - 5 mins
- Titrate to maintain SBP >90

Sierra – Sacramento Valley EMS Agency Treatment Protocol	M-8
Pain Management	
Approval: Troy M. Falck, MD – Medical Director	Effective: 06/01/2024
Approval: John Poland – Executive Director	Next Review: 01/2027

- All pts with a report of pain shall be appropriately assessed and treatment decisions/interventions shall be adequately documented on the PCR.
- A variety of pharmacological and non-pharmacological interventions may be utilized to treat pain. Consider the pt's hemodynamic status, age, and previous medical history/medications when choosing analgesic interventions.
- Treatment goals should be directed at reducing pain to a tolerable level; pts may not experience complete pain relief.

BLS

- Assess V/S including pain scale & SpO_2, every 15 mins or as indicated by pt's clinical condition
- Assess/document pain score using standard 1-10 pain scale before and after each pain management intervention and at a minimum of every 15 mins
- O_2 at appropriate rate if SpO_2 <94% or pt is short of breath
- Utilize non-pharmacological pain management techniques as appropriate, including:
  - Place in position of comfort and provide verbal reassurance to minimize anxiety
  - Apply ice packs &/or splints for pain secondary to trauma

Pain not effectively managed with non-pharmaceutical pain management techniques

Review/consider 'Medication Contraindications & Administration Notes' below & proceed to page 2

Medication Contraindications & Administration Notes

ⓘ **All slow IVP medications contained in this protocol shall be administered over 60 seconds**

Acetaminophen
ⓘ Do not administer to pts with any of the following:
- Severe hepatic impairment
- Active liver disease

ⓘ Discontinue infusion if SBP drops to <100

Ketamine
ⓘ Do not administer to pts with any of the following:
- Pregnancy
- ~~Multi-system trauma~~
- ~~Suspected internal bleeding~~
- ~~Active external bleeding~~

Ketorolac
ⓘ Do not administer to pts with any of the following:
- ≥65 yo
- Pregnancy
- NSAID allergy
- Active bleeding
- Multi-system trauma
- ALOC or suspected moderate/severe TBI
- Current use of anticoagulants or steroids
- Hx of asthma, GI bleeding, ulcers
- Hx of renal disease/insufficiency/transplant

Fentanyl/Midazolam
ⓘ Do not administer to pts with any of the following:
- SBP <100
- SpO2 <94% or RR <12
- ALOC or suspected moderate/severe TBI

ⓘ Do not administer midazolam to pts ≥65 yo
ⓘ Reduce fentanyl doses to 25 mcg for pts ≥65 yo
ⓘ There is an increased risk of deeper level of sedation & airway/respiratory compromise when administering midazolam to pts receiving fentanyl

ALS

- Continuous cardiac monitoring
- IV/IO NS TKO – if indicated by pt's clinical condition or necessary for medication administration
  - May bolus up to 1000 mL if indicated by pt's clinical condition
- Administer analgesic intervention as indicated below when appropriate

Non-Trauma Related/Chronic Pain

Acetaminophen: 1 g IV/IO infusion over 15 mins **OR Ketorolac:** 15 - 30 mg IV/IO or IM

If pain not effectively managed:

- Contact base/modified base hospital for additional pain management consultation

Pain Related to Acute Injury/Burns/Frostbite

Moderate Pain

Acetaminophen: 1 g IV/IO infusion over 15 mins
OR
Ketorolac: 15 - 30 mg IV/IO or IM

If pain not effectively managed:

- Continuous $EtCO_2$ monitoring

Fentanyl: 25 - 50 mcg slow IV/IO or IM/IN every 5 mins (max cumulative dose: 200 mcg)

Severe Pain

- Continuous $EtCO_2$ monitoring

Fentanyl: 50 - 100 mcg slow IV/IO or IM/IN
OR
Ketamine: 15 - 30 mg slow IV/IO

Acetaminophen: 1 g IV/IO infusion over 15 mins

If pain not effectively managed:

- If fentanyl previously administered, may repeat fentanyl 50 - 100 mcg slow IV/IO or IM/IN every 5 mins (max cumulative dose: 200 mcg)
- If ketamine previously administered, may repeat ketamine 15 – 30 mg slow IV/IO x 1

AND/OR
Midazolam: 1 mg slow IV/IO

- May repeat 1 mg slow IV/IO x 1
- Wait 5 mins after fentanyl/ketamine administration before administering midazolam

Sierra – Sacramento Valley EMS Agency Treatment Protocol	OB-G2
Obstetric Emergencies	
Approval: Troy M. Falck, MD – Medical Director	Effective: DRAFT
Approval: John Poland – Executive Director	Next Review: DRAFT

- Obstetric emergencies can be high-acuity/low-frequency situations that can rapidly escalate & may include one or more of the following:
  - Premature Labor – Regular uterine contractions or cervical dilation prior to the 37th week of gestation.
  - Placenta Previa – Placenta covers the cervical opening (painless, often profuse, bright red bleeding).
  - Abruptio Placenta – Separation of placenta from the uterine wall (severe abdominal pain/abdominal rigidity).
  - Pre-Eclampsia – A condition of pregnancy characterized by high blood pressure & other symptoms.
  - Eclampsia – Seizures secondary to a pregnancy-related high blood pressure disorder.
- Pre-Eclampsia & Eclampsia may occur up to 8 weeks post-partum.
- If pt is in the 3rd trimester & has a BP >160/100, altered mental status, & visual disturbances, consult with base/ modified base for consideration of magnesium sulfate

BLS

- Determine gestational age
- Assess V/S, including SpO_2
- O_2 at appropriate rate if SpO_2 <94% or short of breath
- Pts with obstetric emergencies should be rapidly transported to the closest approriate facility
  - Transport pts >20 weeks pregnant in left lateral recumbent position

Premature Labor

- For pts <20 weeks gestation, transport to the closest appropriate facility
- For pts 20-37 weeks gestation, consult with closest base/ modified base hospital for destination determination

ALS

- Consider IV NS TKO

Eclampsia

ALS

Previous diagnosis of pre-eclampsia/eclampsia?

Yes

Active or recently completed seizure:

- **Magnesium Sulfate**
  - 6 g IV in 100ml NS, infused over 15 minutes **OR** if no IV access, 5 g IM in each buttock

No

Active seizure:

- **Midazolam**
  - 5 mg IV **OR** 10 mg IM/IN if no IV access
- **Magnesium Sulfate**
  - 6 g IV in 100 mL NS, infused over 15 mins **OR** if no IV access, 5 g IM in each buttock

***** If seizure has terminated prior to midazolam administration move directly to magnesium.***

Recurrent seizure:

- **Midazolam:** 5 mg IV **OR** 10mg IM/IN

Sierra – Sacramento Valley EMS Agency Treatment Protocol	T-1
General Trauma Management	
Approval: Troy M. Falck, MD – Medical Director	Effective: 06/01/2024
Approval: John Poland – Executive Director	Next Review: 01/2027

- **Limit on scene procedures for pts meeting Field Trauma Triage Criteria to:**
  - Pt assessment - Airway management - Hemorrhage control - Immobilization/splinting - SMR
- **Transport pts with known/apparent third trimester pregnancy in left-lateral position.**
- **Notify receiving hospital of a 'Trauma Alert' as soon as possible for pts meeting Field Trauma Triage Criteria.**

BLS

- Assess & support ABCs
- Assess V/S, including SpO_2
- O_2 at appropriate rate if hypoxemic (SpO_2 <94%) or short of breath
- Control hemorrhage & immobilize/splint injuries as needed
- Initiate spinal motion restriction (SMR) if indicated (see page 3)
- Maintain body temperature, keep warm

ALS

- Consider advanced airway if indicated
- Consider $EtCO_2$ monitoring if indicated (see protocol T-3 or T-3P)
- Consider application of a pelvic binder if indicated (see page 2)
- Cardiac monitor
- Establish vascular access if indicated (see page 2)
- Consider pain management if indicated (see protocol M-8 or M-8P)

Field Trauma Triage Criteria (TTC) Pt Destination (see page 4 for TTC details)

Unmanageable Airway? — YES → **Transport to Closest Hospital**

NO ↓

Meets RED TTC? — YES →

Adult (>14yo)
- If level I or II trauma center is closest, transport to that facility
- If level III or IV trauma center is closest, contact that facility (prior to transport) for destination consultation

Pediatric (≤14yo)
- Transport to pediatric trauma center if transport time ≤45 min
- Follow adult criteria if transport time to pediatric trauma center >45 min
- Contact closest trauma center for destination consultation if needed

NO ↓

Meets YELLOW TTC? — YES →

- Contact closest trauma center for destination consultation if transport time to that facility is ≤45 min
- Contact base/modified base hospital for destination consultation if transport time to a trauma center is >45 min

Vascular Access

Need or anticipated need for fluid or medication administration?
- NO → Vascular access not indicated
- YES →

IV/IO – NS or LR
- Initiate vascular access on all pts meeting Field Trauma Triage Criteria
- Initiate second vascular access on adult pts presenting with hypotension (SBP <90 for pts <65 years of age, or SBP <100 for pts ≥65 years of age), or if thoracic/abdominal pain is present
- Fluid resuscitation guidelines:
  - Adult pts:
    - Administer 500 mL fluid boluses for signs of hypoperfusion/shock
    - Reassess hemodynamic parameters, respiratory status and lung sounds after each fluid bolus
    - Titrate fluid boluses to SBP of ≥90 for pts <65 years of age, or ≥100 for pts ≥65 years of age
  - Pediatric pts:
    - Administer 20 mL/kg fluid boluses for signs of hypoperfusion/shock
    - Reassess hemodynamic parameters, respiratory status and lung sounds after each bolus
    - Titrate fluid boluses to age appropriate SBP (max: 60 mL/kg)

Commercial Pelvic Binder

Approved Commercial Pelvic Binders: ~~1) T-POD Pelvic Stabilization Device, 2) SAM Pelvic Sling 2~~ *Any commercial pelvic binder currently recommended by the CoTCCC.*

- Utilization of a commercial pelvic binder is optional, and only approved for AEMT/paramedic personnel. ALS/LALS provider agencies must ensure that their personnel are appropriately trained on the application/use of the device, as misplacement of pelvic binders can significantly decrease the ability of the binder to reduce pelvic ring fractures.
- Physical exam findings which may indicate the presence of a pelvic ring fracture include, but are not limited to:
  - Crepitus when applying compression to the iliac crests
  - Perineal or genital swelling
  - Testicular/groin pain
  - Blood at the urethral meatus
  - Rectal, vaginal or perineal lacerations/bleeding
- When stabilizing a suspected pelvic ring fracture, care must be taken not to over-reduce the fracture. Over-reduction can be assessed by examining the position of the legs, greater trochanters and knees with the pt supine. The goal is to achieve normal anatomic position of the pelvis, so the lower legs should be symmetrical after stabilization.
- When clinically indicated and logistically feasible, the pelvic binder should be placed prior to extrication/movement.
- Pelvic binders should be placed directly to skin. Once applied, pelvic binders should not be removed.
- If possible, avoid log-rolling pts with a suspected pelvic fracture.

Mechanism of injury suggestive of a pelvic fracture?
- NO → Pelvic binder not indicated
- YES →

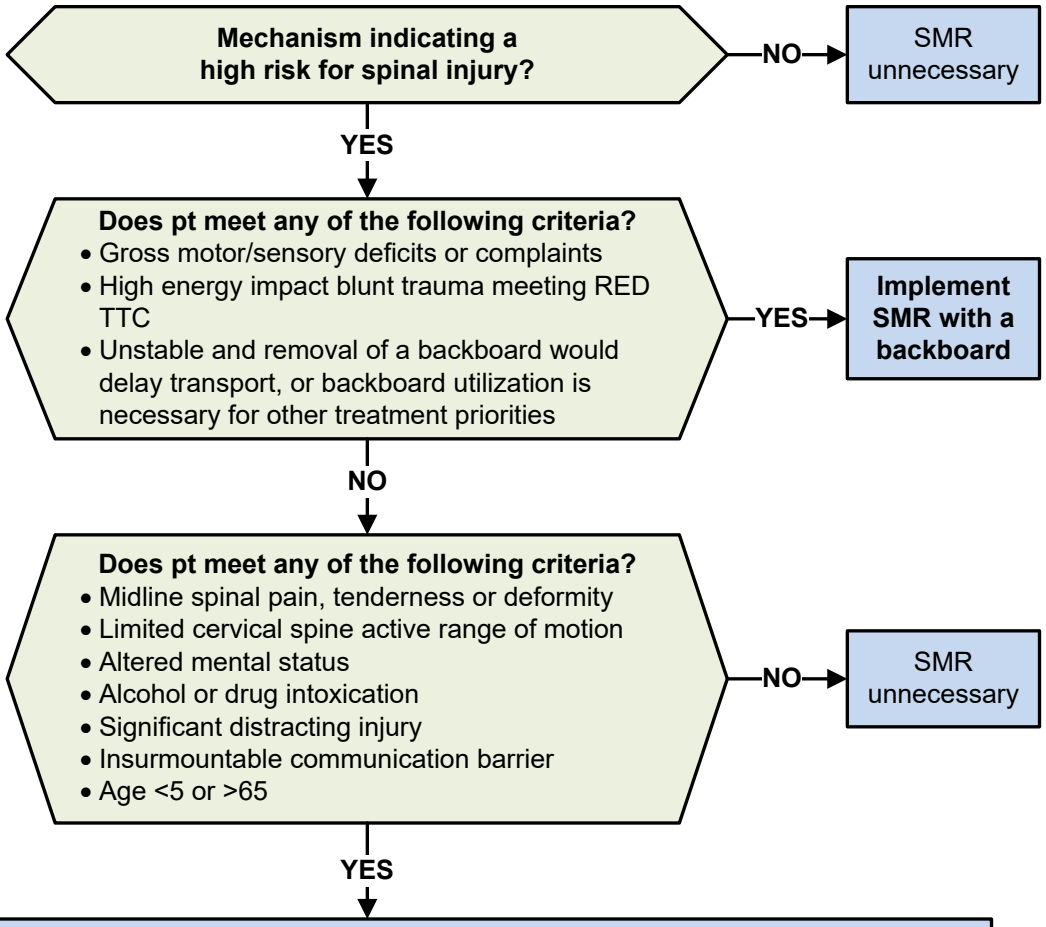
Does pt present with one or more of the following?
- Physical exam findings suggestive of a pelvic fracture
- Hemodynamic instability: HR >100 & SBP <90 (or SBP <100 in pts ≥65 years of age)
- GCS ≤13

- NO → Pelvic binder not indicated
- YES →

Apply pelvic binder according to manufacturer instructions

Spinal Motion Restriction (SMR)

- A backboard shall not be utilized for pts with penetrating trauma to the head, neck or torso without evidence of spinal injury
- Helmet removal guidelines:
  - For pts who meet criteria for SMR with a backboard, football helmets should only be removed if they prevent adequate SMR or under the following circumstances:
    - If the helmet and chin strap fail to hold the head securely or prevent adequate airway control.
    - If the facemask cannot be removed.
  - Football helmets should be carefully removed to allow for appropriate SMR of pts who do not meet criteria for backboard utilization.
  - All other types of helmets (bicycle, motorcycle, etc.) should be carefully removed to allow for appropriate SMR.



Implement SMR without a backboard as follows:

- Apply a cervical collar
- Allow ambulatory pts to sit on the stretcher and then lie flat (no 'standing take-down")
- If necessary, move pt from the position found to the ambulance stretcher utilizing a device such as a KED, scoop stretcher, backboard, or if necessary, by having the pt stand and pivot to the stretcher – do not permit the pt to struggle to their feet from a seated or supine position
- Once on the ambulance stretcher, remove any hard backboard device & instruct the pt to lie still
- The head of the stretcher may be elevated 20-30^0 in a position of comfort
- Secure cross stretcher straps and over-the-shoulder belts firmly
- Pts with nausea &/or vomiting may by placed in the lateral recumbent position, maintaining the head in a neutral position using manual stabilization, padding, pillows, &/or the pt's arm

Field Trauma Triage Criteria (TTC)

RED TTC (High Risk for Serious Injury)

Injury Patterns

- Penetrating injuries to head, neck, torso, &/or proximal extremities
- Skull deformity, suspected skull fracture
- Suspected spinal injury with new motor/sensory loss
- Chest wall instability, deformity, or suspected flail chest
- Suspected pelvic fracture
- Suspected fracture of two or more proximal long bones in a pt of any age, or one or more proximal long bone fracture in a pt ≤14 or ≥65 years of age
- Suspected open proximal long bone fracture
- Crushed, degloved, mangled, or pulseless extremity
- Amputation proximal to wrist or ankle
- Continued, uncontrolled bleeding despite EMS hemorrhage control measures

Mental Status/Vital Signs

MENTAL STATUS

- **<65 years of age:**
  - GCS ≤13
- **≥65 years of age:**
  - GCS <15 (or decreased from baseline) with evidence/suspicion of a head strike

RESPIRATORY STATUS

- **All pt ages:**
  - RR <10 or >29 breaths/min
  - Resp. distress or need for resp. support
  - Room-air SpO_2 <90%

CIRCULATORY STATUS

0-9 years of age:
- SBP <70mm Hg + (2 x age years)

10-64 years of age:
- SBP <90 mmHg **OR** HR>SBP

≥65 years of age:
- SBP <100 mmHG **OR** HR>SBP

YELLOW TTC (Moderate Risk for Serious Injury)

Mechanism of Injury

- High-Risk Auto Crash
  - Partial or complete ejection
  - Significant intrusion (including roof)
    - >12 inches occupant site; or
    - >18 inches any site; or
    - Need for extrication for entrapped pt
  - Death in passenger compartment
  - Child (0-9 years of age) unrestrained or in unsecured child safety seat
  - Vehicle telemetry data consistent with severe injury
- Rider separated from transport vehicle with significant impact (motorcycle, ATV, horse, etc.)
- Pedestrian/bicycle rider thrown, run over, or with significant impact
- Fall from height >10 feet (all ages)

EMS Judgement

EMS personnel should consider the following risk factors, and contact the closest trauma center or base/modified base hospital for destination consultation (see page 1), if transport to a trauma center is believed to be in the pt's best interest:

- Low-level falls in young children (≤5 years of age) or older adults (≥65 years of age) with significant head impact
- Anticoagulant use
- Suspicion of child abuse
- Special, high-resource healthcare needs
- Pregnancy >20 weeks
- Burns in conjunction with trauma

Sierra – Sacramento Valley Emergency Medical Services Agency

Regional Executive Director
John Poland, Paramedic

Medical Director
Troy M. Falck, MD, FACEP, FAAEM

JPA Board Chairperson
Sue Hoek, Nevada County Supervisor

Address & Contact Information
535 Menlo Drive, Suite A
Rocklin, CA 95765
(916) 625-1702
info@ssvems.com
www.ssvems.com

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S-SV EMS Rationale for Protocol/Policy Change

Date: December 30, 2024

To: S-SV EMS Region EMS System Participants

From: Michelle Moss, Deputy Director – Clinical QM/Specialty Programs

Change Description: Commercial pelvic binders – Change from optional to required

1. **Background and Context:**

   During a routine data review in 2020, S-SV EMS identified that some ALS providers were using sheets for pelvic binding in cases of suspected pelvic fractures. Consequently, protocol T-1 was amended to specify that pelvic binding should only be performed with a commercial pelvic binder. However, a recent data review revealed that ALS providers continue to use sheets and blankets when commercial pelvic binders are unavailable. The use of sheets for pelvic stabilization is not included in the training curriculum for accredited paramedic programs.

   Currently, both Prehospital Trauma Life Support (PHTLS) and International Trauma Life Support (ITLS) recommend the use of commercial pelvic binders in prehospital settings for patients with suspected pelvic fractures, particularly when hemodynamic instability is present.

2. **Description of Change:**

   Dr. Falck has reviewed the data and has requested an amendment to require ALS transport providers to carry a commercial pelvic binder on every transport ambulance.

   The application of a commercial pelvic binder will continue to be optional and at the discretion of ALS providers when clinically indicated (refer to S-SV EMS protocol T-1).

3. **Reason for Change:**

   While continuous PHTLS/ITLS certification is not currently required within the S-SV EMS region, the certification is part of the training curriculum for accredited paramedic programs. Additionally, some individual ALS providers and provider agencies continue to maintain these certifications. S-SV EMS has continuously deferred to accepted standards of care in the development of treatment protocols.

4. **Alternatives Considered:**

   Sheets are utilized to stabilize suspected pelvic fractures by the military in austere environments because they are lightweight and versatile. Military medics are trained in using cravats and sheets to stabilize pelvic fractures as part of their Tactical Combat Casualty Care (TCCC) protocols, which is not part of the accredited paramedic curriculum.

   The data was presented to the Regional Trauma Quality Improvement (RTQI) Committee on December 7th. This committee is made up of representatives from the regional trauma centers, including trauma surgeons and ED physicians, as well as other system participants. Following discussion and review of the data, the committee agreed that only commercial pelvic binders should be utilized when attempting to stabilize a suspected pelvic fracture.

5. **Cost and Resource Implications:**

   The estimated cost for ALS transport provider agencies who are not currently carrying commercial pelvic binders is approximately $90/unit. Some of these devices are reusable (see manufacturer specifications) and can be cleaned for repeated use. Additionally minimal training will be required for ALS providers. Training should be conducted according to manufacturer recommendations (refer to S-SV EMS protocol T-1 for approved device manufacturers).

6. **Approval and Authorization:**

- Troy M. Falck, MD, FACEP, FAAEM, Medical Director, S-SV EMS Agency
- John Poland, Regional Executive Director, S-SV EMS Agency

7. **Implementation Plan:**

   ALS providers must be trained to utilize commercial pelvic binders, and the binders must be available on all ALS transport ambulances on or before the release of Policy Manual Update 76 on April 1, 2025.

8. **Monitoring and Review:**

   S-SV will conduct a data review after one full year of data collection to assess whether the intended effect of this change has been achieved.

Sierra – Sacramento Valley EMS Agency Treatment Protocol	T-3
Suspected Moderate/Severe Traumatic Brain Injury (TBI)	
Approval: Troy M. Falck, MD – Medical Director	Effective: 06/01/2024
Approval: John Poland – Executive Director	Next Review: 01/2027

Prehospital Identification of Moderate/Severe TBI

- Any pt with a mechanism of injury consistent with a potential for a brain injury, and one or more of the following:
  - <65 years of age with a GCS ≤13, or ≥65years of age with a GCS <15 (or decrease from baseline)
  - Post-traumatic seizures
  - Multi-system trauma requiring advanced airway placement

For any patient with a suspected moderate/severe TBI, avoid/treat the three TBI "H-Bombs":
1) **H**yperventilation, 2) **H**ypoxia, 3) **H**ypotension

BLS

- Assess V/S, including continuous SpO_2 monitoring and pupil exam: Reassess V/S every 3-5 min if possible
- High-flow O_2 (regardless of SpO_2 reading)
- If continued hypoxia (SpO_2 <94%) or inadequate ventilatory effort, proceed through the following in a stepwise manner
  - Reposition airway
  - Initiate positive pressure ventilation with appropriate airway adjunct if necessary (use of a pressure-controlled BVM &/or ventilation rate timer is recommended if available)
- Avoid hyperventilation (ventilate at a rate of 10 breaths/min)
- Maintain normothermia
- Consider the concurrent need for appropriate immobilization/spinal motion restriction

ALS

- Continuous cardiac & $EtCO_2$ monitoring
- IV/IO NS TKO: For SBP <110 bolus 1000 mL N/S, then titrate additional fluids to maintain SBP ≥110
- Check blood glucose

Blood glucose ≤60 mg/dl?

YES

Oral glucose
- ~~15 –~~25 gm PO

OR

Dextrose 10%
- ~~10 –~~25 gm (100 - 250 mL) IV/IO

OR

Glucagon
1 mg (1 unit) IM/IN

NO

For persistent hypoxia &/or inadequate ventilatory effort:
- Supraglottic airway or endotracheal intubation
- Target EtCO2: 35-39 mmHg

- Transport to appropriate destination & notify receiving facility of a "Trauma Alert" as soon as possible (if applicable)
- Monitor & reassess

Sierra – Sacramento Valley EMS Agency Treatment Protocol **Hemorrhage**	**T-4**
Approval: Troy M. Falck, MD – Medical Director	Effective: 12/01/2024
Approval: John Poland – Executive Director	Next Review: 10/2027

Approved Commercial Tourniquet Devices:

Any windlass style device included on the current CoTCCC Recommended Limb Tourniquets (Non-Pneumatic) list may be utilized.

~~- Combat Application Tourniquet~~ ~~- Emergency and Military Tourniquet~~ ~~- Mechanical Advantage Tourniquet~~
~~- SAM XT Extremity Tourniquet~~ ~~- Special Ops. Tactical Tourniquet~~ ~~- RECON Medical Tourniquet~~

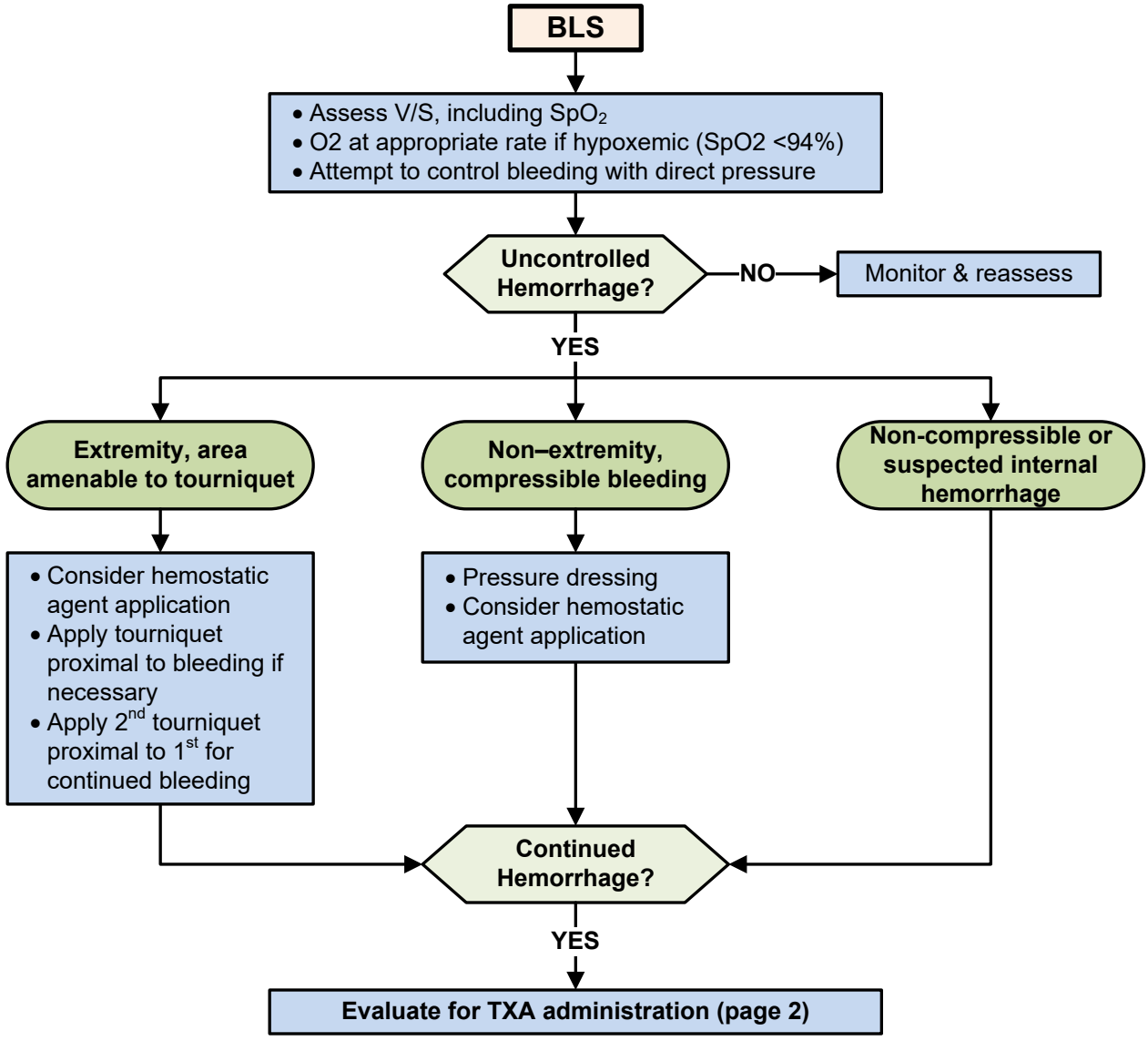
Tourniquet Utilization Notes:

- Tourniquets applied by lay rescuers or other responders shall be evaluated for appropriateness and may be adjusted or removed if necessary – improvised tourniquets should be removed by prehospital personnel.
- If application is indicated and appropriate, a commercial tourniquet should not be loosened or removed by prehospital personnel unless time to definitive care will be greatly delayed (>2 hrs).

Approved Hemostatic Agents:

Any hemostatic agent that is incorporated into gauze (no loose granules/particles) included on the current CoTCCC Recommended Hemostatic Dressings list may be utilized.

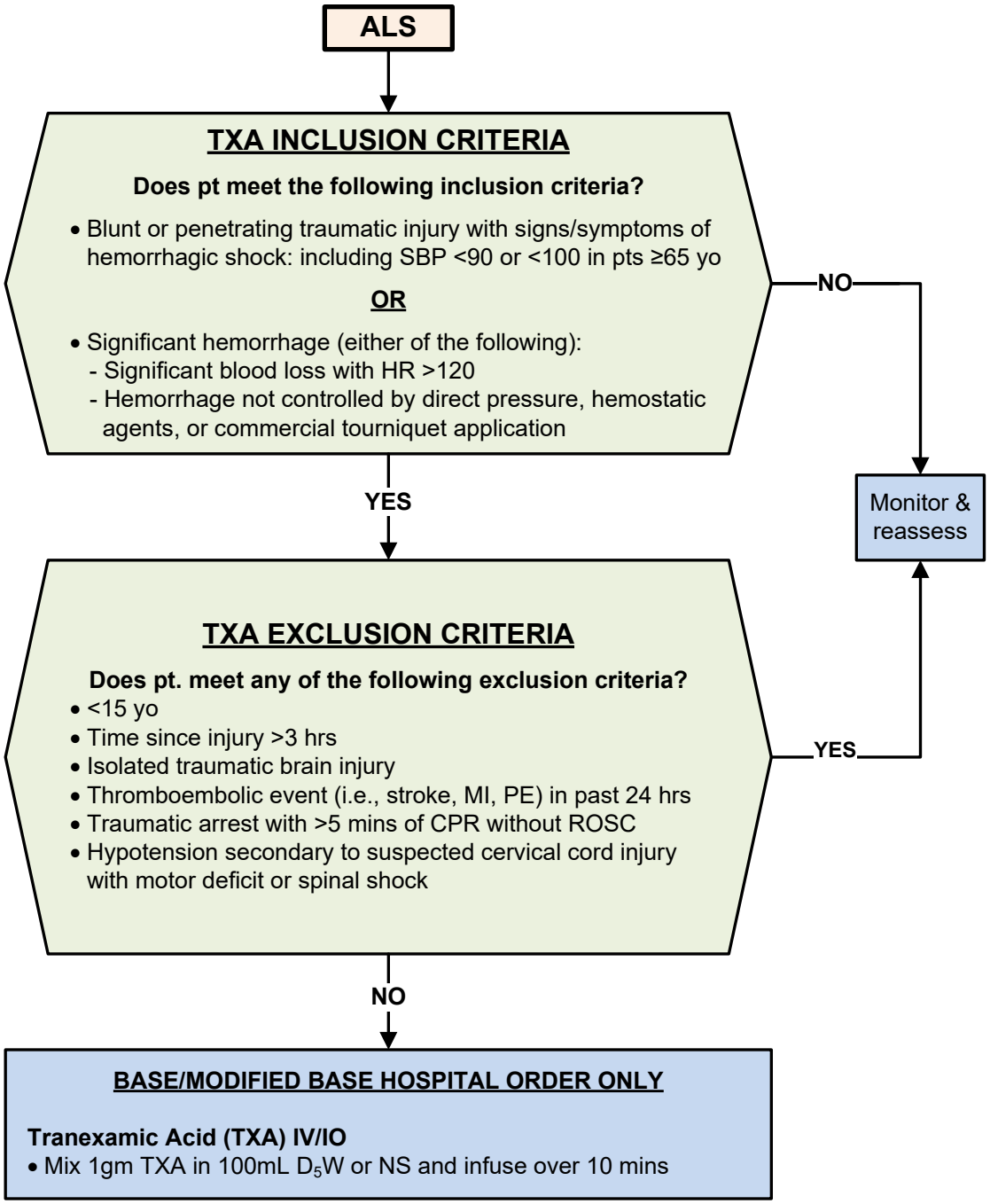
~~- QuikClot EMS 4x4 & Combat Gauze~~ ~~- HemCon ChitoGauze XR PRO~~ ~~- HemCon ChitoGauze XR2 PRO~~
~~- HemCon ChitoGauze OTC~~ ~~- HemCon Bandage PRO~~ ~~- HemCon OneStop Bandage~~



Tranexamic Acid (TXA) Administration

TXA Administration Notes:

- Routes other than IV/IO (e.g., nebulized, topical) may be considered **(<u>with base/modified base hospital order only</u>)** for bleeding from epistaxis, lacerations, or oral trauma.
- For post-partum hemorrhage, refer to Obstetric Emergencies OB-G2.

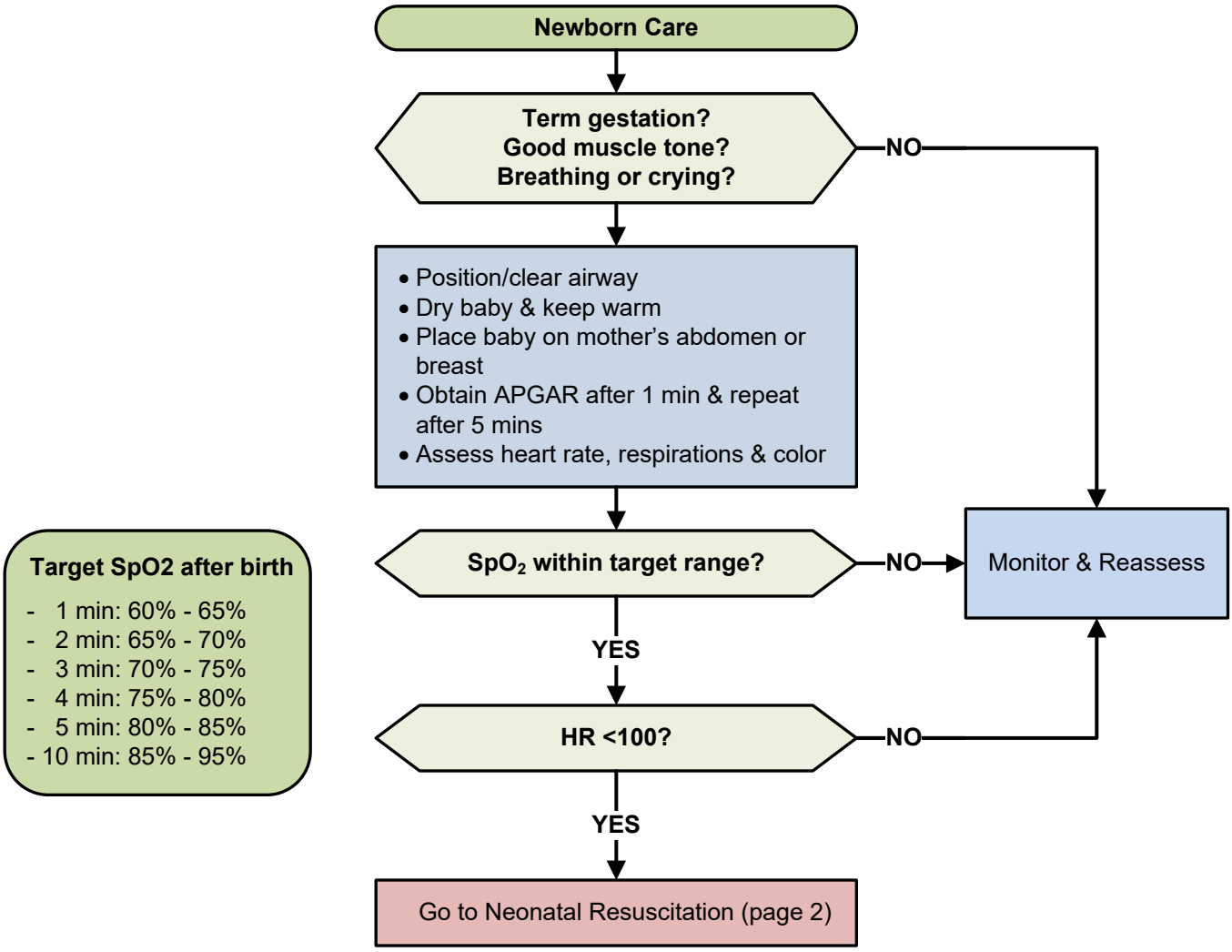


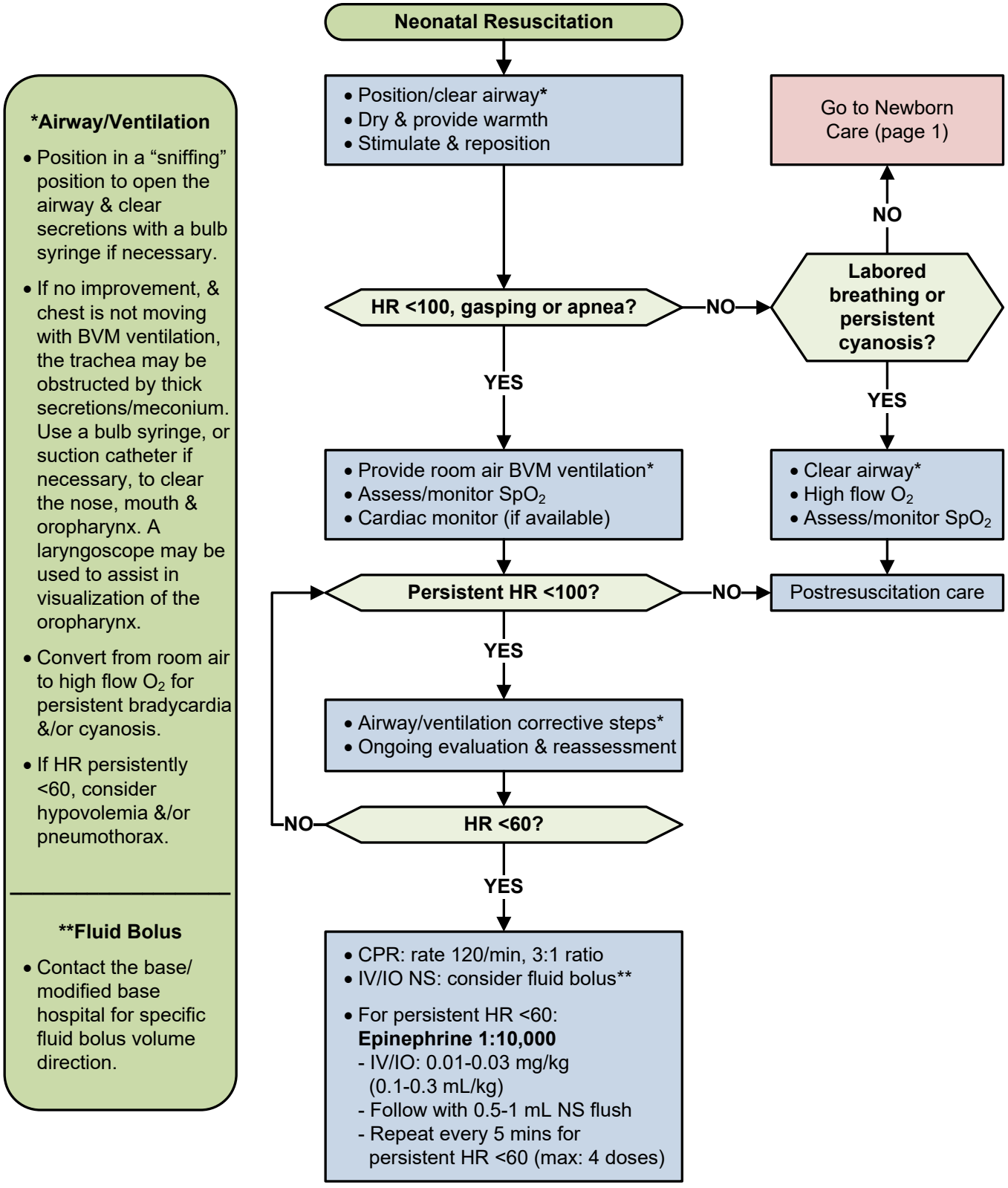
Sierra – Sacramento Valley EMS Agency Treatment Protocol	M-2P
Newborn Care/Neonatal Resuscitation	
Approval: Troy M. Falck, MD – Medical Director	Effective: DRAFT
Approval: John Poland – Executive Director	Next Review: DRAFT

- A newborn/neonate is a child ≤ 28 days of age.
- Initial & ongoing assessments are critical to identifying and correcting life threats.
- If resuscitation is not required, EMS personnel should prioritize the following:
  - Whenever possible keep mother & baby together.
  - Maintain skin-to-skin contact between mother & baby.
  - Keep the baby warm – dry & cover the head, hands & feet.

APGAR SCORE

	Sign/Score	0	1	2
A	Appearance	Blue/Pale	Peripheral cyanosis	Pink
P	Pulse Rate	None	<100	>100
G	Grimace	None	Grimace	Cries
A	Activity	Limp	Some motion	Active
R	Respiration	Absent	Slow/irregular	Good/strong cry





***Airway/Ventilation**

- Position in a "sniffing" position to open the airway & clear secretions with a bulb syringe if necessary.
- If no improvement, & chest is not moving with BVM ventilation, the trachea may be obstructed by thick secretions/meconium. Use a bulb syringe, or suction catheter if necessary, to clear the nose, mouth & oropharynx. A laryngoscope may be used to assist in visualization of the oropharynx.
- Convert from room air to high flow O_2 for persistent bradycardia &/or cyanosis.
- If HR persistently <60, consider hypovolemia &/or pneumothorax.

****Fluid Bolus**

- Contact the base/ modified base hospital for specific fluid bolus volume direction.

Sierra – Sacramento Valley EMS Agency Treatment Protocol	M-6P
Pediatric General Medical Treatment	
Approval: Troy M. Falck, MD – Medical Director	Effective: 12/1/2024
Approval: John Poland – Executive Director	Next Review: 07/2027

GENERAL PEDIATRIC TREATMENT PRINCIPLES

- The purpose of this protocol is to provide standing order assessment/treatment modalities for pediatric pt complaints not addressed in other S-SV EMS treatment protocols – including Nausea/Vomiting (Page 2), Brief Resolved Unexplained Event – BRUE (Page 3) & Suspected Shock/Sepsis (Page 4).
- The Neonatal Resuscitation Protocol (C-1N) shall be used for pts during the first 28 days of life.
- Pediatric protocols shall be utilized for pts >28 days up to and including 14 years old.
- Applicable adult protocols may be utilized when there is not a pediatric protocol applicable to the pt's complaint/condition. Prehospital personnel shall consult with the base/modified base hospital for additional direction, if needed, when there is no standing order treatment protocol applicable to the pt's condition.
- A parent/reliable family member reported weight, length-based pediatric resuscitation tape or Handtevy shall be utilized for determining sizes of equipment and defibrillation/cardioversion joule settings. Once weight has been determined, medication dosing shall be based on S-SV EMS pediatric protocols.

NORMAL VITAL SIGNS & HYPOTENSION DEFINITION FOR NEONATAL & PEDIATRIC PATIENTS

Age	Normal Pulse Rate	Normal Resp. Rate	Normal SBP	Hypotension
≤28 days	100 - 205	30 - 50	60 - 80	SBP <60
29 days -12 months	90 - 180	30 - 50	70 - 100	SBP <70
1-2 years	80 - 140	24 - 40	80 - 110	SBP <70 + age x2
3-5 years	65 - 120	20 - 30	90 - 110	SBP <70 + age x2
6-9 years	60 - 120	20 - 30	100 - 120	SBP <70 + age x2
10-14 years	50 - 100	12 - 20	100 - 120	SBP <90

PEDIATRIC PROTOCOLS PROCEDURE/MEDICATION TREATMENT AGE RESTRICTIONS

- **≤28 days old:** Base/modified base hospital order required to administer a fluid bolus (C-1N)
- **<3 years old:** Needle cricothyrotomy is not allowed (PR-3 & R-3P)
- **<4 years old:** Base/modified base hospital order required to administer the following medications:
  - Zofran/Ondansetron for nausea/vomiting (M-6P)
  - Analgesic medications for pain management (M-8P)
  - Midazolam for severe anxiety/combative symptoms (M-11P)
  - ~~**PO acetaminophen for febrile symptoms (N-2P & M-6P)**~~
- **<8 years old:** CPAP is not allowed (R-3P)
- **<15 years old:** Base/modified base hospital order required to utilize the following procedures/medications:
  - Transcutaneous pacing for bradycardia (C-3P)
  - Synchronized cardioversion for tachycardia (C-4P)
  - Adenosine for tachycardia (C-4P)

BLS

- Assess V/S, including SpO_2 & temperature (if able)
- O_2 at appropriate rate if pt hypoxemic (SpO_2 <94%), short of breath, cyanotic, or has signs of shock
- Assess and obtain medical history

- Refer to other pages/sections of this protocol for specific treatment modalities as applicable:
  - Nausea/Vomiting - Page 2
  - BRUE - Page 3
  - Suspected Sepsis - Page 4

ALS

- Consider the following additional assessment/treatment modalities, as appropriate based on pt's condition & clinical presentation
  - Cardiac monitor/12-lead EKG
  - $EtCO_2$ monitoring
  - IV/IO NS 20 mL/kg, to max 1000 mL

Nausea/Vomiting

- Nausea/vomiting can be symptoms of a multitude of different causes. If possible, the specific underlying cause should be determined and treated. The use of an antiemetic may relieve symptoms while leaving the cause untreated, and possibly, more difficult to detect. EMS personnel should weigh the benefits of antiemetic use against the possible risk of making an accurate diagnosis more difficult, and the possible side effects of the antiemetic agent.
- Treatment of nausea/vomiting is indicated for pts where it may contribute to a worsening of their medical condition, or where the pt's airway may be endangered.
- EMS personnel may consider administering Zofran (Ondansetron) prophylactically, prior to or immediately after opioid administration, for a pt with a history of nausea/vomiting secondary to opioid administration. Zofran (Ondansetron) may also be administered prior to transport to a pt with a history of motion sickness.

ALS

Zofran (Ondansetron)

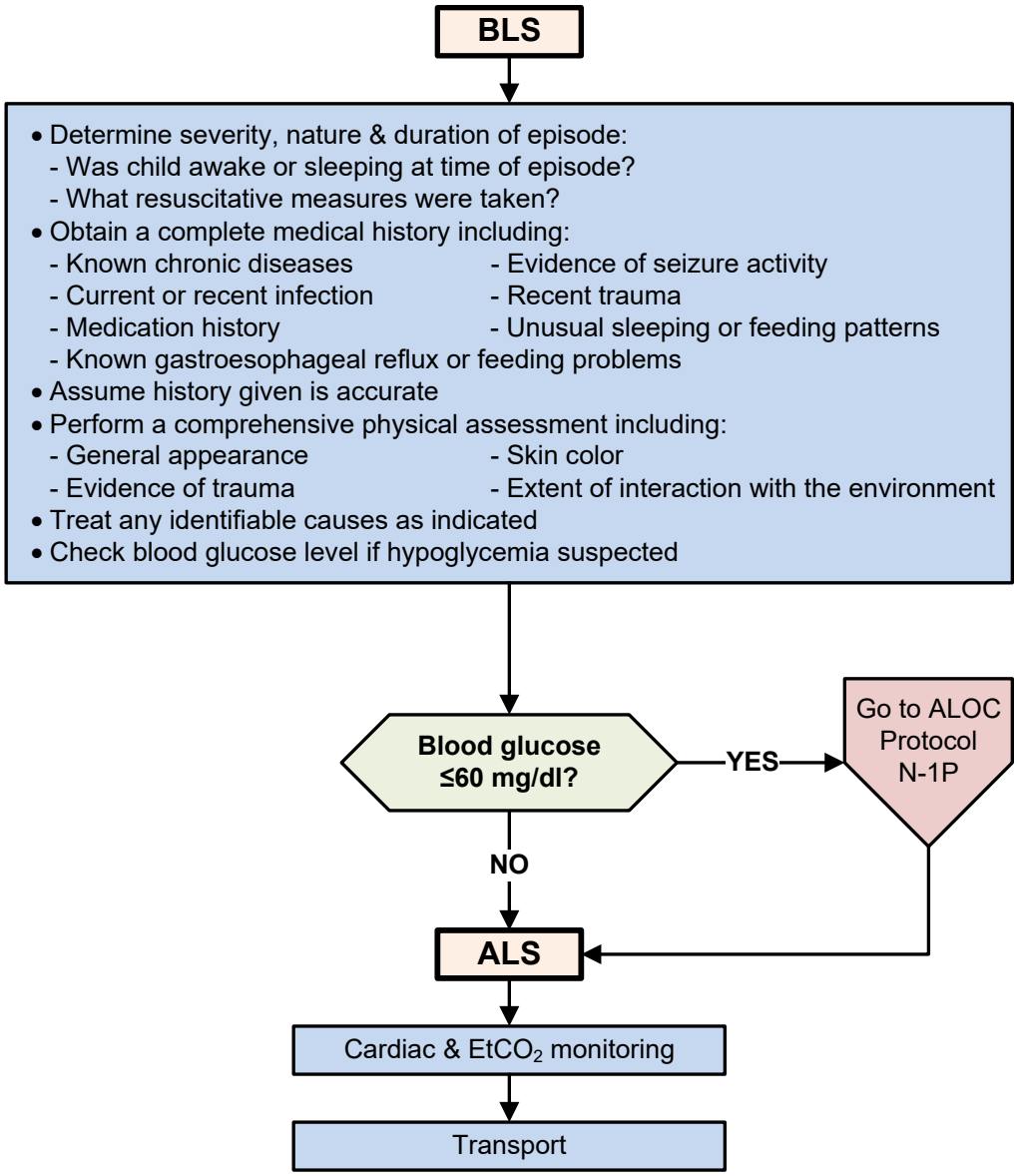
Pts (<4 yo) – BASE/MODIFIED BASE HOSPITAL ORDER ONLY
- 0.15 mg/kg (max. 4 mg) IM, or slow IV/IO (over 60 seconds)

Pts (4 - 14 yo) – Standing Order
- 4 mg oral disintegrating tablet, OR 4 mg IM, or slow IV/IO (over 30 seconds)
- Additional doses require base/modified base hospital consultation

Zofran (Ondansetron) is contraindicated during the first 8 weeks of pregnancy

Brief Resolved Unexplained Event (BRUE)

- Brief resolved unexplained event (BRUE) is an event occurring in an infant younger than one (1) year of age when the observer reports a sudden, brief (lasting <1 min, but typically <20-30 secs), and now resolved episode of any of the following:
  - Cyanosis or pallor
  - Marked change in tone (hyper- or hypotonia)
  - Absent, decreased, or irregular breathing
  - Altered level of responsiveness
- BRUE should be suspected when there is no explanation for a qualifying event after conducting an appropriate history & physical examination.
- All infants ≤1 year of age with possible BRUE should be transported by EMS for further medical evaluation. If the parent/guardian refuses EMS transport, base/modified base hospital consultation is required prior to release.
- EMS personnel shall make every effort to obtain the contact information of the person who witnessed the event, & provide this information to the receiving hospital upon pt delivery.



Suspected Shock/Sepsis

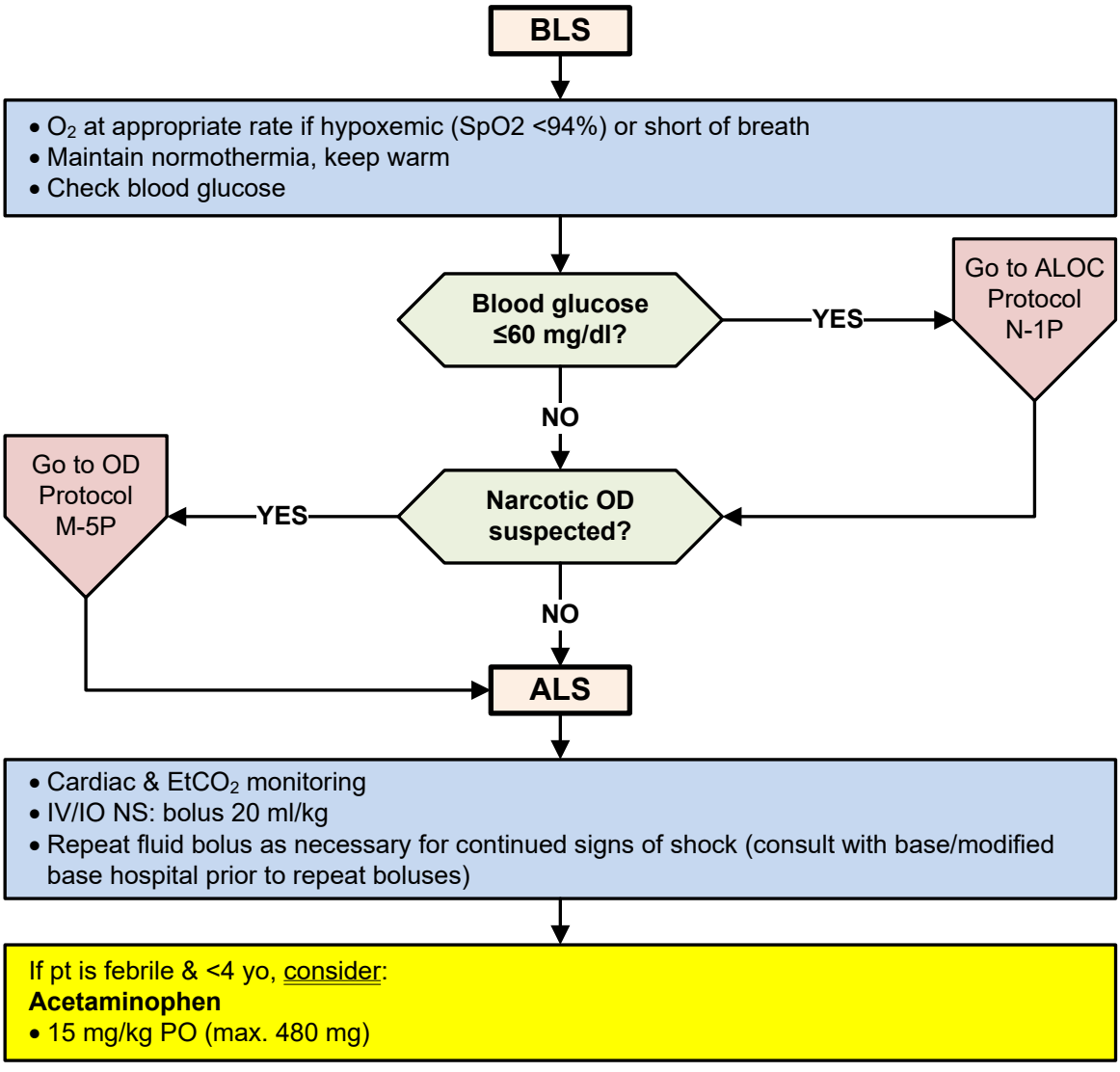
- Shock/Sepsis may be subtle and difficult to recognize.
- Early recognition of sepsis is critical to expedite hospital care and antibiotic administration.
- Septic pts are susceptible to traumatic lung injury. If BVM ventilation is necessary, avoid excessive tidal volumes.
- Obtain history including:
  - Onset and duration of symptoms
  - Fluid loss (vomiting/diarrhea)
  - Fever/Infection/Trauma/Ingestion
  - History of allergic reaction/cardiac disease or rhythm disturbance

Compensated Shock Signs/Symptoms:

- Tachycardia
- Cool extremities
- Weak peripheral pulses compared to central pulses
- Normal blood pressure

Decompensated Shock Signs/Symptoms:

- Hypotension &/or bradycardia (late findings)
- Altered mental status
- Decreased urine output
- Tachypnea
- Non-detectable distal pulses with weak central pulses



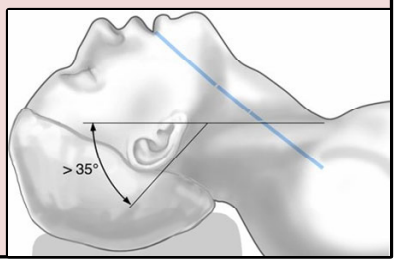
Sierra – Sacramento Valley EMS Agency Treatment Protocol	PR-2
Airway & Ventilation Managment	
Approval: Troy M. Falck, MD – Medical Director	Effective: DRAFT
Approval: John Poland – Executive Director	Next Review: DRAFT

INDICATIONS

- Airway & ventilation management techniques may include: basic airway maneuvers, use of airway adjuncts (e.g., oropharyngeal or nasopharyngeal airways), & advanced airway procedures (e.g., endotracheal intubation, supraglottic airway devices, or cricothyrotomy) based on the situation & the provider's level of training – Indications for airway management may include but are not limited to:
  - Obstructed airway
  - Respiratory distress/failure
  - Altered mental status
  - Severe shock (hemorrhagic, septic, cardiogenic)
  - Cardiac arrest
  - Trauma/burns/smoke inhalation
- An i-gel SGA is the preferred advanced airway device & should be attempted prior to ET intubation unless video laryngoscopy is available & the ALS provider has completed training for that device
- During cardiac arrest, advanced airway placement should not delay or interrupt CPR & shall not be considered until after the 1st round of defibrillation (if indicated) & administration of epinephrine

BLS AIRWAY PROCEDURE

- Look, Listen, and Feel for level of responsiveness, chest movement, breath sounds, obstructions
- Positioning of unresponsive pts:
  - Place in the Head Elevated Laryngoscopy Position (HELP) to facilitate alignment of the pharyngeal, laryngeal & oral axis of the airway
  - Use the Head-Tilt/Chin-Lift, Jaw-Thrust, or Lateral Recovery Position (as appropriate)
- Remove visible obstructions &/or suction fluids as necessary, limiting suctioning to 10-15 secs
- Maintain airway patency – insert OPA/NPA as appropriate



BAG-VALVE-MASK (BVM) VENTILATION PROCEDURE

BVM ventilation should be performed by two rescuers whenever possible

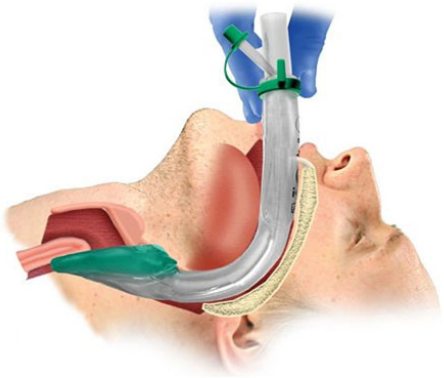
- Attach oxygen to BVM at a minimum flowrate of 10-15 L/min
- For one rescuer ventilation, position the mask over the nose & mouth & ensure a tight seal with an E-C clamp technique
- Squeeze the bag slowly, delivering breath over 1-2 secs
- Deliver only enough volume to achieve normal chest rise & fall **avoid excessive ventilation**
- If utilizing a Positive End Expiratory Pressure (PEEP) valve, maintain between 5-10 cmH_2O. Do not utilize PEEP in any of the following circumstances:
  - Suspected pneumothorax
  - Suspected TBI or increased intracranial pressure
  - Hypovolemic shock
- Ventilate to maintain SpO_2 & $EtCO_2$ within appropriate range for pt condition
- An Impedance Threshold Device (ITD) may be utilized in adult non-traumatic pulseless arrest pts; however, two rescuers are required to maintain effectiveness if no advanced airway is in place

i-gel SUPRAGLOTTIC AIRWAY (SGA) PROCEDURE

Contraindications:
- Intact gag reflex
- Caustic ingestion
- Unresolved complete airway obstruction

Relative Contraindications:
- Trismus or limited ability to open the mouth
- Oral trauma
- Distorted anatomy that prohibits device placement

- If a functioning i-gel SGA is in place & there are no clinical signs of ventilatory insufficiency, the i-gel SGA shall not be replaced by ET intubation
- Pre-oxygenate pt with high-flow O_2, via NRM or BVM as appropriate, for a minimum of 3 mins
- Administer 10-15 L/min O_2 via NC, in addition to NRM/BVM O_2 to augment pre-oxygenation
- Select the correct size i-gel SGA device
- Lubricate the back & sides of the i-gel SGA device with a water-based lubricant
- Place the pt in a sniffing position or use a Jaw-Thrust maneuver if spinal injury is suspected
- Grasp the i-gel SGA device by the proximal end with the dominant hand, making sure the cuff is pointing downwards & the airway tube is aligned in the midline
- Gently press down on the chin & introduce the soft tip into the mouth towards the hard palate
- Glide the i-gel SGA device downwards & backwards Along the hard palate with a continuous but gentle Push until a definitive resistance is felt
- Begin ventilating with a BVM at the appropriate ventilation rate
- Follow **ADVANCED AIRWAY DEVICE PLACEMENT CONFIRMATION & POST-PROCEDURE** instructions on page 3



ENDOTRACHEAL (ET) INTUBATION PROCEDURE

- ET intubation attempts should last no more than 30 secs
- Pre-oxygenate pt with high-flow O_2, via NRM or BVM as appropriate, for a minimum of 3 mins
- Administer 10-15 L/min O_2 via NC, in addition to NRM/BVM O_2 to augment pre-oxygenation
- Assemble/prepare all equipment prior to ET intubation attempt
- Consider utilizing an ET tube introducer for pts with an anticipated difficult airway
- Follow manufacturer's directions for use specific to the laryngoscope utilized (direct laryngoscopy or video laryngoscopy)
- Visualize the vocal cords & pass the ET tube through the cords & into the trachea, approx. 2-3 cm beyond the cords
  - *A common depth is approximately 21 cm for women/23 cm for men (measured at the teeth)*
- Inflate the ET tube cuff with 5-10 mL of air
- Begin ventilating with a BVM at the appropriate ventilation rate
- If required, prior to 2nd ET attempt ventilate with 100% oxygen for a minimum of 1 min
- Follow **ADVANCED AIRWAY DEVICE PLACEMENT CONFIRMATION & POST-PROCEDURE** instructions on page 3

NEEDLE CRICOTHYROTOMY PROCEDURE

Indications:
- Severe airway obstruction
- Failed intubation with an inability to ventilate using other methods

Contraindications:
- Pt age <3 yo or estimated weight <15 kg
- Conscious pt
- Presence of midline neck hematoma or massive subcutaneous emphysema

- Do not perform procedure in a moving ambulance
- Assemble/prepare all equipment prior to procedure attempt
- Position pt supine with the neck slight extended (if no cervical spine injury suspected)
- Locate the cricothyroid membrane
  - Palpate for the depression between the thyroid cartilage (Adam's apple) & the cricoid cartilage
- Attach a 10 mL syringe filled with 5 mL NS to the airway catheter
- **If utilizing a 12ga, 3" airway catheter:** With the bevel facing up, insert the needle through the skin at a 45^{o} angle caudally into the cricothyroid membrane penetrating the skin & cricothyroid membrane with the needle
- **If utilizing a Rusch® QUICKTRACH® Needle Cricothyrotomy Device:** Puncture the skin & underlying cricothyroid membrane at a 90^{o} angle with the needle, then adjust angle to 45^{o} after penetrating the cricothyroid membrane
- Advance the catheter/cannula, aspirating with the syringe until bubbles are observed in the NS
- Continue advancing the catheter/cannula into the trachea while withdrawing the needle
- Secure in place, ensuring it is fixed to avoid displacement
- Begin ventilating with a BVM at the appropriate ventilation rate

ADVANCED AIRWAY DEVICE PLACEMENT CONFIRMATION

- Using a stethoscope, check for the absence of gurgling sounds over the epigastrium & the presence of equal breath sounds over the lungs while observing for chest rise and fall. When an ET tube is in place, no sounds should be heard over the epigastrium. Gurgling may still be heard in pts who are breathing spontaneously or when an i-gel SGA device is in place
- Attach an $EtCO_2$ monitoring device, which must remain in place until arrival to the hospital or cessation of resuscitation efforts
- At least four (4) of the following techniques must be utilized to confirm advanced airway placement
  - Bilateral breath sounds
  - Bilateral chest rise and fall
  - Consistent $EtCO_2$ waveform
  - Change in Colorimetric CO_2 detector from purple to yellow
  - Condensation in the airway tube
  - SpO_2 rising to/or remaining above 94%
- ALS/LALS personnel must immediately confirm patency of an advanced airway placed by an EMT

POST-PROCEDURE

- Airway patency must be reassessed at a minimum of every 15 mins and:
  - Each time the patient is moved
  - If ventilation becomes difficult
  - If vital signs, including SpO2 & EtCO2 change unexpectedly
- If a pt with an advanced airway in place regains consciousness:
  - Use restraints as necessary to avoid displacement of the advanced airway device
  - Consider sedation with **Midazolam 5mg IV/IO or 10 mg IM/IN** for adult pts - contact base/modified base hospital for pediatric Midazolam dosing
- Document all methods/devices used to confirm advanced airway device placement in the PCR

Sierra – Sacramento Valley EMS Agency Treatment Protocol	PR-3
Pleural Decompression	
Approval: Troy M. Falck, MD – Medical Director	Effective: 12/01/2024
Approval: John Poland – Executive Director	Next Review: 07/2027

INDICATIONS

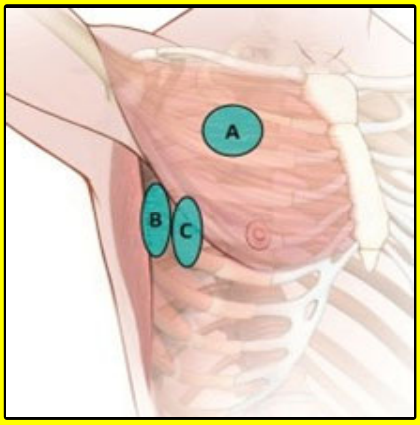
- Suspected tension pneumothorax with ***a history of chest trauma***, ***unilateral*** absent or diminished breath sounds & one or both of the following:
  - ~~Combined hypotension (SBP <90) and~~ ***Severe respiratory distress with an*** SpO_2 <94%
  - ~~Penetrating injury to the thorax~~ ***SBP ≤ 90mmHg or loss of radial pulse due to shock***
  - Traumatic cardiac arrest ~~if chest or multi-system trauma is suspected~~

PRE-PROCEDURE

- Assess respiratory status, manage airway & assist ventilations as appropriate
- Administer high flow O_2 & monitor SpO_2
- Assess & continually monitor vital signs

PROCEDURE

- Identify & prep the site - approved sites in preferred order:
  - **A** – Mid-clavicular line in the 2nd intercostal space
  - **B** – Mid-axillary line in the 4th or 5th intercostal space above the nipple line
  - **C** – Anterior axillary line in the 5th intercostal space above the nipple line



- Capnospot® Pneumothorax Decompression Indicator Procedure:
  - Use a minimum 14g x 3.25" catheter specifically designed for needle decompression
  - Attach Capnospot® Decompression Indicator to the catheter prior to insertion
  - Insert needle with syringe attached at a 90^0 angle, just over the superior border of the rib, & advance until air is freely aspirated or a "pop" is felt, then advance only the catheter until the hub rests against the skin
  - Observe for color change from blue to yellow within 10 secs to confirm catheter placement. Color change may not be reliable in patients with an open pneumothorax. Observe for clinical indicators of successful placement.
- Simplified Pneumothorax Emergency Air Release (SPEAR®) Procedure:
  - Insert in accordance with manufacturer's directions for use
- Adequately secure catheter
- If an initial attempt at 1 approved site is unsuccessful, consider utilizing an alternate approved site
- 2 attempts allowed on affected side(s) without base/modified base hospital contact
- *For Pediatrics, only the mid-clavicular site utilizing a 14g x 3.25 catheter w/Capnospot® is approved*

POST-PROCEDURE

- Reassess breath sounds
- Administer high flow O_2 & monitor SpO_2
- Continuous cardiac & $EtCO_2$ monitoring
- Assess & document vital signs every 3-5 mins (if possible)
- Monitor Capnospot® (if used) & breath sounds for signs of development of tension pneumothorax

	Infrequently Used Skills Verification Checklist Needle Cricothyrotomy	1110-F

Name:	Date:
Provider Agency:	Evaluator:

Objective: Describe the indications/contraindications for needle cricothyrotomy and demonstrate the ability to proficiently perform the procedure.

Equipment: Appropriate PPE, cricothyrotomy manikin, antiseptic agent, tape, 10 ml syringe, 12ga ~~or 14ga~~ over-the-needle catheter ~~and jet insufflation device or~~ ~~ENK Oxygen Flow Modulator~~, or Rusch QuickTrach® Emergency Needle Cricothyrotomy Kit and BVM.

Performance Criteria: The individual will be required to describe the indications/contraindications for needle cricothyrotomy and proficiently perform the procedure on a cricothyrotomy manikin.

Step	Description	Does	Does Not
1	Verbalizes/demonstrates use of appropriate PPE		

2	Verbalizes indications for needle cricothyrotomy:
	• Inability to maintain the airway with standard airway procedures. Typically involves patients with one or more of the following:
	  ○ Airway obstruction by uncontrolled bleeding into the oral cavity and/or vomiting
	  ○ Severe maxillofacial trauma – blunt, penetrating, or associated with mandibular fracture
	  ○ Laryngeal foreign body that cannot be removed expeditiously
	  ○ Swelling of upper airway structures
	  ○ Infection (e.g., epiglottitis, Ludwig's angina)
	  ○ Allergic reaction or hereditary angioedema
	  ○ Chemical or thermal burns to the epiglottis and upper airway		

3	Verbalizes contraindications for needle cricothyrotomy: • Age < 3 years or estimated weight <15 kg • Ability to maintain airway utilizing less invasive procedures • Conscious patient • Moving ambulance • Midline neck hematoma or massive subcutaneous emphysema		
4	Selects appropriate size catheter/device for patient size		

5	Assembles and checks the equipment:
	• If using ~~jet inflation device/ENK Oxygen Flow Modulator:~~ *12ga. 3" airway catheter*
	  ○ Attaches 10 ml syringe to ~~12/14ga~~ catheter
	  ~~○ Connects jet insufflation device/ENK Oxygen Flow Modulator to high flow oxygen source~~ *Ensure a 3.0mm endotracheal tube connector is available to attach to the catheter to the BVM following placement*
	• If using the QuickTrach Cricothyrotomy Kit, device comes pre-assembled with syringe attached		

Step	Description	Does	Does Not
6	Stabilizes larynx with thumb and forefinger and locates cricoid membrane		
7	Inserts catheter/device: • If using a 12~~/14~~ gauge catheter ~~with jet insufflation device/ENK Oxygen Flow Modulator~~, inserts needle downward through the midline of the cricoid membrane at a 45^0 ~~– 60^0~~ angle ~~toward the carina~~ *caudally* while applying negative pressure to the syringe • If using the QuickTrach Cricothyrotomy Kit, punctures cricoid membrane at a 90^0 angle		
8	Verifies needle has entered the trachea by aspirating air into syringe		
9	Advances catheter/cannula: • If using a 12~~/14~~ gauge catheter ~~with jet insufflation device/ENK Oxygen Flow Modulator~~, advances catheter over the needle ~~towards the carina~~ *caudally* • If using the QuickTrach Cricothyrotomy Kit: ○ Changes angle of insertion to 45^0 and advances to the level of the stopper ○ Removes stopper (does not advance device with needle still attached) ○ Slides plastic cannula into the trachea until flange rests on the neck		
10	Removes and properly disposes needle and syringe		
11	Secures catheter/cannula		
12	Provides Ventilation: • If using ~~Jet insufflation device/ENK Oxygen Flow Modulator~~ *a 12ga catheter*, attaches a 3.0mm endotracheal tube connector to the catheter, attaches BVM with supplemental oxygen ~~supply tubing to catheter~~ and provides ventilation using appropriate ~~inspiratory to expiratory ratio (seconds):~~ rate: ~~○ Jet insufflation device ratio – 1:4~~ ~~○ ENK Oxygen Flow Modulator ratio – 4:6~~ • If using the QuickTrach Cricothyrotomy Kit, attaches BVM to connecting tube and provides ventilation at appropriate rate • *Due to the limited efficiency of exhalation through a small catheter, does not ventilate faster than 10-12 breaths per minute (1 breath every 5-6 seconds)* • *Attaches an $ETCO_2$ monitoring device*		
13	Verifies proper placement by: • The observance of chest rise and fall ~~(jet insufflation device and QuickTrach Cricothyrotomy Kit only),~~ • Auscultation of lung sounds and the absence of subcutaneous emphysema		

	Infrequently Used Skills Verification Checklist Needle Thoracostomy	1110-G

Name:	Date:
Provider Agency:	Evaluator:

Objective: Describe the indications/contraindications for needle thoracostomy and demonstrate the ability to proficiently perform the procedure.

Equipment: Appropriate PPE, thoracostomy manikin or simulated chest, Minimum 14ga x 3.25" catheter designed for needle decompression, stethoscope, stopcock or one way valve, tape, antiseptic agent, tape.

Performance Criteria: The individual will be required to describe the indications/contraindications for needle thoracostomy and proficiently perform the procedure on a manikin or simulated chest.

Step	Description	Does	Does Not
1	Verbalizes/demonstrates use of appropriate PPE		

2	Verbalizes indications for needle thoracostomy (either of the following):
	• Suspected tension pneumothorax with absent or diminished breath sounds and at least one of the following:
	  ○ Combined hypotension (SBP <90) and SpO2 <94%
	  ○ Penetrating injury to the thorax
	• Traumatic cardiac arrest with suspected tension pneumothorax		

3	Verbalizes minimum catheter size required for procedure (14 ga x 3.25")		
4	Verbalizes that only two (2) attempts are allowed on affected side(s) without base/ modified base hospital contact		
5	Verbalizes/identifies approved needle thoracostomy sites (any of the following): • Mid-clavicular line in the 2nd intercostal space • Mid-axillary line in the 4th or 5th intercostal space (above anatomic nipple line) • Anterior axillary line in the 5th intercostal space (above anatomic nipple line)		
6	Prepares site using aseptic technique		
~~7~~	~~Removes end cap from catheter and attaches empty 10 mL syringe~~		
8	If using a 3.25" length catheter with Capnospot® Decompression Indicator: • Attaches the Capnospot® Decompression Indicator to the catheter prior to insertion • Inserts needle with syringe attached into skin at a 90° angle just over the superior border of the rib and advances until air is freely aspirated or a "pop" is felt • Advances the catheter until the hub rests against the skin • Observes for color change from blue to yellow within 10 seconds to confirm catheter placement • Verbalizes that color change may not be reliable in patients with an open pneumothorax		

	If using a Simplified Pneumothorax Emergency Air Release (SPEAR®): • Inserts the SPEAR® through the skin and target a selected rib. • Places the needle tip against the exterior rib and confirm its position. • Directs the SPEAR® superiorly over the rib and into the thoracic cavity. • Penetrates the thoracic cavity, extending the SPEAR® about 3 cm beyond the exterior of the targeted rib. • Directs the needle tip toward the middle of the clavicle. • Releases the catheter from the needle by disconnecting the spin lock. • Advances the catheter toward the middle of the clavicle using the needle as a stationary guide. • Removes the needle only when the catheter is fully inserted.		
~~9~~	~~Advances catheter until air is freely aspirated~~		
~~10~~	~~If using a 3.25" length catheter, advances catheter over the needle until catheter hub rests against the skin~~		
~~11~~	~~Removes syringe and needle and leaves catheter in place~~		
~~12~~	~~Attaches stopcock or one-way valve and secures catheter/tubing~~ *Adequately secures catheter*		
13	Rechecks breath sounds and closely monitors patient status		