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

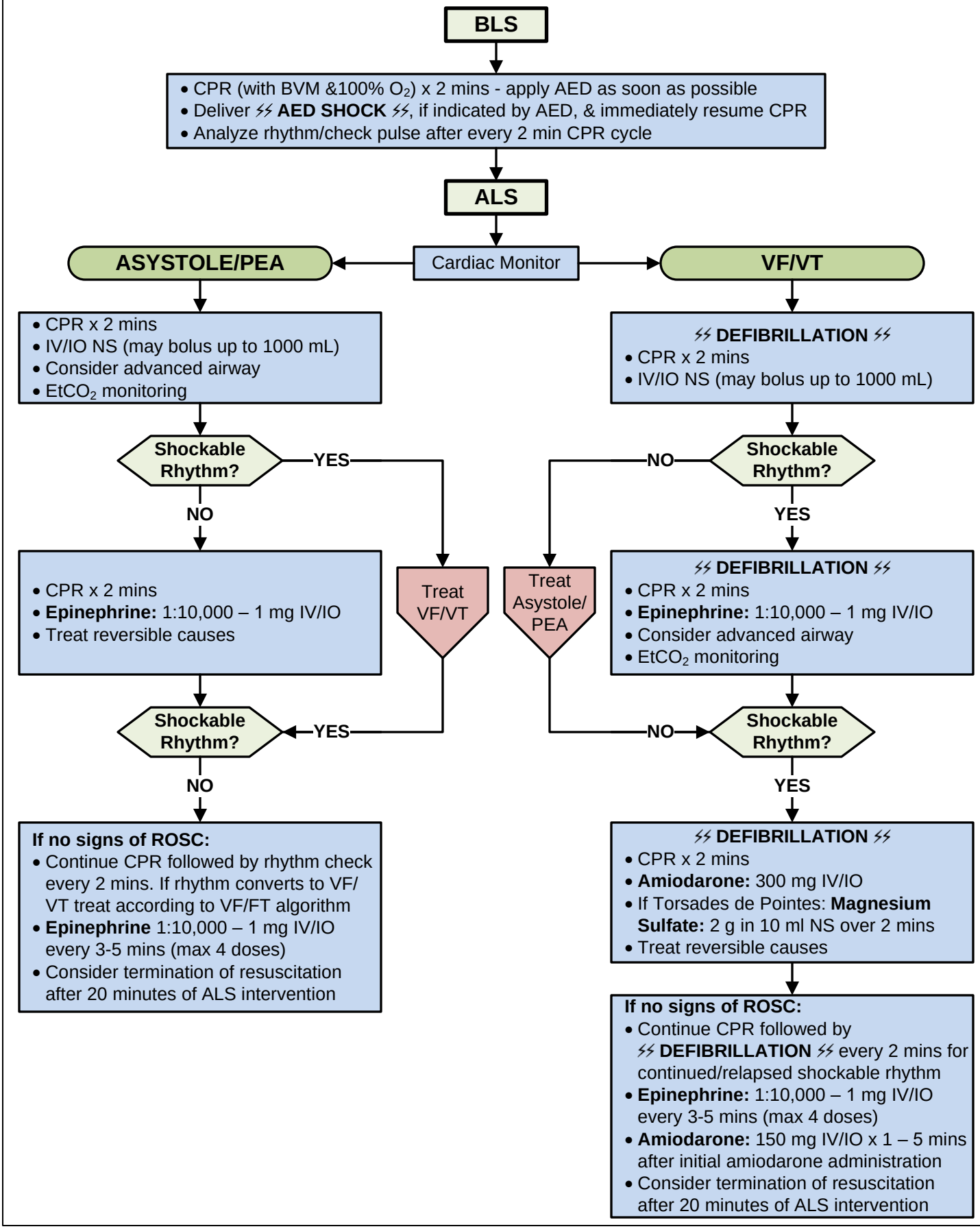
Base/Modified Base Hospital Physician Order**

- 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

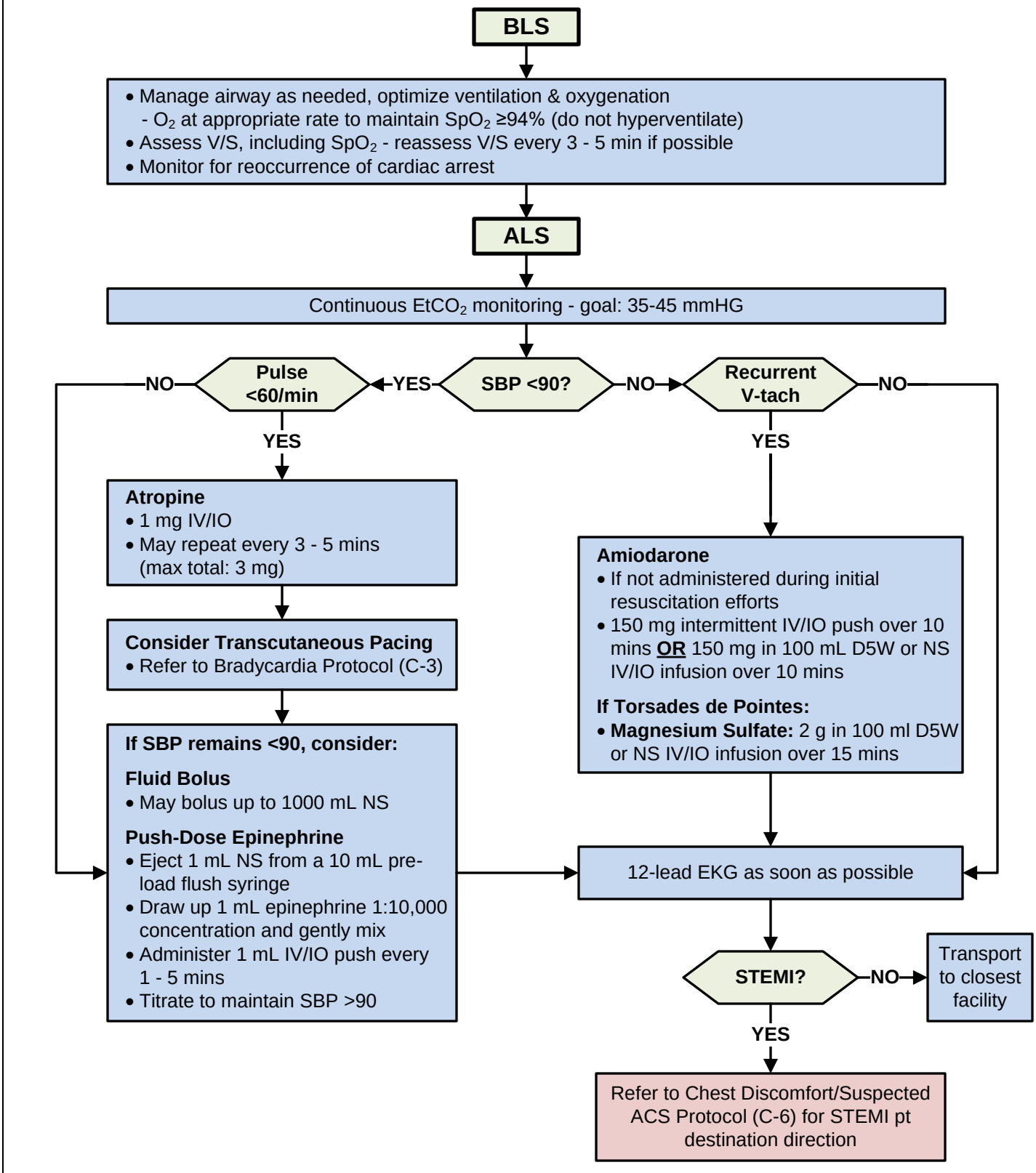
**In the event of communication failure, EMS personnel may terminate resuscitation without a base/modified base hospital physician order on a pt who meets ALS termination of resuscitation criteria.

SEE PAGE 2 FOR TREATMENT ALGORITHM

Non-Traumatic Pulseless Arrest



Sierra – Sacramento Valley EMS Agency Treatment Protocol	C-2
Return Of Spontaneous Circulation (ROSC)	
Approval: Troy M. Falck, MD – Medical Director	Effective: 12/01/2024
Approval: John Poland – Executive Director	Next Review: 10/2027



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

- **Unstable pts with persistent tachycardia require immediate cardioversion.**
- **It is unlikely that symptoms of instability are caused primarily by the tachycardia if the HR is <150/min.**

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

Pre-Cardioversion Sedation/Pain Control

- Consider one of the following for pts in need of sedation/pain control:
  - **Midazolam:** 5 mg* IV/IO
  - **OR**
  - **Fentanyl:** 50 mcg* IV/IO

***For pts ≥65yo, Midazolam is limited to 2.5 mg & Fentanyl is limited to 25 mcg.**

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 tachycardia causing any of the following?

- Hypotension
- Acutely altered mental status
- Signs of shock
- Ischemic chest discomfort
- Acute heart failure

YES

Synchronized Cardioversion

- Initial synchronized cardioversion doses:
  - Narrow regular: 50 - 100 J
  - Narrow irregular: 120 - 200 J
  - Wide regular: 100 J
- Consider pre-cardioversion sedation/pain control
- If no response to initial shock, increase dose in a stepwise fashion for subsequent attempts
- If rhythm is wide-irregular or monitor will not synchronize, & pt is critical, treat as VF with unsynchronized defibrillation doses (protocol C-1)

NO

Wide QRS (≥0.12 seconds)?

NO

Valsalva Maneuver

YES

- **Amiodarone:** 150 mg intermittent IV/IO push over 10 mins **OR** 150 mg in 100 mL D5W or NS IV/IO infusion over 10 mins
- If Torsades de Pointes: **Magnesium Sulfate:** 2 g in 100 ml D5W or NS IV/IO infusion over 15 mins
- Contact base/modified base hospital for consultation if necessary

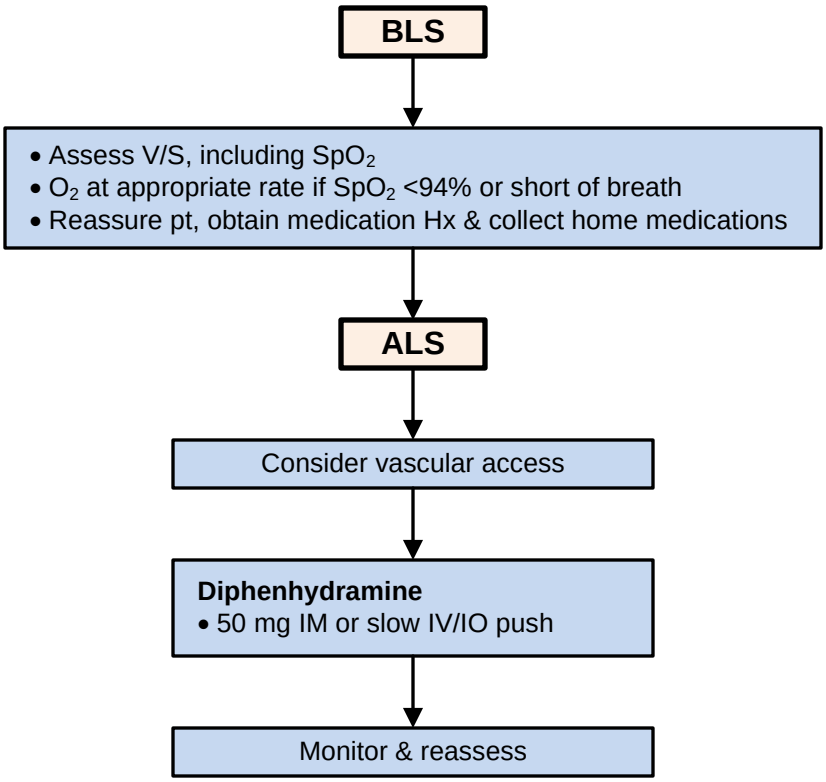
If no response to Valsalva Maneuver, consider:

Adenosine:

- First dose: 6 mg rapid IV/IO push
- Second dose (if rhythm does not convert within 1-2 mins): 12 mg rapid IV/IO push
- Flush IV/IO line with 20 mL NS after each dose

Sierra – Sacramento Valley EMS Agency Treatment Protocol	M-3
Phenothiazine/Dystonic Reaction	
Approval: Troy M. Falck, MD – Medical Director	Effective: 12/01/2024
Approval: John Poland – Executive Director	Next Review: 10/2027

- **Assessment:**
  - History includes possible ingestion of phenothiazine
  - Symptoms often mistaken for a seizure disorder or tetany
- **Signs & Symptoms:**
  - Facial grimaces
  - Protruding tongue/jaw muscle spasm
  - Oculogyric crisis (circular movement of the eyeballs)
  - Spasms of the back muscles, causing the head and legs to bend backward and the trunk to arch up
  - Anxiety/restlessness
  - Torticollis (twisting of the neck)



Sierra – Sacramento Valley EMS Agency Treatment Protocol	M-6
General Medical Treatment	
Approval: Troy M. Falck, MD – Medical Director	Effective: 12/01/2024
Approval: John Poland – Executive Director	Next Review: 07/2027

- The purpose of this protocol is to provide standing order assessment/treatment modalities for pt complaints not addressed by other S-SV EMS treatment protocols – including nausea/vomiting and suspected sepsis.

BLS

- Assess V/S, including SpO_2 & temperature (if able)
- O_2 at appropriate rate if pt hypoxemic (SpO_2 <94%), short of breath, or has signs of heart failure/shock
- Assess history & physical
- Check blood glucose – if indicated & able

Blood glucose ≤60 mg/dl, or hx & clinical presentation fits hypoglycemia

NO

YES

Oral glucose (BLS) – ONLY if pt is conscious & able to swallow
- Pre-packaged glucose solution/gel or 2-3 tbsp of sugar in water/juice

OR

Dextrose 10% (ALS)
- 10 – 25 g (100 – 250 mL) IV/IO

OR

Glucagon (ALS)
- 1 mg (1 unit) IM/IN

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 (may bolus up to 1000 mL if indicated)

- Refer to other sections of this protocol as appropriate
  - Suspected Sepsis – Page 2
  - Nausea/Vomiting – Page 3

Suspected Sepsis

- Early recognition of sepsis is critical to expedite hospital care and antibiotic administration.
- Aggressive IV fluid therapy is the most important prehospital treatment for sepsis.
- Septic pts are especially susceptible to traumatic lung injury and ARDS. If BVM ventilation is necessary, avoid excessive tidal volumes.
- Attempt to identify the source of infection (skin, respiratory, etc.), previous treatment and related history.
- Consider the possibility of sepsis when a combination of two or more of the following Systemic Inflammatory Response Syndrome (SIRS) criteria are present:
  - Temperature <96.8°F or >100.4°
  - RR >20bpm
  - HR >90bpm
  - ETCO2 ≤25 mmHg

High-Risk Indicators for Sepsis:

- Hx of pneumonia, UTI, MRSA
- Cancer pts
- Nursing home residents
- Pts with indwelling catheters
- Immune-compromised pts

Shock Index (SI):

- SI is used to assess the severity of hypovolemic shock
- SI = HR/SBP
  - Normal SI range is 0.5 to 0.7
  - HR>SBP (SI>1) may indicate sepsis

ALS

- Assess Temperature
- $EtCO_2$ monitoring
- IV/IO NS 500 mL boluses to a maximum of 2 L if SIRS criteria remain present
  - Reassess vital signs between boluses
  - Discontinue boluses and provide supportive care if signs of pulmonary edema develop

If SBP <90 after 2 L NS:
Push-Dose Epinephrine
- Eject 1 mL NS from a 10 mL flush syringe
- Draw up 1 mL epinephrine 1:10,000 & gently mix
- Administer 1 mL IV/IO push every 1-5 mins for continued SBP <90

If pt is febrile:
Acetaminophen
- 1 g IV/IO infusion over 15 mins (single dose)

- Monitor & reassess
- Provide early notification to the receiving hospital for suspected sepsis pts

Nausea/Vomiting

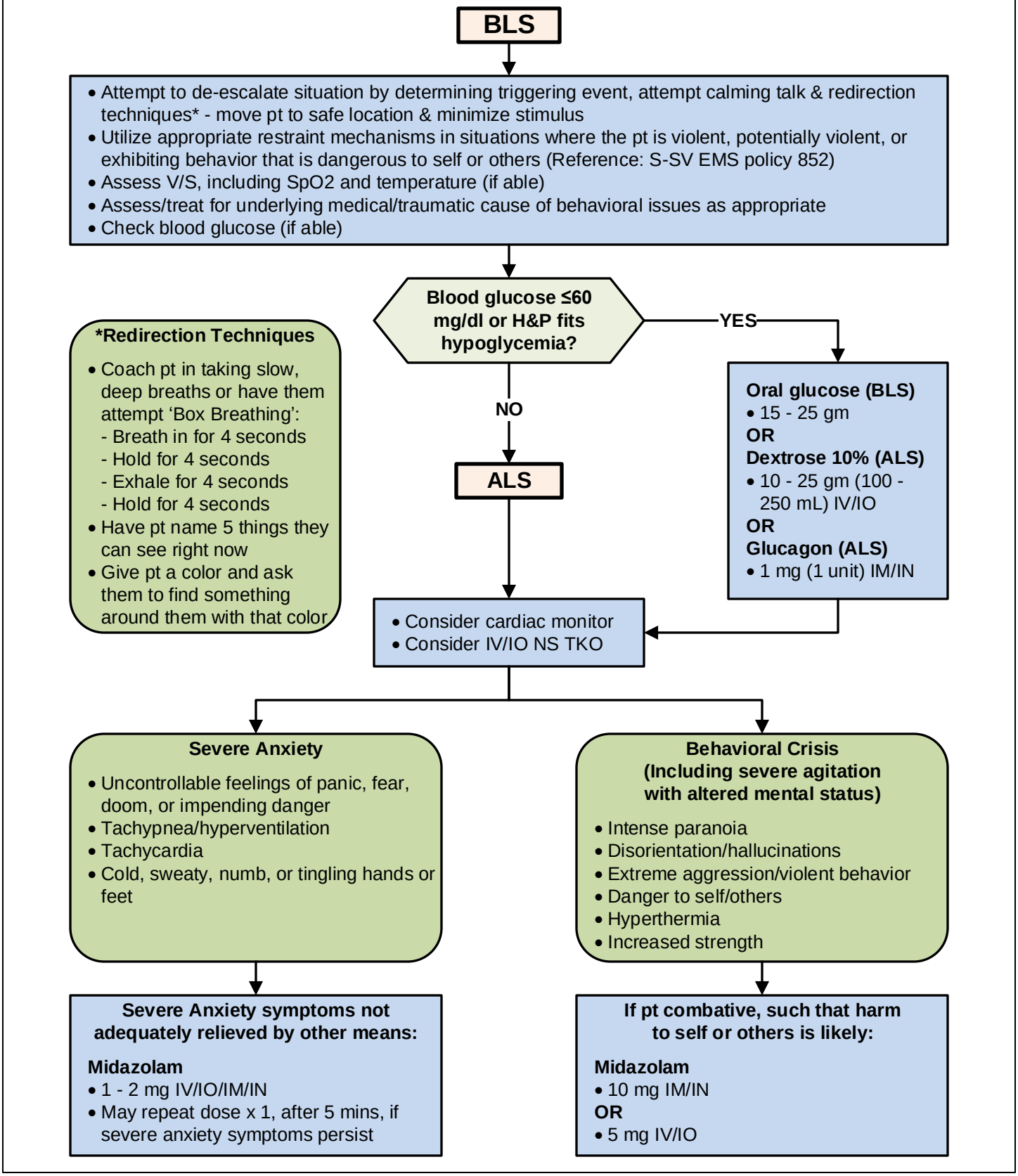
- Nausea/vomiting can be symptoms of a multitude of different causes. If possible, the specific underlying cause should be determined and treated. The use of an antiemetic may relieve symptoms while leaving the cause untreated, and possibly, more difficult to detect. EMS personnel should weigh the benefits 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)
- 4 - 8 mg oral disintegrating tablet, **OR** 4 - 8 mg IM, **OR** 4 - 8 mg slow IV/IO (over 30 seconds)
- May repeat as needed (max total dose: 16 mg)

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

Sierra – Sacramento Valley EMS Agency Treatment Protocol	M-11
Behavioral Emergencies	
Approval: Troy M. Falck, MD – Medical Director	Effective: 12/01/2024
Approval: John Poland – Executive Director	Next Review: 10/2027



Sierra – Sacramento Valley EMS Agency Treatment Protocol	N-3
Suspected Stroke	
Approval: Troy M. Falck, MD – Medical Director	Effective: 12/01/2024
Approval: John Poland – Executive Director	Next Review: 10/2027

Cincinnati Prehospital Stroke Scale (CPSS)

Component	Normal Result	Abnormal Result
Facial Droop (Ask pt to show teeth or smile)	Both sides of face move equally	One side of face does not move as well as the other side
Arm Drift (Ask pt to close eyes & hold both arms out with palms up)	Both arms move the same, or both arms do not move	One arm does not move, or one arm drifts down compared with the other
Speech (Ask pt to say "you can't teach an old dog new tricks")	Pt uses correct words with no slurring	Pt slurs words, uses the wrong words, or is unable to speak

BLS

- Assess V/S, including SpO_2
- O_2 at appropriate rate if hypoxemic (SpO_2 <94%) or short of breath
- Perform CPSS assessment

Suspect stroke for any of the following:

- New onset symptoms with abnormal CPSS
- New onset altered state (GCS <14) with unidentifiable etiology
- CPSS is normal, but patient/bystander report stroke symptoms within previous 24 hrs

If stroke suspected:

- Determine time of onset of symptoms (pt last known normal)
  - When possible, obtain and relay to the receiving hospital the name/contact information of the individual who can verify the time of onset of symptoms (pt last known normal)
- Check blood glucose (if glucometer available)
- Transport as soon as possible (scene time should be ≤10 mins)

ALS

- Consider advanced airway if GCS ≤8 or need for airway protection
- Cardiac monitor, consider 12-lead EKG (do not delay transport to perform 12-lead EKG)
- Obtain blood draw if requested by stroke receiving center
- IV/IO NS TKO (may bolus up to 1000 mL)

Are both the following present?
- Onset of symptoms ≤24 hrs (including wake-up stroke*)
- ≤45 minute transport time to a stroke receiving center

NO
- Transport to closest appropriate hospital
- Contact base/modified base hospital for destination consultation if necessary

YES
- Transport to closest stroke receiving center
- Advise of "Stroke Alert" & time pt. last known normal
- Provide pt. identifying information if requested by stroke receiving center

***Wake-up stroke definition:** Pt awakens with stroke symptoms that were not present prior to falling asleep

Sierra – Sacramento Valley EMS Agency Treatment Protocol	OB-G1
Childbirth	
Approval: Troy M. Falck, MD – Medical Director	Effective: 12/01/2024
Approval: John Poland – Executive Director	Next Review: 10/2027

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

- Assess V/S, including SpO_2
- O_2 at appropriate rate if SpO_2 <94% or short of breath
- Estimate blood loss
- Consider vascular access at appropriate time (may bolus up to 1000 mL)

Presenting Part

Prolapsed Cord

Rapid transport & early hospital contact

Protect umbilical cord
- Place mother in knee-chest position
- Insert gloved hand into vagina & gently push presenting part off cord
- Cover exposed cord with wet saline dressing

Head

Allow delivery
- Dry/provide warmth
- Assure open/clear airway
- Refer to Neonatal Resuscitation Protocol (C1-N) if necessary

Breech or Footling

Rapid transport & early hospital contact

- Avoid compression of cord by presenting part
- Allow delivery to progress until baby's waist appears
- Rotate baby to face down position (do not pull)
- If head does not deliver in 3 mins, insert gloved hand into vagina to create an air passage for infant
- As mother bears down, sweep head out of vagina

After delivery
- Calculate Apgar Score at 1 & 5 mins after delivery
- Clamp & cut umbilical cord
  - Delay clamping cord for 1 min for uncomplicated births not requiring resuscitation
  - Double clamp cord, cut with sterile scissors between clamps, 6" from baby
- Transport, do not wait for placenta delivery
- After delivery of placenta, vigorously massage fundus until firm
- If severe post-partum hemorrhage present:
  - **Tranexamic Acid (TXA)** 1 gm/100 mL D5W or NS IV/IO, infused over 10 mins

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

Approved Commercial Tourniquet Devices:

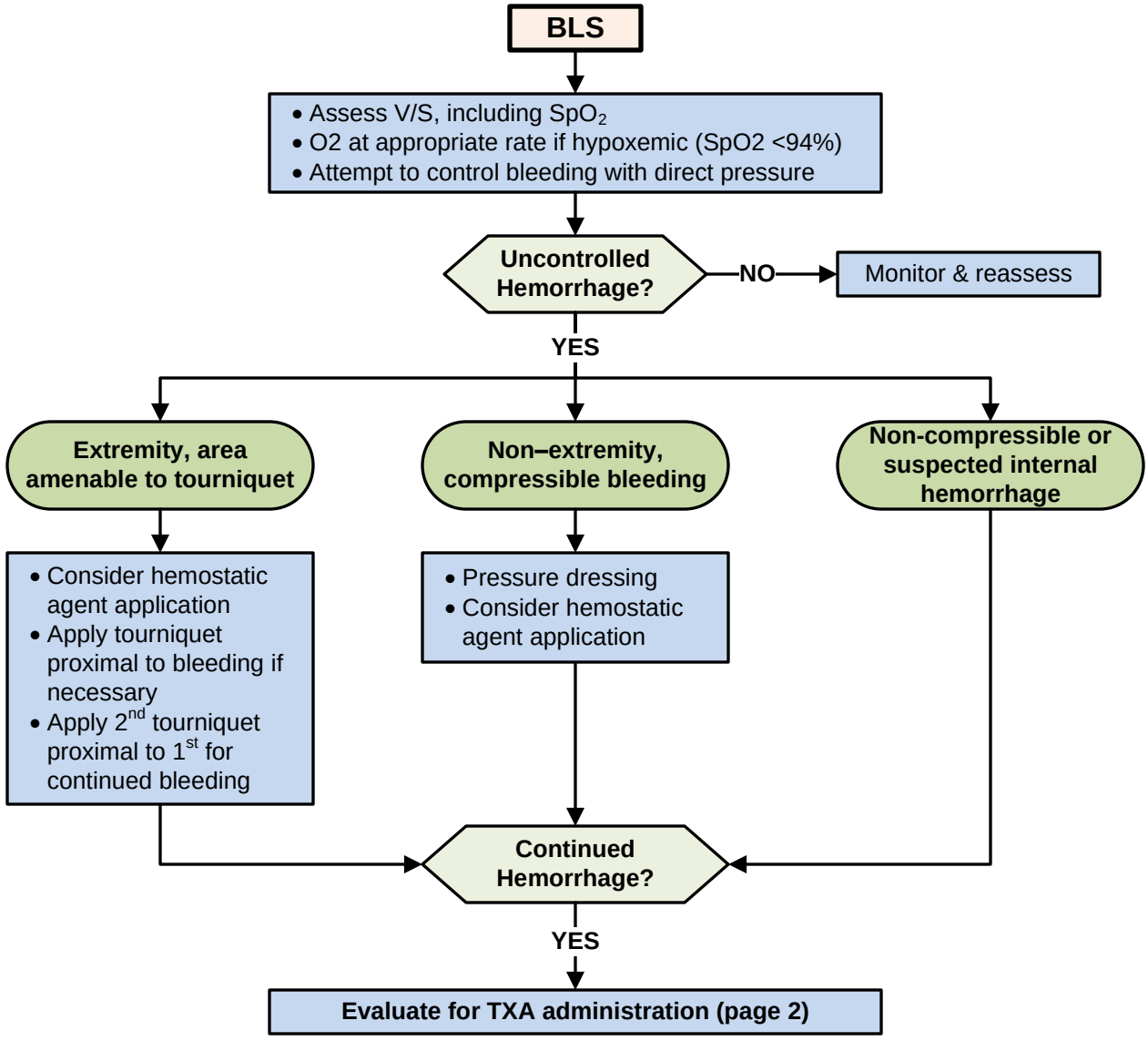
- Combat Application Tourniquet
- Emergency and Military Tourniquet
- Mechanical Advantage Tourniquet
- SAM XT Extremity Tourniquet
- Special Ops. Tactical Tourniquet
- RECON Medical Tourniquet

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:

- 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 Childbirth Protocol (OB-G1).

ALS

<u>TXA INCLUSION CRITERIA</u>

Does pt meet the following inclusion criteria?

- Blunt or penetrating traumatic injury with signs/symptoms of hemorrhagic shock: including SBP <90 or <100 in pts ≥65 yo

<u>OR</u>

- Significant hemorrhage (either of the following):
  - Significant blood loss with HR >120
  - Hemorrhage not controlled by direct pressure, hemostatic agents, or commercial tourniquet application

NO → Monitor & reassess

YES

<u>TXA EXCLUSION CRITERIA</u>

Does pt. meet any of the following exclusion criteria?

- <15 yo
- Time since injury >3 hrs
- Isolated traumatic brain injury
- Thromboembolic event (i.e., stroke, MI, PE) in past 24 hrs
- Traumatic arrest with >5 mins of CPR without ROSC
- Hypotension secondary to suspected cervical cord injury with motor deficit or spinal shock

YES → Monitor & reassess

NO

<u>BASE/MODIFIED BASE HOSPITAL ORDER ONLY</u>

Tranexamic Acid (TXA) IV/IO

- Mix 1gm TXA in 100mL D_5W or NS and infuse over 10 mins

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

- Consider respiratory failure for pts with a history of increased work of breathing & presenting with ALOC & a slow or normal respiratory rate without retractions.
- The hallmark of upper airway obstruction (croup, epiglottitis, foreign body aiway obstruction) is inspiratory stridor.
- Do not attempt to visualize the throat or insert anything into the mouth if epiglottitis suspected.

Continuous Positive Airway Pressure (CPAP) Utilization Information

- **Indications:**
  - CHF with pulmonary edema
  - Moderate to severe respiratory distress
  - Near drowning
- **Contraindications:**
  - <8 years of age
  - Respiratory or cardiac arrest
  - Suspected croup/epiglottitis
  - Agonal respirations
  - Inability to maintain airway
  - Suspected pneumothorax
  - SBP <90
  - Major trauma/head injury/chest trauma
  - Severe decreased LOC
- **Complications:**
  - Hypotension
  - Pneumothorax
  - Corneal drying

Epinephrine Administration

- Epinephrine is indicated for pts with suspected asthma who are in severe distress.
- Administer Auto-Injector/IM epinephrine into the lateral thigh, midway between waist & knee.

BLS

- Assess & support ABCs
- High flow O_2
- Assess V/S, including SpO_2
- Assess history & physical, determine degree of illness
- Minimize stimulation – keep pt calm & consider allowing parent to hold the child &/or O2 delivery device if their presence calms the child
- Consider CPAP, when appropriate/indicated, for moderate to severe distress (pts ≥8 yo only)

Suspected asthma & in severe distress

YES

Epinephrine 1:1,000 IM (authorized/trained EMTs only)

- Pts 7.5 – 30 kg
  - 0.15 mg pediatric auto-injector **OR** 0.15 mg (0.15 mL) via approved syringe
- Pts >30 kg
  - 0.3 mg adult auto-injector **OR** 0.3 mg (0.3 mL) via approved syringe

SEE PAGE 2 FOR ALS TREATMENT OF WHEEZING OR SUSPECTED CROUP/EPIGLOTTITIS

Wheezing

ALS

Mild Distress
- Mild wheezing
- Mild shortness of breath
- Cough

- Cardiac & $EtCO_2$ monitoring

Albuterol 5 mg & Ipratropium 500 mcg
- Nebulizer
- May repeat **(albuterol 2.5-5 mg only)** for continued respiratory distress

Moderate – Severe Distress
- Cyanosis
- Accessory muscle use
- Inability to speak >3 words
- Severe wheezing/shortness of breath
- Decreased or absent air movement

- Cardiac & $EtCO_2$ monitoring
- IV/IO NS (may bolus 20 mL/kg)

Albuterol 5 mg & Ipratropium 500 mcg
- Nebulizer, CPAP, or BVM
- May repeat **(albuterol 2.5-5 mg only)** for continued respiratory distress

Epinephrine 1:1,000 (for severe distress only)
- 0.01 mg/kg IM (max: 0.3 mg)

Suspected Croup/Epiglottitis

ALS

- Cardiac & $EtCO_2$ monitoring
- Consider nebulized saline
- **MINIMIZE PT STIMULATION**
- If full upper airway occlusion suspected – ensure proper airway positioning & BVM seal, attempt to ventilate & reassess – **DO NOT ATTEMPT I-GEL**

Unable to ventilate/maintain airway utilizing less invasive procedures?

YES → Perform needle cricothyrotomy (pts ≥3 yo) as airway of last resort

NO

<u>Base/Modified Base Hospital Order Only</u>

Racemic epinephrine
- One (1) - 0.5 ml vial of 2.25% inhalation solution (mix with NS to = 5 ml of volume)

OR

Nebulized epinephrine
- 1:1000 - 0.5 mL/kg (max: 5 mL) nebulizer or BVM (if <5 mL, mix with NS to = 5 mL of volume)

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)

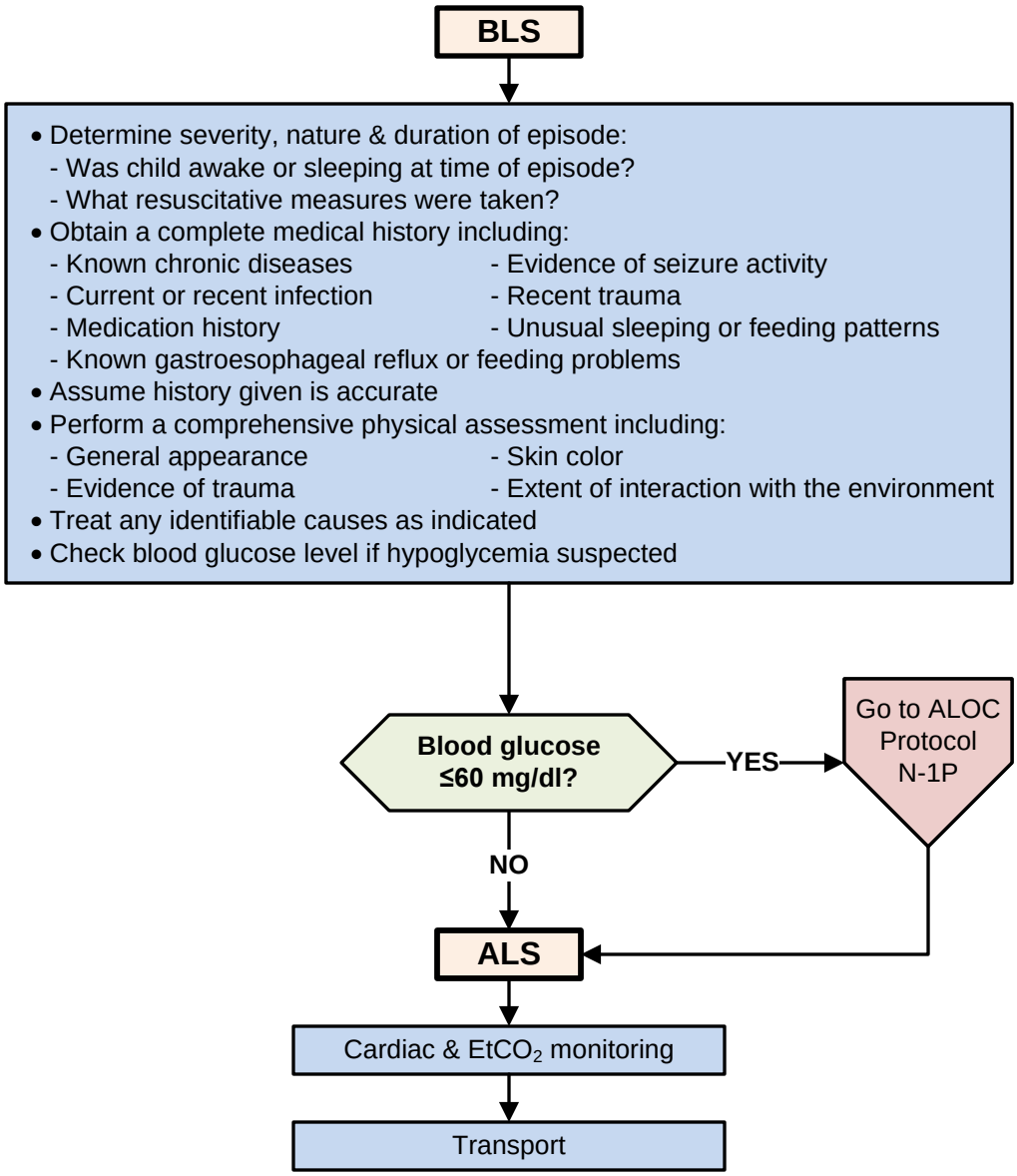
Pts (<4 yo) – BASE/MODIFIED BASE HOSPITAL ORDER ONLY
- 0.15 mg/kg (max. 4 mg) IM, or slow IV/IO (over 60 seconds)

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

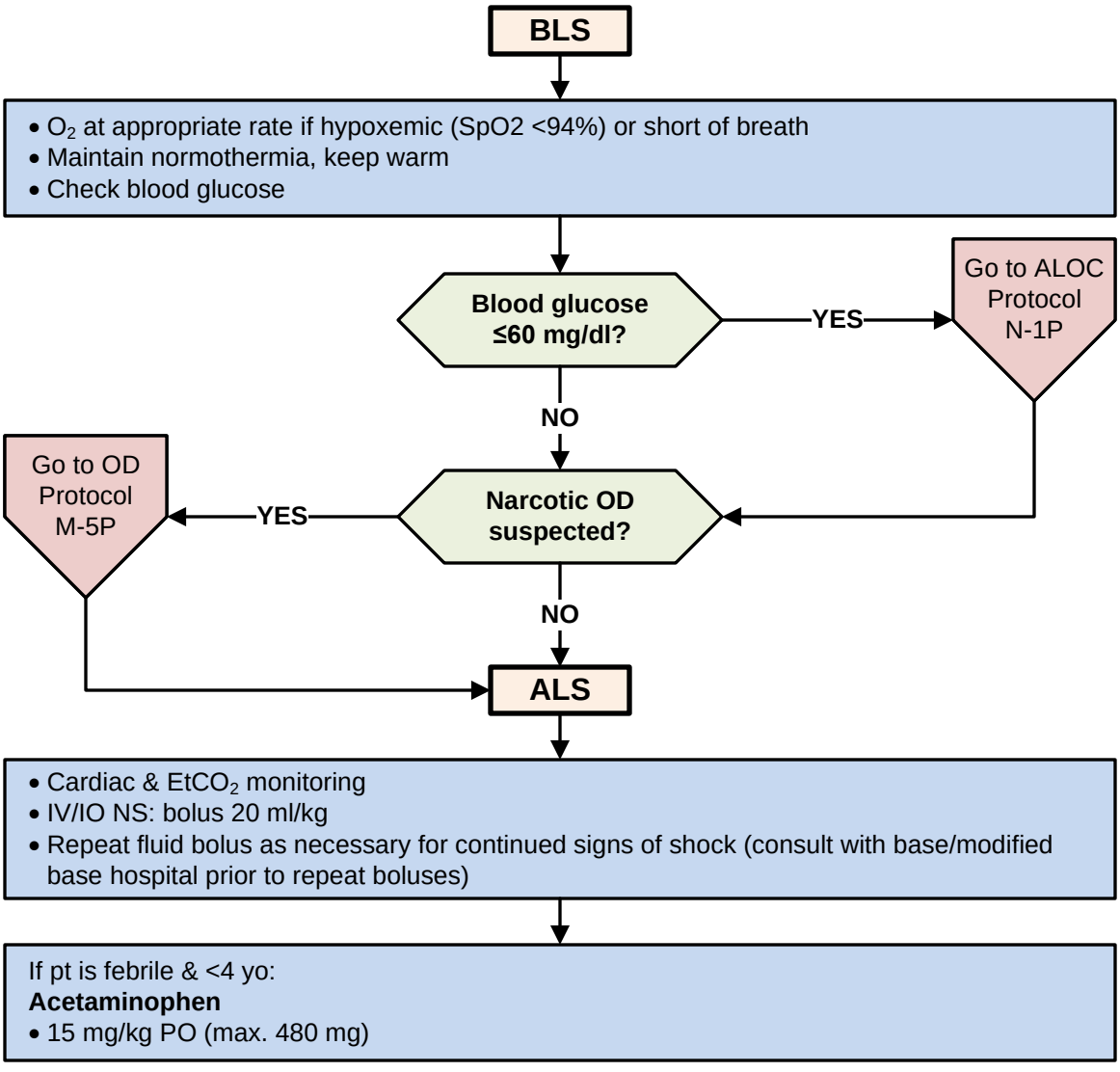
- Shock/Sepsis may be subtle and difficult to recognize.
- Early recognition of sepsis is critical to expedite hospital care and antibiotic administration.
- Septic pts are susceptible to traumatic lung injury. If BVM ventilation is necessary, avoid excessive tidal volumes.
- Obtain history including:
  - 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	M-8P
Pediatric Pain Management	
Approval: Troy M. Falck, MD – Medical Director	Effective: 12/01/2024
Approval: John Poland – Executive Director	Next Review: 07/2027

- 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 hypoxemic (SpO_2 <94%) or short of breath
- Utilize non-pharmacological pain management techniques as appropriate, including:
  - Place in position of comfort and provide distraction/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

ⓘ **For pts <4 yo, consult with base/modified base hospital prior to medication administration**
ⓘ **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 patient becomes hypotensive (see table on page 2)

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:
- 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:
- Hypotension (Pediatric Hypotension Table – page 2)
- SpO2 <94% or RR <12
- ALOC or suspected moderate/severe TBI

ⓘ 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 20 mL/kg if indicated by pt's clinical condition
- Administer analgesic intervention as indicated below when appropriate

Non-Trauma Related/Chronic Pain

Acetaminophen: 15 mg/kg IV/IO infusion over 15 mins (max: 1000 mg) – single dose only; **OR**
Ketorolac: 0.5 mg/kg IV/IO or IM (max: 15 mg) – single dose only

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: 15 mg/kg IV/IO infusion over 15 mins (max: 1000 mg) – single dose
OR
Ketorolac: 0.5 mg/kg IV/IO or IM (max: 15 mg) – single dose

If pain not effectively managed:

- Continuous $EtCO_2$ monitoring

Fentanyl: 1 mcg/kg slow IV/IO or IM/IN (max single dose: 50 mcg) – may repeat every 5 mins to max 4 doses

Pediatric Normal SBP & Hypotension Table

Age	Normal SBP	Hypotension
1-12 mos	70-100	SBP <70
1-2 yrs	80-110	SBP <70 + age (yrs) x 2
3-5 yrs	90-110	
6-9 yrs	100-120	
10-14 yrs	100-120	SBP <90

Severe Pain

- Continuous $EtCO_2$ monitoring

Fentanyl: 1 mcg/kg slow IV/IO or IM/IN (max single dose: 50 mcg)
OR
Ketamine: 0.3 mg/kg slow IV/IO (max single dose: 30 mg)

Acetaminophen: 15 mg/kg IV/IO infusion over 15 mins (max: 1000 mg) – single dose

If pain not effectively managed:

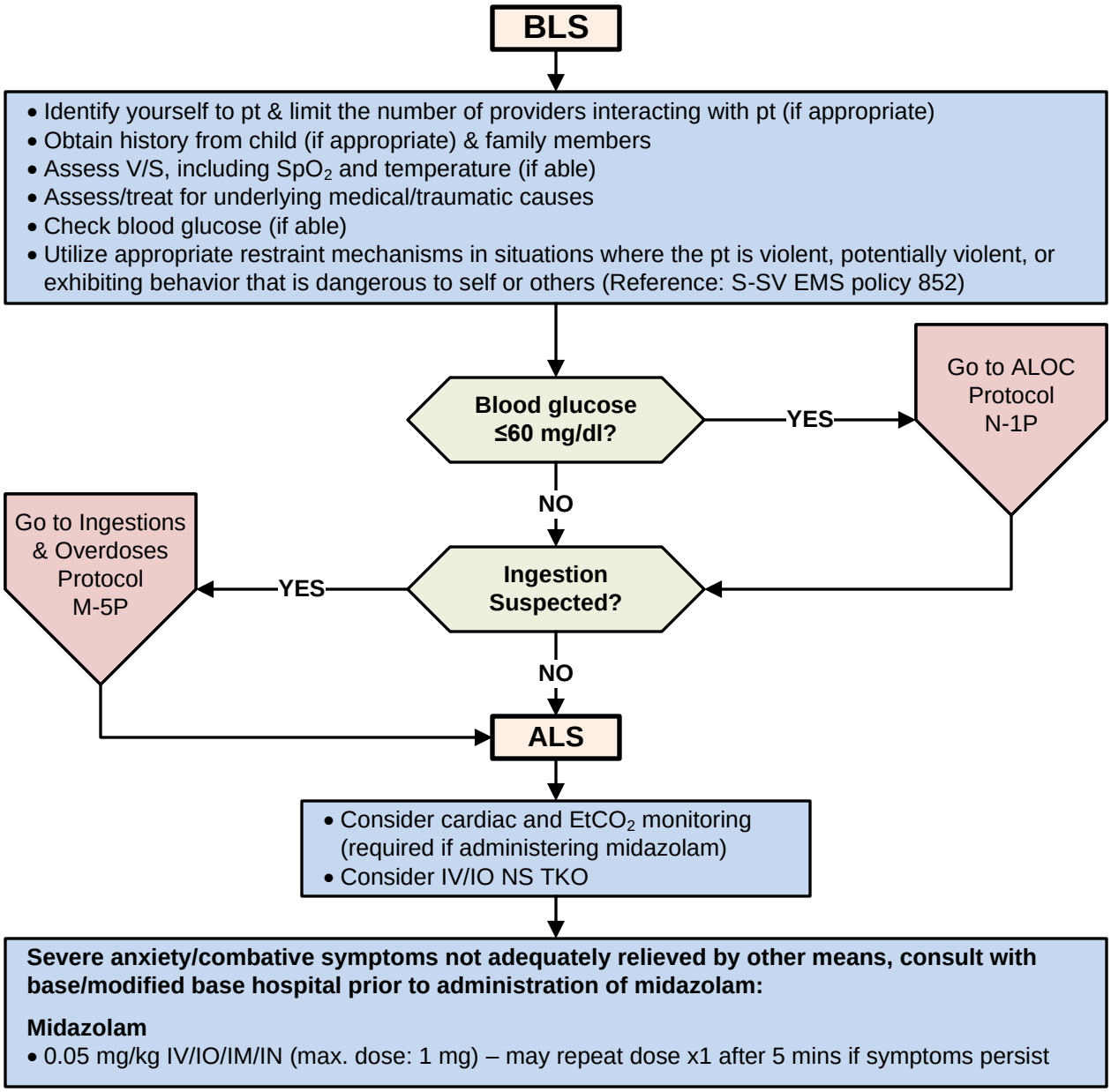
- If fentanyl previously administered, may repeat fentanyl every 5 mins to max 4 doses
- If ketamine previously administered, may repeat once after 10 - 15 mins to max 2 doses

&/OR
Midazolam: 0.05 mg/kg slow IV/IO (max single dose: 1 mg)

- May repeat once after 5 mins to max 2 doses
- Wait 5 mins after fentanyl/ketamine administration before administering midazolam

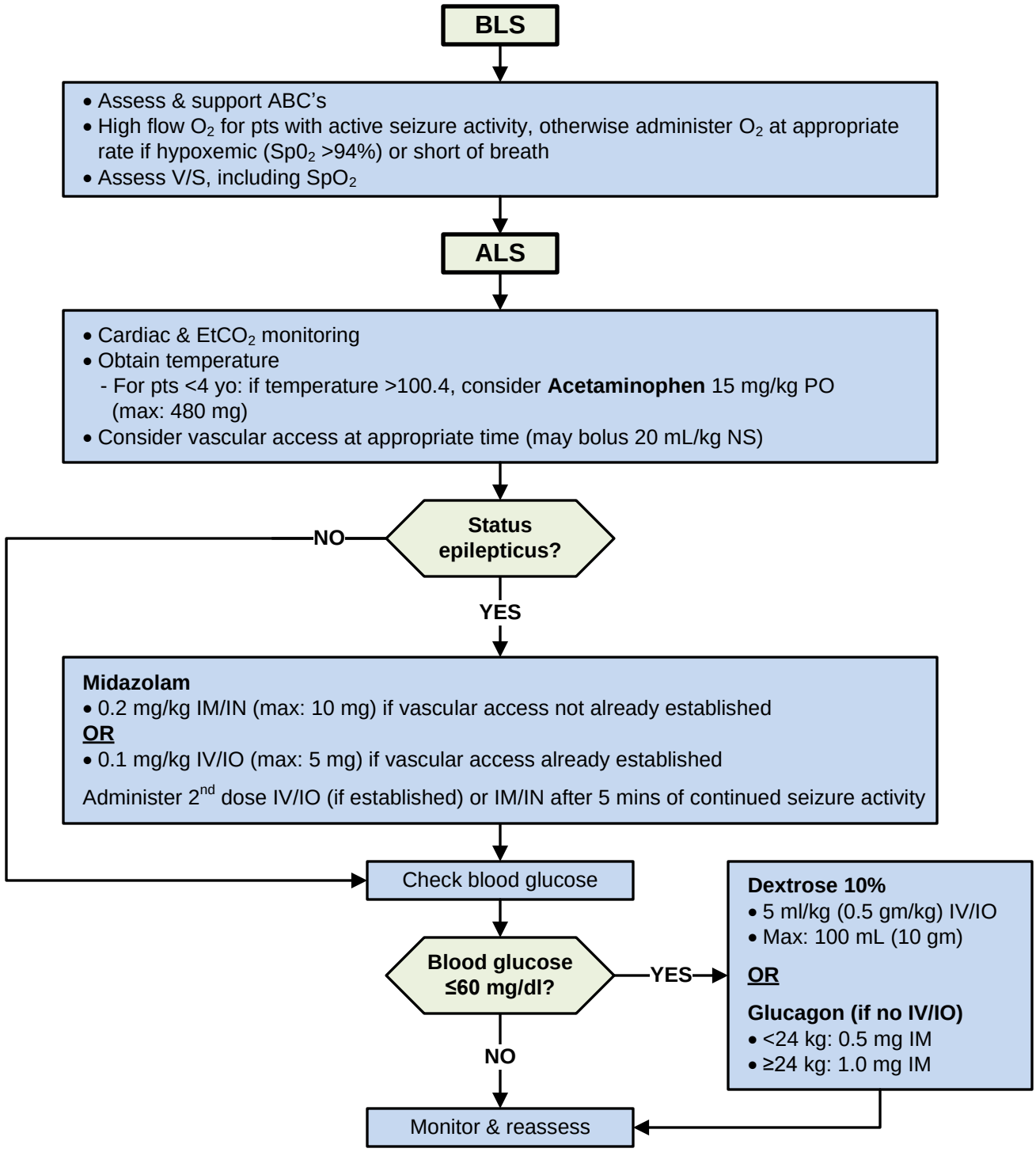
Sierra – Sacramento Valley EMS Agency Treatment Protocol	M-11P
Pediatric Behavioral Emergencies	
Approval: Troy M. Falck, MD – Medical Director	Effective: 12/01/2024
Approval: John Poland – Executive Director	Next Review: 10/2027

- Pediatric behavioral emergencies occur when the presenting problem includes some disorder of thought or behavior that is disturbing or dangerous to the pt or others. Psychiatric emergencies are a subset of behavioral emergencies.
- Crisis in pediatrics may be precipitated by social factors and/or instability in the home or community.
- Avoid judgmental statements and encourage pt to help with their own care.
- Consider dimming the lights and removing non-essential adults when appropriate.
- Assess for the presence of other conditions that may mimic behavioral emergencies, for example:
  - Diabetes/hypoglycemia - Trauma/TBI - Seizure disorders - Hypoxia - Ingestion/Overdose
- Major psychiatric disorders that may predispose to behavioral emergencies in children include:
  - Mood disorders (Depression, Bipolar Disorder) - Thought disorders (Schizophrenia)
  - Developmental disorders (Autism) - Anxiety disorders (PTSD)
  - Other disorders (ADD, ADHD, Oppositional Defiant Disorder, Reactive Attachment Disorder, etc.)



Sierra – Sacramento Valley EMS Agency Treatment Protocol	N-2P
Pediatric Seizure	
Approval: Troy M. Falck, MD – Medical Director	Effective: 12/01/2024
Approval: John Poland – Executive Director	Next Review: 07/2027

- **Febrile:** Cooling measures: loosen clothing and/or remove outer clothing/blankets.
- **Status Epilepticus:** 2 or more seizures without periods of consciousness, or a single seizure lasting >5 mins.
- Only continuous or repetitive seizure activity requires ALS intervention.



Sierra – Sacramento Valley EMS Agency Treatment Protocol	G-1
Multiple Patient Incidents	
Approval: Troy M. Falck, MD – Medical Director	Effective: 12/01/2024
Approval: John Poland – Executive Director	Next Review: 10/2027

DEFINITIONS

Control Facility (CF): An acute care hospital or EMS dispatch center responsible for situation status reporting and patient dispersal during a MCI or URVI.

EMS Surge Incident: An incident that does not overwhelm prehospital resources but has the potential to overwhelm hospital resources with multiple patients.

Unified Response to Violent Incident (URVI): An evolving event, primarily managed by law enforcement (LE), involving the use of force or violence on a group of people (e.g. mass shooting, bombing, riots, etc.). These incidents present a significantly higher threat of injury or loss of life to first responders, victims, and the public.

Multiple Casualty Incident (MCI): An incident that requires more prehospital and/or hospital resources to adequately manage patients than those available during a routine response. A MCI is categorized by the following levels:

LEVEL 1 MCI: Approximately 5-14 patients, expected duration ≤1 hour

LEVEL 2 MCI: Approximately 15-49 patients, expected duration ≥1 hour

LEVEL 3 MCI: 50+ patients, expected duration ≥1 hour

EMS SURGE ALERT

When:

- Three (3) or more ground or air transport resources are requested to respond to an incident; or
- Three (3) or more patients are identified after arrival at the scene of an incident; or
- Multiple patients are released at scene who may arrive at a hospital by private vehicle.
- A URVI.

Who:

- Dispatch center or first dispatched ground transport resource.

Why:

- To provide early notification to the CF for situation status reporting and hospital polling.

MCI ALERT

When:

- An incident that requires more EMS system resources to manage patients than those available during a routine response; or
- The number of patients from a single incident overwhelms the CF or closest appropriate receiving hospital.

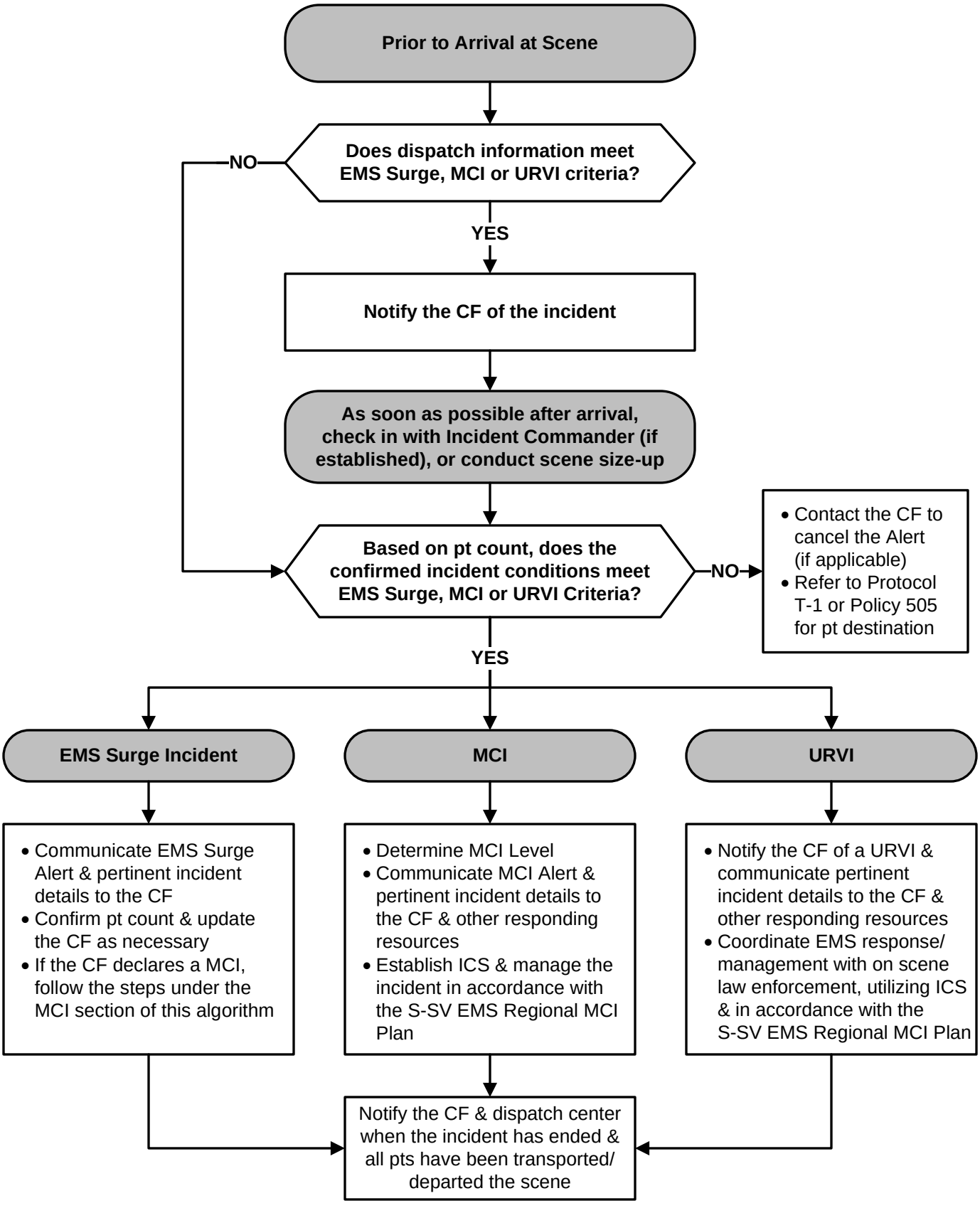
Who:

- Dispatch center, prehospital resources, or CF.

Why:

- To provide early notification for situation status reporting, hospital polling and initiation of the Regional MCI Plan.

Multiple Patient Incidents



Sierra – Sacramento Valley EMS Agency Treatment Protocol	G-2
Determination Of Death	
Approval: Troy M. Falck, MD – Medical Director	Effective: 12/01/2024
Approval: John Poland – Executive Director	Next Review: 07/2017

General Procedures/Considerations:

- CPR need not be initiated and may be discontinued for pts who meet Obvious Death or Probable Death criteria as contained in this protocol, at the time of initial assessment.
- A valid Do Not Resuscitate (DNR) should be honored for any pt with absent respirations, pulses and neurological response, regardless of the cause of death (e.g. terminal illness, trauma).
- Hypothermia, drug and/or alcohol overdose can mask neurological reflexes. If any doubt exists about contributing environmental factors (e.g. cold water submersion) and no valid DNR exists, initiate resuscitation and treat according to applicable S-SV EMS protocol.
- In the event of a declared MCI, death may be determined in accordance with START/JUMP START criteria.
- For all pts treated under this protocol, the following must be assessed/confirmed (as possible):

  - Absent respirations: look, listen (auscultate), and feel for respirations for a minimum of 30 secs.
  - Absent pulses: palpate both the carotid and apical pulses for a minimum of 30 secs.
  - Absent neurological response: check pupil response with a light and check for response to painful stimuli.

- If the base/modified base hospital physician directs EMS personnel to stop resuscitation efforts once transport has begun, the ambulance shall reduce transport code and continue transport to the original destination hospital.
- If determination of death is made at rendezvous location with HEMS aircraft, the body shall not be moved from the ambulance and an immediate request for law enforcement shall be made.
- If there is any objection/disagreement by family members or EMS personnel to terminating or withholding resuscitation for pts who have a valid DNR or meet probable death criteria, BLS measures (including defibrillation) shall continue or begin immediately and EMS personnel shall contact the base/modified base hospital for further direction.

Instructions for EMS Personnel Upon Determination of Death:

- If not already on scene, request law enforcement
- Minimize contact with the body and scene to protect potential crime scene evidence
- Appropriate EMS personnel shall remain on scene until released by law enforcement
- Provide law enforcement with the following minimum information:

  - Unit ID
  - Name and certification/license # of EMS provider determining death
  - Patient demographics and known, pertinent medical history
  - Determination of death date and time

- At a minimum, the PCR must include the following:

  - Time of determination of death
  - Six-second cardiac monitor strip of two (2) leads for pts meeting probable death criteria

See page 2 for Determination of Death Assessment Criteria

Determination of Death Assessment Criteria
(all pts must have absent respirations, pulses & neurological response)

BLS

- Assess for the presence of one (1) or more of the following **Obvious Death Criteria**:
  - Decapitation
  - Decomposition
  - Incineration of torso and/or head
  - Exposure, destruction and/or separation of the brain or heart from the body
  - Rigor mortis – if determination of death is based on rigor mortis, EMS personnel must 1) confirm muscle rigidity of the jaw by attempting to open the mouth & 2) confirm muscle rigidity of one arm by attempting to move the extremity

Does pt meet Obvious Death Criteria or have a valid DNR?

YES → EMS personnel may determine death*

NO

Are ALS personnel on scene?

NO → Initiate resuscitation & treat per applicable S-SV EMS protocol(s)

YES

ALS

- Assess for the presence of one (1) or more of the following **Probable Death Criteria**:
  - Lividity or Livor Mortis & cardiac monitor showing asystole in two (2) leads
  - Blunt or penetrating trauma & cardiac monitor showing asystole in two (2) leads
  - Blunt trauma & cardiac monitor showing PEA at a rate ≤40/min

Does pt meet Probable Death Criteria or have a valid DNR?

YES → EMS personnel may determine death*

NO → Initiate resuscitation & treat per applicable S-SV EMS protocol(s)

***Once EMS personnel have determined death, they shall follow the 'Instructions for EMS Personnel Upon Determination of Death' contained on page 1 of this protocol**

Sierra – Sacramento Valley EMS Agency Treatment Protocol	G-3
DNR, POLST & End Of Life Option Act	
Approval: Troy M. Falck, MD – Medical Director	Effective: 12/01/2024
Approval: John Poland – Executive Director	Next Review: 07/2027

DEFINITIONS

Advance Health Care Directive (AHCD) – A document that allows an individual to provide healthcare instructions &/or appoint an agent to make healthcare decisions when they are unable or prefer to have someone speak for them.

Agent or Attorney-In-Fact – An individual designated in a power of attorney for health care to make a health care decision for the pt, regardless of whether the person is known as an agent or attorney-in-fact, or by some other term.

Aid-in-Dying Drug – A drug prescribed by a physician for a qualified individual, which the qualified individual may choose to self-administer to bring about their death.

Do Not Resuscitate (DNR) – A request to withhold interventions to restore cardiac activity & respirations (no chest compressions, defibrillation, assisted ventilation, advanced airways, or cardiotonic medications).

DNR Wrist or Neck Medallion – A MedicAlert® or other approved wrist or neck medallion, engraved with the words "Do Not Resuscitate", and a patient ID number.

Durable Power of Attorney for Health Care (DPAHC) – A document that allows an individual to appoint an agent/attorney-in-fact to make health care decisions if they become incapacitated. The DPAHC must be immediately available and the agent/attorney-in-fact must be physically present. Decisions made by the agent/attorney-in-fact must be within the limits set by the DPAHC, if any.

EMSA/CMA Prehospital DNR Form – A form developed by the California Emergency Medical Services Authority (EMSA) and California Medical Association (CMA) for the purpose of instructing EMS personnel to forgo resuscitation attempts in the event of a pt's cardiopulmonary arrest in the out of hospital setting. The form must be signed and dated by a physician and pt/representative to be valid.

End of Life Option Act – A law authorizing an adult, 18 years or older, who meets certain qualifications and who has been determined by their attending physician to be suffering from a terminal disease, to request an aid-in-dying drug prescribed for the purpose of ending their life in a humane and dignified manner.

Physician's Orders for Life Sustaining Treatment (POLST) – A physician order form that addresses a patient's wishes about a specific set of medical issues related to end-of-life care. The form must be signed and dated by a physician and pt/representative to be valid.

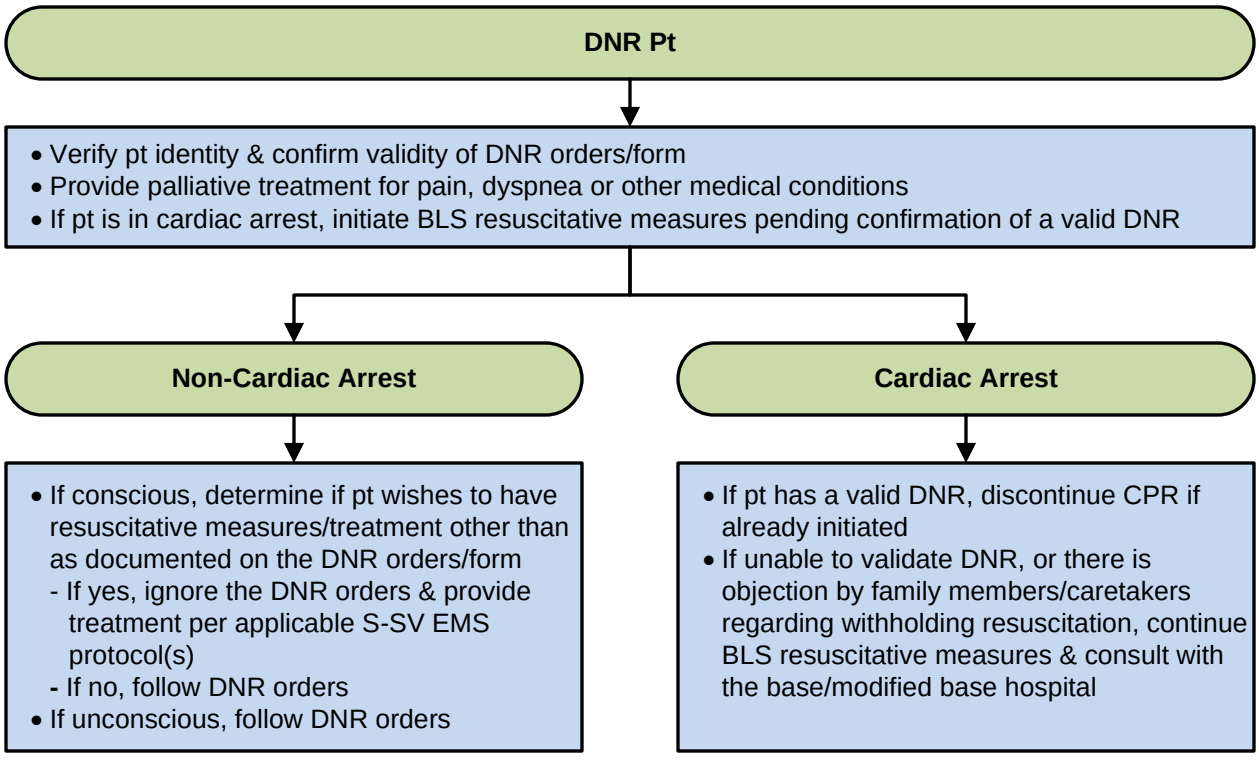
VALID DNR ORDERS/FORMS

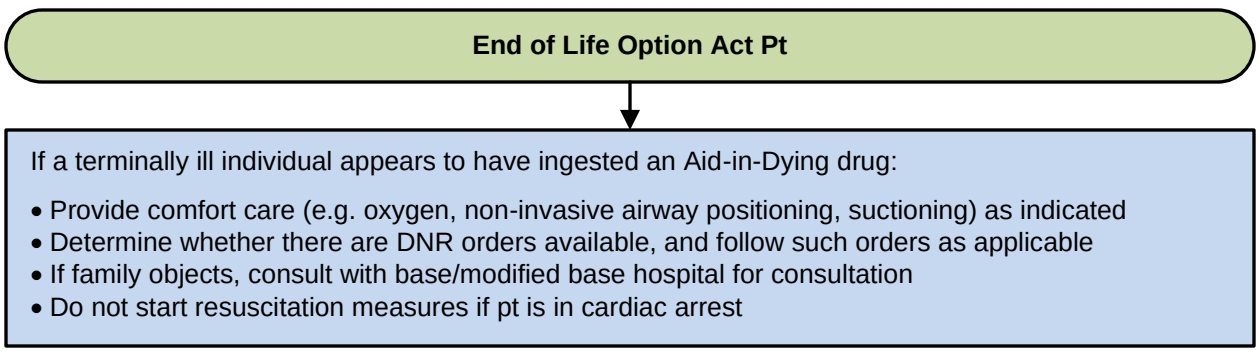
- EMSA/CMA Prehospital DNR form
- POLST form
- DNR wrist or neck medallion
- DNR order in the medical record of a licensed healthcare facility signed by a physician (or an RN verifying a valid verbal physician order on a physician order sheet), or an electronic physician's order
- Verbal DNR order given by the patient's physician
- An AHCD or DPAHC with the agent/attorney-in-fact physically present and stating the pt refuses resuscitative measures

DNR orders do not expire and photocopies/electronic physician's orders are considered valid

DNR, POLST & End Of Life Option Act

- **All pts shall receive an immediate assessment/evaluation by EMS personnel.**
- A copy of applicable DNR orders/forms shall be attached to the EMS patient care report (PCR) when available.
  - If DNR orders/forms are not available, document the method of DNR verification in the PCR.
  - If DNR bracelet or neck medallion present, document the medallion number in the PCR.
  - If applicable, document the name/contact information of any agent, attorney-in-fact or other pt representative.
- If pt is transported by EMS, DNR orders/forms shall be taken with the pt to the receiving facility.
- Pts with a POLST form indicating "Comfort-Focused Treatment", are typically only transported to a hospital if their comfort needs cannot be met in their current location/setting. These pts who have no signs of pain or respiratory distress, & who have sufficient family/caretaker support present, may be released at scene by EMS personnel & not transported to the hospital, unless transportation is requested by the patient/legal representative.
- EMS personnel shall contact the base/modified base hospital for consultation for any questions or concerns regarding EMS treatment/transport of a patient with a POLST form.
- Provide supportive care to family members/caregivers as appropriate.





Sierra – Sacramento Valley EMS Agency Treatment Protocol	PR-1
12-Lead EKG	
Approval: Troy M. Falck, MD – Medical Director	Effective: 12/01/2024
Approval: John Poland – Executive Director	Next Review: 07/2027

INDICATIONS

12-lead EKG procedures shall be performed on pts who present with one or more of the following:

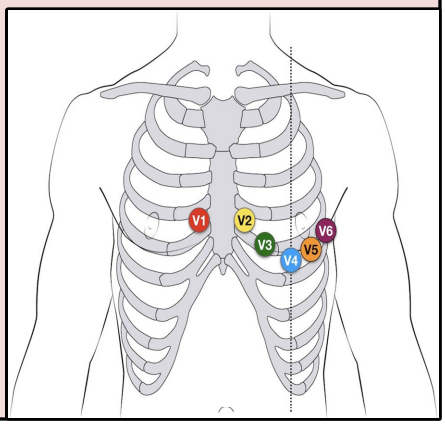
- Sign/symptoms suggestive of acute coronary syndrome (ACS) such as:
  - Non-traumatic chest or upper abdominal discomfort
  - Syncope/near-syncope
  - Acute generalized weakness
  - Dyspnea
- Cardiac dysrhythmias on 4-lead EKG
- ROSC following cardiac arrest

PRE-PROCEDURE

- Assess vital signs including SpO_2
- Administer O_2 as indicated by clinical condition

PROCEDURE

- Prepare EKG monitor and connect 12-lead cables
- Utilize packaged electrodes designed for single pt use (not bulk)
- Prep skin as necessary (e.g. wiping with 4x4 gauze, shaving)
- Enter, at a minimum, pt's age, gender, and last name/first initial into the cardiac monitor
- Apply chest leads using the landmarks indicated on the diagram
- While acquiring the 12-lead EKG:
  - Position pt away from 60hz RF noise (light switches, smartphones, LED lights, etc.)
  - Position pt supine, or semi-fowler with their arms at their side and legs uncrossed
  - Instruct pt to breath normally and remain still
  - Don't converse with or touch pt during acquisition
- Interpret the EKG findings
- If isoelectric line has significant artifact or machine reads "poor data quality" (or equivalent), attempt to reacquire a clean 12-lead EKG if pt condition allows



POST-PROCEDURE

- 12-lead EKG's meeting STEMI criteria shall be transmitted to the appropriate facility (closest hospital or STEMI Receiving Center depending on incident specific circumstances) as soon as possible if transmission capabilities are available
- For pts with suspected ACS, serial 12-lead EKGs should be obtained if the pt's clinical status changes or if EKG changes are noted on the cardiac monitor, and every 15 minutes if transport times are long
- Copies of 12-lead EKGs shall be provided to the receiving hospital physician upon EMS arrival, left at the receiving hospital at time of pt delivery, and attached to the EMS pt care report (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

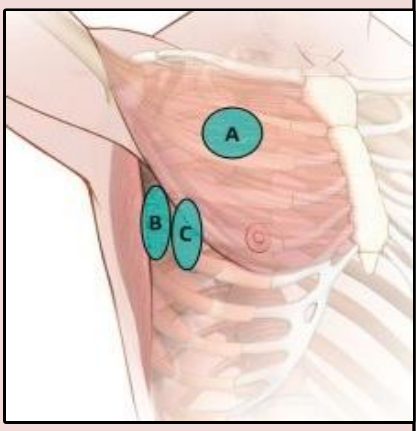
- Suspected tension pneumothorax with absent or diminished breath sounds & one or both of the following:
  - Combined hypotension (SBP <90) and SpO_2 <94%
  - Penetrating injury to the thorax
  - Traumatic cardiac arrest if chest or multi-system trauma is suspected

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

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

Sierra – Sacramento Valley EMS Agency Treatment Protocol	PR-4
Venous Blood Draws	
Approval: Troy M. Falck, MD – Medical Director	Effective: 12/01/2024
Approval: John Poland – Executive Director	Next Review: 07/2027

INDICATIONS

- Paramedics or AEMTs may perform blood draws on pts with a medical complaint, when there is an agreement to do so in place between the EMS provider agency & the receiving hospital
- Paramedics may perform chemical testing blood draws at the direction of law enforcement (LE) under the following parameters:
  - Fire department/district employees are not allowed to perform chemical testing blood draws
  - Personnel must be authorized to perform chemical testing blood draws by their employer
  - Medical treatment & emergency calls take precedence over chemical testing blood draw requests

PRE-PROCEDURE

- Assess for & provide medical treatment as indicated/appropriate

MEDICAL BLOOD DRAW PROCEDURE

- Select appropriate equipment & site:
  - If drawing blood from an IV catheter, attach blood draw adapter to the IV catheter hub & draw blood sample prior to IV fluid administration
  - If no IV has been established, or if IV fluids have been administered, prep site with an appropriate disinfectant agent, place tourniquet 3 - 4 inches above collections site & perform venipuncture
- Insert the blood tubes in the following order (releasing tourniquet when blood starts to flow):
  - Blue, Red, Green, Purple
- Apply slight pressure to the site with a gauze pad & secure with tape
- Gently invert each tube a few times (do not shake or mix vigorously)
- Label samples as follows:
  - Patient name & date of birth
  - Date & time of blood draw
  - EMS unit number
- Place labeled tubes in a specimen collection bag & turn over to appropriate hospital staff
- Adequately document medical blood draws on the PCR

CHEMICAL TESTING BLOOD DRAW PROCEDURE

- Suspects shall be in LE custody and shall consent to the blood draw - if the suspect refuses or is unable to consent, the paramedic shall stop the procedure immediately
- Paramedics shall not draw blood on a struggling or restrained suspect
- Blood draw kits shall be supplied by the requesting LE agency
- Alcohol or other volatile organic disinfectant shall not be used to clean the skin at the draw site - a suitable aqueous disinfectant (normally included in the LE supplied blood draw kit) shall be utilized
- The arresting officer must be present when the blood draw is performed & the blood sample is the property of the arresting officer
- In addition to routine incident information, the paramedic shall document the following on the PCR:
  - Blood draw kit number
  - Requesting officer's name & badge number
  - Suspect/Pt's consent for the procedure
  - Skin prep used and site of blood draw(s)

Sierra – Sacramento Valley EMS Agency Treatment Protocol	PR-5
Vascular Access	
Approval: Troy M. Falck, MD – Medical Director	Effective: 12/01/2024
Approval: John Poland – Executive Director	Next Review: 07/2027

INDICATIONS

- Vascular access may be established by authorized EMS personnel when there is a current or anticipated need to administer intravenous medications/fluids.

ADDITIONAL DIRECTIONS/CONSIDERATIONS

- Do not delay transport to establish vascular access unless clinically necessary.
- Avoid establishing vascular access in an extremity with a functioning dialysis shunt unless no other vascular access is available/appropriate.
- Intraosseous (IO) access or external jugular (EJ) vein cannulation shall only be attempted if unable to establish peripheral vascular access & immediate medication/fluid administration is necessary.
- Preexisting Vascular Access Devices (PVADs) may be utilized for pts in extremis when no other vascular access is available/appropriate.
- Limit vascular access attempts to three (3) unless necessary for emergent treatment.
- Do not connect the primary IV tubing directly to the IV catheter. IV extension/saline lock tubing shall be utilized between the primary IV tubing and the IV catheter.

INTRAOSSEOUS (IO) ACCESS

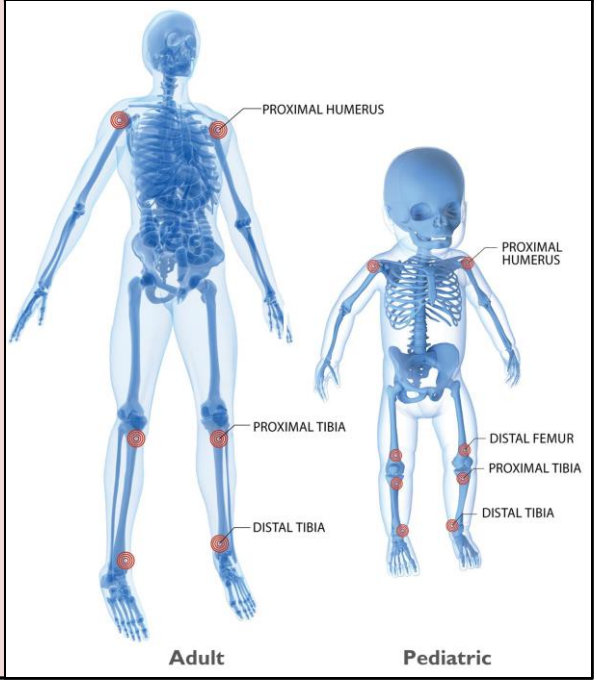
Contraindications:

- Fracture/suspected vascular compromise in targeted bone or infection at area of insertion site.
- Excessive tissue or absence of adequate anatomical landmarks.
- Previous significant orthopedic procedure at site or IO access in targeted bone within past 48 hours.

Procedure:

- Prep selected site (see images) with a recognized antiseptic agent & wipe dry with a sterile gauze pad.
- Insert device per manufacturer specific instructions.
- Attach primed extension set to needle & secure needle per manufacturer instructions.
- For pts unresponsive to pain:
  - Rapid flush with 10 mL of normal saline.
- For pts responsive to pain:
  - Prime extension set with 2% lidocaine.
  - Slowly administer 2% lidocaine over 120 sec.
    - Adult pts - 40 mg.
    - Pediatric pts - 0.5 mg/kg (max: 40 mg).
  - Allow lidocaine to dwell in IO space 60 sec.
  - Rapid flush with 10 mL of normal saline.
  - Slowly administer a subsequent ½ dose of 2% lidocaine over 60 sec.
- Connect fluids to extension set – infusion may need to be pressurized to achieve desired rate.
- Dress site and secure tubing.

Approved IO Sites



EXTERNAL JUGULAR (EJ) VEIN CANNULATION

Contraindications:

- Suspected coagulopathy (e.g. advanced liver disease, anti-coagulant medications)
- Suspected cervical spine injury
- Inability to tolerate supine position

Procedure:

- Place pt in Trendelenburg or supine position and elevate shoulders.
- Turn head 45^{o} - 60^{o} to side opposite of intended venipuncture site.
- Palpate to assure no pulsatile quality to vessel.
- Prep site with recognized antiseptic agent & wipe dry with a sterile gauze pad.
- 'Tourniquet' vein by placing finger just above clavicle near midclavicular line.
- Stabilize skin over vein with thumb.
- Point needle toward shoulder in direction of vein & puncture vein midway between jaw & clavicle, over belly of sternocleidomastoid muscle.
- Maintain compression of vein at clavicle area until needle is withdrawn & IV tubing has been connected.
- Secure IV site.

PREEXISTING VASCULAR ACCESS DEVICE (PVAD) UTILIZATION

Contraindications:

- Subcutaneous access requiring special equipment & entry through the skin is not approved for use by EMS personnel

Procedure:

- Do not remove injection cap from catheter.
- Do not use a syringe smaller than 10 ml to prevent catheter damage from excess infusion pressure.
- Always expel air from syringe prior to administration.
- Follow all medications with 5 ml of saline to avoid clots.
- Do not inject medications or fluids if resistance is met when establishing patency.
- Do not allow IV fluids to run dry.
- Do not manipulate or remove an indwelling catheter under any circumstances.
- Should damage occur to the external catheter, clamp immediately between the skin exit site & the damaged area to prevent air embolism or blood loss.