PREHOSPITAL TREATMENT – 100.1

Principle

- The objective of prehospital treatment is to provide timely, equitable, high-quality, and patient-centered care.

Standards

- All treatments shall be administered per protocol unless the patient declines, there is a contraindication, such as an allergy, or a Base Hospital Physician Order to withhold a required treatment.
- When clinically indicated, more than one protocol may be applied for patient treatment.
- All protocol treatments may be performed by the Emergency Medical Technician (EMT), Advanced Emergency Medical Technician (AEMT), and/or Paramedic via standing orders except for those stating Base Hospital Order (BHO) or Base Hospital Physician Order (BHPO). Standing orders may be continued after Base Hospital contact unless the Base Hospital directs otherwise.
- Mobile Intensive Care Nurses (MICNs) may relay BHPOs.
- These protocol standards do not apply when a physician on scene assumes responsibility for patient care (see S-403 Physician on Scene).
- Base Hospital Physician[1] consultation is encouraged for unclear or complex situations.

Base Hospital Physicians are authorized to:

- Order additional doses or boluses of a protocolized treatment
- Order the withholding of a protocolized treatment

Base Hospital Physicians are not authorized to:

- Order medications, routes, or procedures that are outside EMT, AEMT, or Paramedic scopes of practice[2]
- Modify Local Optional Scope of Practice (LOSOP) protocols
- Order treatments specifically prohibited by local CoSD EMS protocols

Under extraordinary circumstances, Base Hospital Physicians may order an Emergency Protocol Exception (EPE) when the following conditions are met:

- Immediate/imminent risk of serious morbidity or mortality
- S-104 or P-115 do not explicitly prohibit use[3]
- Complies with the above criteria for non-authorized orders

The Base Hospital shall report every EPE to CoSD EMS as an “unusual event” within 24 hours

[1] Refer to S-403 Physician on Scene when a physician on scene assumes patient care
[2] EMS clinicians are only permitted to follow orders within their respective local scopes of practice (B-450, B-451, P-401)
[3] Per P-115, EPEs are not authorized for administration of ketamine in dissociative doses or naloxone in cardiac arrest

BLS/ALS TRANSPORT CRITERIA – 100.2

Principle

- All patients should receive the most suitable level of transport to optimize clinical outcomes, efficient use of resources, and overall patient care.

Standards

- Patients meeting the following criteria shall be transported by ALS*

Decompensating Patient

- Provider impression of extremis, including new onset of altered mental status, poor appearance, airway issues, severe respiratory distress/failure, signs and symptoms of shock/poor perfusion, or imminent cardiac respiratory arrest

Airway

- Current or anticipated need for airway management

Breathing

- Respiratory failure or distress
- Hypoxia (SpO_2 <94%) despite NRB or PPV (including CPAP)

Circulation

- Cardiac chest pain or anginal equivalent
- ECG with ischemia or infarct
- ECG with new or concerning dysrhythmia
- Current or anticipated need for IV fluids, vasopressors, or other IV medication
- Unstable bradycardia/tachycardia
- Hypotension

Disability

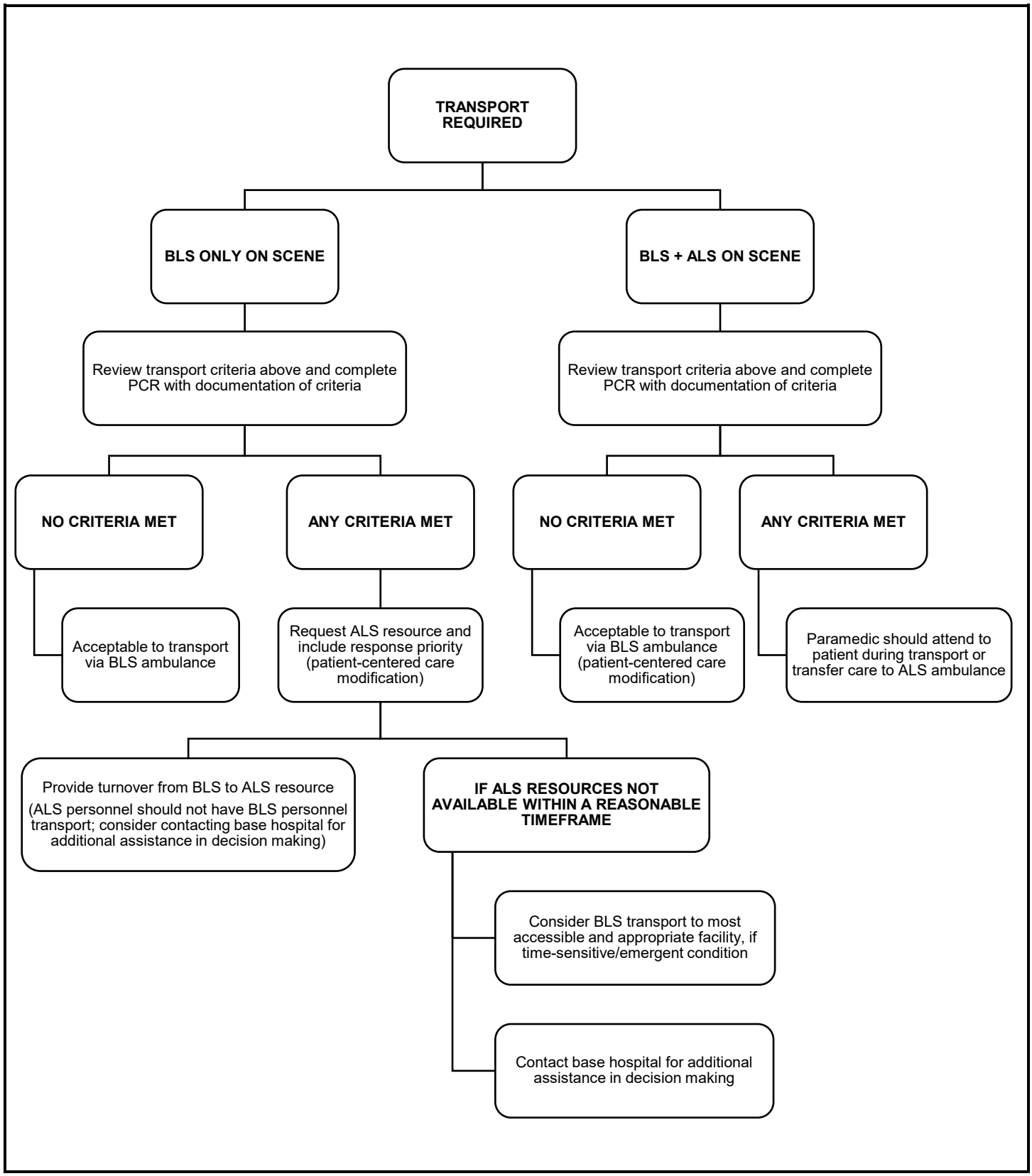
- Acute change in mental status (GCS <13)
- New neurologic deficit (e.g., positive BE-FAST)
- Seizure not returned to baseline or multiple seizures
- Syncope
- Acute agitation
- Severe intoxication or overdose

Miscellaneous

- Meets T-460A criteria (including special considerations designated for transport to a trauma center)
- ALS medication administered (except single therapeutic treatment of naloxone, ondansetron, glucagon, dextrose, or acetaminophen and are not anticipated to require repeat doses)
- Hypoglycemia with persistent altered mental status
- Hyperglycemia with persistent altered mental status
- Pediatric patients with a high-risk complaint (e.g., BRUE) or complex medical history
- EMT provider has a clinical concern
- ALS procedure performed (excluding IV placement or 12-lead ECG interpretation)

***Exceptions**

- BLS transport may be considered under the following conditions:
  - MCI/Annex D activation
  - ALS resources not available within a reasonable timeframe
  - Hospital-to-hospital interfacility transfers meeting criteria in Policy B-450 EMT Scope of Practice and Protocol S-135 Existing Devices and Medications



BE-FAST - Prehospital Stroke Screening Scale in assessment of possible TIA or stroke patients and **FAST-ED**, Prehospital Stroke Severity Scale, for patients with a positive BE-FAST.

B = **B**alance: Unsteadiness, ataxia
E = **E**yes: Blurred/double or loss of vision
F = **F**ace: Unilateral face droop
A = **A**rms and/or legs: Unilateral weakness exhibited by a drift or drop
S = **S**peech: Slurred, inability to find words, absent
T = **T**ime: Accurate last known well time

F = Facial Palsy
A = Arm Weakness
S = Speech Changes
T = Time
E = Eye Deviation
D = Denial/Neglect

Brief, Resolved, Unexplained Event (BRUE): An episode involving an infant younger than 12 months where an observer reports a sudden, brief, yet resolved episode of one or more of the following:

1) Absent, decreased, or irregular breathing
2) Color change (cyanosis or pallor)
3) Marked change in muscle tone (hypertonia or hypotonia)
4) Altered level of responsiveness

Definitive Therapy: Immediate or anticipated immediate need for administration of a fluid bolus or medications.

End-Tidal CO_2 ($EtCO_2$) (quantitative capnography): Quantitative capnometer to continuously monitor end-tidal CO_2 is mandatory for use in the intubated patient. See Skills List (S-104) for exceptions.

LEADSD: Acronym for the steps to be performed in the assessment and documentation of endotracheal intubation attempts:

1. **L**ung Sounds
2. **E**nd-Tidal CO_2 Detection Device
3. **A**bsence of Abdominal Sounds
4. **D**epth
5. **S**ize
6. **D**ocumentation

Nebulizer: O_2-powered delivery system for administration of normal saline or medications.

Opioid: Any derivative, natural or synthetic, of opium, morphine or any substance that has effects on opioid receptors (e.g., analgesia, somnolence, respiratory depression).

Opioid-Dependent Pain Management Patient: An individual who is taking prescribed opioids for chronic pain management, particularly those with opioid infusion devices.

Opioid Overdose (Symptomatic): Decreased level of consciousness and/or respiratory depression (e.g., respiratory rate of <12 or $EtCO_2$ ≥40 mmHg).

Pediatric Patient: Children known or appearing to be 14 years or younger.
A pediatric trauma patient is determined by age, regardless of weight.

Neonate: From birth to 30 days.
Infant: One month to one year.

Perilaryngeal Airway Adjunct (PAA) Options

1. **Supraglottic airway (SGA):** The "i-gel" is the only such airway approved for prehospital use in San Diego County.
2. **Retroglottic airway:** The "King Airway" is the only such airway approved for prehospital use in San Diego County.

Unstable
A patient who meets the following criteria:

1. 15 years or older (known or apparent age)
   SBP <90 mmHg and exhibiting any of the following signs/symptoms of inadequate perfusion, e.g.,
   - Altered mental status (decreased LOC, confusion, agitation)
   - Pallor
   - Diaphoresis
   - Significant chest pain of suspected cardiac origin
   - Severe dyspnea

2. 14 years or younger (known or apparent age)
   Exhibiting any of the following signs/symptoms of inadequate perfusion, e.g.,
   - Altered mental status (decreased LOC, confusion, agitation)
   - Pallor, mottling, or cyanosis
   - Diaphoresis
   - Difference in peripheral vs. central pulses
   - Delayed capillary refill
   - Hypotension by age
     - <1 month: SBP <60 mmHg
     - 1 month – 1 year: SBP <70 mmHg
     - 1 year – 10 years: SBP <70mm Hg + (2x age in years)
     - ≥10 years: SBP <90 mmHg

AAA	Abdominal Aortic Aneurysm
AED	Automated External Defibrillator
AEMT	Advanced Emergency Medical Technician
AHA	American Heart Association
AICD	Automatic Implanted Cardiac Defibrillator
ALS	Advanced Life Support
AV	Arteriovenous (Fistula)
BEF	Basic Emergency Facility
BH	Base Hospital
BHO	Base Hospital Order
BHPO	Base Hospital Physician Order
BLS	Basic Life Support
BP	Blood Pressure
BPM	Beats Per Minute
BRUE	Brief, Resolved, Unexplained Event
BS	Blood Sugar (Blood Glucose)
BSA	Body Surface Area
BVM	Bag-Valve-Mask
$CaCl_2$	Calcium Chloride
C/C	Chief Complaint
CHF	Congestive Heart Failure
CNS	Central Nervous System
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CPAP	Continuous Positive Airway Pressure
CPR	Cardiopulmonary Resuscitation
CVA	Cerebrovascular Accident
d/c	Discontinue
DCI	Decompression Illness
dL	Deciliter
D_{10}	10% Dextrose
D_{50}	50% Dextrose
ECPR	Extracorporeal Cardiopulmonary Resuscitation
EJ	External Jugular
ECG	Electrocardiogram
EMSA	California Emergency Medical Services Authority
ePCR	Electronic Patient Care Record
EpiPen ®	Brand name for Epinephrine Auto-Injector
ET	Endotracheal Tube
$EtCO_2$	End-Tidal CO_2
GI	Gastrointestinal
gm	Gram
GU	Genitourinary
HR	Heart Rate
ICS	Intercostal Space
IM	Intramuscular
IN	Intranasal

in	Inches
IO	Intraosseous
IV	Intravenous
J	Joule
kg	Kilogram
L	Liter
LBBB	Left Bundle Branch Block
LBRT	Length-Based Resuscitation Tape
LEMSA	Local Emergency Medical Services Agency
LT Airway	Laryngeal-Tracheal Airway
LOC	Level of Consciousness or Loss of Consciousness
LOSOP	Local Optional Scope of Practice
LVAD	Left Ventricular Assist Device
mA	Milliampere
MAD	Mucosal Atomizer Device
max	Maximum
mcg	Microgram
MCI	Mass Casualty Incident
MDI	Metered-Dose Inhaler
mEq	Milliequivalent
mg	Milligram
MICN	Mobile Intensive Care Nurse
min	Minute
mL	Milliliter
MOI	Mechanism of Injury
MPI	Multiple Patient Incident
MR	May Repeat
MS	Morphine Sulfate
MTV	Major Trauma Victim
$NaHCO_3$	Sodium Bicarbonate
NC	Nasal Cannula
NG	Nasogastric
NPO	Nothing by Mouth *(Nil Per Os)*
NS	Normal Saline
NTG	Nitroglycerin
O_2	Oxygen
OD	Overdose
ODT	Oral Dissolving Tablet
OG	Orogastric
OPP	Organophosphate Poisoning
PAA	Perilaryngeal Airway Adjunct
PCR	Patient Care Record
PEA	Pulseless Electrical Activity
PO	By Mouth *(Per Os)*
POLST	Physician Orders for Life-Sustaining Treatment
PRN	As Needed *(Pro Re Nata)*
PVC	Premature Ventricular Complex
q	Every *(Quaque)*
RBBB	Right Bundle Branch Block
ROSC	Return of Spontaneous Circulation
SGA	Supraglottic Airway
SL	Sublingual
SLUDGE/BBB	Salivation, Lacrimation, Urination, Defecation, Gastric Emesis, Bronchorrhea, Bronchospasm, Bradycardia

SMR	Spinal Motion Restriction
SO	Standing Order
SOB	Shortness of Breath
STEMI	ST-Elevation Myocardial Infarction
SVT	Supraventricular Tachycardia
TAH	Total Artificial Heart
TdP	Torsades de Pointes
TIA	Transient Ischemic Attack
TKO	To Keep Open
TOP	Topical
TOR	Termination of Resuscitation
VAD	Ventricular Assist Device
VF	Ventricular Fibrillation
VSM	Valsalva Maneuver
VT	Ventricular Tachycardia
?	Possible, Questionable, or Suspected
<	Less Than
≥	Greater Than or Equal To
✪	Regulatory Reference
Ⓐ	Advanced Emergency Medical Technician (AEMT) Scope of Practice

I. PURPOSE

To identify a standardized inventory on all Basic Life Support (BLS) and Advanced Life Support (ALS) Transport Units.

II. AUTHORITY

Health and Safety Code, Division 2.5, Section 1797.204.

III. POLICY/PROCEDURE

Essential equipment and supplies are required by California Code of Regulations, Title 13, Section 1103.2(a)1-2 (for vehicle requirements, refer to County of San Diego, Emergency Medical Services (CoSD EMS) Policy B-833 “Ground Ambulance Vehicle Requirements”). Any equipment or supplies carried for use in providing emergency medical care must be maintained in good working order. Each BLS or ALS transporting unit in San Diego County shall carry the following:

BLS Requirements	Minimum Requirements
Automated External Defibrillator (Automated External Defibrillator not required for ALS)	1
Ambulance cot and collapsible stretcher – clean, mattress intact, and in good working order	1 each
Straps to secure the patient to the cot or stretcher	1 set
Ankle and wrist restraints	1 set
Linens (sheets, pillow, pillowcase, blanket, towels)	2 sets
Personal protective equipment (masks, gloves, gowns, shields)	2 sets
Oropharyngeal airways	-
• Adult	2
• *Pediatric 0-5*	1 each
• *Neonate*	1
• *Premature*	1
Pneumatic or rigid splints	4
Bag-valve-mask w/reservoir and clear resuscitation mask	-
• Adult	1
• *Pediatric*	1
• *Neonate*	1
• *Premature*	1
Oxygen cylinder w/wall outlet (H **or** M)	1
Oxygen tubing	1
Oxygen cylinder – portable (D **or** E)	2
Oxygen administration mask	-
• Adult	4

• *Pediatric*	2
• *Infant*	1
Nasal cannulas (Adult)	4
Nasal airways (assorted sizes)	1 set
Nebulizer for use w/sterile H_2O or saline	2
Blood glucose monitoring device & supplies	1
Glucose paste/tablets	1 15 gm tube **OR** 3 tabs
Naloxone intranasal	1
Epinephrine auto-injector adult 0.3 mg (Auto-injector not required for ALS)	1
Epinephrine auto-injector pediatric 0.15 mg (Auto-injector not required for ALS)	1
Bandaging supplies	-
• 4-inch sterile bandage compresses	12
• 3x3 gauze pads	4
• 2-, 3-, 4-, or 6-inch roller bandages	6
• 1-, 2-, or 3-inch adhesive tape rolls	2
• Bandage shears	1
• 10-inch x30-inch **or** larger universal dressing	2
• Hemostatic gauze[1]	2
Emesis basin (**or** disposable bags)	1
Covered waste container	1
Portable suction equipment (30 L/min, 300 mmHg)	1
Suction device – fixed (30 L/min, 300 mmHg)	1
Suction catheter – tonsil tip	3
Pediatric suction catheter (5, 6, 10)	1 each
Adult suction catheter (8, 12, 18)	1 each
Spinal immobilization devices w/straps	1
Head immobilization device	2
Cervical collars – rigid	-
• Adult	3
• *Pediatric (small, medium, large)*	2 each
• *Infant*	2
Thermometer	1
Traction splint*	-
• Adult **or** equivalent	1
• *Pediatric **or** equivalent*	1
Tourniquet (County-approved type[2])	2
Blood pressure manometer and cuff	-
• Adult	1
• *Pediatric*	1
• *Infant*	1
Stethoscope	1
Obstetrical supplies to include:	1 kit
• Sterile gloves, umbilical tape **or** clamps, dressings, head coverings,	-

[1] The active hemostatic agent must be incorporated into the gauze (loose granules or granules delivered in an applicator, or particles sprinkled into the wound, are not authorized). The active hemostatic agent must not be exothermic (heat producing) upon contact with the wound.
[2] San Diego County EMS Office approves the Committee for Tactical Combat Casualty Care (CoTCCC) list of recommended tourniquets (limb non-pneumatic/limb pneumatic).

ID bands, towels, bulb syringe, sterile scissors **or** scalpel, clean	-
plastic bags	-
Potable water (1 gallon) **or** saline (2 liters)	1
Bedpan	1
Urinal	1
Disposable gloves – non-sterile	1 box
Disposable gloves – sterile	4 pairs
Cold packs	2
Warming packs (not to exceed 110 degrees F) **or** warming device with blanket	2
Sharps container (OSHA approved)	1
Agency radio	1
EMS radio	1
Metronome (**or audible** equivalent device for chest compressions)	1
Optional items[3]:	
• Burn sheets	
• Automated cardiac compression device	
• Chest seals	
• Oxygen saturation monitoring device	
○ Adult probe	
○ *Pediatric/Infant*	
• Mark 1 kit(s) **or** equivalent	

ALS Requirements: All supplies and equipment in BLS Requirements in addition to the following:

A. Airway Adjuncts	**Minimum Requirements**
Quantitative end tidal CO_2 monitor	1
Pediatric end tidal CO_2 detection device (if capnography not equipped to read $EtCO_2$ in patients weighing <15kgs)	2
CPAP equipment	1
Endotracheal tubes	-
• *5.0, 5.5, 6.0, 6.5, 7.0, 7.5, 8.0 (cuffed)*	1 each
Supraglottic airway (i-gel: sizes 3, 4, 5)	1 each
OR	-
Retroglottic airway (King Airway: sizes 3, 4, 5)	1 each
ET adapter (nebulizer)	1 setup
Laryngoscope – handle	2
Laryngoscope – blade	-
• *Straight sizes 0-4*	1 each
• Curved sizes 2-4	1 each
Magill tonsil forceps – small and large	1 each
Stylet – 6 and 14 french, Adult	1 each

[3] Any patient care inventory not listed in this protocol must have LEMSA approval prior to use. Agencies must validate training, education, and QA reporting processes for all approved optional inventory items.

Bougie	1 each
HEPA/viral filter (for BVM, CPAP, nebulizer)	6
Positive end-expiratory pressure (PEEP) valve	1

B. Vascular Access/Monitoring Equipment	**Minimum Requirements**
IV administration sets	-
• Macrodrip (2 must be vented if using acetaminophen vials)	4
• Microdrip **or**	2
• Multi-drip chambers	6
IV tourniquets	4
Needles:	-
• IV cannula – 14 gauge	8
• IV cannula – 16 gauge	8
• IV cannula – 18 gauge	8
• IV cannula – 20 gauge	6
• *IV cannula – 22 gauge*	4
• *IV cannula – 24 gauge*	4
• IM – 21 gauge x 1 inch	6
• Filter needles	2
• Angiocath for needle decompression- 14 gauge, 3.25 inches	2
• IO – jamshidi-type (**or** approved device) needle – 18 gauge	2
• IO – jamshidi-type (**or** approved device) needle – 15 gauge	2
OR	-
• IO power driver w/appropriate IO needles:	-
○ 15 mm (3-39 kg)	2
○ 25 mm (40 kg and greater)	2
Syringes: 1 mL, 3 mL, 10 mL, 20 mL	3 each
C. Monitoring	**Minimum Requirements**
Capnography cannula	2
Defibrillator pads	1 adult, *1 pediatric*
Electrodes	1 box
Electrode cables	1 set
Monitor/defibrillator w/12-lead ECG and pacing capability	1
Oxygen saturation monitoring device	1
• Adult probe	1
• *Pediatric/Infant probe*	1
D. Other Equipment	**Minimum Requirements**
Automated cardiac compression device	1
Length Based Resuscitation Tape (LBRT)	1
Mucosal Atomizer Device (MAD)	2
Metronome (**or** equivalent device)	1
Nasogastric tubes (*8*, 10, 12, 14, 18)	1 each
60mL syringe for nasogastric tube confirmation and placement	1
Water soluble lubricant	1

E. Laminated Items	**Minimum Requirements**
Pediatric Drug Chart (Policy P-117 "ALS Pediatric Drug Chart")	1
F. Replaceable Medications	**Minimum Requirements**
Acetaminophen IV 1,000 mg/100 mL (vials require vented tubing)	2000 mg
Adenosine – 6 mg/2 mL **and** 12 mg/4 mL	30 mg total
Albuterol – 2.5 mg/3 mL **or** 0.083%	6 vials
ASA, chewable – 81 mg each	6 units
Atropine sulfate – 1 mg/10 mL	2
Atropine sulfate – 8 mg/20 mL (0.4 mg/mL)	1
Calcium chloride – 1 gm/10 mL	1
Charcoal, activated (no sorbitol) – 50 gm	1
Dextrose, 10% – 25 gm/250 mL	4
Diphenhydramine hydrochloride – 50 mg/1 mL	2
Epinephrine 1:1,000 – 1 mg/1 mL	6
Epinephrine 1:10,000 – 1 mg/10 mL	6
Glucagon – 1 unit (mg)/1 mL	1
Ipratropium bromide – 0.5 mg/2.5 mL	2
Ketamine – 500 mg/10 mL (50 mg/mL)	1
Lidocaine hydrochloride (preservative-free) – 100 mg/5 mL (2%)	4
Midazolam – 5 mg/1 mL	20 mg total
Morphine sulfate (injectable) – 10 mg/1 mL	20 mg total
OR (units may carry morphine or fentanyl, but not both)	
Fentanyl citrate – 100 mcg/2 mL	200 mcg total
Naloxone hydrochloride – 2 mg/2 mL	6 mg total
Nitroglycerin – 0.4 mg	1 container
Ondansetron (injectable) – 4 mg/2 mL	2
Ondansetron (PO/ODT) – 4 mg	4
Sodium bicarbonate – 50 mEq/50 mL	3
Tranexamic acid – 1 gm/10 mL	1
IV Solutions:	
• Normal Saline – 1,000 mL bag	4
• Normal Saline – 250 mL bag	2
• Normal Saline – 50 mL bag **or** 100 mL bag	2
G. Optional Items[4]	
Albuterol MDI	
Amiodarone – 150 mg/3 mL with 100 mL normal saline bag	
Armboard – long	
Armboard – short	
Buprenorphine-naloxone (Suboxone®) (for agencies participating in the buprenorphine LOSOP)	
Carboxyhemoglobin monitor	
Chest seals	
Colorimetric carbon dioxide detector (if capnography not equipped to read $EtCO_2$ in patients weighing <15kgs)	
Curved laryngoscope blades – size 0, 1	
Dextrose, 50% – 25 gm/50 mL	

[4] Any patient care inventory not listed in this protocol must have LEMSA approval prior to use. Agencies must validate training, education, and QA reporting processes for all approved optional inventory items.

IO power drive needle 45 mm (40kg and greater w/excessive tissue)
IV extension tubing
Levalbuterol – 1.25 mg/3 mL (adults and pediatrics ≥12 years) **and** *0.31 mg/3 mL (pediatrics ≥6 and <12 years)*
Lidocaine 2% jelly – 5 mL tube
Mesh hood (spit sock **or** similar) – light color only (beige/white)
Leave Behind Naloxone kit(s)
Ringer's lactate solution[5]
Saline lock
Three-way stopcock w/extension tubing
Video laryngoscope (recording capabilities preferred)

Note: Pediatric required supplies denoted by italics

*One splint may be used for both adult and pediatric (e.g., Sager Splint)

[5] With the exception of amiodarone and ketamine, medications listed in P-401 may be infused with Ringer's lactate solution during periods when normal saline fluid is in shortage. This substitution shall be on a one-for-one basis, i.e., a protocol treatment of 250 mL normal saline fluid bolus may be replaced with a 250 mL Ringer's lactate fluid bolus.

Color code identifies the level of EMS clinician authorized to perform each skill.

Red	Not authorized
Yellow	Authorized by LEMSA Medical Director per 22 CCR § 100063 (b)[L] or by California EMSA-approved LOSOP[S]
Green	Authorized by state regulation and local protocol

SKILL	EMS CLINICIAN	INDICATION	CONTRAINDICATION	COMMENTS
Bougie	EMT AEMT Paramedic	Assist with intubations		Should be used routinely during intubations. After attempting to view with laryngoscope, may use to assist ET placement if unable to fully visualize vocal cords.
Carboxyhemoglobin monitor	EMT AEMT Paramedic	Suspected or known carbon monoxide exposure	None	Consider transport to facility with hyperbaric chamber for suspected carbon monoxide poisoning in the unconscious or pregnant patient.
Synchronized cardioversion	EMT AEMT Paramedic	Unstable VT Unstable SVT Unstable Atrial Fibrillation/Flutter with HR ≥180	Pediatric: If defibrillator unable to deliver <5 J or biphasic equivalent	Remove chest transdermal medication patches prior to cardioversion.
Chest seal	EMT AEMT Paramedic	Occlusive dressing designed for treating open chest wound	None	
CPAP	EMT AEMT Paramedic	Respiratory Distress: Suspected CHF/ cardiac origin Respiratory Distress: Suspected non-cardiac origin. Drowning with respiratory distress	Unconscious Non-verbal patients with poor head/neck tone may be too obtunded for CPAP CPR SBP <90 mmHg Vomiting Age <15 Possible pneumothorax Facial trauma Unable to maintain airway	CPAP may be used only in patients alert enough to follow direction and cooperate with the assistance. BVM-assisted ventilation is the appropriate alternative. CPAP should be used cautiously for patients with suspected COPD or pulmonary fibrosis. Start low and titrate pressure. HEPA filters should be applied with aerosol-generated procedures

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Green	Authorized by state regulation and local protocol

SKILL	EMS CLINICIAN	INDICATION	CONTRAINDICATION	COMMENTS
Manual defibrillation	EMT AEMT Paramedic	VT (pulseless) VF	None	Remove chest transdermal medication patches prior to defibrillation.
ECG monitoring	EMT AEMT Paramedic	Any situation where there is a potential for cardiac arrhythmia	None	Apply monitor before moving patient with chest pain, syncope, or in arrest. Continuous monitoring for unstable/STEMI/CPR patients required. Document findings on PCR and leave strip with patient.
12-lead ECG	EMT AEMT Paramedic	Chest discomfort/pain and/or signs and symptoms suggestive of myocardial infarction (e.g., dyspnea, upper abdominal pain, fatigue) Signs and symptoms of arrhythmia (e.g., syncope, near syncope, palpitations) Suspected hyperkalemia ROSC after cardiac arrest To identify a rhythm	None	Transmit 12-lead ECGs to receiving hospital. If STEMI suspected, immediately notify BH, transmit 12-lead ECG to appropriate STEMI receiving center and transport. Report LBBB, RBBB, or poor-quality ECG for consideration of a false positive reading STEMI. Repeat 12-lead ECG after arrhythmia conversion or any change in patient condition. Do not delay transport for a repeat 12-lead ECG. Attach ECG(s) or printout photo(s) to PCR. Document findings on the PCR and leave ECG printout with patient. EMT/AEMT: May assist with placement of 12-lead ECG leads.
End tidal CO_2 Detection Device (Qualitative)	EMT AEMT Paramedic	All intubated patients <15 kg - unless quantitative end tidal CO_2 available for patient <15 kg.	None	Continuous monitoring after ET/PAA insertion required.
End tidal CO_2 Detection Device – Capnography (Quantitative)	EMT AEMT Paramedic	All intubated patients Respiratory distress or cardiovascular impairment	None	Continuous monitoring after ET/PAA insertion required. Use early in cardiac arrest.

Color code identifies the level of EMS clinician authorized to perform each skill.

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Green	Authorized by state regulation and local protocol

SKILL	EMS CLINICIAN	INDICATION	CONTRAINDICATION	COMMENTS
End tidal CO_2 Detection Device – Capnography (Quantitative) (continued)		Trauma		For $EtCO_2$ > 0 mmHg, may place ET/PAA without interrupting compressions. If $EtCO_2$ rises rapidly during CPR, pause CPR and check for pulse. If quantitative is unavailable due to special circumstances, then use qualitative (optional equipment)
External cardiac pacing	EMT AEMT Paramedic	Unstable bradycardia unresponsive to atropine	None	Document rate setting, milliamps and capture External cardiac pacing: • Set rate and energy per manufacturer's recommendations • Increase energy setting until capture occurs, usually between 50 mA and 100 mA • After electrical and mechanical capture achieved, increase energy by 10% • If patient remains hypotensive, increase rate in 5 bpm increments (not to exceed 100 bpm) to achieve and maintain adequate perfusion
Glucose monitoring	EMT [L] AEMT Paramedic	Hypoglycemia (suspected) Hyperglycemia Altered neurologic function	None	Repeat BS not indicated enroute if patient is improving. Repeat BS must be done if patient left on scene and initial was abnormal (AMA/Release).
Hemostatic gauze	EMT AEMT Paramedic	Life-threatening hemorrhage in the trauma patient when tourniquet cannot be used or to supplement tourniquet or bleeding unable to be controlled with direct pressure.	Bleeding controlled with direct pressure with standard gauze.	Should be applied with minimum 3 minutes of direct pressure.
Intranasal (IN)	EMT [L] AEMT Paramedic	When IN route indicated	None	Volumes over 1 mL per nostril are likely too large and may result in runoff out of the nostril. If using a mucosal atomization device, see manufacturer's guidance on accounting for dead space.
Injection (IM)	EMT [L] AEMT Paramedic	When IM route indicated	None	Pediatric preferred site: • Vastus lateralis in patients less than 3 years of age. (Maximum of 2 mL volume)

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Yellow	Authorized by LEMSA Medical Director per 22 CCR § 100063 (b)[L] or by California EMSA-approved LOSOP[S]
Green	Authorized by state regulation and local protocol

SKILL	EMS CLINICIAN	INDICATION	CONTRAINDICATION	COMMENTS
				Adults: • Deltoid in patients ≥3 years of age. (Maximum of 2 mL volume). Use vastus lateralis as secondary site (Maximum of 5 mL volume)
Injection (IV)	EMT AEMT Paramedic	When IV route indicated	None	
Intubation: ET/Stomal	EMT AEMT Paramedic	To facilitate ventilation and/or oxygenation in a patient who is unable to protect his/her own airway or maintain spontaneous respiration. Ineffective ventilations for unconscious adult patient or decreasing LOC.	Suspected opioid OD prior to naloxone Gag reflex present Infants and pediatric patients <15 years of age that fit on the LBRT	If able to maintain adequate ventilation, may attempt to insert ET tube up to 3 times. After 3 unsuccessful attempts, ventilate with BVM or SGA. An ET attempt is defined as insertion of a laryngoscope into the oropharynx with intent to intubate. Document and report **LEADSD** **L**ung Sounds **E**$EtCO_2$ **A**bsent Abdominal Sounds **D**epth **S**ize **D**ocument presence of $EtCO_2$ waveform and $EtCO_2$ numeric value at Transfer of Care **Establishment of $EtCO_2$ prior to intubation:** The presence of $EtCO_2$ greater than zero is required prior to ET tube/PAA placement. • If assessment rules out airway obstruction, but $EtCO_2$ remains zero despite effective BVM ventilation (including OPA/NPA placement), a PAA may be placed. • For patients with intractable vomiting or airway bleeding, initial management should focus on clearing the airway with patient positioning (i.e., logrolling), and mouth and oropharynx suctioning. • Immediately following insertion of an advanced airway, persistent $EtCO_2$ waveform and reading (other than zero) must be maintained or the ET tube/PAA must be removed.

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SKILL	EMS CLINICIAN	INDICATION	CONTRAINDICATION	COMMENTS
Intubation: ET/Stomal (continued)				If $EtCO_2$ drops to zero and does not increase with immediate troubleshooting, extubate, and manually ventilate the patient via BVM. Continuous capnography monitoring after ET/PAA insertion is required. Report and document at a minimum: • capnography value, presence of waveform, abdominal sounds, and lung sounds before and after advanced airway placement; • at each patient movement, and; • at the transfer of care. When moving an intubated patient, apply C-collar prior to moving to minimize head movement and potential ET dislodgement.
Intubation: Perilaryngeal airway adjuncts • Supraglottic airway (i-gel) • Retroglottic airway (King Airway)	EMT AEMT Paramedic	Apnea or ineffective respirations for unconscious patient or decreasing LOC	Gag reflex present For King Airway, patient <4 feet tall Ingestion of caustic substances Known esophageal disease Laryngectomy/stoma Suspected opioid OD prior to naloxone Infants and pediatric patients <15 years of age that fit on the LBRT	Extubate if placement issue. <u>i-gel:</u> Use Size 3 (yellow) for small adult – 36-60kg. Use 12 french OG tube Use Size 4 (green) for medium adult – 50-90kg. Use 12 french OG tube Use Size 5 (orange) for large adult – 90+kg. Use 14 french OG tube <u>King Airway:</u> Use Size 3 (yellow) for patients 4 feet – 5 feet tall Use Size 4 (red) for patients 5 feet – 6 feet tall Use Size 5 (purple) for patients ≥6 feet tall Document and report **LEADSD:** **L**ung Sounds **E**$EtCO_2$ **A**bsent Abdominal Sounds **D**epth **S**ize **D**ocument presence of $EtCO_2$ waveform and $EtCO_2$ numeric value at Transfer of Care

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SKILL	EMS CLINICIAN	INDICATION	CONTRAINDICATION	COMMENTS
Intubation: Perilaryngeal airway adjuncts • Supraglottic airway (i-gel) • Retroglottic airway (King Airway) (continued)				**Establishment of $EtCO_2$ prior to intubation:** The presence of $EtCO_2$ greater than zero is required prior to ET tube/PAA placement. • If assessment rules out airway obstruction, but $EtCO_2$ remains zero despite effective BVM ventilation (including OPA/NPA placement), a PAA may be placed. • For patients with intractable vomiting or airway bleeding, initial management should focus on clearing the airway with patient positioning (i.e., logrolling), and mouth and oropharynx suctioning. • Immediately following insertion of an advanced airway, persistent $EtCO_2$ waveform and reading (other than zero) must be maintained or the ET tube/PAA must be removed. If $EtCO_2$ drops to zero and does not increase with immediate troubleshooting, extubate, and manually ventilate the patient via BVM. Continuous capnography monitoring after ET/PAA insertion is required. Report and document at a minimum: • capnography value, presence of waveform, abdominal sounds, and lung sounds before and after advanced airway placement; • at each patient movement, and; • at the transfer of care. When moving an intubated patient, apply C-collar prior to moving to minimize head movement and potential ET dislodgement.
Length-Based Resuscitation Tape (LBRT)	EMT AEMT Paramedic	Determination of length for calculation of pediatric drug dosages and equipment sizes.	None	Base dosage calculation on length of child. Refer to pediatric chart for dosages (P-117).

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SKILL	EMS CLINICIAN	INDICATION	CONTRAINDICATION	COMMENTS
Magill forceps	EMT AEMT Paramedic	Airway obstruction from foreign body with decreasing LOC/unconscious	None	
Nasogastric / Orogastric tube	EMT AEMT Paramedic	Gastric distention interfering w/ ventilations	Severe facial trauma Known esophageal disease	If NG tube needed in a patient with a King Airway/i-gel, insertion should be via the suction/gastric port, if available.
Nebulizer, oxygen powered	EMT AEMT Paramedic	Respiratory distress with: • Bronchospasm • Wheezing • Croup-like cough • Stridor	None	Flow rate 4-6 L/min via mouthpiece; 6-10 L/min via mask/ET. If concerned about aerosolized infectious exposure, substitute with MDI, if available. Consider applying HEPA filters with aerosol-generating procedures for in-line nebulizer treatments.
Needle thoracostomy	EMT AEMT Paramedic	Severe respiratory distress with diminished or absent breath sounds (unilaterally or bilaterally), and SBP <90 mmHg, and suspected pneumothorax (Adult) Severe respiratory distress with diminished or absent breath sounds (unilaterally or bilaterally), and hypotensive for age, and suspected pneumothorax (Pediatric)	None	Use 14-gauge, 3.25-inch IV catheter. Anterior axillary line needle thoracostomy placement is preferred as it has a lower failure rate than midclavicular line placement. Insert the catheter into the anterior axillary line 4th/5th ICS on the involved side (roughly nipple level / inframammary fold: preferred position) **OR** Insert the catheter into the midclavicular line 2nd/3rd ICS on the involved side (non-preferred position) Tape catheter securely to chest wall and leave open to air.
Obstetrical maneuvers	EMT AEMT Paramedic	Difficult deliveries	None	Nuchal cord (cord wrapped around neck): • Slip cord over the head and off neck. • Clamp and cut cord, if wrapped too tightly. Prolapsed cord: • Place mother with her hips elevated on pillows. • Insert a gloved hand into vagina and gently push presenting part off cord.

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SKILL	EMS CLINICIAN	INDICATION	CONTRAINDICATION	COMMENTS
				• Transport immediately while retaining this position. Do not remove hand until relieved by hospital personnel. • Cover exposed cord with saline-soaked gauze. Shoulder dystocia: • Hyperflex mother's knees to her chest.
Positive end-expiratory pressure (PEEP) valve	EMT AEMT Paramedic	BVM ventilation	Adult: CPR SBP <90 mmHg Possible pneumothorax Pediatric: CPR Hypotensive for age Possible pneumothorax	Adult: PEEP should be increased slowly by 2-3 cmH20 and titrated from 5 cmH20 (initial setting) to a max of 15 cmH20 closely monitoring response and vital sign changes. Pediatric: PEEP should be increased slowly by 2-3 cmH2o and titrated from 5 cmH2o (initial setting) to a max of 10 cmH20 closely monitoring response and vital sign changes. EMT/AEMT: May perform BVM ventilations with PEEP valve in place, but may not adjust settings.
Prehospital pain scale	EMT AEMT Paramedic	All patients with a traumatic or pain-associated chief complaint	None	Assess for presence and intensity of pain.
Pulse oximetry	EMT AEMT Paramedic	Assess oxygenation	None	Obtain room air saturation prior to O_2 administration, if possible.
Prehospital stroke screening and severity scales	EMT AEMT Paramedic	All patients with suspected Stroke/TIA	None	Bring witness to ED to verify time of symptom onset and provide consent for interventions. If witness unable to ride in ambulance, obtain accurate contact phone number. Use *BE-FAST* Prehospital Stroke Screening Scale in assessment of possible TIA or stroke patients: **B** = Balance: Unsteadiness, ataxia **E** = Eyes: Blurred/double or loss of vision **F** = Face: Unilateral face droop **A** = Arms and/or legs: Unilateral weakness exhibited by a drift or drop

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SKILL	EMS CLINICIAN	INDICATION	CONTRAINDICATION	COMMENTS
				S = Speech: Slurred, inability to find words, absent **T** = Time: Accurate Last Known Well time Get specific Last Known Well time in military time (hours: minutes). If *BE-FAST* is positive, calculate and report the FAST-ED Prehospital Stroke Severity Scale value: **F** = Facial palsy **A** = Arm weakness **S** = Speech changes **T** = Time **E** = Eye deviation **D** = Denial/neglect
Re-alignment of fracture	EMT AEMT Paramedic	Grossly angulated long bone fracture	None	Use unidirectional traction. Check for distal pulses prior to realignment and every 15 min thereafter.
Removal of impaled object obstructing airway	EMT AEMT Paramedic	Impaled object in face, cheek or neck causing total airway obstruction	None	Impaled objects not causing total airway obstruction should be immobilized and left in place.
Spinal motion restriction	EMT AEMT Paramedic	Spinal pain of possible traumatic cause MOI suggests potential spinal injury consider: ≥65 years and older Acute neurological deficit following injury Penetrating trauma with neurological deficit Victims of penetrating trauma (stabbing, gunshot wound) to the head, neck, and/or torso should not receive spinal stabilization unless there is one or more of the following: • Neurologic deficit • Priapism • Anatomic deformity to the spine secondary to injury	None	Pregnant patients (>6 mo) tilt 30° left lateral decubitus. See S-104 Attachment for "**Spinal Motion Restriction Algorithm**" **The Acronym "NSAIDS" Should Be Used to Remember the Steps in Algorithm**: **N**- Neurologic exam **S**- Sixty-five **A**- Altered (including language barrier) **I**- Intoxication **D**- Distracting injury **S**- Spine exam Spinal Motion Restriction is **not** required if **ALL of the following are present and documented**: 1. No neuro complaints/ no abnormal exam 2. Not altered / no language barrier 3. Not intoxicated by drugs and/or alcohol 4. No significant competing, distracting pain 5. No spine pain or tenderness

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SKILL	EMS CLINICIAN	INDICATION	CONTRAINDICATION	COMMENTS
Spinal Motion Restriction (continued)				**Spinal Motion Restriction:** -The use of an appropriately sized cervical collar on a stretcher while limiting the movement of the spine and maintaining "neutral" in-line position. -Backboards should be limited to extrication whenever possible. In-line stabilization should be maintained with the patient supine and neutral on the gurney during transport. -If a patient is not able to tolerate the supine position during transport, document the reason and communicate to receiving hospital staff. Sports Injury Patient If a patient is helmeted and/or shoulder padded, patient helmet and pads should be removed while on scene. **Document a neurological examination including**: • Test of sensation and abnormal sensation (paresthesia) in all 4 extremities • Test of motor skills in all 4 extremities with active movements by the patient (avoid just reflexive movements like hand grasp to include: - Wrist/finger extension and flexion - Foot plantar and dorsiflexion Pediatric Patient **N**-no altered LOC **E**-evidence of obvious injury absent **C**-complete spontaneous ROM without pain **K**-kinematic (mechanism) negative Pediatrics Patients and Car Seats **Infants restrained in a rear-facing car seat** may be immobilized and extricated in the car seat. The child may remain in the car seat if the immobilization is secure and his/her condition allows (no signs of respiratory distress or shock). **Children restrained in a car seat** (with a high back) may be immobilized and extricated in the car seat; however, once removed from the vehicle, the child should be placed in spinal immobilization. **Children restrained in a booster seat** (without a back) need to be extricated and immobilized following standard spinal immobilization procedures.

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SKILL	EMS CLINICIAN	INDICATION	CONTRAINDICATION	COMMENTS
Saline lock	EMT AEMT Paramedic	Used to provide IV access in patients who do not require continuous infusion of intravenous solutions	None	Patient presentations which may require IV fluid replacement.
Tourniquet	EMT AEMT Paramedic	Severely injured extremity when direct pressure or pressure dressing fails to control life-threatening hemorrhage	None	In MCI, direct pressure not required prior to tourniquet application. Tourniquet must be tight enough to occlude arterial flow/distal pulses. Assess and document distal pulses, time placed, and any subsequent adjustments.
Valsalva maneuver	EMT AEMT Paramedic	Stable SVT	None	Most effective with adequate BP. D/C after 5-10 sec if no conversion.
Video laryngoscope	EMT AEMT Paramedic	To assist with endotracheal intubation using video laryngoscopy	None	Optional inventory item (recording capabilities preferred). See Intubation ET for comments.
VASCULAR ACCESS External jugular	EMT AEMT Paramedic	When unable to establish other peripheral IV and IV is needed for definitive therapy ONLY	None	
Extremity	EMT AEMT Paramedic	Whenever IV line is needed or anticipated for definitive therapy	None	Lower extremities remain standing order in the pediatric patient.
Indwelling Devices	EMT AEMT Paramedic	Primary access site for patients with indwelling catheters if needed for definitive therapy	Devices without external port (i.e., port-a-cath)	Clean site for minimum of 15 seconds prior to accessing. Infuse at a rate to support continuous flow and prevent backflow into IV line. Needleless systems may require adaptor. Examples include Groshong, Hickman, and PICC lines.

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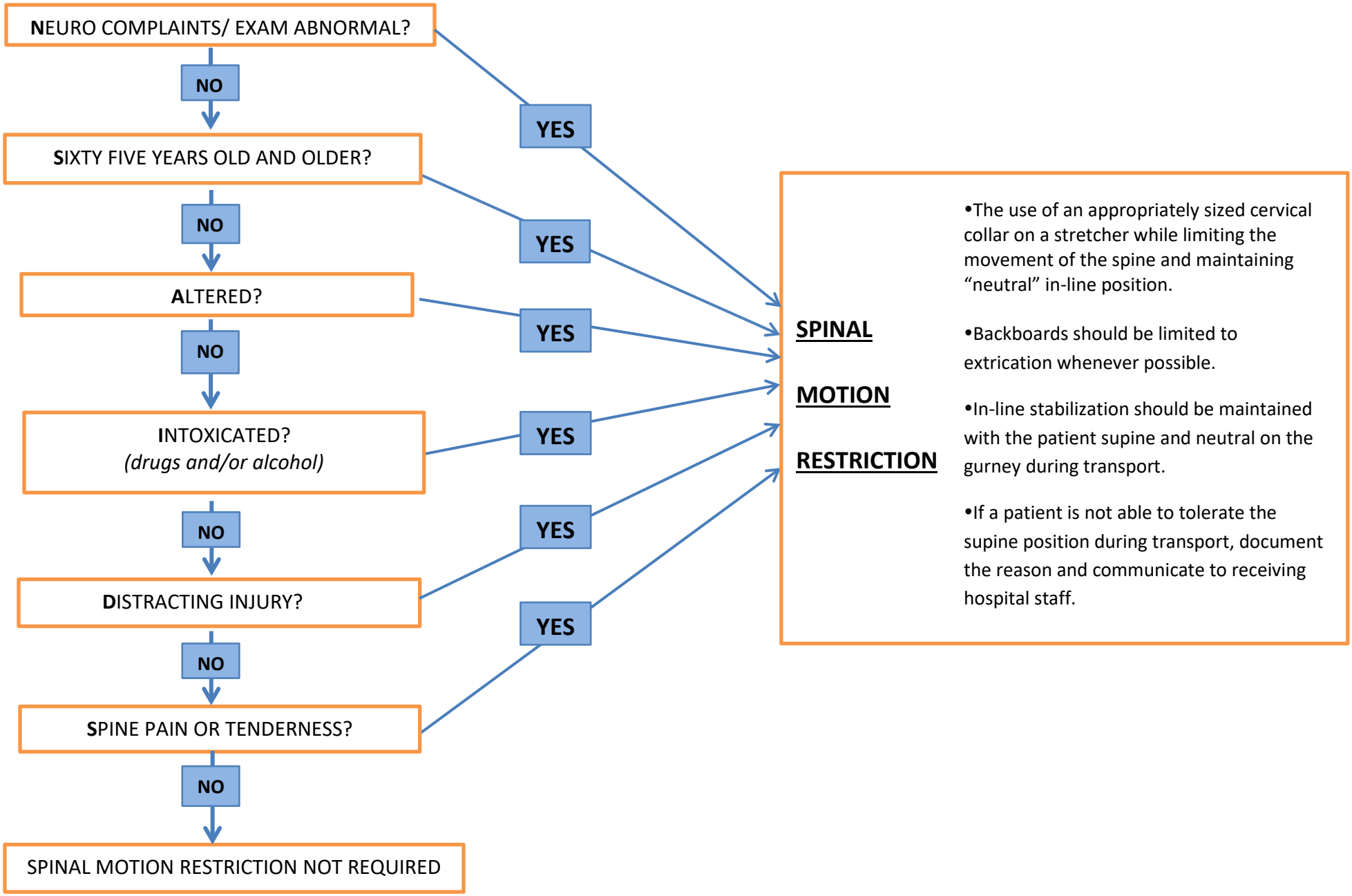
SKILL	EMS CLINICIAN	INDICATION	CONTRAINDICATION	COMMENTS
Intraosseous	EMT AEMT Paramedic	Fluid/medication administration in patient when needed for definitive therapy and unable to establish venous access Pediatric patient: unconscious	Tibial fracture Vascular Disruption Prior attempt to place in target bone Humeral fracture (for humeral placement) Local infection at insertion site	Splint extremity after placement. Observe carefully for signs of extravasation. Do not infuse into fracture site. Attempts to initiate tibial IO should be the priority when peripheral access is unavailable; however humeral IO insertion may be utilized when unable to access other sites. Avoid placement if potential fracture is on target bone. In conscious adult patients, slowly infuse lidocaine 40 mg IO prior to fluid/medication administration. AEMT: Authorized to establish and maintain IO access in a pediatric patient only.
Percutaneous Dialysis Catheter Access (e.g., Vascath)	EMT AEMT Paramedic	If unable to gain other IV access and for immediate life threat only	None	Vascath contains concentrated dose of heparin which must be aspirated PRIOR to infusion. Infuse at a rate to support continuous flow and prevent backflow into IV line. Needleless systems may require adaptor. Annual training required.
Shunt/graft – AV (Dialysis)	EMT AEMT Paramedic	If unable to gain other IV access and for immediate life threat only	None	Prior to access, check site for bruits and thrills. Access fistula on venous side (weaker thrill). Inflate BP cuff around IV bag to just above patient's systolic BP to maintain flow of IV. If unsuccessful, hold direct pressure over site for 10 min to stop bleeding. Do not apply pressure dressing.

EMT/AEMT/Paramedics or supervised EMT/AEMT/Paramedic students are authorized to perform these skills when on-duty as part of the organized EMS system, while at the scene of a medical emergency or during transport, or during interfacility transfer.

Spinal Motion Restriction Algorithm: NSAIDS



The Acronym "NSAIDS" Should Be Used to Remember the Steps in Algorithm

N- **Neurologic exam-** Are there any abnormal sensory or motor findings? Weakness/numbness or complaints of paresthesia? Look for focal deficit, such as tingling, reduced strength, numbness in an extremity.

S-**Sixty five-** Greater than or equal to 65 years of age?

A- **Altered-** Is the patient oriented to person, place, time and situation? Is the patient altered in any way? Is there a language barrier? Is the patient cooperative?

I-**Intoxication-** Is there any indication that the person is impaired by drugs or alcohol?

D-**Distracting injury-** Is there any other injury which is capable of producing significant pain in this patient?

S-**Spine exam-** Does the patient complain of neck or back pain? Assess entire spine for point tenderness or spinal process tenderness.

SPECIAL CONSIDERATIONS

•Prehospital provider assessment will determine what method is needed. Every patient with trauma must receive an assessment. If any assessment component is positive, the patient requires spinal motion restriction.

•Patients with severe kyphosis or other anatomical or medical conditions (e.g., ankylosing spondylitis or rheumatoid arthritis) may be stabilized using a combination of pillow, blanket, or other devices.

•Spinal motion restriction should be accomplished using the most appropriate tool for the specific circumstance. May include, but are not limited to, vacuum splints, pneumatic splints, cervical collars, soft collars, straps, tape, as well as soft materials, such as pillows and blanket to minimize movement, compression, or distraction of the spine.

•Patients with acute or chronic difficulty breathing: Use spinal motion restriction with caution in patients presenting with dyspnea and place patient in position best suited to protect the airway.

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This document contains the authorized medications for EMT/AEMT/Paramedics to administer when on-duty as part of the organized EMS system, while at the scene of a medical emergency or during transport, or during interfacility transfer.

ACETAMINOPHEN (IV)

EMT	AEMT	PARAMEDIC

Class
- Analgesic, antipyretic

Mechanism of Action
- Mechanism of action unclear; may work peripherally to block pain impulse generation; may also inhibit prostaglandin synthesis in CNS.

Indications	Contraindications
• Management of acute pain • Protocols: S-141, S-173	• Severe acute liver disease • Known or suspected total dose exceeding 4,000 mg in a 24-hour period • <2 years of age • Pregnancy with pain from active labor

Adult Dose	Pediatric Dose
• Acetaminophen 1,000 mg IV over 15 min	• Acetaminophen IV per drug chart in 100 ml of NS over 15 min

Adverse Effects
- Nausea/vomiting
- Skin rash
- Itching
- Overdose can cause hepatotoxicity

Notes
- Remember to consider non-pharmacologic pain treatments, e.g., place in position of comfort, apply ice packs/splints PRN, and verbal reassurance.
- If patient refuses or has contraindications to acetaminophen, may treat as moderate pain with fentanyl or morphine.

ACTIVATED CHARCOAL

EMT	AEMT	PARAMEDIC

Class
- Antidote

Mechanism of Action
- Adsorbs a variety of drugs and chemicals (e.g., physical binding of a molecule to the surface of charcoal particles); desorption of bound particles may occur unless the ratio of charcoal to toxin is extremely high.

Indications	Contraindications
• Management of overdose and poisoning • Protocols: S-134, S-165	• Caustic agents, hydrocarbons, or liquid ingestions (e.g., alcohols)

Adult Dose	Pediatric Dose
• Activated charcoal 50 gm PO	• Activated charcoal per drug chart PO

Adverse Effects
- Nausea/vomiting

Notes
- Due to risk of charcoal aspiration, do not administer activated charcoal to a patient anticipated to have a decline in mental status over the next 30-60 minutes.
- Does not effectively bind to or adsorb certain ions like metals (iron, lithium, sodium), electrolytes (potassium, magnesium), and acids/alkalis.
- Authorized to administer activated charcoal on standing order, if recommended by Poison Control Center.
- The 24-hour toll-free telephone number to Poison Control Center is (800) 222-1222.
- Shake vigorously before use because separation occurs while it is stored.

ADENOSINE

EMT	AEMT	PARAMEDIC

Classification
- Antidysrhythmic

Mechanism of Action
- Slows conduction through the AV node and interrupts AV reentry pathways as well as conduction through the SA nodes.

Indications	Contraindications
• Management of supraventricular tachycardia (SVT) • Protocols: S-127, S-163	• Second- or third-degree AV block (without pacemaker) • Sick sinus syndrome

Adult Dose	Pediatric Dose
• Adenosine 6 mg rapid IV/IO followed by 20 mL NS rapid IV/IO • If no conversion, adenosine 12 mg rapid IV/IO followed by 20 mL NS rapid IV/IO, MR x1	• Adenosine per drug chart rapid IV/IO, followed with 20 mL NS rapid IV/IO, MR x2

Adverse Effects
- Flushing
- Sweating
- Dizziness
- Nervousness
- Hypotension
- Feeling of impending doom
- Severe bronchospasm in patients with asthma
- Paresthesia

Notes
- For stable patients, use Valsalva maneuver prior to administration. Discontinue Valsalva maneuver after 5-10 seconds if no conversion.
- Ideally, cannulate a proximal vein with an 18-20g catheter. Use the IV port closest to the patient and rapidly flush with 20mL normal saline immediately.
- Run a 6-second ECG strip before, during, and after drug administration.
- Patients frequently have a brief period of escape beats or asystole before the sinus node starts up again. This may be perceived as a feeling of impending death and can be extremely frightening for patients.
- If the wide-complex tachycardia is ventricular in origin, adenosine is highly unlikely to result in cardioversion.
- Bronchospasm may occur in patients with a history of airway disease, such as asthma or COPD.

ALBUTEROL / LEVALBUTEROL

EMT	AEMT	PARAMEDIC

Classification
- Beta-2 receptor agonist

Mechanism of Action
- Albuterol: Selective beta-2 adrenergic agonist that causes relaxation of smooth muscles in the bronchial tree, decreasing airway resistance, facilitating mucous drainage and increasing vital capacity; shifts potassium intracellular; has mild beta-1 activity that may increase heart rate.
- Levalbuterol: Relaxes bronchial smooth muscle by action on beta-2 receptors; less likely to cause tachycardia than albuterol.

Indications
- Management of respiratory distress (non-cardiac, anaphylaxis, and burns), suspected hyperkalemia, and specific crush injuries
- Protocols: S-122, S-124, S-127, S-131, S-136, S-139, S-162, S-163, S-167, S-169, S-170

Contraindications
- <6 years of age (levalbuterol only)

Adult Dose
- For respiratory distress (non-cardiac, anaphylaxis, and burns), albuterol/levalbuterol 6 mL via nebulizer, MR
- For suspected hyperkalemia and specific crush injuries, continuous albuterol/levalbuterol 6 mL via nebulizer

Pediatric Dose
- For respiratory distress (non-cardiac, anaphylaxis, and burns), albuterol/levalbuterol per drug chart via nebulizer, MR
- For suspected hyperkalemia and specific crush injuries, continuous albuterol/levalbuterol per drug chart via nebulizer

Adverse Effects
- Tremors
- Headache
- Nervousness
- Dizziness
- Dry mouth
- Dysrhythmias
- Chest discomfort
- Palpitations
- Nausea/vomiting

Notes
- Ineffective in croup and should be avoided.
- Pediatric patients between 2-6 years of age may be more prone to adverse effects.
- Do not assume patients have administered their own drug properly. Do not include home doses of albuterol/levalbuterol in your total drug administration consideration.
- If concerned about aerosolized infectious exposure, substitute with MDI, if available.
- Patients may need to be instructed on proper use of the MDI.
- Levalbuterol may be substituted for albuterol and can be combined with ipratropium bromide. This substitution option applies to patients ≥6 years of age.

AMIODARONE

EMT	AEMT	PARAMEDIC

Classification
- Antidysrhythmic

Mechanism of Action
- Class III antidysrhythmic agent that inhibits adrenergic stimulation; affects sodium, potassium, and calcium channels; markedly prolongs action potential and repolarization; decreases AV conduction and sinus node function.

Indications	Contraindications
• Management of ventricular tachycardia and ventricular fibrillation • Protocols: S-127, S-163	

Adult Dose	Pediatric Dose
• For stable VT, amiodarone 150 mg in 100 mL of NS over 10 min IV/IO, MR x1 in 10 min • For persistent VF/pulseless VT after 3 defibrillation attempts, amiodarone 300 mg IV/IO, MR 150 mg q3-5 min (max 450 mg) • For reported/witnessed AICD firing ≥2, amiodarone 150 mg in 100 mL of NS over 10 min IV/IO, MR x1 in 10 min	• For stable VT, amiodarone per drug chart BHPO • For persistent VF/pulseless VT after 3 defibrillation attempts, amiodarone per drug chart IV/IO, MR per drug chart x2 • For reported/witnessed AICD firing ≥2, amiodarone per drug chart, MR BHPO

Adverse Effects
- Hypotension
- Worsening of dysrhythmias
- Prolonged QT interval
- Bradycardia
- AV block
- Dizziness
- Nausea/vomiting
- Burning at the IV site

Notes
- If patient is in unstable ventricular tachycardia, synchronized cardioversion should be performed first.
- Monitor the patient for hypotension and increasing PR and QT intervals.
- Risk factors for acute hypotension are patients >65 years of age with a history of myocardial infarction.
- Closely monitor heart rate, blood pressure, and cardiac rhythm during and after administration.
- Do not infuse with Ringer's lactate solution.

ASPIRIN

EMT L	AEMT	PARAMEDIC

Classification
- Antiplatelet agent, non-steroidal anti-inflammatory drug (NSAID)

Mechanism of Action
- Inhibits platelet aggregation and inhibits synthesis of prostaglandin by cyclooxygenase; has antipyretic and analgesic activity.

Indications	Contraindications
• Antiplatelet agent for the care of patients suspected of suffering from an acute coronary syndrome • Protocols: S-126	

Adult Dose	Pediatric Dose
• Aspirin 324 mg chewable PO	• Not indicated for use in pediatrics

Adverse Effects
- GI bleeding
- Epigastric pain
- Nausea/vomiting

Notes
- EMT: Authorized to assist patient to self-medicate own prescribed aspirin up to a maximum dose of 325 mg.
- Administer aspirin even if discomfort/pain has resolved. If aspirin is not given, document the reason.
- Aspirin may be withheld if an equivalent dose has been administered by a healthcare professional.

ATROPINE

EMT	AEMT	PARAMEDIC

Classification
- Anticholinergic, toxicity antidote

Mechanism of Action
- Blocks the action of acetylcholine at parasympathetic sites in smooth muscle, secretory glands, and the CNS; increases cardiac output, dries secretions; reverses the muscarinic effects of cholinergic poisoning.

Indications	Contraindications
• Management of unstable bradycardia and symptomatic organophosphate poisoning • Protocols: S-127, S-134, S-163, S-165	

Adult Dose	Pediatric Dose
• For unstable bradycardia, atropine 1 mg IV/IO, MR q3-5 min to max 3 mg • For symptomatic organophosphate poisoning, atropine 2 mg IV/IO. For continued signs/symptoms of SLUDGE/BBB, double prior atropine dose IV/IO q3-5 min	• For unstable bradycardia after 3 doses of epinephrine, atropine per drug chart IV/IO, MR x1 in 5 min • For symptomatic organophosphate poisoning, atropine per drug chart IV/IO. For continued signs/symptoms of SLUDGE/BBB, double prior atropine dose IV/IO q3-5 min

Adverse Effects
- Drowsiness
- Confusion
- Headache
- Palpitations
- Dysrhythmias
- Nausea/vomiting
- Pupil dilation
- Dry mouth/nose/skin
- Blurred vision
- Urinary retention
- Flushed, hot, dry skin

Notes
- May omit atropine in bradycardic patients unlikely to have clinical benefit (e.g., heart transplant patients, second-degree type II, or third-degree heart block).
- Use cautiously if myocardial infarction or ischemia is suspected, as atropine will increase myocardial oxygen demand, which may worsen the infarct.
- In organophosphate poisoning, titrate atropine to SLUDGE/BBB signs/symptoms, not to tachycardia. Cardiac monitoring should be considered in all cases of severe organophosphate poisoning.

BUPRENORPHINE-NALOXONE

EMT	AEMT	PARAMEDIC [S]

Classification
- Buprenorphine: analgesic, opioid antagonist, opioid partial agonist
- Naloxone: opioid reversal agent

Mechanism of Action
- Exerts its analgesic effect via high affinity binding to mu-opioid receptors in the CNS; displays partial mu agonist and weak kappa antagonist activity. Naloxone is a competitive opioid antagonist.

Indications	Contraindications
• Management of opioid withdrawal and opioid use disorder • Protocols: S-145	• Any methadone use within the last 10 days • Lack of opioid withdrawal signs or symptoms • Severe medical illness (e.g., sepsis, respiratory distress) • Altered mental status • <16 years of age

Adult Dose	Pediatric Dose
• Buprenorphine-naloxone (Suboxone®) 16 mg/4 mg SL BHO (opioid withdrawal base) • For continued symptoms, repeat with buprenorphine-naloxone (Suboxone®) 8 mg/2 mg SL to a max of 24 mg/6 mg	• Not indicated for use in pediatrics

Adverse Effects
- Diaphoresis
- Abdominal pain
- Nausea
- Headache
- Withdrawal syndrome
- Palpitations

Notes
- Use of buprenorphine-naloxone is only authorized for agencies participating in the Buprenorphine Pilot Program.
- Sharp Grossmont Hospital and Palomar Medical Center – Escondido are approved opioid withdrawal bases.
- For patients with overdoses reversed by naloxone, calculate a COWS score and consider administration.
- Calculate a COWS score before and after administration.

CALCIUM CHLORIDE

EMT	AEMT	PARAMEDIC

Classification
- Electrolyte, antidote

Mechanism of Action
- Essential regulator for the excitation threshold of nerves and muscles; causes significant increase in myocardial contractility and ventricular automaticity. Antidote for some electrolyte imbalances and calcium channel and/or beta blocker toxicity.

Indications	Contraindications
• Management of suspected hyperkalemia, calcium channel blocker overdose, and specific crush injuries • Protocols: S-127, S-131, S-134, S-139, S-163, S-169	

Adult Dose	Pediatric Dose
• For PEA with suspected hyperkalemia, $CaCl_2$ 1 gm IV/IO • For suspected hyperkalemia, if widened QRS complex, immediately administer $CaCl_2$ 1 gm IV/IO • For suspected calcium channel blocker OD, $CaCl_2$ 1 gm IV/IO • For specific crush injuries, $CaCl_2$ 1 gm IV/IO over 30 sec	• For PEA with suspected hyperkalemia, $CaCl_2$ per drug chart IV/IO, MR x1 in 5 min for continued ECG findings consistent with hyperkalemia • For specific crush injuries, $CaCl_2$ IV/IO over 30 sec per drug chart, MR x1 in 5 min for continued ECG findings consistent with hyperkalemia

Adverse Effects
- Syncope
- Bradycardia
- Asystole
- Hypotension
- Nausea/vomiting
- Metallic taste with rapid injection
- Tissue necrosis at injection site

Notes
- Confirm IV is patent prior to administration, as extravasation causes severe tissue necrosis. Avoid use in small veins (feet/hands) for this reason.
- Precipitates to form calcium carbonate (chalk) when used with sodium bicarbonate. Administer calcium chloride and sodium bicarbonate in separate IV/IO or thoroughly flush in between administrations using at least 10 mL of normal saline.
- Calcium chloride contains three times more elemental calcium than calcium gluconate does. Constant ECG and vital sign monitoring are essential.
- Contact base hospital if dose exceeds par level.

DEXTROSE

EMT	AEMT	PARAMEDIC

Classification
- Glucose-elevating agent

Mechanism of Action
- Main form of glucose used by the body to create energy; elevates serum blood glucose levels.

Indications	Contraindications
• Management of hypoglycemia • Protocols: S-123, S-161	

Adult Dose	Pediatric Dose
• Dextrose 25 gm IV if BS <60 mg/dL • If patient remains symptomatic and BS remains <60 mg/dL, MR	• D_{10} per drug chart IV if BS <60 mg/dL (<45 mg/dL for neonate) • If patient remains symptomatic and BS remains <60 mg/dL (<45 mg/dL for neonate), MR

Adverse Effects
- Warmth, pain, burning, or phlebitis from IV infusion

Notes
- Confirm IV is patent prior to administration, as extravasation causes severe tissue necrosis. Use a large vein for administration and monitor the site closely.
- Immediately stop administration if extravasation occurs; document it and notify the receiving facility staff.
- Do not administer to patients with stroke unless hypoglycemia is documented.
- Repeat blood glucose level is required if patient remains on scene (AMA or release) and initial blood glucose level was abnormal.
- Repeat blood glucose is not indicated enroute if patient status is improving.

DIPHENHYDRAMINE

EMT	AEMT	PARAMEDIC

Classification
- Antihistamine

Mechanism of Action
- H_1 (histamine) receptor antagonist; works on effector cells in respiratory tract, blood vessels, and GI smooth muscle; also has anticholinergic properties.

Indications	Contraindications
• Management of allergic reactions and extrapyramidal reactions • Protocols: S-122, S-134, S-162, S-165	

Adult Dose	Pediatric Dose
• Diphenhydramine 50 mg IV/IM	• Diphenhydramine per drug chart IV/IM

Adverse Effects
- Drowsiness
- Sedation
- Seizures
- Dizziness
- Headache
- Blurred vision
- Wheezing
- Thickening of bronchial secretions
- Palpitations
- Hypotension
- Dysrhythmias
- Dry mouth
- Nausea/vomiting
- Hallucinations, confusion, and paradoxical CNS excitation can occur in children

Notes
- Administer slow IV.
- Epinephrine is the most important immediate treatment for anaphylaxis and should be administered as soon as anaphylaxis is recognized. The pharmacologic actions address the pathophysiological changes that occur in anaphylaxis better than any other medication. **Delayed epinephrine injection is associated with fatalities.**
- May be administered between epinephrine doses in anaphylaxis.

EPINEPHRINE (1:1,000)

EMT [L]	AEMT	PARAMEDIC

Classification
- Alpha/beta adrenergic agonist

Mechanism of Action
- A naturally occurring catecholamine that acts directly on alpha- and beta-adrenergic receptors. It is the most potent activator of alpha receptors, vasoconstricting the aorta and peripheral vasculature. Beta-1 stimulation increases inotropy, chronotropy, and AV conduction. Beta-2 stimulation causes bronchial smooth muscle relaxation and vasodilation to internal organs and skeletal muscles.

Indications	Contraindications
• Management of anaphylaxis, severe respiratory distress/failure, and stridor in pediatrics • Protocols: S-122, S-136, S-162, S-167, S-170	

Adult Dose	Pediatric Dose
• Epinephrine 1:1,000 (1 mg/mL) 0.5 mg IM, MR x2 q5 min	• IM: 1:1,000 per drug chart IM, MR x2 q5 min • Nebulized: 1:1,000 per drug chart (combined with 3 mL normal saline) via nebulizer, MR x1

Adverse Effects
- Nervousness/restlessness
- Headache
- Chest pain
- Tremors
- Dysrhythmias
- Nausea/vomiting
- Hypertension
- Palpitations

Notes
- EMT: Authorized to administer via auto-injector only.
- Epinephrine is the most important immediate treatment for anaphylaxis and should be administered as soon as anaphylaxis is recognized. The pharmacologic actions address the pathophysiologic changes that occur in anaphylaxis better than any other medication. **Delayed epinephrine injection is associated with fatalities.**
- Inadvertent IV injection of usual IM formulation and dose constitutes a 10-fold overdose that can result in sudden and severe hypertension and cerebral hemorrhage.
- In patients who remain hypotensive after initial IM epinephrine, administer IV fluids. Have push-dose epinephrine ready for patients unresponsive to repeated IM epinephrine and IV fluids.

EPINEPHRINE (1:10,000)

EMT	AEMT	PARAMEDIC

Classification
- Alpha/beta adrenergic agonist

Mechanism of Action
- A naturally occurring catecholamine that acts directly on alpha- and beta-adrenergic receptors. It is the most potent activator of alpha receptors, vasoconstricting the aorta and peripheral vasculature. Beta-1 stimulation increases inotropy, chronotropy, and AV conduction. Beta-2 stimulation causes bronchial smooth muscle relaxation and vasodilation to internal organs and skeletal muscles.

Indications	Contraindications
• Management of cardiac arrest and bradycardia in pediatric patients • Protocols: S-127, S-130, S-133, S-163, S-166, S-176	

Adult Dose	Pediatric Dose
• For cardiac arrest, epinephrine 1:10,000 1 mg IV/IO q3-5 min • For VF and pulseless VT, epinephrine 1:10,000 1 mg IV/IO q3-5 min, begin after second defibrillation • For cardiac arrest with hypothermia, epinephrine 1:10,000 1 mg IV/IO x1	• For cardiac arrest or newborn with HR <60, epinephrine 1:10,000 per drug chart IV/IO q3-5 min • For VF and pulseless VT, epinephrine 1:10,000 per drug chart IV/IO q3-5 min, begin after second defibrillation • For cardiac arrest with hypothermia, epinephrine 1:10,000 per drug chart IV/IO x1 • For unstable bradycardia, epinephrine 1:10,000 per drug chart IV/IO, MR x2 q3-5 minutes. MR q3-5 minutes BHO

Adverse Effects
- Nervousness/restlessness
- Headache
- Chest pain
- Tremors
- Dysrhythmias
- Nausea/vomiting
- Hypertension
- Palpitations

Notes
- During CPR, epinephrine is administered to increase systemic vasomotor tone, thereby increasing diastolic blood pressure and coronary perfusion pressure.

EPINEPHRINE (1:100,000)

EMT	AEMT	PARAMEDIC

Classification
- Alpha/beta adrenergic agonist

Mechanism of Action
- A naturally occurring catecholamine that acts directly on alpha- and beta-adrenergic receptors. It is the most potent activator of alpha receptors, vasoconstricting the aorta and peripheral vasculature. Beta-1 stimulation increases inotropy, chronotropy, and AV conduction. Beta-2 stimulation causes bronchial smooth muscle relaxation and vasodilation to internal organs and skeletal muscles.

Indications	Contraindications
• Management of severe anaphylaxis and shock • Protocols: S-122, S-126, S-127, S-138, S-143, S-162, S-163, S-168, S-177	

Adult Dose	Pediatric Dose
• Push-dose epinephrine 1:100,000 (0.01 mg/mL) 1 mL IV/IO, MR q3 min, titrate to SBP ≥90 mmHg	• Push-dose epinephrine 1:100,000 (0.01 mg/mL) per drug chart IV/IO, MR q3 min, titrate to adequate perfusion

Adverse Effects
- Nervousness/restlessness
- Headache
- Chest pain
- Tremors
- Dysrhythmias
- Nausea/vomiting
- Hypertension
- Palpitations

Notes
- Administer slowly via IV and titrate to adequate perfusion.
- Patients with anaphylaxis unresponsive to IM epinephrine and aggressive fluid resuscitation may benefit from push-dose epinephrine.

Mixing Instructions
- Remove 1 mL normal saline (NS) from the 10 mL NS syringe
- Add 1 mL of epinephrine 1:10,000 (0.1 mg/mL) to 9 mL NS syringe
- The mixture now has 10 mL of epinephrine at 0.01 mg/mL (10 mcg/mL) concentration

FENTANYL

EMT	AEMT	PARAMEDIC

Classification
- Synthetic opioid, opioid analgesic

Mechanism of Action
- Opioid agonist-analgesic; inhibits ascending pain pathways, thus altering pain perception; increases pain threshold; produces analgesia, respiratory depression, and sedation.

Indications	Contraindications
• Management of acute pain • Protocols: S-141, S-173	• Pregnancy with pain from active labor

Adult Dose	Pediatric Dose

• IV: Fentanyl up to 100 mcg IV. MR up to 50 mcg IV q5 min x2. Maximum total dose 200 mcg IV
• IN: Up to 50 mcg IN q15 min x2. 3rd dose fentanyl up to 50 mcg IN
	• IV:
	  • <10 kg: Fentanyl IV per drug chart. MR at half initial IV dose BHO
	  • ≥10 kg: Fentanyl IV per drug chart. MR at half initial IV dose
	• IN:
	  • <10 kg: Fentanyl IN per drug chart. MR at initial IN dose BHO
	  • ≥10 kg: Fentanyl IN per drug chart. MR at initial IN dose

Adverse Effects
- Confusion
- Paradoxical excitation
- Delirium
- Sedation/drowsiness
- CNS depression
- Respiratory depression
- Apnea
- Dyspnea
- Dysrhythmias
- Hypotension
- Syncope
- Nausea/vomiting
- Abdominal pain

Notes
- Remember to consider non-pharmacologic pain treatments, e.g., place in position of comfort, apply ice packs/splints PRN, and verbal reassurance.
- Closely monitor respiratory status (including capnography) after administration.
- An initial dose of 100 mcg IV or 50 mcg IN is well tolerated in most adults.
- In opioid-naive or elderly patients, start with a lower dose. For elderly patients not taking opioids, 25 mcg is frequently sufficient for pain relief. Consider beginning with 25 mcg and titrating up in increments of 25 mcg to achieve pain relief without respiratory depression.
- For pediatric patients >36 kg or longer than the LBRT, rather than administering the maximum dose, use weight-based dosing for both initial and repeat doses. It is acceptable to round doses (up or down) to the nearest 5 mcg.

GLUCAGON

EMT	AEMT	PARAMEDIC

Classification
- Glucose-elevating agent, antidote

Mechanism of Action
- A hormone naturally produced by pancreatic alpha cells of the islets of Langerhans. Causes breakdown of glycogen (stored in the liver) to glucose and inhibits the synthesis of glycogen from glucose. These combined actions increase blood glucose levels.

Indications	Contraindications
• Management of hypoglycemia and beta blocker overdose with cardiac effects • Protocols: S-123, S-134, S-161	

Adult Dose	Pediatric Dose
• For hypoglycemia, glucagon 1 mL IM • For beta blocker overdose, glucagon 1-5 mg IV, MR 5-10 min, for a total of 10 mg	• Glucagon per drug chart IM

Adverse Effects
- Dizziness
- Headache
- Hypotension
- Tachycardia
- Nausea/vomiting
- Rebound hypoglycemia

Notes
- AEMT: Authorized to administer via IM only.
- Use mixture immediately after reconstitution of dry powder.
- Patient usually awakens from hypoglycemic coma in 5-20 minutes after glucagon injection. PO carbohydrates should be given as soon as possible after patient regains consciousness and is able to maintain airway.
- Anticipate nausea/vomiting following administration of glucagon.

IPRATROPIUM BROMIDE

EMT	AEMT	PARAMEDIC

Classification
- Anticholinergic

Mechanism of Action
- Anticholinergic (parasympatholytic) agent; inhibits vagally mediated reflexes by antagonizing acetylcholine action; prevents increase in intracellular calcium concentration that is caused by interaction of acetylcholine with muscarinic receptors on bronchial smooth muscle.

Indications	Contraindications
• Management of respiratory distress (non-cardiac) • Protocols: S-122, S-136, S-162, S-167	

Adult Dose	Pediatric Dose
• Ipratropium bromide 2.5 mL 0.02% via nebulizer added to first dose of albuterol/levalbuterol	• Ipratropium bromide per drug chart via nebulizer added to first dose of albuterol/levalbuterol

Adverse Effects
- Headache
- Dizziness
- Nervousness
- Tremors
- Dyspnea
- Worsening COPD symptoms
- Hypertension
- Tachycardia
- Palpitations
- Flushing
- Dry mouth
- Nausea/vomiting
- GI discomfort

Notes
- If concerned about aerosolized infectious exposure, substitute with MDI, if available.
- Patients may need to be instructed on proper use of the MDI.

KETAMINE

EMT	AEMT	PARAMEDIC

Classification
- Analgesic (in sub-dissociative doses)

Mechanism of Action
- Dissociative anesthetic; produces a cataleptic-like state in which the patient is dissociated from the surrounding environment by direct action on the cortex and limbic system; noncompetitive NMDA receptor antagonist that blocks glutamate; low (sub-dissociative) doses produce analgesia.

Indications	Contraindications
• Management of acute pain • Protocols: S-141	• Sedation • Use of dissociative dose ranges • Pregnancy with pain from active labor

Adult Dose	Pediatric Dose
• IV: 0.3 mg/kg in 100 mL of NS over 10 min IV. Maximum for any IV dose is 30 mg. MR x1 in 15 min if pain remains moderate or severe. • IN: 0.5 mg/kg IN (50 mg/mL concentration). Maximum for any IN dose is 50 mg. MR x1 in 15 min if pain remains moderate or severe.	• Not indicated for use in pediatrics

Adverse Effects
- Hypertension
- Hallucinations
- Nausea/vomiting
- Nystagmus
- Bronchodilation
- Tachycardia
- Increased secretions
- Hypersalivation
- Laryngospasm

Notes
- Not authorized for sedation.
- Not authorized for use in dissociative dose ranges. To reduce the risk for dissociative states, maximum dose is not to exceed 60 mg IV or 100 mg IN.
- Administration results in elevated heart rate and blood pressure.
- Do not administer to patients who cannot tolerate these changes in vital signs.
- Rapid administration can result in respiratory and potentially cardiac arrest. Administer slowly.
- Do not infuse with Ringer's lactate solution.

LIDOCAINE

EMT	AEMT	PARAMEDIC

Classification
- Antidysrhythmic, anesthetic

Mechanism of Action
- Class 1b antidysrhythmic; combines with fast sodium channels and thereby inhibits recovery after repolarization, resulting in decreasing myocardial excitability and conduction velocity.

Indications	Contraindications
• Management of ventricular tachycardia and ventricular fibrillation, and as a local anesthetic for the IO procedure in conscious adults • Protocols: S-104, S-127, S-163	• Cardiac pre-excitation syndromes, e.g., Wolff-Parkinson-White (WPW) syndrome, Lown-Ganong-Levine (LGL) syndrome

Adult Dose	Pediatric Dose
• For stable VT, persistent VF/pulseless VT after 3 defibrillation attempts, and reported/witnessed AICD firing ≥2, lidocaine 1.5 mg/kg IV/IO, MR at 0.5 mg/kg IV/IO q5 min to max 3 mg/kg • For IO procedure in conscious adult patients, slowly infuse lidocaine 40 mg IO prior to fluid/medication administration	• For stable VT, lidocaine per drug chart BHPO • For persistent VF/pulseless VT after 3 defibrillation attempts, lidocaine per drug chart IV/IO, MR per drug chart x1 q5 min • For reported/witnessed AICD firing ≥2, lidocaine per drug chart, MR BHPO

Adverse Effects
- Drowsiness
- Confusion
- Seizures
- Slurred speech
- Hypotension
- Dysrhythmias
- Cardiac arrest
- Nausea/vomiting

Notes
- If patient is in unstable ventricular tachycardia, synchronized cardioversion should be performed first.
- Adult doses should be given in increments rounded (up or down) to the nearest 20 mg amount.
- Lidocaine jelly may be applied to an ET tube for intubation or on a nasopharyngeal airway.

MIDAZOLAM

EMT	AEMT	PARAMEDIC

Classification
- Anticonvulsant, antianxiety agent, anxiolytics, benzodiazepines

Mechanism of Action
- Binds to receptors at multiple sites within the CNS; potentiates GABA receptor system which produces anxiolytic, anticonvulsant, muscle relaxant, and amnesic effects.

Indications
- Management of seizures and eclampsia, sedation pre-cardioversion/pre-pacing, unable to tolerate CPAP, intubated patients with agitation, and agitated/combative patients
- Protocols: S-123, S-127, S-133, S-135, S-136, S-142, S-161, S-163, S-166, S-175

Contraindications

Adult Dose
- Seizure
  - Patients ≥40 kg: midazolam 10 mg IM
  - Patients <40 kg: midazolam 0.2 mg/kg IM
  - If vascular access present, midazolam 0.2 mg/kg IV/IO to max dose of 5 mg, MR x1 in 10 min. Max 10 mg total, d/c if seizure stops
- Eclampsia
  - Midazolam IN/IM/IV/IO to a max dose of 5 mg (d/c if seizure stops), MR x1 in 10 min. Max 10 mg total
- Sedation pre-cardioversion/pre-pacing
  - Midazolam 1-5 mg IV/IO
- Unable to tolerate CPAP
  - Midazolam 0.5-1 mg IM/IN/IV
- Intubated with agitation
  - Midazolam 2-5 mg IM/IN/IV/IO, MR x1 in 5-10 min
- Behavioral
  - Midazolam 5 mg IM/IN/IV, MR x1 in 5-10 min

Pediatric Dose
- Seizure
  - Midazolam IM per drug chart
  - If vascular access present, midazolam IV/IO per drug chart, MR x1 in 10 min
- Sedation pre-cardioversion/pre-pacing
  - Midazolam per drug chart IV/IO
- Behavioral
  - Midazolam per drug chart IM/IN/IV, MR x1 in 10 min

Adverse Effects
- Respiratory depression or apnea
- Nausea/vomiting
- Hypotension
- Headache

Notes
- Closely monitor respiratory status (including capnography) and cardiac function after administration.
- Sedation prior to cardioversion is recommended. Consider a lower dose with attention to age and hydration status.
- For severely agitated or combative patients, IN or IM administration is the preferred route to decrease risk of injury to the patient and personnel.
- Administration in patients with alcohol intoxication can cause respiratory depression. Consider a lower dose or avoiding use.

MORPHINE

EMT	AEMT	PARAMEDIC

Classification
- Opioid analgesic

Mechanism of Action
- Opioid agonist-analgesic; inhibits ascending pain pathways, thus altering pain perception; increases pain threshold; produces analgesia, respiratory depression, and sedation.

Indications	Contraindications
• Management of acute pain • Protocols: S-141, S-173	• Pregnancy with pain from active labor

Adult Dose	Pediatric Dose
• IV: Up to 0.1 mg/kg IV. MR in 5 min at half initial IV dose. MR in additional 5 min at half initial IV dose • IM: Up to 0.1 mg/kg IM. MR in 15 min at half initial IM dose. MR in additional 15 min at half initial IM dose	• Morphine IV/IM per drug chart

Adverse Effects
- Confusion
- Sedation
- Headache
- CNS depression
- Respiratory depression or apnea
- Bronchospasm
- Dyspnea
- Hypotension/orthostatic hypotension
- Syncope
- Bradycardia
- Tachycardia
- Nausea/vomiting

Notes
- Remember to consider non-pharmacologic pain treatments, e.g., place in position of comfort, apply ice packs/splints PRN, and verbal reassurance.
- Closely monitor respiratory status (including capnography) after administration.

NALOXONE

EMT [L]	AEMT	PARAMEDIC

Classification
- Opioid reversal agent

Mechanism of Action
- Competitive inhibitor of opioid receptors in the brain. Reverses the respiratory depression associated with opioid overdose.

Indications	Contraindications
• Reversal of acute opioid toxicity • Protocols: S-123, S-134, S-161, S-165	

Adult Dose	Pediatric Dose
• Naloxone 2 mg IN/IM/IV, MR **OR** naloxone 4 mg via nasal spray preloaded single-dose device • If patient refuses transport, give additional naloxone 2 mg IM **OR** naloxone 4 mg via nasal spray preloaded single-dose device. Administer full dose in one nostril, MR	• Naloxone per drug chart IN/IV/IM, MR • For opioid-dependent patients, dilute and titrate slowly per drug chart.

Adverse Effects
- Restlessness
- Seizures
- Dyspnea
- Pulmonary edema
- Hypotension with rapid administration
- Hypertension
- Dysrhythmias
- Diaphoresis
- Nausea/vomiting
- Withdrawal symptoms in opioid-dependent patients

Notes
- EMT: Authorized to administer via IN only.
- AEMT: Authorized to administer via IN/IM only.
- Not authorized in cardiac arrest.
- Titrate IV dose to maintain adequate respiratory drive; use only enough to reverse respiratory depression.
- Duration of opioid effects may exceed that of naloxone; closely monitor patient's respiratory status.
- Naloxone may precipitate acute withdrawal symptoms or acute pulmonary edema when given to patients with opioid use disorder.
- Administration can result in the sudden onset of opiate withdrawal (agitation, tachycardia, pulmonary edema, nausea, vomiting, and, in neonates, seizures)

NITROGLYCERIN

EMT	AEMT	PARAMEDIC

Classification
- Nitrate, anti-anginal

Mechanism of Action
- Nitrate enters vascular smooth muscle and is converted to nitric oxide leading to vasodilation. Relaxes smooth muscle via dose-dependent dilation of arterial and venous beds: reduces both preload, afterload, and myocardial oxygen demand. Also improves coronary collateral circulation. Lowers blood pressure, increases heart rate and occasionally causes paradoxical bradycardia.

Indications	Contraindications
• Management of discomfort/pain of cardiac origin and acute pulmonary edema • Protocols: S-126, S-136	• Use of erectile dysfunction or pulmonary hypertension medications within last 48 hours • Suspected intracranial bleed

Adult Dose	Pediatric Dose

• For discomfort/pain of cardiac origin if SBP ≥100 mmHg, NTG 0.4 mg SL, MR q3-5 min
• For CHF
  • If systolic BP ≥100 but <150: NTG 0.4 mg SL, MR q3-5 min
  • If systolic BP ≥150: NTG 0.8 mg SL, MR q3-5 min
	• Not indicated for use in pediatrics

Adverse Effects
- Headache
- Dizziness
- Weakness
- Reflex tachycardia
- Syncope
- Hypotension
- Nausea/vomiting

Notes
- EMT: Authorized to assist patient to self-medicate own prescribed NTG only.
- Examples of erectile dysfunction medications include sildenafil (Viagra), tadalafil (Cialis) and vardenafil (Levitra).
- Examples of pulmonary hypertension medications include sildenafil (Revatio) and epoprostenol sodium (Flolan, Veletri).
- Nitroglycerin is used primarily to provide pain relief from anginal chest discomfort.
- Assess the patient and document vital signs, including pain scale, before and after each administration.

ONDANSETRON

EMT	AEMT	PARAMEDIC

Classification
- Antiemetic, selective 5-HT3 antagonist

Mechanism of Action
- Mechanism of action unclear; believed to function via serotonin antagonism at central and/or peripheral receptors. Serotonin receptors of the 5-HT3 type are present both peripherally on vagal nerve terminals and centrally in the chemoreceptor trigger zone of the area of the medullary structure that controls vomiting. May cause prolongation of the QT interval.

Indications	Contraindications
• Management of nausea or vomiting • Protocols: S-120, S-139, S-169, S-174	• Known or suspected long QT syndrome • <6 months of age

Adult Dose	Pediatric Dose
• Ondansetron 4 mg IV/IM/ODT, MR x1 in 10 min	• Ondansetron IV/IM/ODT per drug chart

Adverse Effects
- Headache
- Syncope
- Wheezing
- Bronchospasm
- Dysrhythmias
- ECG changes
- Palpitations
- Hives
- Skin rash

Notes
- ECG changes include dose-dependent QT prolongation and ST-segment depression.
- May cause serotonin syndrome if co-administered with selective serotonin reuptake inhibitors (SSRIs), e.g., fluoxetine, sertraline, citalopram, escitalopram, paroxetine.

SODIUM BICARBONATE

EMT	AEMT	PARAMEDIC

Classification
- Alkalizing agent, antidote

Mechanism of Action
- Increases blood and urinary pH by neutralizing hydrogen ion concentration.

Indications	Contraindications
• Management of hyperkalemia, tricyclic antidepressant overdose, and specific crush injuries • Protocols: S-127, S-131, S-134, S-139, S-163, S-165, S-169	

Adult Dose	Pediatric Dose
• $NaHCO_3$ 1 mEq/kg IV/IO	• $NaHCO_3$ per drug chart IV/IO

Adverse Effects
- Electrolyte imbalance
- Pulmonary edema (secondary to sodium overload)
- Tremors
- Twitching
- Seizures (caused by alkalosis)

Notes
- Monitor the patient closely for signs and symptoms of fluid overload. Because the buffering action produces carbon dioxide, ensure the patient has adequate airway and ventilatory support.
- May precipitate or inactivate other medications; flush the IV line well before and after administering sodium bicarbonate. For example, precipitates to form calcium carbonate (chalk) when used with calcium chloride. Administer calcium chloride and sodium bicarbonate in separate IV/IO or thoroughly flush in between administrations using at least 10 mL of normal saline.

TRANEXAMIC ACID

EMT	AEMT	PARAMEDIC

Classification
- Hemostatic agent, antifibrinolytic agent, plasminogen inhibitor

Mechanism of Action
- Prevents clot breakdown by inhibiting the activation of plasminogen, which reduces the conversion of plasminogen to plasmin (enzyme that halts the clotting process). Increases fibrin formation, which impedes blood flow for the formation of a clot.

Indications	Contraindications
• Management of trauma-associated hemorrhage and postpartum hemorrhage • Protocols: S-133, S-139, S-166	• Isolated, severe head injury • Thromboembolic event within 24 hours (e.g., stroke, MI, DVT, PE) • Potential need for reimplantation • Mechanism of injury or delivery more than 3 hours prior to EMS care

Adult Dose	Pediatric Dose
• Tranexamic acid 1 gm/10 mL IV/IO, in 50-100 mL NS, over 10 min	• Not indicated for use in pediatrics

Adverse Effects
- Headache
- Dizziness

Notes
- Rapid infusion may cause hypotension; administer over 10 minutes.
- Slow infusion rate if nausea, vomiting, or near syncope occurs.
- May increase the risk of thromboembolic disorders.

SUBJECT: TREATMENT PROTOCOL -
PEDIATRIC WEIGHT-BASED DOSAGE STANDARDS

Date: 07/1/2024

MEDICATION	DOSE	MAXIMUM SINGLE DOSE
Acetaminophen IV (<2 years)	contraindicated	-
Acetaminophen IV (≥2 years)	15 mg/kg	1 gm
Adenosine IV 1st	0.1 mg/kg	6 mg
Adenosine IV 2nd/3rd	0.2 mg/kg	12 mg
Albuterol Nebulized	5 mg (6 mL)	5 mg
Amiodarone IV/IO	5 mg/kg	150 mg
Atropine (Bradycardia) IV/IO	0.02 mg/kg	0.5 mg
Atropine (Organophosphate) IV/IO	0.02 mg/kg	2 mg
Calcium Chloride IV/IO	20 mg/kg	500 mg
Charcoal PO	1 gm/kg	50 gm
Dextrose 10% IV	0.5 gm/kg	25 gm
Diphenhydramine IV/IM	1 mg/kg	50 mg
Epinephrine IM **(1:1,000)**	0.01 mg/kg	0.3 mg
Epinephrine IV/IO Cardiac Arrest **(1:10,000)**	0.01 mg/kg	1 mg
Epinephrine IV/IO Push-Dose **(1:100,000)**	0.001 mg/kg	0.01 mg (10 mcg)
Epinephrine Nebulized **(1:1,000)**	2.5 mg - 5 mg	5 mg
Fentanyl Citrate IN <10 kg	1 mcg/kg	10 mcg
Fentanyl Citrate IV <10 kg	1 mcg/kg	10 mcg
Fentanyl Citrate IN ≥10 kg	1.5 mcg/kg	50 mcg
Fentanyl Citrate IV ≥10 kg	1 mcg/kg	100 mcg
Glucagon IM	0.05 mg/kg	1 mg
Ipratropium Bromide Nebulized	0.5 mg (2.5 mL)	0.5 mg (2.5 mL)
Levalbuterol Nebulized (<6 years)	contraindicated	-
Levalbuterol Nebulized (≥6 years – <12 years)	0.62 mg (6 mL)	0.62 mg (6 mL)
Levalbuterol Nebulized (≥12 years)	2.5 mg (6 mL)	2.5 mg (6 mL)
Lidocaine 2% IV/IO	1 mg/kg	not applicable
Midazolam IN/IM	0.2 mg/kg	5 mg
Midazolam IV slow	0.1 mg/kg	5 mg
Morphine Sulfate IV/IM	0.1 mg/kg	4 mg
Naloxone IN/IM/IV	0.1 mg/kg	2 mg
Normal Saline Fluid Bolus	20 mL/kg	500 mL
Ondansetron (<6 months)	contraindicated	-
Ondansetron IM/IV/ODT (6 months - 3 years)	2 mg	2 mg
Ondansetron IM/IV/ODT (>3 years)	4 mg	4 mg
Sodium Bicarbonate IV	1 mEq/kg	50 mEq

COUNTY OF SAN DIEGO
EMERGENCY MEDICAL SERVICES

TREATMENT PROTOCOL	S-120
ABDOMINAL DISCOMFORT / GI / GU (NON-TRAUMATIC)	
Date: 7/1/2024	**Page 1 of 1**

BLS	ALS
• Ensure patent airway • O_2 saturation PRN • O_2 and/or ventilate PRN • NPO • Transport suspected symptomatic AAA to facility with surgical resources immediately available	• Monitor/ECG • IV/IO Ⓐ • Treat per Pain Management Protocol (S-141) **Suspected volume depletion** • 500 mL fluid bolus IV/IO, MR x1 Ⓐ **Suspected AAA** • 500 mL fluid bolus IV/IO to maintain SBP ≥80 mmHg, MR x1 Ⓐ **For nausea or vomiting** • Ondansetron 4 mg IV/IM/ODT, MR x1 in 10 min

COUNTY OF SAN DIEGO EMERGENCY MEDICAL SERVICES	TREATMENT PROTOCOL	S-121
	AIRWAY OBSTRUCTION	
	Date: 7/1/2025	Page 1 of 1

BLS	ALS
For conscious patient • Reassure, encourage coughing • O_2 PRN **For inadequate air exchange** Airway maneuvers (AHA) • Abdominal thrusts • Use chest thrusts in obese or pregnant patients **If patient becomes unconscious or is found unconscious** • Begin CPR **Once obstruction is removed** • Ventilate with high-flow O_2 PRN • O_2 saturation **Treat per Respiratory Distress Protocol (S-136)**	**If patient becomes unconscious or has decreasing LOC** • Direct or video laryngoscopy and Magill forceps, MR PRN • Capnography **Once obstruction is removed** • Monitor/ECG • IV/IO Ⓐ

Note: If unable to ventilate effectively, transport immediately while continuing CPR (unconscious patient)

COUNTY OF SAN DIEGO EMERGENCY MEDICAL SERVICES	TREATMENT PROTOCOL	S-122
	ALLERGIC REACTION / ANAPHYLAXIS	
	Date: 7/1/2025	Page 1 of 1

BLS

- Ensure patent airway
- O_2 saturation PRN
- O_2 and/or ventilate PRN
- Attempt to identify allergen and route (injected, ingested, absorbed, or inhaled)
- Remove allergen (e.g., stinger, injection mechanism), if possible
- Epinephrine auto-injector 0.3 mg IM x1
  OR
  Assist patient to self-medicate own prescribed epinephrine auto-injector or albuterol MDI **once only**. BH contact required for additional dose(s)

ALS

- Monitor/ECG
- IV/IO Ⓐ
- Capnography

Allergic reaction (skin signs only)

- Urticaria (hives, rash)
- Erythema (flushing)
- Pruritus (itching)

Allergic reaction treatment

- Diphenhydramine 50 mg IV/IM

Suspected anaphylaxis reaction

- Respiratory: throat tightness, hoarse voice, wheezing/stridor, cough, SOB
- Cardiovascular: fainting, dizziness, tachycardia, low BP
- GI: nausea, vomiting, abdominal cramping
- Tissues: angioedema of eyelids, lips, tongue, face

Anaphylaxis treatment

- Epinephrine 1:1,000 (1 mg/mL) 0.5 mg IM, MR x2 q5 min Ⓐ
  then
- Diphenhydramine 50 mg IV/IM

If respiratory involvement[1]

- Albuterol/Levalbuterol 6 mL via nebulizer, MR Ⓐ
- Ipratropium bromide 2.5 mL 0.02% via nebulizer added to first dose of albuterol/levalbuterol

Severe anaphylaxis or inadequate response to treatment

- 500 mL fluid bolus IV/IO MR to maintain SBP ≥90 mmHg Ⓐ
- Push-dose epinephrine 1:100,000 (0.01 mg/mL) 1 mL IV/IO, MR q3 min, titrate to SBP ≥90 mmHg or improvement in status

Push-dose epinephrine mixing instructions

1. Remove 1 mL normal saline (NS) from the 10 mL NS syringe
2. Add 1 mL of epinephrine 1:10,000 (0.1 mg/mL) to 9 mL NS syringe

The mixture now has 10 mL of epinephrine at 0.01 mg/mL (10 mcg/mL) concentration.

[1] **Infection control:** If concerned about aerosolized infectious exposure, substitute with MDI, if available

COUNTY OF SAN DIEGO
EMERGENCY MEDICAL SERVICES

TREATMENT PROTOCOL | **S-123**

ALTERED NEUROLOGIC FUNCTION (NON-TRAUMATIC)

Date: 7/1/2025 | **Page 1 of 1**

BLS

- Ensure patent airway
- O_2 saturation, O_2 and/or ventilate PRN
- Spinal motion restriction PRN
- Position on affected side if difficulty managing secretions
- Do not allow patient to walk
- Restrain PRN
- Monitor blood glucose

Symptomatic suspected opioid OD with RR <12. Use with caution in opioid-dependent, pain-management patients✪

- Naloxone 4 mg via nasal spray preloaded single-dose device. Administer full dose in one nostril
  OR
- Naloxone 2 mg via atomizer and syringe. Administer 1 mg into each nostril

EMTs may assist family or friend to medicate with patient's prescribed naloxone in **symptomatic suspected opioid OD**

Suspected hypoglycemia or patient's blood sugar is <60 mg/dL

- If patient is awake and able to manage oral secretions, give 3 oral glucose tabs or paste (15 gm total)
- Patient may eat or drink, if able
- If patient is unconscious, NPO

Stroke/TIA

- Treat per Stroke and Transient Ischemic Attack (S-144)
- Pediatric patients presenting with stroke symptoms should be transported to Rady Children's Hospital

Seizures

- Protect airway and protect from injury
- Treat associated injuries

ALS

- Monitor/ECG
- Capnography
- IV/IO Ⓐ

Symptomatic suspected opioid OD with respiratory depression (RR<12, SpO_2<96%, or $EtCO_2$ ≥40 mmHg). Titrate slowly in opioid-dependent patients

- Naloxone 2 mg IN/IM/IV, MR Ⓐ. Titrate IV dose to effect, **to drive the respiratory effort**
  OR
- Naloxone 4 mg via nasal spray preloaded single-dose device. Administer full dose in one nostril, MR Ⓐ

- If patient refuses transport, give additional naloxone 2 mg IM Ⓐ
  OR
- Naloxone 4 mg via nasal spray preloaded single-dose device. Administer full dose in one nostril, MR Ⓐ

Symptomatic hypoglycemia with altered LOC or unresponsive to oral glucose agents

- Dextrose 25 gm IV if BS <60 mg/dL Ⓐ
- If patient remains symptomatic and BS remains <60 mg/dL, MR Ⓐ
- If no IV, glucagon 1 mL IM if BS <60 mg/dL Ⓐ

Symptomatic hyperglycemia

- 500 mL fluid bolus IV/IO if BS ≥350 mg/dL or reads "high," if no rales MR x1 Ⓐ

Status epilepticus (generalized, ongoing, and recurrent seizures without lucid interval)

- Patients ≥40 kg: midazolam 10 mg IM
- Patients <40 kg: midazolam 0.2 mg/kg IM

If vascular access present

- Midazolam 0.2 mg/kg IV/IO to max dose of 5 mg, MR x1 in 10 min. Max 10 mg total, d/c if seizure stops

Partial seizure lasting ≥5 min (includes seizure time prior to arrival of prehospital provider)

- Midazolam 0.2 mg/kg IN/IM/IV/IO to max dose of 5 mg, MR x1 in 10 min. Max 10 mg total, d/c if seizure stops

Eclamptic seizure of any duration

- Treat per Obstetrical Emergencies / Newborn Deliveries (S-133)

✪ Per Title 22, Division 9, Chapter 2.3, § 100027.03 public safety personnel may administer nasal naloxone when authorized by the County of San Diego EMS Medical Director

BLS	ALS
• Move patient to safe environment • Break contact with causative agent • Ensure patent airway, O_2, and/or ventilate PRN • O_2 saturation PRN • Treat other life-threatening injuries • Carboxyhemoglobin monitor PRN, if available **Thermal burns** • For burns <10% BSA, stop burning with non-chilled water or saline • For burns >10% BSA, cover with dry dressing and keep patient warm • Do not allow patient to become hypothermic **Toxic inhalation (e.g., CO exposure, smoke, gas)** • Move patient to safe environment • 100% O2 via mask • Consider transport to facility with hyperbaric chamber for suspected CO poisoning, particularly in unconscious or pregnant patients **Chemical burns** • Brush off dry chemicals • Flush with copious amounts of water **Tar burns** • Do not remove tar • Cool with water, then transport	• Monitor/ECG • IV/IO Ⓐ • Capnography • Treat pain per Pain Management Protocol (S-141) **For patients with >20% partial-thickness or >5% full-thickness burns and ≥15 years** • 500 mL fluid bolus IV/IO Ⓐ **Respiratory distress with bronchospasm**[1] • Albuterol/Levalbuterol 6 mL via nebulizer, MR Ⓐ

Contact UCSD Base Hospital for patients meeting burn center criteria†
See Base Hospital Contact/Patient Transportation and Report (S-415)

†Burn center criteria
Patients with burns involving
- >20% partial-thickness or >5% full-thickness burns over BSA
- Suspected respiratory involvement or significant smoke inhalation
- Circumferential burn or burn to face, hands, feet, or perineum
- Electrical injury due to high voltage (≥1,000 volts)

[1] **Infection control**: If concerned about aerosolized infectious exposure, substitute with MDI, if available

COUNTY OF SAN DIEGO
EMERGENCY MEDICAL SERVICES

TREATMENT PROTOCOL | **S-126**

DISCOMFORT / PAIN OF SUSPECTED CARDIAC ORIGIN

Date: 7/1/2025 | **Page 1 of 1**

BLS

- Ensure patent airway
- O_2 saturation PRN
- Use supplemental O_2 to maintain saturation at 94-98%
- O_2 and/or ventilate PRN
- Minimize patient exertion, including walking, when possible
- If SBP ≥100 mmHg, may assist patient to self-medicate own prescribed NTG[1] SL **(maximum 3 doses, including those the patient has taken)**
- May assist with placement of 12-lead ECG leads
- May assist patient to self-medicate own prescribed aspirin up to a max dose of 325 mg

ALS

- Monitor/ECG
- IV Ⓐ
- Obtain 12-lead ECG
- Repeat 12-lead ECG after arrhythmia conversion or any change in patient condition[2]
- If STEMI suspected, immediately notify BH, transmit 12-lead ECG to appropriate STEMI receiving center and transport[3]
- Report LBBB, RBBB or poor-quality ECG
- Aspirin 324 mg chewable PO[4,5] Ⓐ

If SBP ≥100 mmHg

- NTG[1] 0.4 mg SL, MR q3-5 min Ⓐ
- Treat pain with opioids per Pain Management Protocol (S-141)

Discomfort/pain of suspected cardiac origin with associated shock

- 250 mL fluid bolus IV/IO with no rales, MR to maintain SBP ≥90 mmHg Ⓐ

If BP refractory to second fluid bolus

- Push-dose epinephrine 1:100,000 (0.01 mg/mL) 1 mL IV/IO, MR q3 min, titrate to SBP ≥90 mmHg

Push-dose epinephrine mixing instructions

1. Remove 1 mL normal saline (NS) from the 10 mL NS syringe
2. Add 1 mL of epinephrine 1:10,000 (0.1 mg/mL) to 9 mL NS syringe

The mixture now has 10 mL of epinephrine at 0.01 mg/mL (10 mcg/mL) concentration.

[1] NTG is contraindicated in patients who have taken erectile dysfunction medications such as sildenafil (Viagra®), tadalafil (Cialis®), and vardenafil (Levitra®) within 48 hours; and pulmonary hypertension medications such as sildenafil (Revatio®), and epoprostenol sodium (Flolan®) and (Veletri®)
[2] Do not delay transport for a repeat 12-lead ECG
[3] Immediately transmit 12-lead ECG to receiving hospital for suspected STEMI patients regardless of patient presentation
[4] Administer aspirin even if discomfort/pain has resolved. If aspirin is not given, document the reason
[5] Aspirin may be withheld if an equivalent dose has been administered by a healthcare professional

BLS

- Continuous compressions of 100-120/min with ventilation rate of 10-12/min
- Use metronome or other real-time audiovisual feedback device
- Rotate compressor at least every 2 min
- Use mechanical compression device (unless contraindicated)
- O_2 and/or ventilate with BVM
- Monitor O_2 saturation
- Apply AED during CPR and analyze as soon as ready

VAD
- Perform CPR
- Contact BH for additional instructions

TAH
- Contact BH for instructions

ALS

- Apply defibrillator pads during CPR. Defibrillate immediately for VF/pulseless VT.
- IV/IO Ⓐ
- Capnography with waveform and value
- ET/PAA without interrupting compressions
- NG/OG tube PRN
- Provide cardiac monitor data to agency QA/QI department

Team leader priorities
- Monitor CPR quality, rate, depth, full chest recoil, and capnography value and waveform
- Minimize interruption of compressions (<5 sec) during ECG rhythm checks
- Charge monitor prior to rhythm checks. Do not interrupt CPR while charging.

VAD/TAH
- See Adjunct Cardiac Devices section

Capnography
- For $EtCO_2$ >0 mmHg, may place ET/PAA without interrupting compressions
- If $EtCO_2$ rises rapidly during CPR, pause CPR and check for pulse

Specific protocols (see below)
- Arrhythmias
  - Unstable bradycardia
  - Supraventricular tachycardia
  - Atrial fibrillation / flutter
  - Ventricular tachycardia
  - Ventricular fibrillation / pulseless VT
  - Pulseless electrical activity / asystole
- Return of Spontaneous Circulation
- Adjunct Cardiac Devices
- Termination of Resuscitation
- Extracorporeal Cardiopulmonary Resuscitation (ECPR) Criteria

UNSTABLE‡ BRADYCARDIA

- Obtain 12-lead ECG
- Atropine 1 mg IV/IO, MR q3-5 min to max 3 mg*
- If SBP <90 mmHg and rales not present, 250 mL fluid bolus IV/IO, MR Ⓐ

Rhythm unresponsive to atropine

- Midazolam 1-5 mg IV/IO PRN pre-pacing
- External cardiac pacing†
- If capture occurs and SBP ≥100 mmHg, treat per Pain Management Protocol (S-141)

If SBP <90 mmHg after atropine or initiation of pacing

- 250 mL fluid bolus IV/IO, MR x1
- Push-dose epinephrine 1:100,000 (0.01 mg/mL) 1 mL IV/IO. MR q3 min, titrate to SBP ≥90 mmHg.

Push-dose epinephrine mixing instructions

1. Remove 1 mL normal saline (NS) from the 10 mL NS syringe
2. Add 1 mL of epinephrine 1:10,000 (0.1 mg/mL) to 9 mL NS syringe

The mixture now has 10 mL of epinephrine at 0.01 mg/mL (10 mcg/mL) concentration.

***** May omit atropine in patients unlikely to have clinical benefit (e.g., heart transplant patients, 2nd degree type II, or 3rd degree heart block)

‡SBP <90 mmHg and exhibiting any of the following signs/symptoms of inadequate perfusion, e.g.,

- Altered mental status (decreased LOC, confusion, agitation)
- Pallor
- Diaphoresis
- Significant chest pain of suspected cardiac origin
- Severe dyspnea

†External cardiac pacing

- Set rate and energy per manufacturer's recommendations
- Increase energy setting until capture occurs, usually between 50 mA and 100 mA
- After electrical and mechanical capture achieved, increase energy by 10%
- If patient remains hypotensive, increase rate in 5 bpm increments (not to exceed 100 bpm) to achieve and maintain adequate perfusion

SUPRAVENTRICULAR TACHYCARDIA

- Obtain 12-lead ECG

Stable (symptomatic)

- If SBP <90 mmHg and rales not present, 250 mL fluid bolus IV/IO, MR Ⓐ
- VSM
- Adenosine 6 mg rapid IV/IO followed by 20 mL NS rapid IV/IO
- Adenosine 12 mg rapid IV/IO followed by 20 mL NS rapid IV/IO, MR x1

Unstable‡

- Consider midazolam 1-5 mg IV/IO pre-cardioversion
- Synchronized cardioversion at manufacturer's recommended energy dose, MR x2, MR BHO
- After successful cardioversion
  - Check BP. If SBP <90 mmHg and rales not present, 250 mL fluid bolus IV/IO, MR
  - Obtain 12-lead ECG

‡SBP <90 mmHg and exhibiting any of the following signs/symptoms of inadequate perfusion, e.g.,

- Altered mental status (decreased LOC, confusion, agitation)
- Pallor
- Diaphoresis
- Significant chest pain of suspected cardiac origin
- Severe dyspnea

ATRIAL FIBRILLATION / FLUTTER

- Obtain 12-lead ECG
- If SBP <90 mmHg and rales not present, 250 mL fluid bolus IV/IO, MR Ⓐ

Rate ≥180 and unstable‡

- Consider midazolam 1-5 mg IV/IO pre-cardioversion
- Synchronized cardioversion at manufacturer's recommended energy dose, MR x2, MR BHO
- After successful cardioversion
  - Check BP. If SBP <90 mmHg and rales not present, 250 mL fluid bolus IV/IO, MR
  - Obtain 12-lead ECG

‡SBP <90 mmHg and exhibiting any of the following signs/symptoms of inadequate perfusion, e.g.,

- Altered mental status (decreased LOC, confusion, agitation)
- Pallor
- Diaphoresis
- Significant chest pain of suspected cardiac origin
- Severe dyspnea

VENTRICULAR TACHYCARDIA

- Obtain 12-lead ECG

Stable

- If SBP <90 mmHg and rales not present, 250 mL fluid bolus IV/IO, MR Ⓐ
- Amiodarone 150 mg in 100 mL of NS over 10 min IV/IO, MR x1 in 10 min
  OR
- Lidocaine 1.5 mg/kg IV/IO, MR at 0.5 mg/kg IV/IO q5 min to max 3 mg/kg

Unstable‡

- Consider midazolam 1-5 mg IV/IO pre-cardioversion
- Synchronized cardioversion at manufacturer's recommended energy dose, MR x2, MR BHO
- After successful cardioversion
  - Check BP. If SBP <90 mmHg and rales not present, 250 mL fluid bolus IV/IO, MR
  - Obtain 12-lead ECG

‡SBP <90 mmHg and exhibiting any of the following signs/symptoms of inadequate perfusion, e.g.,

- Altered mental status (decreased LOC, confusion, agitation)
- Pallor
- Diaphoresis
- Significant chest pain of suspected cardiac origin
- Severe dyspnea

VENTRICULAR FIBRILLATION / PULSELESS VT[1]

- CPR
- Defibrillate at manufacturer's recommended energy dose as soon as monitor available/charged
- Defibrillate at manufacturer's recommended energy dose q2 min while VF/VT persists
- Epinephrine 1:10,000 1 mg IV/IO q3-5 min, begin after second defibrillation

Persistent VF/VT after 3 defibrillation attempts

- Amiodarone 300 mg IV/IO, MR 150 mg q3-5 min (max 450 mg)
  OR
- Lidocaine 1.5 mg/kg IV/IO, MR at 0.5 mg/kg IV/IO q5 min to max 3 mg/kg

[1] If patient meets ECPR criteria, make base hospital contact and transport **IMMEDIATELY** to an ECPR Receiving Center (per S-127A).

PULSELESS ELECTRICAL ACTIVITY

- CPR
- Epinephrine 1:10,000 1 mg IV/IO q3-5 min

Suspected hyperkalemia

- $CaCl_2$ 1 gm IV/IO
- $NaHCO_3$ 1 mEq/kg IV/IO
- Continuous albuterol/levalbuterol 6 mL via nebulizer Ⓐ

Suspected hypovolemia

- 1,000 mL fluid bolus IV/IO, MR x2 Ⓐ

Suspected poisoning / OD

- For suspected tricyclic antidepressant, beta blocker, or calcium channel blocker overdoses, consider treatment per Poisoning / Overdose Protocol (S-134)[2]

For consideration of non-transport, see Asystole/Termination of Resuscitation protocol

[2] Naloxone is not authorized in cardiac arrest.

ASYSTOLE / TERMINATION OF RESUSCITATION

ASYSTOLE

- CPR
- Epinephrine 1:10,000 1 mg IV/IO q3-5 min

TERMINATION OF RESUSCITATION (TOR)

Resuscitation may be terminated on SO[§] if <u>all</u> the following conditions are met:

- Persistent asystole (NO other rhythms detected)
- Unwitnessed arrest (by bystanders or EMS)
- No bystander CPR
- No AED or other defibrillation
- No return of pulses
- ≥20 min on-scene resuscitation time

Base Hospital contact is not required if all criteria are met, even if ALS interventions are performed

- Document time of death recognition, full name of paramedic making determination of apparent death, and circumstances under TOR determination

BHPO is required for TOR for <u>all other presentations, rhythms, and situations</u>

- Document time of death pronouncement, full name of physician, and circumstances under which TOR was ordered

[§]Applies to cardiac arrests of presumed cardiac origin. Excludes drowning, hypothermia, trauma, and electrocution.

RETURN OF SPONTANEOUS CIRCULATION

- Ventilate PRN (goal of $EtCO_2$ = 40 mmHg)
- Obtain BP
- Obtain 12-lead ECG
- Transport to closest STEMI Center[3] regardless of 12-lead ECG reading
- Provide cardiac monitor data to agency QA/QI department
- Monitor blood glucose PRN

SBP <90 mmHg

- If rales not present, 250 mL fluid bolus IV/IO, MR Ⓐ
- Push-dose epinephrine 1:100,000 (0.01 mg/mL) 1 mL IV/IO. MR q3 min, titrate to SBP ≥90 mmHg

Push-dose epinephrine mixing instructions

1. Remove 1 mL normal saline (NS) from the 10 mL NS syringe
2. Add 1 mL of epinephrine 1:10,000 (0.1 mg/mL) to 9 mL NS syringe

The mixture now has 10 mL of epinephrine at 0.01 mg/mL (10 mcg/mL) concentration.

[3] Do not change destination if already enroute to an ECPR Receiving Center.

ADJUNCT CARDIAC DEVICES

Transport equipment and any knowledgeable family/support persons to ED with patient

VAD
- Contact BH and VAD coordinator
- Follow protocols for CPR and treatment of arrhythmias, including use of cardioversion, pacing, and defibrillation PRN

TAH
- Contact TAH coordinator
- Consult BH Physician for orders for TAH recommended treatments

Wearable defibrillators (vest)
- If vest device is broadcasting specific verbal directions, follow device's prompts
- If device not broadcasting directions and patient requires CPR or cardiac treatment, remove vest and treat

Malfunctioning pacemakers
- Treat per applicable arrythmia protocol
- Treat pain per Pain Management Protocol (S-141) PRN

Reported/witnessed AICD firing ≥2

Pulse ≥60
- Lidocaine 1.5 mg/kg IV/IO, MR at 0.5 mg/kg IV/IO q5 min to max 3 mg/kg

OR
- Amiodarone 150 mg in 100 mL of NS over 10 min IV/IO, MR x1 in 10 min

EXTRACORPOREAL CARDIOPULMONARY RESUSCITATION (ECPR) CRITERIA[4]

Age 18-70

Witnessed cardiac arrest

CPR
- Must be established within 5 minutes of cardiac arrest
- High-quality compressions throughout resuscitation, including during transport

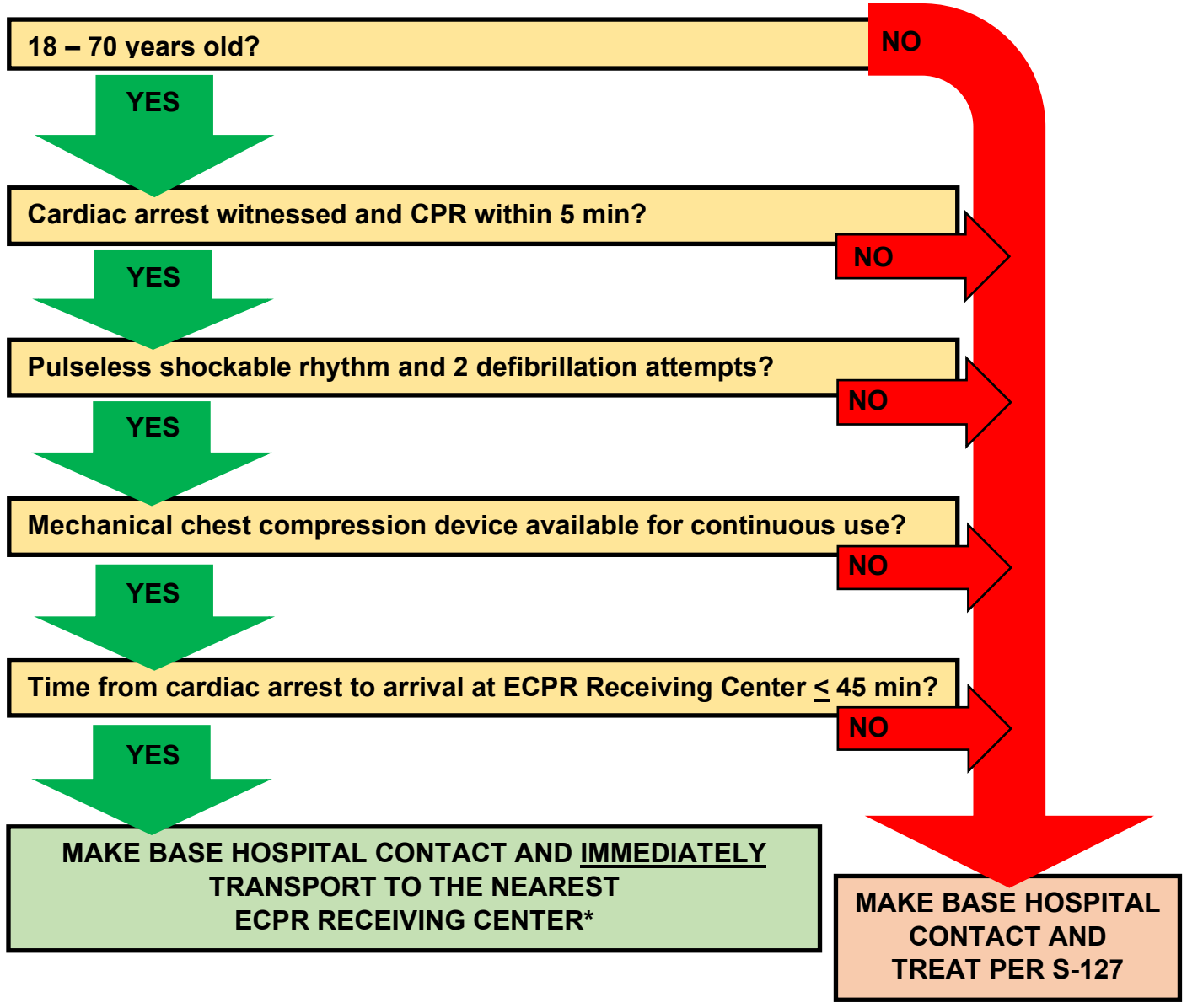
Use of automated mechanical chest compression device

Refractory Ventricular Fibrillation/Pulseless VT
- Defined as persistent pulseless shockable rhythm after 2 defibrillation attempts (including AED-delivered shocks, but not AICD firings)

Time interval from cardiac arrest to arrival at ECPR receiving center ≤45 minutes

[4] If patient meets ECPR criteria, make base hospital contact and transport **IMMEDIATELY** to an ECPR Receiving Center (per S-127A).

EXTRACORPOREAL CARDIOPULMONARY RESUSCITATION (ECPR) DECISION ALGORITHM



IF PATIENT ACHIEVES ROSC DURING TRANSPORT

- CONTINUE TRANSPORT TO ECPR RECEIVING CENTER
- MAKE BASE HOSPITAL CONTACT
- REFER TO S-127 FOR TREATMENT GUIDELINES

*Bypass non-ECPR STEMI Receiving Centers

BLS	ALS
• O_2 and/or ventilate PRN • If antivenin available on site, transport with patient to hospital **Jellyfish sting** • Liberally rinse with seawater • Scrape to remove stinger(s) • Heat as tolerated (not to exceed 110 °F / 43 °C) **Stingray or sculpin injury** • Immersion in hot water (as hot as tolerated, not to exceed 110 °F / 43 °C) **Snakebite** • Mark proximal extent of swelling and/or tenderness • Keep involved extremity at heart level and immobile • Remove constrictive device(s) • Remove jewelry distal to bite	• IV Ⓐ • Treat per Pain Management Protocol (S-141)

COUNTY OF SAN DIEGO
EMERGENCY MEDICAL SERVICES

TREATMENT PROTOCOL | **S-130**

ENVIRONMENTAL EXPOSURE

Date: 7/1/2025 | **Page 1 of 1**

BLS

- Ensure patent airway
- O_2 saturation PRN
- O_2 and/or ventilate PRN
- Remove excess/wet clothing
- Obtain temperature

Heat exhaustion
- Cool gradually
- Fan and sponge with tepid water
- Avoid shivering
- If conscious, give small amounts of fluids

Heat stroke
- Rapid cooling
- Spray with cool water and fan
- Avoid shivering
- Apply ice packs to carotid, inguinal, and axillary regions

Cold exposure
- Gentle warming
- Apply blankets, warm packs, and dry dressings
- Avoid unnecessary movement or rubbing
- If alert, give warm liquids. If altered LOC, NPO
- Prolonged CPR may be indicated

Drowning
- CPR, if cardiac arrest. Emphasize ventilations.
- High-flow O2 if spontaneous respirations
- Remove wet clothing
- Spinal motion restriction PRN

ALS

- Monitor/EGC
- IV/IO Ⓐ
- Capnography

Cardiac arrest with hypothermia
- CPR
- Persistent VF/VT, defibrillate per CPR / Arrhythmias Protocol (S-127)*
- Epinephrine 1:10,000 1 mg IV/IO x1†
- Rewarm

Heat exhaustion/heat stroke
- 500 mL fluid bolus IV/IO, if no rales MR x1 Ⓐ

Drowning with respiratory distress
- CPAP at 5-10 cmH_2O for respiratory distress

*Defibrillation attempts may be unsuccessful during rewarming until temperature ≥86 °F / ≥30 °C

†Limit epinephrine to 1 dose and withhold antiarrhythmic medications until temperature ≥86 °F / ≥30 °C

COUNTY OF SAN DIEGO
EMERGENCY MEDICAL SERVICES

TREATMENT PROTOCOL	S-131
HEMODIALYSIS PATIENT	
Date: 7/1/2025	**Page 1 of 1**

BLS	ALS
• Ensure patent airway • O_2 saturation • Give O2 to maintain SpO2 at 94% to 98% • Ventilate PRN	• Monitor/ECG • Determine time of last dialysis • IV in upper extremity without working graft/AV fistula Ⓐ **For immediate life threat only** • EJ/IO access preferred over accessing percutaneous dialysis catheter (e.g., Vascath) or shunt/graft • Monitor and administer via existing dialysis catheter (aspirate 5 mL **prior** to infusion*) **OR** • Access graft/AV fistula **Fluid overload with rales** • Treat CHF per Respiratory Distress Protocol (S-136) **Suspected hyperkalemia (e.g., peaked T-waves or widened QRS complex)** • Obtain 12-lead ECG • If widened QRS complex, immediately administer $CaCl_2$ 1 gm IV/IO • $NaHCO_3$ 1 mEq/kg IV/IO • Continuous albuterol/levalbuterol 6 mL via nebulizer Ⓐ **For patients not on hemodialysis with suspected hyperkalemia** • Obtain 12-lead ECG • If findings consistent with hyperkalemia (e.g., peaked T-waves or widened QRS complex), contact base hospital

*Dialysis catheter contains concentrated dose of heparin, which must be aspirated **prior** to infusion

BLS	ALS
• 100% O_2 via mask • Ventilate PRN • O2 saturation • Spinal stabilization PRN • Warming PRN, remove wetsuit, if able	• Monitor/ECG • IV/IO Ⓐ

Diving victim: A person with any symptoms after diving, regardless of whether compressed gasses such as air were used.

Minor symptoms (non-progressive): Minimal localized joint pain, mottling of skin surface, or localized swelling with pain.

Major symptoms: Symptoms listed above that are severe and/or rapidly progressing, vertigo, altered LOC, progressive paresthesia, seizure, paralysis, severe SOB, blurred vision, crepitus, hematemesis, hemoptysis, pneumothorax, urinary retention, trunk pain, or girdle or band-like burning discomfort.

Diving victim disposition

- All patients (including active-duty military) should be transported to UCSD Hillcrest Emergency Department
- Follow policy T-460 if trauma criteria are met
- Bring dive computer and gear if available

PREDELIVERY

BLS

- Ensure patent airway
- O2 saturation PRN
- O2 and/or ventilate PRN
- If no time for transport and delivery is imminent (crowning and pushing), proceed with delivery
- If no delivery, transport on left side
- Keep mother warm

Third-trimester bleeding

- Transport immediately to facility with obstetrical services per BH direction

Eclampsia (seizures)

- Protect airway
- Protect from injury

ALS

- Monitor/ECG
- IV Ⓐ
- Capnography

Direct to labor/delivery area BHO if ≥20 weeks gestation

Eclampsia (seizures)

- Midazolam IN/IM/IV/IO to a max dose of 5 mg (d/c if seizure stops), MR x1 in 10 min. Max 10 mg total.

DELIVERY

BLS and ALS

Routine delivery

- If placenta delivered, massage fundus. Do not wait on scene.
- Wait 60 sec after delivery, then clamp and cut cord between clamps
- Document name of person cutting cord, time cut, and delivery location (address)
- Place identification bands on mother and newborn(s)
- Complete Out of Hospital Birth Report Form (S-166A) and provide to parent

Difficult deliveries

- High-flow O2
- Keep mother warm

Nuchal cord (cord wrapped around neck)

- Slip cord over the head and off neck
- Clamp and cut cord, if wrapped too tightly

Prolapsed cord

- Place mother with her hips elevated on pillows
- Insert a gloved hand into vagina and gently push presenting part off cord
- Transport immediately while retaining this position. Do not remove hand until relieved by hospital personnel.
- Cover exposed cord with saline-soaked gauze

Shoulder dystocia

- Hyperflex mother's knees to her chest

Breech birth (arm or single foot visible)

- Rapid transport

Frank breech or double footling and imminent delivery with long transport
- Allow newborn to deliver to the waist without active assistance (support only)
- When legs and buttocks are delivered, assist head out keeping body parallel to the ground. If head does not deliver within 1-2 min, insert gloved hand into the vagina to create airway for newborn.
- Transport immediately if head undelivered

Eclampsia (seizures)
- Protect airway, and protect from injury
- **ALS:** Midazolam IN/IM/IV/IO to a max dose of 5 mg (d/c if seizure stops), MR x1 in 10 min. Max 10 mg total.

MOTHER POST-DELIVERY

BLS	ALS
Postpartum hemorrhage • Massage fundus vigorously • Baby to breast • High-flow O2 • Keep mother warm **Eclampsia (seizures)** • Protect airway • Protect from injury	**Postpartum hemorrhage** • Monitor/ECG • Capnography • 500 mL fluid bolus IV/IO, MR x2 q10 min to maintain SBP ≥90 mmHg Ⓐ • If estimated blood loss ≥500 mL and within 3 hours of delivery, tranexamic acid 1 gm/10 mL IV/IO, in 50-100 mL NS, over 10 min **Eclampsia (seizures)** • Midazolam IN/IM/IV/IO to a max dose of 5 mg (d/c if seizure stops), MR x1 in 10 min. Max 10 mg total.

NEONATAL POST-DELIVERY

BLS and ALS

Warm, dry, and stimulate newborn
- Wrap newborn in warm, dry blanket. Keep head warm.
- Assess breathing, tone, and HR. Palpate HR via umbilical cord.
- If placing pulse oximeter, use newborn's right hand
- APGAR at 1 and 5 min (do not delay resuscitation to obtain score)
- Confirm identification bands placed on mother and newborn(s)
- Bring mother and newborn(s) to same hospital
- Complete Out of Hospital Birth Report Form (S-166A) and provide to parent

Full-term newborn with good tone and breathing
- Keep newborn warm
- Ensure patent airway
- If excessive secretions, suction mouth then nose with bulb syringe
- O2 saturation on newborn's right hand PRN
- Baby to breast
- Ongoing assessment q30 sec

Newborn HR ≥100 with respiratory distress or central cyanosis
- Blow-by O_2

Newborn HR <100, poor respiratory effort or persistent central cyanosis
- Ventilate with BVM on room air
- Monitor/ECG
- Recheck pulse q30 sec

- For persistently poor respiratory rate/effort, or cyanosis despite correct BVM technique, add high-flow O_2 15 L/min to BVM
- **Stop BVM when patient breathing well and HR ≥100**
- **ALS**: IV/IO Ⓐ (do not delay transport)
- **ALS**: NG tube PRN

Newborn HR <60

- Continue BVM with high-flow O2
- Chest compressions at rate of 120/min
- 3:1 compression to ventilation ratio
- Check pulse q1 min
- Stop compressions when HR ≥60
- **ALS:** Epinephrine 1:10,000 per drug chart IV/IO, MR q3-5 min
- **ALS:** Fluid bolus per drug chart IV/IO, MR x1 in 10 min Ⓐ

Premature and/or low birth weight newborn

- If amniotic sac intact, remove neonate from sac after delivery
- Place neonate in plastic bag up to axilla to minimize heat loss
- Transport immediately
- CPR need **not** be initiated if there are no signs of life **and** gestational age <24 weeks

BLS

- Ensure patent airway
- O2 saturation PRN
- O2 and/or ventilate PRN
- Monitor blood glucose PRN
- Carboxyhemoglobin monitor PRN, if available

Ingestions
- Identify substance
- Transport pill bottles and containers with patient, PRN

Skin contamination*
- Remove clothes
- Brush off dry chemicals
- Flush with copious water

Toxic inhalation (e.g., CO exposure, smoke, gas)
- Move patient to safe environment
- 100% O2 via mask
- Consider transport to facility with hyperbaric chamber for suspected CO poisoning, particularly in unconscious or pregnant patients

Symptomatic suspected opioid OD with RR <12. Use with caution in opioid-dependent, pain-management patients✪
- Naloxone 4 mg via nasal spray preloaded single-dose device. Administer full dose in one nostril
  OR
- Naloxone 2 mg via atomizer and syringe. Administer 1 mg into each nostril

EMTs may assist family or friend to medicate with patient's prescribed naloxone in **symptomatic suspected opioid OD**

Hyperthermia from suspected stimulant intoxication
- Initiate cooling measures
- Obtain temperature, if possible

ALS

- Monitor/ECG
- IV/IO Ⓐ
- Capnography

Ingestions
- Assure patient has gag reflex and is cooperative
- If not vomiting and within 60 min, activated charcoal 50 gm PO ingestion with any of the following Ⓐ:
  1. Acetaminophen
  2. Colchicine
  3. Beta blockers
  4. Calcium channel blockers
  5. Salicylates
  6. Sodium valproate
  7. Oral anticoagulants (including rodenticides)
  8. Paraquat
  9. Amanita mushrooms
  10. Recommendation by Poison Control Center

Symptomatic suspected opioid OD with respiratory depression (RR<12, SpO_2<96%, or EtCO2 ≥40 mmHg). Titrate slowly in opioid-dependent patients
- Naloxone 2 mg IN/IM/IV, MR Ⓐ. Titrate IV dose to effect, **to drive the respiratory effort**
  OR
- Naloxone 4 mg via nasal spray preloaded single-dose device. Administer full dose in one nostril, MR Ⓐ

- If patient refuses transport, give additional naloxone 2 mg IM Ⓐ
  OR
- Naloxone 4 mg via nasal spray preloaded single-dose device. Administer full dose in one nostril, MR Ⓐ

Symptomatic organophosphate poisoning
- Atropine 2 mg IV/IO
- For continued signs/symptoms of SLUDGE/BBB, double prior atropine dose IV/IO q3-5 min

Extrapyramidal reactions
- Diphenhydramine 50 mg slow IV/IM

Suspected tricyclic antidepressant OD with cardiac effects (e.g., hypotension, heart block, or widened QRS)
- $NaHCO_3$ 1 mEq/kg IV/IO

	Suspected beta blocker OD with cardiac effects (e.g., bradycardia with hypotension) • Glucagon 1-5 mg IV, MR 5-10 min, for a total of 10 mg **Suspected calcium channel blocker OD (SBP <90 mmHg)** • $CaCl_2$ 1 gm IV/IO **Suspected cyanide poisoning** If cyanide kit available on site (e.g., industrial site), may administer if patient is exhibiting significant symptoms • Amyl nitrite inhalation (over 30 seconds) • Sodium thiosulfate 25%, 12.5 gm IV **or** hydroxocobalamin (CYANOKIT®) 5 gm IV

✪ Per Title 22, Division 9, Chapter 2.3, § 100027.03 public safety personnel may administer nasal naloxone when authorized by the County of San Diego EMS Medical Director.

* For radioactive material, treatment of traumatic injuries takes precedence over decontamination.

BLS	ALS
• If patient or accompanying person able to manage existing device, proceed with transport • Bring back-up equipment/batteries as appropriate **Established electrolyte and/or glucose-containing peripheral IV lines** • Maintain at preset rates **Established IV pumps or other existing devices** • Contact BH for direction, if person responsible for operating IV pump or device is unable to accompany patient and manage IV during transport **BH may only direct BLS personnel to leave device as found or turn the device off, then transport patient or wait for ALS arrival** **Transdermal medication** • Remove patches PRN (e.g., unstable, CPR status) **Transports to another facility or home** • No waiting period is required after medication administration • IV solutions with added medications or other ALS treatment/monitoring modalities require ALS personnel (or RN/MD) in attendance during transport • Cap end of catheter with device that occludes end if there is a central line	**Criteria for use of existing peripheral vascular access with external port** • For immediate life threat **only** • EJ/IO access preferred over accessing percutaneous dialysis catheter (e.g., Vascath) or shunt/graft • Monitor and administer via existing dialysis catheter (aspirate 5 mL **prior** to infusion*) **OR** • Access graft/AV fistula **Assist with administration of physician-prescribed self-administered emergency medication**✪ [e.g., hydrocortisone (Solu-Cortef®) for Congenital Adrenal Hyperplasia] • Paramedics may assist patient/surrogate with the administration of emergency medications prescribed for self-administration BHO **Intubated patients with agitation and potential for airway compromise** • Midazolam 2-5 mg IM/IN/IV/IO, MR x1 in 5-10 min

Note: Existing devices and medications include physician-prescribed medications

* Dialysis catheter contains concentrated dose of heparin, which must be aspirated **prior** to infusion

✪ Per Title 22, Division 9, Chapter 3.1, § 100066.02, EMS clinicians may "assist patients with the administration of physician-prescribed … self-administered emergency medications…"

COUNTY OF SAN DIEGO EMERGENCY MEDICAL SERVICES	TREATMENT PROTOCOL	**S-136**
	RESPIRATORY DISTRESS	
	Date: 7/1/2025	**Page 1 of 1**

BLS

- Ensure patent airway
- Reassurance
- Dislodge any airway obstruction. Treat per Airway Obstruction Protocol (S-121)
- O2 saturation
- O2 and/or ventilate PRN
- Transport in position of comfort
- Carboxyhemoglobin monitor PRN, if available
- May assist patient to self-medicate own prescribed MDI **once only**. BH contact required for additional dose(s)

Toxic inhalation (e.g., CO exposure, smoke, gas)

- Move patient to safe environment
- 100% O_2 via mask
- Consider transport to facility with hyperbaric chamber for suspected CO poisoning for unconscious or pregnant patients

Croup-like cough

- Aerosolized saline or water 5 mL via O2-powered nebulizer/mask, MR PRN

ALS

- Monitor/ECG
- Capnography
- IV/IO Ⓐ
- Intubate PRN
- NG/OG PRN

Suspected CHF/cardiac origin

- NTG[1] SL
  - **If systolic BP ≥100 but <150:** NTG 0.4 mg SL, MR q3-5 min Ⓐ
  - **If systolic BP ≥150:** NTG 0.8 mg SL, MR q3-5 min Ⓐ
- CPAP 5-10 cmH_2O

Suspected non-cardiac origin[2]

- Albuterol/Levalbuterol 6 mL via nebulizer, MR Ⓐ
- Ipratropium bromide 2.5 mL 0.02% via nebulizer added to first dose of albuterol/levalbuterol
- CPAP 5-10 cmH_2O

Unable to tolerate CPAP

- Midazolam 0.5-1 mg IM/IN/IV

Severe respiratory distress/failure or inadequate response to nebulized treatments consider

History of asthma or suspected allergic reaction

- Epinephrine 1:1,000 (1 mg/mL) 0.5 mg IM, MR x2 q5 min Ⓐ

Intubated patients with agitation and potential for airway compromise

- Midazolam 2-5 mg IM/IN/IV/IO, MR x1 in 5-10 min

Notes:

- For respiratory arrest, immediately start BVM ventilation
- Use caution with CPAP in patients with COPD; start low and titrate pressure
- Epinephrine IM: Use caution if known cardiac history, history of hypertension, SBP >150 mmHg, or age >40
- Fireline paramedics without access to O_2 may use MDI

[1] NTG is contraindicated in patients who have taken erectile dysfunction medications such as sildenafil (Viagra®), tadalafil (Cialis®), and vardenafil (Levitra®) within 48 hours; and pulmonary hypertension medications such as sildenafil (Revatio®), and epoprostenol sodium (Flolan®) and (Veletri®)
[2] Infection control: If concerned about aerosolized infectious exposure, substitute with MDI, if available

COUNTY OF SAN DIEGO EMERGENCY MEDICAL SERVICES	TREATMENT PROTOCOL	**S-138**
	SHOCK	
	Date: 7/1/2025	**Page 1 of 1**

BLS	ALS
• O_2 saturation • O_2 and/or ventilate PRN • Control obvious external bleeding • Treat associated injuries • NPO, anticipate vomiting • Remove transdermal patch • Keep patient warm	• Monitor/ECG • IV/IO Ⓐ • Capnography **Non-traumatic, hypovolemic shock*** • 500 mL fluid bolus IV/IO, MR to maintain SBP ≥90 mmHg Ⓐ SBP <90 mmHg after second fluid bolus • Push-dose epinephrine 1:100,000 (0.01 mg/mL) 1 mL IV/IO, MR q3 min, titrate to SBP ≥90 mmHg **Distributive shock†** • 500 mL fluid bolus IV/IO, MR to maintain SBP ≥90 mmHg Ⓐ SBP <90 mmHg after second fluid bolus • Push-dose epinephrine 1:100,000 (0.01 mg/mL) 1 mL IV/IO, MR q3 min, titrate to SBP ≥90 mmHg **Push-dose epinephrine mixing instructions** 1. Remove 1 mL normal saline (NS) from the 10 mL NS syringe 2. Add 1 mL of epinephrine 1:10,000 (0.1 mg/mL) to 9 mL NS syringe The mixture now has 10 mL of epinephrine at 0.01 mg/mL (10 mcg/mL) concentration.

* If suspected AAA, fluid boluses to maintain SBP ≥80 mmHg. Treat per Abdominal Discomfort / GI / GU (Non-Traumatic) Protocol (S-120).

† Distributive shock includes neurogenic; drug and toxin-induced; and endocrine shock.

BLS

- Ensure patent airway
- Protect C-spine
- Control obvious bleeding
- Spinal motion restriction per Skills List (S-104) except in penetrating trauma without neurological deficits
- O2 saturation. Maintain SpO2 at 94% to 98%
- O2 and/or ventilate at a rate of 10/min PRN
- Keep warm
- Hemostatic gauze

Abdominal trauma
- Cover eviscerated bowel with saline pads

Chest trauma
- Cover open chest wound with three-sided occlusive dressing. Release dressing if tension pneumothorax develops.
- Chest seal PRN

Extremity trauma
- Splint neurologically stable fractures in position as presented. Traction splint PRN.
- Reduce grossly angulated long bone fractures with no pulse or sensation PRN
- Direct pressure to control external hemorrhage
- Apply gauze or hemostatic dressing PRN
- Tourniquet PRN
- In MCI, direct pressure not required prior to tourniquet application

Impaled objects
- Immobilize and leave impaled objects in place
- Remove object impaled in face, cheek, or neck if there is total airway obstruction

Any suspicion of neurological injury (mechanism, GCS, examination)
- High-flow O_2 PRN
- Monitor SpO_2, BP, and HR q3-5 min
- If SpO_2 <90% **or** hypoventilation (despite high-flow O_2), assist ventilations with BVM

ALS

- Monitor/ECG
- IV/IO Ⓐ
- Capnography. Maintain EtCO2 35-45 mmHg PRN
- Treat pain per Pain Management Protocol (S-141)

SBP <90 mmHg or signs of shock
- 500 mL fluid bolus IV/IO, MR x3 q15 min to maintain SBP ≥90 mmHg Ⓐ

Trauma-associated hemorrhage <3 hours prior and at least one of the following:
1. SBP <90 mmHG
2. Shock index ≥1.0 (HR ≥ SBP)
3. Uncontrolled external bleeding

- Tranexamic acid 1 gm/10 mL IV/IO, in 50-100 mL NS, over 10 min

Crush injury requiring extrication with compression of extremity or torso ≥2 hours
Immediately prior to anticipated release
- 1,000 mL fluid bolus IV/IO Ⓐ
- $NaHCO_3$ 1 mEq/kg IV/IO
- $CaCl_2$ 1 gm IV/IO over 30 sec
- Continuous albuterol/levalbuterol 6 mL via nebulizer Ⓐ

Grossly angulated long bone fractures
- Reduce with gentle unidirectional traction for splinting Ⓐ

Severe respiratory distress with diminished or absent breath sounds (unilaterally or bilaterally), and SBP <90 mmHg, and suspected pneumothorax
- Needle thoracostomy

For nausea or vomiting
- Ondansetron 4 mg IV/IM/ODT, MR x1 in 10 min

For traumatic cardiac arrest
- 1,000 mL fluid bolus IV/IO Ⓐ
- Do not administer epinephrine

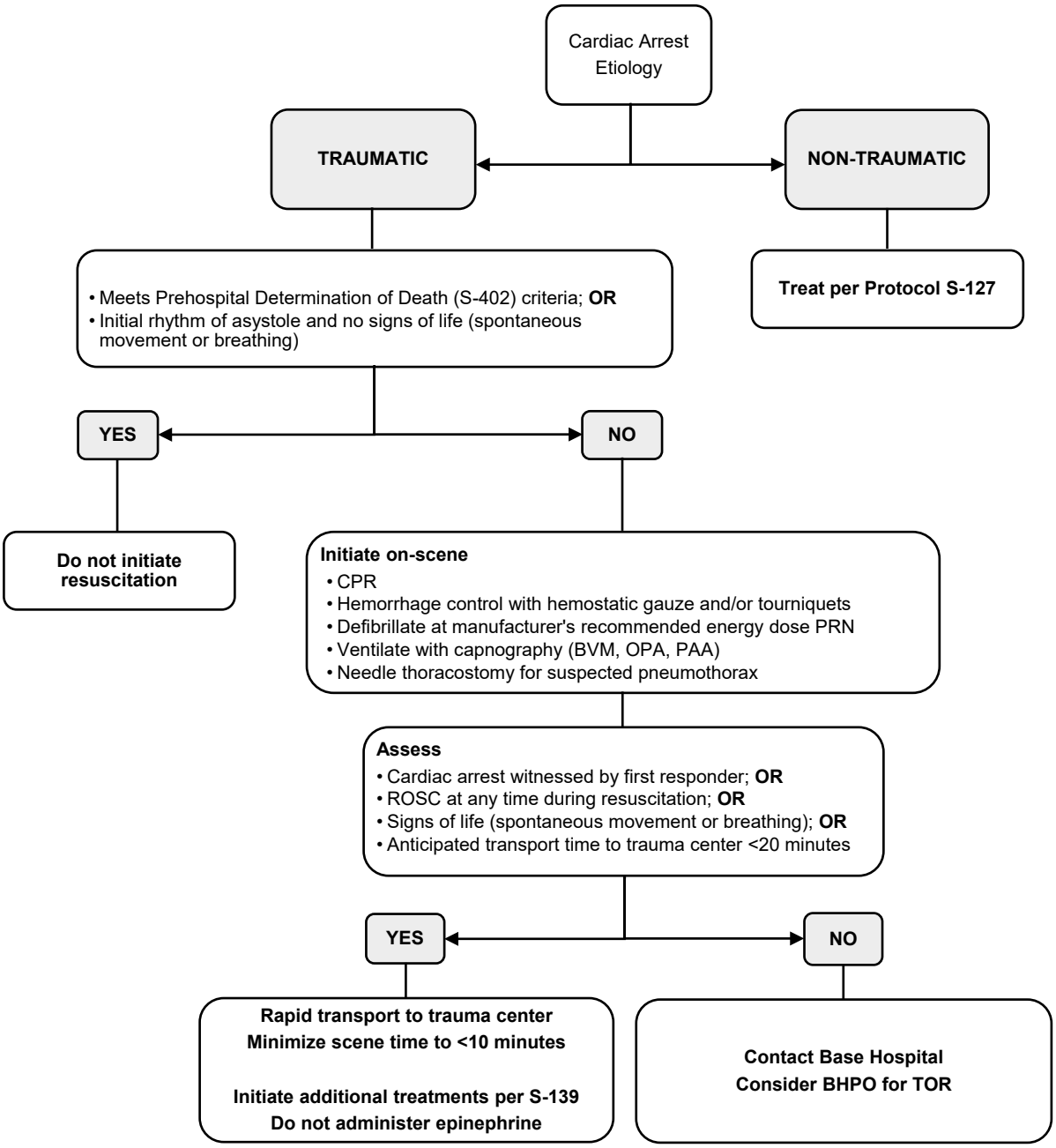
Pregnancy ≥6 months • Where spinal motion restriction indicated, tilt patient to the left 30°	

Transportation and Destination Guidelines

Pediatric patients who meet criteria outlined in T-460 (Identification of the Pediatric Trauma Center Patient) should be transported to the Designated Pediatric Trauma Center, **except** in the following situations.

1. **Adult with child**
   a. If there is a single ambulance (air/ground) with both a pediatric trauma center patient **and** an adult trauma center patient, the ambulance should first transport the more critical patient to the appropriate facility. If both patients are critical, or if there are other questions, both may be transported to the designated adult trauma center.
   b. Field personnel should consider splitting the team using additional ALS transport vehicles, or aeromedical resources to transport the pediatric patient to the pediatric trauma facility and the adult patient to the catchment area trauma facility.
2. **Trauma center diversion**
   The pediatric patient who is identified as a trauma patient shall be transported to the designated pediatric trauma center. When the pediatric trauma center is on diversion, including age-specific diversion, the pediatric patient shall be transported to the county-designated backup pediatric trauma center, the University of California, San Diego (UCSD).
3. **Pregnant pediatric patient**
   A pediatric pregnant trauma patient shall be transported to UCSD.

ADULT TRAUMATIC CARDIAC ARREST



BLS	ALS
• Assess level of pain • Ice, immobilize, and splint PRN • Elevation of extremity PRN	• Continue to monitor and reassess pain using standardized pain scores • Document vital signs before and after each medication administration **Pain medication considerations** 1. When changing route of administration, consider the potential time difference in onset of action 2. If SBP <100 mmHg, ketamine may be preferred over opioids, which can cause hypotension **For mild pain (score 1-3)[1], moderate pain (score 4-6), or severe pain (score 7-10)** • Acetaminophen 1,000 mg IV over 15 min **For moderate pain (score 4-6) or severe pain (score 7-10)** <u>Fentanyl (IV dosing)</u> • Up to 100 mcg IV • MR up to 50 mcg IV q5 min x2 • Maximum total dose 200 mcg IV <u>Fentanyl (IN dosing)</u> • Up to 50 mcg IN q15 min x2 • 3rd dose fentanyl up to 50 mcg IN **If fentanyl unavailable** <u>Morphine (IV dosing)</u> • Up to 0.1 mg/kg IV • MR in 5 min at half initial IV dose • MR in additional 5 min at half initial IV dose <u>Morphine (IM dosing)</u> • Up to 0.1 mg/kg IM • MR in 15 min at half initial IM dose • MR in additional 15 min at half initial IM dose **For moderate to severe pain (score ≥5)** Requirements for use of ketamine on SO (must meet all) • ≥15 years old • GCS of 15 • Not pregnant • No known or suspected alcohol or drug intoxication

[1] If patient refuses or has contraindications to acetaminophen, may treat as moderate pain

	Ketamine (IV dosing) • 0.3 mg/kg in 100 mL of NS over 10 min IV. Maximum for any IV dose is 30 mg. • MR x1 in 15 min if pain remains **moderate** or **severe** Ketamine (IN dosing) • 0.5 mg/kg IN (50 mg/mL concentration). Maximum for any IN dose is 50 mg. • MR x1 in 15 min if pain remains **moderate** or **severe**

BLS	ALS
• Ensure patent airway, O_2 and/or ventilate PRN • O_2 saturation PRN • Treat life-threatening injuries • Ask patient: "Do you have any weapons?" • Attempt to determine if behavior is related to injury, illness, or drug use • Employ de-escalation techniques • Restrain only if necessary to prevent injury • Document distal neurovascular status q15 min, if restrained • Avoid unnecessary sirens • Consider law enforcement support and/or evaluation of patient • Law enforcement or EMS may remove Taser* barbs	• Capnography • Monitor/ECG • IV Ⓐ **Severely agitated and/or combative patient requiring restraint for patient or provider safety** • Midazolam† 5 mg IM/IN/IV, MR x1 in 5-10 min • 500 mL fluid bolus IV/IO PRN, MR x1, MR BHO Ⓐ

***Taser barb considerations**

- Taser discharge for simple behavioral control is usually benign and does not require transport to BEF for evaluation.
- Patients who are injured; appear to be under the influence of drugs; or present with altered mental status or symptoms of illness should have medical evaluation performed by EMS personnel before being transported to BEF.
- If barbs are impaled in anatomically sensitive location such as eye, face, neck, finger/hand, or genitalia, do not remove the barb. Transport patient to BEF.

†For severely agitated or combative patients, IN or IM midazolam is the preferred route to decrease risk of injury to the patient and personnel.

Alert: Co-administration of midazolam in patients with alcohol intoxication can cause respiratory depression. Consider avoiding or reducing midazolam dose.

COUNTY OF SAN DIEGO EMERGENCY MEDICAL SERVICES	TREATMENT PROTOCOL	**S-143**
	SEPSIS	
	Date: 7/1/2024	**Page 1 of 1**

BLS

- O_2 saturation PRN
- O_2 and/or ventilate PRN
- NPO, anticipate vomiting
- Remove transdermal patch, if present
- Obtain temperature
- Monitor blood glucose PRN

ALS

- Monitor/ECG
- IV/IO Ⓐ
- Capnography

Suspected sepsis

If history **suggestive of infection** with ≥2 of the following[1]:

1. Temperature ≥100.4 °F (38.0 °C) or <96.8 °F (36.0 °C)
2. HR ≥90
3. RR ≥20 or $EtCO_2$ <25 mmHg
4. Altered LOC
5. SBP <90 mmHg

- 500 mL fluid bolus IV/IO regardless of initial BP or lung sounds Ⓐ
  - If no rales or SBP <90 mmHg, give additional 500 mL fluid bolus IV/IO, MR x2 Ⓐ

SBP <90 mmHg after fluid boluses

- Push-dose epinephrine 1:100,000 (0.01 mg/mL) 1 mL IV/IO, MR q3 min, titrate to SBP ≥90 mmHg

Push-dose epinephrine mixing instructions

1. Remove 1 mL normal saline (NS) from the 10 mL NS syringe
2. Add 1 mL of epinephrine 1:10,000 (0.1 mg/mL) to 9 mL NS syringe

The mixture now has 10 mL of epinephrine at 0.01 mg/mL (10 mcg/mL) concentration.

[1] Suspected sepsis should be reported to the Base Hospital and upon transfer of care at the receiving hospital.

BLS

For patients with symptoms suggestive of TIA or stroke with onset of symptoms known to be <24 hours in duration

- Maintain O_2 saturation at 94% to 98%
- Keep head of bed (HOB) at 15° elevation. If SBP <120 mmHg and patient tolerates, place HOB flat.
- Expedite transport
- Make BH initial notification early to confirm destination
- Notify accepting Stroke Receiving Center of potential stroke code patient enroute
- Provide list of all current medications, especially anticoagulants, upon arrival to Emergency Department

Important signs/symptoms to recognize, report, and document
Use *BE-FAST* Prehospital Stroke Screening Scale in assessment of possible TIA or stroke patients

B = Balance: Unsteadiness, ataxia
E = Eyes: Blurred/double or loss of vision
F = Face: Unilateral face droop
A = Arms and/or legs: Unilateral weakness exhibited by a drift or drop
S = Speech: Slurred, inability to find words, absent
T = Time: Accurate last known well time

If *BE-FAST* is positive, calculate and report the *FAST-ED* Prehospital Stroke Severity Scale value

F = Facial palsy
A = Arm weakness
S = Speech changes
T = Time
E = Eye deviation
D = Denial/Neglect

- Sudden severe headache with no known cause
- Get specific **last known well** time in military time (hours: minutes)

Bring witness to ED to verify time of symptom onset and provide consent for interventions. If witness unable to ride in ambulance, obtain accurate contact phone number.

Obtain blood glucose. If blood glucose <60 mg/dL, treat for hypoglycemia.

- If patient is awake and able to swallow, give 3 oral glucose tabs or paste (15 gm total)
- Patient may eat or drink, if able
- If patient is unconscious, NPO

ALS

- IV Ⓐ (large-bore antecubital site preferred)
- 250 mL fluid bolus IV/IO to maintain BP ≥120 mmHg if no rales, MR Ⓐ

FAST-ED Severity Scale

Assessment Item	**FAST-ED Score**
Facial palsy:	
Normal or minor paralysis	0
Partial or complete paralysis	1
Arm weakness:	
No drift	0
Drift or some effort against gravity	1
No effort against gravity or no movement	2
Speech changes:	
Absent	0
Mild to moderate	1
Severe, global aphasia, or mute	2
Time:	
What time did the symptoms start?	
What time was the patient last known well?	
Eye deviation:	
Absent	0
Partial	1
Forced deviation	2
Denial/Neglect:	
Absent	0
Extinction to bilateral simultaneous stimulation in only 1 sensory modality	1
Does not recognize own hand or orients only to one side of the body	2
Total	

COUNTY OF SAN DIEGO
EMERGENCY MEDICAL SERVICES

TREATMENT PROTOCOL | **S-145**

OPIOID WITHDRAWAL / OPIOID USE DISORDER

Date: 7/1/2025 | **Page 1 of 1**

BLS

- Ensure patent airway
- O_2 saturation PRN
- O_2 and/or ventilate PRN

Symptomatic suspected opioid OD with RR <12

- Treat per Poisoning / Overdose Protocol (S-134)

For suspected opioid withdrawal or opioid use disorder, request for ALS to provide treatment and transport[1]

For patients and/or other individuals suspected of opioid use disorder, provide Leave Behind Naloxone Kit with education per the Leave Behind Naloxone Program[2]

ALS

- Monitor/ECG
- IV/IO Ⓐ
- Capnography

Symptomatic suspected opioid OD with respiratory depression (RR<12, SpO2<96%, or EtCO2 ≥40 mmHg)

- Treat per Poisoning / Overdose Protocol (S-134)

Complete COWS score using S-145A[1]

For suspected opioid withdrawal in patients ≥16 years with COWS score ≥8[1]

- Contact opioid withdrawal base
- Buprenorphine-naloxone (Suboxone®) 16 mg/4 mg SL BHO (opioid withdrawal base)
- Reassess after 15 min
- Repeat with buprenorphine-naloxone (Suboxone®) 8 mg/2 mg SL to a max of 24 mg/6 mg
- Recommend transport to emergency department
- Ensure warm handoff

If patient declines transport:

- Verify patient contact information
- Ensure warm handoff
- Attempt to arrange non-EMS transport to appropriate facility
- Provide Leave Behind Naloxone kit and education
- Provide MAT information, coaching, and brochure

Buprenorphine Pilot Program exclusion criteria:

- Any methadone use within the last 10 days
- Lack of opioid withdrawal signs or symptoms
- Under 16 years of age
- Severe medical illness (e.g., sepsis, respiratory distress)
- Unable to give consent or comprehend potential risks and benefits for any reason, including altered mental status

[1] For agencies participating in the Buprenorphine Pilot Program
[2] For agencies participating in the Leave Behind Naloxone Program

SUBJECT: TREATMENT PROTOCOL -
OPIOID WITHDRAWAL / OPIOID USE DISORDER COWS SCORE

Date: 07/1/2023

Instructions

For each item, select the number that best describes the patient's sign or symptom. Rate it on just the apparent relationship to opiate withdrawal. For example, if heart rate is increased because the patient was jogging prior to assessment, the increased pulse rate would not be added to the score. The scores will be added together on the final page for a total COWS score.

Resting Pulse Rate *Measured after the patient is sitting or lying down for 1 minute* 0 = pulse rate <80 BPM 1 = pulse rate 81-100 BPM 2 = pulse rate 101-120 BPM 4 = pulse rate >120 BPM Score =	**Gastrointestinal Upset** *Over the past 30 minutes* 0 = no GI symptoms 1 = stomach cramps 2 = nausea or loose stool 3 = vomiting or diarrhea 5 = multiple episodes of diarrhea or vomiting Score =
Sweating *Over the past 30 minutes not accounted for by room temperature or patient activity* 0 = no report of chills or flushing 1 = subjective report of chills or flushing 2 = flushed or observable moistness on face 3 = beads of sweat on brow or face 4 = sweat streaming off of face Score =	**Tremor** *Observation of outstretched hands* 0 = no tremor 1 = tremor can be felt, but not observed 2 = slight tremor observable 4 = gross tremor or muscle twitching Score =
Restlessness *Observation during assessment* 0 = able to sit still 1 = reports difficulty sitting still, but is able to 3 = frequent shifting or extraneous movements of arms or legs 5 = unable to sit still for more than a few seconds Score =	**Yawning** *Observation during assessment* 0 = no yawning 1 = yawning 1-2 times during assessment 2 = yawning 3+ times during assessment 4 = yawning several times per minute Score =

Continued on the next page

Pupil Size 0 = pupils pinned or normal size for room light 1 = pupils possibly larger than normal for room light 2 = pupils moderately dilated 5 = pupils so dilated that only the rim of the iris is visible Score =	**Anxiety or Irritability** 0 = none 1 = patient reports increasing irritability or anxiousness 2 = patient obviously irritable or anxious 4 = patient so irritable or anxious that participation in the assessment is difficult Score =
Bone or Joint Aches *If the patient was having pain previously, only the additional component attributed to opioid withdrawal is scored* 0 = not present 1 = mild, diffuse discomfort 2 = patient reports severe diffuse aching of joints or muscles 4 = patient is rubbing joints or muscles and is unable to sit still because of discomfort Score =	**Gooseflesh Skin (Goosebumps)** 0 = skin is smooth 3 = piloerection of skin can be felt or hairs standing up on arms 5 = prominent piloerection Score =
Runny Nose or Tearing *Not accounted for by cold symptoms or allergies* 0 = not present 1 = nasal stuffiness or unusually moist eyes 2 = nose running or tearing 4 = nose constantly running or tears streaming down cheeks Score =	**Total Score** *Sum of all 11 criteria* Score = **Interpretation** Score >5 = no active withdrawal Score 5-12 = mild withdrawal Score 13-24 = moderate withdrawal Score 25-36 = moderately severe withdrawal Score >36 = severe withdrawal Interpretation =

Patient's Name	Date & Time of Assessment
Assessing Paramedic's Name	**Interpretation of Assessment**

A digital version of this tool can be found at: https://tinyurl.com/yc7v95jn

OR by scanning the QR code

SCAN ME

COWS Criteria from Wesson DR, Ling W. The Clinical Opiate Withdrawal Scale (COWS). *J Psychoactive Drugs*. 2003;35(2):253-259. DOI:10.1080/02791072.2003.10400007. Reproduced and modified for clinical use with permission.

COUNTY OF SAN DIEGO
EMERGENCY MEDICAL SERVICES

TREATMENT PROTOCOL | **S-150**

CHEMPACK DEPLOYMENT AND AUTOINJECTOR USE

Date: 7/1/2025 |

BLS

Upon identification of a scene involving suspected or known exposure of nerve agent

- Isolate area
- Notify dispatch of possible Mass Casualty Incident with possible nerve agent involvement
- **DO NOT ENTER AREA**

If exposed

- Blot off agent
- Strip off all clothing, avoiding contact with outer clothing surfaces
- Flush affected area(s) with copious amounts of water
- Cover affected area(s)

If you begin to experience any signs/symptoms of nerve agent exposure, for example
(Use SLUDGE/BBB mnemonic: Salivation, Lacrimation, Urination, Defecation, Gastrointestinal distress, Emesis, Bronchorrhea, Bronchospasm, Bradycardia)

- Increased secretions (tears, saliva, runny nose, sweating)
- Diminished vision, small pupils
- SOB
- Nausea, vomiting, diarrhea
- Muscle twitching/weakness
- **NOTIFY THE INCIDENT COMMANDER** (or dispatch if no IC) immediately of your exposure and declare yourself a patient

Self-treat immediately per the acuity guidelines listed under ALS

ALS

Triage, decontaminate, and treat patient based on severity of symptoms

Mild
Miosis, rhinorrhea, increasing salivation

- DuoDote (or equivalent) autoinjector[1,2] IM

Moderate
Miosis, rhinorrhea, shortness of breath, vomiting, diarrhea

- DuoDote (or equivalent) autoinjector[1,2] IM x2 in rapid succession

Ongoing DuoDote treatment

- If symptoms of mild or moderate exposure progress after initial evaluation, administer additional DuoDote (or equivalent) autoinjector[1,2] IM up to a cumulative maximum of 3 doses

Severe
Severe respiratory distress, respiratory arrest, cyanosis, extreme SLUDGE/BBB, seizures, unconsciousness

- DuoDote (or equivalent) autoinjector[1,2] IM x3 in rapid succession

For seizures

- Diazepam autoinjector 10mg IM
- If no diazepam autoinjector available, treat per Altered Neurologic Function (Non-Traumatic) Protocol (S-123)

Ongoing organophosphate SLUDGE/BBB signs and symptoms after completion of initial 3 doses of DuoDote

- Atropine autoinjector or atropine per Poisoning/Overdose Protocol (S-134)

PEDIATRIC DOSING

Mild
Miosis, rhinorrhea, increased salivation

- Pediatric atropine autoinjector or atropine per Poisoning/Overdose Protocol (S-165)

Moderate
Miosis, rhinorrhea, shortness of breath, vomiting, diarrhea

- DuoDote (or equivalent) autoinjector[1,2] IM (dose per weight):

[1] DuoDote (or equivalent) autoinjectors are authorized for use by Paramedics, and by EMT/AEMTs as an optional skill, subject to completion of County of San Diego approved training or on scene just-in-time (JIT) training.
[2] DuoDote autoinjectors contain atropine 2.1 mg and pralidoxime (2-PAM) 600 mg. If no DuoDote (or equivalent) autoinjectors are available, coadministration of an atropine autoinjector 2mg IM plus a pralidoxime (2-PAM) autoinjector 600 mg IM is an authorized substitution.

Weight	LBRT Color	DuoDote
5 kg	GREY / PINK	1 DuoDote
10 kg	RED / PURPLE / YELLOW	1 DuoDote
15 kg	WHITE	1 DuoDote
20 kg	BLUE	1 DuoDote
25 kg	ORANGE	1 DuoDote
35 kg	GREEN	1 DuoDote
>36 kg	TURQUOISE	2 DuoDotes (adult dose)

Severe
Severe respiratory distress, respiratory arrest, cyanosis, extreme SLUDGE/BBB, seizures, unconsciousness

- For seizures, treat per Altered Neurologic Function (Non-Traumatic) Protocol (S-161)
- DuoDote(s) (or equivalent) autoinjector[1,2] IM (dose per weight):

Weight	LBRT Color	DuoDote
5 kg	GREY / PINK	1 DuoDote
10 kg	RED / PURPLE / YELLOW	1 DuoDote
15 kg	WHITE	1 DuoDote
20 kg	BLUE	1 DuoDote
25 kg	ORANGE	2 DuoDotes
35 kg	GREEN	2 DuoDotes
>36 kg	TURQUOISE	3 DuoDotes (adult dose)

Ongoing organophosphate SLUDGE/BBB signs and symptoms after completion of initial DuoDote doses

- Pediatric atropine autoinjector or atropine per Poisoning/Overdose Protocol (S-165)

Weight	LBRT Color	Atropine Autoinjector
5 kg	GREY / PINK	0.5 mg
10 kg	RED / PURPLE / YELLOW	0.5 mg
15 kg	WHITE	0.5 mg
20 kg	BLUE	1 mg
25 kg	ORANGE	1 mg
35 kg	GREEN	1 mg
>36 kg	TURQUOISE	2 mg

Note: If there are no autoinjectors in the CHEMPACK, paramedics may administer medications from multi-dose vials.

COUNTY OF SAN DIEGO
EMERGENCY MEDICAL SERVICES

PEDIATRIC TREATMENT PROTOCOL | **S-160**

AIRWAY OBSTRUCTION

Date: 7/1/2025 | **Page 1 of 1**

BLS	ALS
For conscious patient • Reassure, encourage coughing • O_2 PRN **For inadequate air exchange** Airway maneuvers (AHA) • Abdominal thrusts • For obese or pregnant patients, perform chest thrusts • For infants <1 year, perform 5 back blows and 5 chest thrusts, MR PRN **If patient found or becomes unconscious** • Begin CPR **Once obstruction is removed** • Ventilate with high-flow O_2 PRN • O_2 saturation **If suspected epiglottitis** • Place patient in sitting position • Do not visualize the oropharynx **Treat per Respiratory Distress Protocol (S-167)**	**If patient becomes unconscious or has a decreasing LOC** • Direct or video laryngoscopy and Magill forceps, MR PRN • Capnography **Once obstruction is removed** • Monitor/ECG • IV/IO Ⓐ

Note: If unable to ventilate effectively, transport immediately while continuing CPR (unconscious patient)

COUNTY OF SAN DIEGO
EMERGENCY MEDICAL SERVICES

PEDIATRIC TREATMENT PROTOCOL | **S-161**

ALTERED NEUROLOGIC FUNCTION (NON-TRAUMATIC)

Date: 7/1/2025 | **Page 1 of 1**

BLS

- Ensure patent airway
- O_2 saturation, O_2 and/or ventilate PRN
- Spinal motion restriction PRN
- Position on affected side if difficulty managing secretions
- Do not allow patient to walk
- Restrain PRN
- Monitor blood glucose

Symptomatic suspected opioid OD with RR low for age. Use with caution in opioid-dependent, pain-management patients✪

Patients <35 kg (77 lbs)
- Ventilate PRN
- Call for ALS

Patients ≥35 kg
- Naloxone 4 mg via nasal spray preloaded single-dose device. Administer full dose in one nostril
  OR
- Naloxone 2 mg via atomizer and syringe. Administer 1 mg into each nostril

EMTs may assist family or friend to medicate with patient's prescribed naloxone in **symptomatic suspected opioid OD**

Suspected hypoglycemia or patient's blood sugar is <60 mg/dL (<45 mg/dL for neonates)
- If patient is awake and able to manage oral secretions, give 3 oral glucose tabs or paste (15 gm total)
- Patient may eat or drink, if able
- If patient is unconscious, NPO

Stroke/TIA
- Treat per Adult Stroke and Transient Ischemic Attack (S-144)
- Pediatric patients presenting with stroke symptoms should be transported to Rady Children's Hospital

Seizures
- Protect airway and protect from injury
- Treat associated injuries
- If febrile, remove excess clothing/covering

ALS

- Monitor/ECG
- Capnography
- IV Ⓐ

Symptomatic suspected opioid OD with respiratory depression (RR low for age, SpO_2<96%, or $EtCO_2$ ≥40 mmHg)
- Naloxone per drug chart IN/IV/IM, MR Ⓐ
- For opioid-dependent patients, dilute and titrate slowly per drug chart.

Symptomatic hypoglycemia with altered LOC or unresponsive to oral glucose agents
- D_{10} per drug chart IV if BS <60 mg/dL (<45 mg/dL for neonate)
- If patient remains symptomatic and BS remains <60 mg/dL (<45 mg/dL for neonate), MR
- If no IV, glucagon per drug chart IM if BS <60 mg/dL (<45 mg/dL for neonate) Ⓐ

Status epilepticus (generalized, ongoing, and recurrent seizures without lucid interval)
- Midazolam IM per drug chart

If vascular access present
- Midazolam IV/IO per drug chart, MR x1 in 10 min

Partial seizure lasting ≥5 min (includes seizure time prior to arrival of prehospital provider)
- Midazolam IN/IM/IV/IO per drug chart, MR x1 in 10 min

Eclamptic seizure of any duration
- Treat per Adult Obstetrical Emergencies / Newborn Deliveries (S-133)

✪Authorized by County of San Diego EMS Medical Director for public safety personnel per Title 22, Division 9, Chapter 2.3, §100027.03

BLS

- Ensure patent airway
- O_2 saturation PRN
- O_2 and/or ventilate PRN
- Attempt to identify allergen and route (injected, ingested, absorbed, or inhaled)
- Remove allergen (e.g., stinger, injection mechanism), if possible
- Epinephrine auto-injector
  - Patient 15 to 33 kg (33 to 73 lbs), 0.15 mg IM x1
  - Patient ≥33 kg (≥73 lbs), 0.3 mg IM x1

OR

Assist patient to self-medicate own prescribed epinephrine auto-injector or albuterol MDI **once only**. BH contact required for additional dose(s)

Assess for hypotension

- <1 month: SBP <60 mmHg
- 1 month – 1 year: SBP <70 mmHg
- 1 year – 10 years: SBP <70 mmHg + (2x age in years)
- ≥10 years: SBP <90 mmHg

ALS

- Monitor/ECG
- IV/IO Ⓐ
- Capnography

Allergic reaction (skin signs only)

- Urticaria (hives, rash)
- Erythema (flushing)
- Pruritus (itching)

Allergic reaction treatment

- Diphenhydramine per drug chart IV/IM

Suspected anaphylaxis reaction

- Respiratory: throat tightness, hoarse voice, wheezing/stridor, cough, SOB
- Cardiovascular: fainting, dizziness, tachycardia, low BP
- GI: nausea, vomiting, abdominal cramping
- Tissues: angioedema of eyelids, lips, tongue, face

Anaphylaxis treatment

- Epinephrine 1:1,000 (1 mg/mL) per drug chart IM (lateral thigh), MR x2 q5 min Ⓐ **then**
- Diphenhydramine per drug chart IV/IM

If respiratory involvement[1]

- Albuterol/Levalbuterol per drug chart via nebulizer, MR Ⓐ
- Ipratropium bromide per drug chart via nebulizer added to first dose of albuterol/levalbuterol

Respiratory distress with stridor at rest

- Epinephrine 1:1,000 per drug chart (combined with 3 mL normal saline) via nebulizer, MR x1

Severe anaphylaxis or inadequate response to treatment

- Fluid bolus IV/IO per drug chart MR to maintain adequate perfusion Ⓐ
- Push-dose epinephrine 1:100,000 (0.01 mg/mL) per drug chart IV/IO, MR q3 min, titrate to adequate perfusion or improvement in status

Push-dose epinephrine mixing instructions

1. Remove 1 mL normal saline (NS) from the 10 mL NS syringe

[1] **Infection control:** If concerned about aerosolized infectious exposure, substitute with MDI, if available

	2. Add 1 mL of epinephrine 1:10,000 (0.1 mg/mL) to 9 mL NS syringe The mixture now has 10 mL of epinephrine at 0.01 mg/mL (10 mcg/mL) concentration.	

BLS

- Compression rate 100-120/min
- Ventilation rate (compression-to-ventilation ratio)
  - Neonate: 20-30/min (3:1)
  - Pediatric: 10-12/min (15:2)*
- Use metronome or other real-time audiovisual feedback device
- Rotate compressor at least every 2 min
- Use mechanical compression device, if size-appropriate available
- O2 and/or ventilate with BVM
- Monitor O2 saturation
- Apply AED during CPR and analyze as soon as ready

VAD
- Perform CPR
- Contact BH for additional instructions

TAH
- Contact BH for instructions

ALS

- Apply defibrillator pads during CPR. Defibrillate immediately for VF/pulseless VT.
- IV/IO Ⓐ
- Capnography with waveform and value
- NG/OG tube PRN

Team leader priorities
- Monitor CPR quality, rate, depth, full chest recoil, and capnography value and waveform
- Minimize interruption of compressions (<5 sec) during ECG rhythm checks
- Charge monitor prior to rhythm checks. Do not interrupt CPR while charging.

VAD/TAH
- See Adjunct Cardiac Devices section

Capnography
- If $EtCO_2$ rises rapidly during CPR, pause CPR and check for pulse

Specific protocols (see below)
- Arrhythmias
  - Unstable bradycardia
  - Supraventricular tachycardia
  - Ventricular tachycardia
  - Ventricular fibrillation / pulseless VT
  - Pulseless electrical activity / asystole
- Return of Spontaneous Circulation
- Adjunct Cardiac Devices

*Continuous compressions are an acceptable alternative for pediatric CPR

UNSTABLE‡ BRADYCARDIA

- Obtain 12-lead ECG, when able

Infant/child (<9 years) with HR <60 BPM
OR
Child (9-14 years) with HR <40 BPM

- Ventilate with BVM

If no increase in HR after 30 sec of BVM ventilations

- If unconscious, begin CPR
- Epinephrine 1:10,000 per drug chart IV/IO, MR x2 q3-5 minutes. MR q3-5 minutes BHO
- After 3 doses of epinephrine
  - Atropine per drug chart IV/IO, MR x1 in 5 min
- Consider midazolam per drug chart IV/IO PRN pre-pacing BHO
- Consider cardiac pacing BHO

‡Exhibiting any of the following signs/symptoms of inadequate perfusion, e.g.,

- Altered mental status (decreased LOC, confusion, agitation)
- Pallor, mottling, or cyanosis
- Diaphoresis
- Difference in peripheral vs. central pulses
- Delayed capillary refill
- Hypotension by age
  - <1 month: SBP <60 mmHg
  - 1 month – 1 year: SBP <70 mmHg
  - 1 year – 10 years: SBP <70 mmHg + (2x age in years)
  - ≥10 years: SBP <90 mmHg

SUPRAVENTRICULAR TACHYCARDIA

- Obtain 12-lead ECG

Infant/child (<4 years) with HR ≥220 BPM
OR
Child (≥4 years) with HR ≥180 BPM

Stable (symptomatic)
- Consider VSM
- Fluid bolus per drug chart IV/IO Ⓐ
- Adenosine per drug chart rapid IV/IO, followed with 20 mL NS rapid IV/IO, MR x2

Unstable‡
- Consider midazolam per drug chart IV/IO pre-cardioversion
- Synchronized cardioversion per drug chart, MR BHPO

‡Exhibiting any of the following signs/symptoms of inadequate perfusion, e.g.,
- Altered mental status (decreased LOC, confusion, agitation)
- Pallor, mottling, or cyanosis
- Diaphoresis
- Difference in peripheral vs. central pulses
- Delayed capillary refill
- Hypotension by age
  - <1 month: SBP <60 mmHg
  - 1 month – 1 year: SBP <70 mmHg
  - 1 year – 10 years: SBP <70 mmHg + (2x age in years)
  - ≥10 years: SBP <90 mmHg

VENTRICULAR TACHYCARDIA

- Obtain 12-lead ECG

Stable

- Fluid boluses per drug chart IV/IO to maintain SBP appropriate for age Ⓐ
- Amiodarone per drug chart BHPO
  OR
- Lidocaine per drug chart BHPO

Unstable‡

- Consider midazolam per drug chart IV/IO pre-cardioversion
- Synchronized cardioversion per drug chart, MR BHPO
- After successful cardioversion
  - Check BP. If hypotensive for age§ and rales not present, fluid bolus per drug chart IV/IO, MR
  - Obtain 12-lead ECG

‡Exhibiting any of the following signs/symptoms of inadequate perfusion, e.g.,

- Altered mental status (decreased LOC, confusion, agitation)
- Pallor, mottling, or cyanosis
- Diaphoresis
- Difference in peripheral vs. central pulses
- Delayed capillary refill
- §Hypotension by age
  - <1 month: SBP <60 mmHg
  - 1 month – 1 year: SBP <70 mmHg
  - 1 year – 10 years: SBP <70 mmHg + (2x age in years)
  - ≥10 years: SBP <90 mmHg

VENTRICULAR FIBRILLATION / PULSELESS VT

- CPR
- Defibrillate per drug chart as soon as monitor available/charged
- Defibrillate per drug chart q2 min while VF/VT persists
- Epinephrine 1:10,000 per drug chart IV/IO q3-5 min, begin after second defibrillation

Persistent VF/VT after 3 defibrillation attempts

- Amiodarone per drug chart IV/IO, MR per drug chart x2
  OR
- Lidocaine per drug chart IV/IO, MR per drug chart x1 q5 min

PULSELESS ELECTRICAL ACTIVITY / ASYSTOLE

- CPR
- Epinephrine 1:10,000 per drug chart IV/IO q3-5 min

Suspected hyperkalemia

- $CaCl_2$ per drug chart IV/IO, MR x1 in 5 min for continued ECG findings consistent with hyperkalemia
- $NaHCO_3$ per drug chart IV/IO
- Continuous albuterol/levalbuterol per drug chart via nebulizer Ⓐ

Suspected hypovolemia

- Fluid bolus per drug chart IV/IO, MR x2 Ⓐ

Suspected poisoning / OD

- For suspected tricyclic antidepressant, beta blocker, or calcium channel blocker overdoses, consider treatment per Poisoning / Overdose Protocol (S-165)[1]

Prolonged asystole / PEA

- After ≥20 min, contact BH physician for direction

[1] Naloxone is not authorized in cardiac arrest.

RETURN OF SPONTANEOUS CIRCULATION

- Ventilate PRN (goal of $EtCO_2$ = 40 mmHg)
- Obtain BP
  - If hypotensive[§] and rales not present, fluid bolus per drug chart IV/IO, MR Ⓐ
    - If unresponsive to fluid boluses, push-dose epinephrine 1:100,000 (0.01 mg/mL) per drug chart IV/IO, MR q3 min, titrate to adequate perfusion
- Obtain 12-lead ECG
- Provide cardiac monitor data to agency QA/QI department
- Monitor blood glucose PRN

Push-dose epinephrine mixing instructions

1. Remove 1 mL normal saline (NS) from the 10 mL NS syringe
2. Add 1 mL of epinephrine 1:10,000 (0.1 mg/mL) to 9 mL NS syringe

The mixture now has 10 mL of epinephrine at 0.01 mg/mL (10 mcg/mL) concentration.

[§]Hypotension by age

- <1 month: SBP <60 mmHg
- 1 month – 1 year: SBP <70 mmHg
- 1 year – 10 years: SBP <70 mmHg + (2x age in years)
- ≥10 years: SBP <90 mmHg

ADJUNCT CARDIAC DEVICES

Transport equipment and any knowledgeable family/support persons to ED with patient

VAD
- Contact BH and VAD coordinator
- Follow protocols for CPR and treatment of arrhythmias, including use of cardioversion, pacing, and defibrillation PRN

TAH
- Contact TAH coordinator
- Consult BH Physician for orders for TAH recommended treatments

Wearable defibrillators (vest)
- If vest device is broadcasting specific verbal directions, follow device's prompts
- If device not broadcasting directions and patient requires CPR or cardiac treatment, remove vest and treat

Malfunctioning pacemakers
- Treat per applicable arrythmia protocol
- Treat pain per Pain Management Protocol (S-173) PRN

Reported/witnessed AICD firing ≥2
- Amiodarone per drug chart, MR BHPO
  OR
- Lidocaine per drug chart, MR BHPO

BLS	ALS
• O_2 and/or ventilate PRN • If antivenin available on site, transport with patient to hospital **Jellyfish sting** • Liberally rinse with seawater • Scrape to remove stinger(s) • Heat as tolerated (not to exceed 110 °F / 43 °C) **Stingray or sculpin injury** • Immersion in hot water (as hot as tolerated, not to exceed 110 °F / 43 °C) **Snakebite** • Mark proximal extent of swelling and/or tenderness • Keep involved extremity at heart level and immobile • Remove constrictive device(s) • Remove jewelry distal to bite	• IV Ⓐ • Treat per Pain Management Protocol (S-173)

COUNTY OF SAN DIEGO
EMERGENCY MEDICAL SERVICES

PEDIATRIC TREATMENT PROTOCOL	S-165
POISONING / OVERDOSE	
Date: 7/1/2025	**Page 1 of 1**

BLS

- Ensure patent airway
- O_2 saturation PRN
- O_2 and/or ventilate PRN
- Monitor blood glucose PRN
- Carboxyhemoglobin monitor PRN, if available

Ingestions
- Identify substance
- Transport pill bottles and containers with patient PRN

Skin contamination*
- Remove clothes
- Brush off dry chemicals
- Flush with copious water

Toxic inhalation (e.g., CO exposure, smoke, gas)
- Move patient to safe environment
- 100% O_2 via mask
- Consider transport to facility with hyperbaric chamber for suspected CO poisoning, particularly in unconscious or pregnant patients

Symptomatic suspected opioid OD with RR low for age. Use with caution in opioid-dependent, pain-management patients✪

Patients <35 kg (77 lbs)
- Ventilate PRN
- Call for ALS

Patients ≥35 kg
- Naloxone 4 mg via nasal spray preloaded single-dose device. Administer full dose in one nostril OR
- Naloxone 2 mg via atomizer and syringe. Administer 1 mg into each nostril.

EMTs may assist family or friend to medicate with patient's prescribed naloxone in **symptomatic suspected opioid OD**

ALS

- Monitor/ECG
- IV/IO Ⓐ
- Capnography

Ingestions
- Assure patient has gag reflex and is cooperative
- Activated charcoal per drug chart PO if ingestion within 60 minutes and recommended by Poison Control Center Ⓐ
- In oral hypoglycemic agent ingestion, any change in mentation requires blood glucose check or recheck

Symptomatic suspected opioid OD with respiratory depression (RR low for age, SpO_2<96%, or $EtCO_2$ ≥40 mmHg)
- Naloxone per drug chart IN/IV/IM, MR Ⓐ
- In opioid-dependent patients, dilute and titrate slowly per drug chart

Symptomatic organophosphate poisoning
- Atropine per drug chart IV/IO
- For continued signs/symptoms of SLUDGE/BBB, double prior atropine dose IV/IO q3-5 min

Extrapyramidal reactions
- Diphenhydramine per drug chart slow IV/IM

Suspected tricyclic antidepressant OD with cardiac effects (e.g., hypotension, heart block, or widened QRS)
- $NaHCO_3$ per drug chart IV/IO

Suspected beta blocker or calcium channel blocker OD, contact Poison Control Center and Base Hospital‡

✪ Per Title 22, Division 9, Chapter 2.3, § 100027.03 public safety personnel may administer nasal naloxone when authorized by the County of San Diego EMS Medical Director

*For radioactive material, treatment of traumatic injuries takes precedence over decontamination

‡ Base Hospital Physician may order recommendation from Poison Control Center

PREDELIVERY

BLS

- Ensure patent airway
- O_2 saturation PRN
- O2 and/or ventilate PRN
- If no time for transport and delivery is imminent (crowning and pushing), proceed with delivery
- If no delivery, transport on left side
- Keep mother warm

Third-trimester bleeding

- Transport immediately to facility with obstetrical services per BH direction

Eclampsia (seizures)

- Protect airway
- Protect from injury

ALS

- Monitor/ECG
- IV Ⓐ
- Capnography

Direct to labor/delivery area BHO if ≥20 weeks gestation

Eclampsia (seizures)

- Midazolam IN/IM/IV/IO to a max dose of 5 mg (d/c if seizure stops), MR x1 in 10 min. Max 10 mg total.

DELIVERY

BLS and ALS

Routine delivery

- If placenta delivered, massage fundus. Do not wait on scene.
- Wait 60 sec after delivery, then clamp and cut cord between clamps
- Document name of person cutting cord, time cut, and delivery location (address)
- Place identification bands on mother and newborn(s)
- Complete Out of Hospital Birth Report Form (S-166A) and provide to parent

Difficult deliveries

- High-flow O2
- Keep mother warm

Nuchal cord (cord wrapped around neck)

- Slip cord over the head and off neck
- Clamp and cut cord, if wrapped too tightly

Prolapsed cord

- Place mother with her hips elevated on pillows
- Insert a gloved hand into vagina and gently push presenting part off cord
- Transport immediately while retaining this position. Do not remove hand until relieved by hospital personnel.
- Cover exposed cord with saline-soaked gauze

Shoulder dystocia

- Hyperflex mother's knees to her chest

Breech birth (arm or single foot visible)

- Rapid transport

Frank breech or double footling and imminent delivery with long transport
- Allow newborn to deliver to the waist without active assistance (support only)
- When legs and buttocks are delivered, assist head out keeping body parallel to the ground. If head does not deliver within 1-2 min, insert gloved hand into the vagina to create airway for newborn.
- Transport immediately if head undelivered

Eclampsia (seizures)
- Protect airway, and protect from injury
- **ALS:** Midazolam IN/IM/IV/IO to a max dose of 5 mg (d/c if seizure stops), MR x1 in 10 min. Max 10 mg total.

MOTHER POST-DELIVERY

BLS	ALS
Postpartum hemorrhage • Massage fundus vigorously • Baby to breast • High-flow O2 • Keep mother warm **Eclampsia (seizures)** • Protect airway • Protect from injury	**Postpartum hemorrhage** • Monitor/ECG • Capnography • 500 mL fluid bolus IV/IO, MR x2 q10 min to maintain SBP ≥90 mmHg Ⓐ • If estimated blood loss ≥500 mL and within 3 hours of delivery, tranexamic acid 1 gm/ 10mL IV/IO, in 50-100 mL NS, over 10 min **Eclampsia (seizures)** • Midazolam IN/IM/IV/IO to a max dose of 5 mg (d/c if seizure stops), MR x1 in 10 min. Max 10 mg total.

NEONATAL POST-DELIVERY

BLS and ALS

Warm, dry, and stimulate newborn
- Wrap newborn in warm, dry blanket. Keep head warm.
- Assess breathing, tone, and HR. Palpate HR via umbilical cord.
- If placing pulse oximeter, use newborn's right hand
- APGAR at 1 and 5 min (do not delay resuscitation to obtain score)
- Confirm identification bands placed on mother and newborn(s)
- Bring mother and newborn(s) to same hospital
- Complete Out of Hospital Birth Report Form (S-166A) and provide to parent

Full-term newborn with good tone and breathing
- Keep newborn warm
- Ensure patent airway
- If excessive secretions, suction mouth then nose with bulb syringe
- O2 saturation on newborn's right hand PRN
- Baby to breast
- Ongoing assessment q30 sec

Newborn HR ≥100 with respiratory distress or central cyanosis
- Blow-by O_2

Newborn HR <100, poor respiratory effort or persistent central cyanosis
- Ventilate with BVM on room air
- Monitor/ECG
- Recheck pulse q30 sec
- For persistently poor respiratory rate/effort, or cyanosis despite correct BVM technique, add high-

flow O_2 15 L/min to BVM
- **Stop BVM when patient breathing well and HR ≥100**
- **ALS**: IV/IO Ⓐ (do not delay transport)
- **ALS**: NG tube PRN

Newborn HR <60
- Continue BVM with high-flow O2
- Chest compressions at rate of 120/min
- 3:1 compression to ventilation ratio
- Check pulse q1 min
- Stop compressions when HR ≥60
- **ALS:** Epinephrine 1:10,000 per drug chart IV/IO, MR q3-5 min
- **ALS:** Fluid bolus per drug chart IV/IO, MR x1 in 10 min Ⓐ

Premature and/or low birth weight newborn
- If amniotic sac intact, remove neonate from sac after delivery
- Place neonate in plastic bag up to axilla to minimize heat loss
- Transport immediately
- CPR need **not** be initiated if there are no signs of life **and** gestational age <24 weeks

Out of Hospital Birth Report

Name of Mother	
Date and Time of Delivery	**Address of Delivery**
Date: Time:	Street: City:

Name	***If person who cut the umbilical cord/delivered placenta is an EMT or Paramedic fill out below info:**
Person who cut umbilical cord*: First Name: Last Name:	Certification/ License #: Agency: Agency Phone #: Signature:
Person who delivered placenta (if delivered)*: First Name: Last Name:	Certification/ License #: Agency: Agency Phone #: Signature:

Weight and Apgar Scores (if taken)		**CAD Incident #:**
Weight:	APGAR Score:	

KEEP THIS FORM – It will be required when you visit the Office of Vital Records.

Failure to register a child's birth in a timely manner could prohibit parents from obtaining a social security card, passport, medical insurance, and cash aid.

For more information on required documents and fees, search "out of hospital births" on the County web site: www.sandiegocounty.gov

Por Favor de mantener esta forma - Esta requerida cuando llegue a su visita con la Oficina de Vital Records.

Fracaso de no registrar el nacimiento de su niño a tiempo, se podrá prohibir de obtener el número del seguro social, pasaporté, seguro medica, y ayuda financiera.

Para información sobre documentos requeridos y el costo, por favor buscar, solo en inglés, "out of hospital births" en el sitio del Condado: www.sandiegocounty.gov

COUNTY OF SAN DIEGO
HHSA
HEALTH AND HUMAN SERVICES AGENCY

County of San Diego

Health and Human Services Agency

Office of Vital Records

5530 Overland Avenue, Suite 170

San Diego, CA 92123

619-692-5733

COUNTY OF SAN DIEGO EMERGENCY MEDICAL SERVICES	PEDIATRIC TREATMENT PROTOCOL	**S-167**
	RESPIRATORY DISTRESS	
	Date: 7/1/2025	**Page 1 of 1**

BLS	ALS
• Ensure patent airway • Reassurance • Dislodge any airway obstruction. Treat per Airway Obstruction Protocol (S-160). • O2 saturation • O2 and/or ventilate PRN • Transport in position of comfort • Carboxyhemoglobin monitor PRN, if available • May assist patient to self-medicate own prescribed albuterol MDI **once only**. BH contact required for additional dose(s). **Toxic inhalation (e.g., CO exposure, smoke, gas)** • Move patient to safe environment • 100% O2 via mask • Consider transport to facility with hyperbaric chamber for suspected CO poisoning for unconscious or pregnant patients **Croup-like cough** • Aerosolized saline or water 5 mL via O_2-powered nebulizer/mask, MR PRN **Suspected bronchiolitis (<2 years old with no prior albuterol use)** • Place in position of comfort • Suction nose with bulb syringe PRN	• Monitor/ECG • Capnography • IV Ⓐ • BVM PRN **Respiratory distress with bronchospasm[1]** • Albuterol/Levalbuterol per drug chart via nebulizer, MR Ⓐ • Ipratropium bromide per drug chart via nebulizer added to first dose of albuterol/levalbuterol **Severe respiratory distress/failure or inadequate response to nebulized treatments consider** • Epinephrine 1:1,000 per drug chart IM, MR x2 q5 min Ⓐ **Respiratory distress with stridor at rest** • Epinephrine 1:1,000 per drug chart (combined with 3 mL normal saline) via nebulizer, MR x1 Ⓐ **No improvement after epinephrine via nebulizer x2 or impending respiratory/airway compromise** • Epinephrine 1:1,000 per drug chart IM, MR x2 q5 min Ⓐ **If history suggests epiglottitis, do not visualize airway. Use calming measures**

Note: For respiratory arrest, immediately start BVM ventilation

[1] **Infection control:** If concerned about aerosolized infectious exposure, substitute with MDI, if available

BLS	ALS
• O_2 saturation • O_2 and/or ventilate PRN • Control obvious external bleeding • Treat associated injuries • NPO, anticipate vomiting • Remove transdermal patch • Keep patient warm **Assess for hypotension** • <1 month: SBP <60 mmHg • 1 month – 1 year: SBP <70 mmHg • 1 year – 10 years: SBP <70 mmHg + (2x age in years) • ≥10 years: SBP <90 mmHg	• Monitor/ECG • IV/IO Ⓐ • Capnography **Hypovolemic shock** • IV/IO fluid bolus per drug chart, MR if no rales Ⓐ **Distributive†/cardiogenic shock** • IV/IO fluid bolus per drug chart, MR if no rales Ⓐ **Hypotensive for age after second fluid bolus** • Push-dose epinephrine 1:100,000 (0.01 mg/mL) IV/IO per drug chart, MR q3 min, titrate to adequate perfusion **Push-dose epinephrine mixing instructions** 1. Remove 1 mL normal saline (NS) from the 10 mL NS syringe 2. Add 1 mL of epinephrine 1:10,000 (0.1 mg/mL) to 9 mL NS syringe The mixture now has 10 mL of epinephrine at 0.01 mg/mL (10 mcg/mL) concentration.

† Distributive shock includes neurogenic; drug and toxin-induced; and endocrine shock.

BLS

- Ensure patent airway
- Protect C-spine
- Control obvious bleeding
- Spinal motion restriction per Skills List (S-104) except in penetrating trauma without neurological deficits
- O2 saturation. Maintain SpO2 ≥90%.
- O2 and/or ventilate PRN
- Keep warm
- Hemostatic gauze

Abdominal trauma
- Cover eviscerated bowel with saline pads

Chest trauma
- Cover open chest wound with three-sided occlusive dressing. Release dressing if tension pneumothorax develops.
- Chest seal PRN

Extremity trauma
- Splint neurologically stable fractures in position as presented. Traction splint PRN.
- Reduce grossly angulated long bone fractures with no pulse or sensation PRN
- Direct pressure to control external hemorrhage
- Apply gauze or hemostatic dressing PRN
- Tourniquet PRN
- In MCI, direct pressure not required prior to tourniquet application

Impaled objects
- Immobilize and leave impaled objects in place
- Remove object impaled in face, cheek, or neck if there is total airway obstruction

Any suspicion of neurological injury (mechanism, GCS, examination)
- High-flow O2 PRN
- Monitor SpO2, BP, and HR q3-5 min
- If SpO2 <90% or inadequate respirations (despite high-flow O_2), assist ventilations with BVM

ALS

- Monitor/ECG
- IV/IO Ⓐ
- Capnography. Maintain EtCO2 35-45 mmHg PRN
- Treat pain per Pain Management Protocol (S-173)

Signs of shock or hypotensive for age
- Fluid bolus IV/IO per drug chart, MR x3 q15 min to maintain adequate perfusion Ⓐ

Crush injury requiring extrication with compression of extremity or torso ≥2 hours

Immediately prior to anticipated release
- IV/IO fluid bolus per drug chart, MR BHPO Ⓐ
- $NaHCO_3$ IV/IO per drug chart
- $CaCl_2$ IV/IO over 30 sec per drug chart, MR x1 in 5 min for continued ECG findings consistent with hyperkalemia
- Continuous albuterol/levalbuterol per drug chart via nebulizer

Grossly angulated long bone fractures
- Reduce with gentle unidirectional traction for splinting Ⓐ

Severe respiratory distress with diminished or absent breath sounds (unilaterally or bilaterally), and hypotensive for age, and suspected pneumothorax
- Needle thoracostomy

For nausea or vomiting

≥6 months
- Ondansetron IV/IM/ODT per drug chart

For traumatic cardiac arrest
- IV/IO fluid bolus per drug chart Ⓐ
- Do not administer epinephrine

Pregnancy ≥6 months • If spinal motion restriction indicated, tilt patient to the left 30°	

Hypotension by age

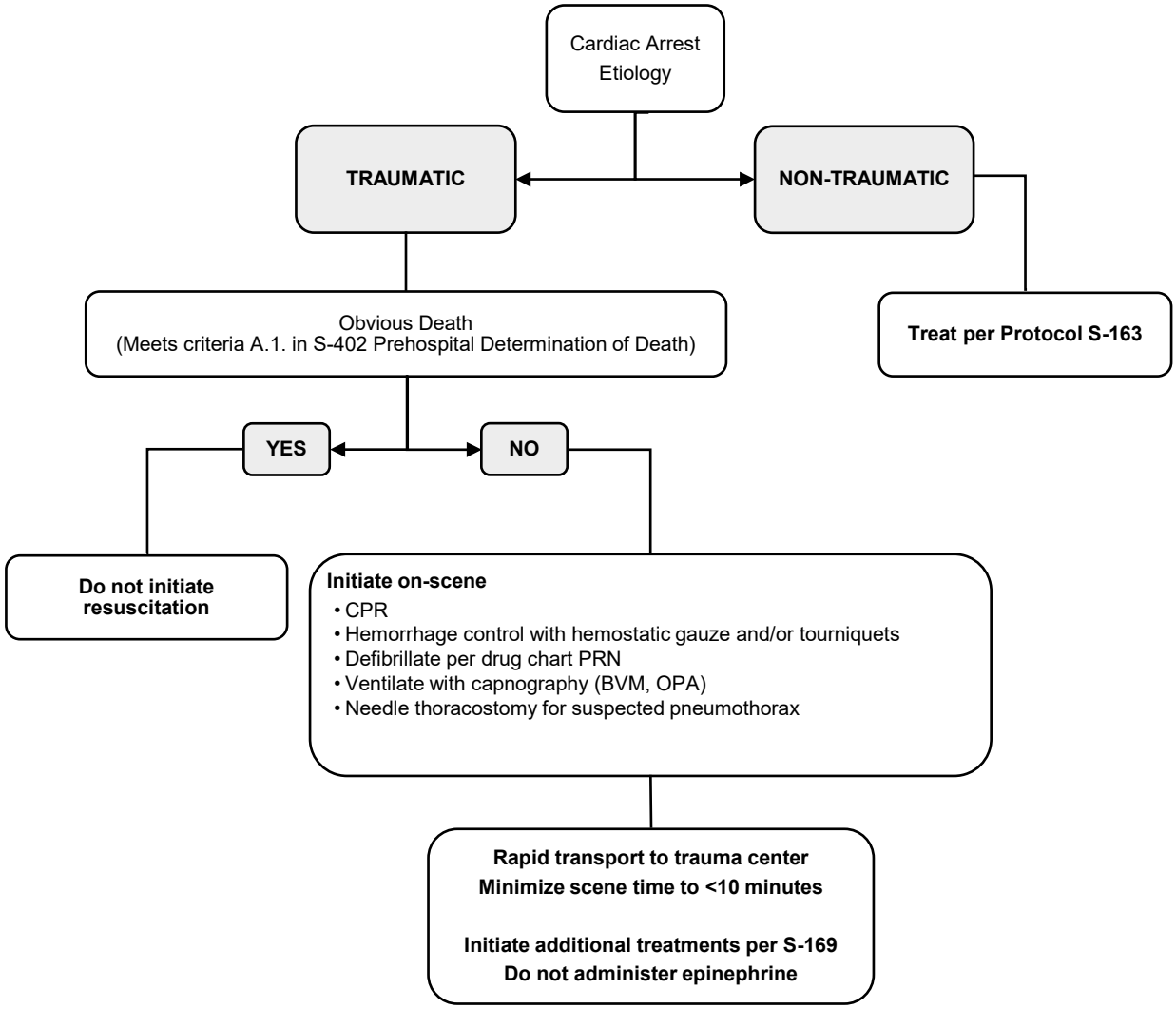
- <1 month: SBP <60 mmHg
- 1 month – 1 year: SBP <70 mmHg
- 1 year – 10 years: SBP <70 mmHg + (2x age in years)
- ≥10 years: SBP <90 mmHg

Transportation and Destination Guidelines

Pediatric patients who meet criteria outlined in T-460 (Identification of the Pediatric Trauma Center Patient) should be transported to the Designated Pediatric Trauma Center, **except** in the following situations.

1. **Adult with child**
   a. If there is a single ambulance (air/ground) with both a pediatric trauma center patient **and** an adult trauma center patient, the ambulance should first transport the more critical patient to the appropriate facility. If both patients are critical, or if there are other questions, both may be transported to the designated adult trauma center.
   b. Field personnel should consider splitting the team using additional ALS transport vehicles, or aeromedical resources to transport the pediatric patient to the pediatric trauma facility and the adult patient to the catchment area trauma facility.
2. **Trauma center diversion**
   The pediatric patient who is identified as a trauma patient shall be transported to the designated pediatric trauma center. When the pediatric trauma center is on diversion, including age-specific diversion, the pediatric patient shall be transported to the county-designated backup pediatric trauma center, the University of California, San Diego (UCSD).
3. **Pregnant pediatric patient**
   A pediatric pregnant trauma patient shall be transported to UCSD.

PEDIATRIC TRAUMATIC CARDIAC ARREST



COUNTY OF SAN DIEGO
EMERGENCY MEDICAL SERVICES

PEDIATRIC TREATMENT PROTOCOL	S-170
BURNS	
Date: 7/1/2025	**Page 1 of 1**

BLS

- Move to a safe environment
- Break contact with causative agent
- Ensure patent airway, O2, and/or ventilate PRN
- O_2 saturation PRN
- Treat other life-threatening injuries
- Carboxyhemoglobin monitor PRN, if available

Thermal burns
- For burns of <10% BSA, stop burning with non-chilled water or saline
- For burns of >10% BSA, cover with dry dressing and keep patient warm
- Do not allow patient to become hypothermic

Toxic inhalation (e.g., CO exposure, smoke, gas)
- Move patient to safe environment
- 100% O_2 via mask
- Consider transport to facility with hyperbaric chamber for suspected CO poisoning, particularly in unconscious or pregnant patients

Chemical burns
- Brush off dry chemicals
- Flush with copious amounts of water

Tar burns
- Do not remove tar
- Cool with water, then transport

ALS

- Monitor/ECG
- IV/IO Ⓐ
- Capnography
- Treat pain per Pain Management Protocol (S-173)

Patients with >10% partial-thickness or >5% full-thickness burns
- Fluid bolus IV/IO per drug chart then TKO Ⓐ

Respiratory distress with bronchospasm[1]
- Albuterol/Levalbuterol per drug chart via nebulizer, MR Ⓐ

Respiratory distress with stridor
- Epinephrine 1:1,000 per drug chart (combined with 3 mL normal saline) via nebulizer, MR x1

No improvement after epinephrine via nebulizer x2 or impending airway compromise
- Epinephrine 1:1,000 per drug chart IM, MR x2 q5 min Ⓐ

Contact UCSD Base Hospital for patients meeting burn center criteria†
See Base Hospital Contact/Patient Transportation and Report (S-415)

†Burn center criteria

Patients with burns involving
- >10% BSA partial thickness or >5% BSA full thickness
- Suspected respiratory involvement or significant smoke inhalation
- Circumferential burn or burn to face, hands, feet, or perineum
- Electrical injury due to high voltage (≥1,000 volts)

[1] **Infection control:** If concerned about aerosolized infectious exposure, substitute with MDI, if available

BLS	ALS
• Ensure patent airway • O_2 saturation • O_2 and/or ventilate PRN • Monitor blood glucose **Suspected hypoglycemia or patient's blood sugar is <60 mg/dL (<45 mg/dL for neonates)** • If patient is awake and able to manage oral secretions, give oral glucose paste or 3 tablets (15 gm total) • Patient may eat or drink, if able • If patient is unconscious, NPO	• Monitor/ECG • IV Ⓐ

COUNTY OF SAN DIEGO EMERGENCY MEDICAL SERVICES	PEDIATRIC TREATMENT PROTOCOL	**S-173**
	PAIN MANAGEMENT	
	Date: 7/1/2025	**Page 1 of 1**

BLS	ALS
• Assess level of pain • Ice, immobilize, and splint PRN • Elevate extremity trauma PRN	• Continue to monitor and reassess pain as appropriate • Document vital signs before and after each medication administration **Pain medication considerations** 1. When changing route of administration, consider the potential time difference in onset of action 2. Document **adequate perfusion** prior to opioid administration **For mild pain (score 1-3)[1] or moderate pain (score 4-6)** • Acetaminophen* IV per drug chart in 100 ml of NS over 15 min **For moderate pain (score 4-6) or severe pain (score 7-10)** <u>Fentanyl (IV dosing)</u> • <10 kg, fentanyl IV per drug chart • MR at half initial IV dose BHO • ≥10 kg, fentanyl IV per drug chart • MR at half initial IV dose <u>Fentanyl (IN dosing)</u> • <10 kg, fentanyl IN per drug chart • MR at initial IN dose BHO • ≥10 kg, fentanyl IN per drug chart • MR at initial IN dose **If fentanyl unavailable, morphine IV/IM per drug chart**

*IV acetaminophen contraindicated if patient <2 years of age

[1] If patient refuses or has contraindications to acetaminophen, may treat as moderate pain

BLS	ALS
• Ensure patent airway • O_2 saturation PRN • NPO	• Monitor/ECG • IV/IO Ⓐ • Fluid bolus IV/IO for suspected volume depletion per drug chart Ⓐ • Treat pain per Pain Management Protocol (S-173) **For nausea or vomiting** ≥6 months • Ondansetron IV/IM/ODT per drug chart

BLS	ALS
• Ensure patent airway, O_2 and/or ventilate PRN • O_2 saturation PRN • Treat life-threatening injuries • Ask patient: "Do you have any weapons?" • Attempt to determine if behavior is related to injury, illness, or drug use • Employ de-escalation techniques • Restrain only if necessary to prevent injury • Document distal neurovascular status q15 min, if restrained • Avoid unnecessary sirens • Consider law enforcement support • Law enforcement or EMS may remove Taser* barbs	• Capnography • Monitor/ECG • IV Ⓐ **Severely agitated and/or combative patient requiring restraint for patient or provider safety** • Midazolam† per drug chart IM/IN/IV, MR x1 in 10 min • Fluid bolus IV/IO per drug chart PRN, MR x1, MR BHO Ⓐ

***Taser barb considerations**

- Taser discharge for simple behavioral control is usually benign and does not require transport to BEF for evaluation.
- Patients who are injured; appear to be under the influence of drugs; or present with altered mental status or symptoms of illness should have medical evaluation performed by EMS personnel before being transported to BEF.
- If barbs are impaled in anatomically sensitive location such as eye, face, neck, finger/hand, or genitalia, do not remove the barb. Transport patient to BEF.

†For severely agitated or combative patients, IN or IM midazolam is the preferred route to decrease risk of injury to the patient and personnel.

Alert: Co-administration of midazolam in patients with alcohol intoxication can cause respiratory depression. Consider avoiding or reducing midazolam dose.

BLS	ALS
• Ensure patent airway • O_2 saturation PRN • O_2 and/or ventilate PRN • Remove excess/wet clothing • Obtain temperature **Heat exhaustion** • Cool gradually • Fan and sponge with tepid water • Avoid shivering • If conscious, give small amounts of fluids **Heat stroke** • Rapid cooling • Spray with cool water and fan • Avoid shivering • Apply ice packs to carotid, inguinal, and axillary regions **Cold exposure** • Gentle warming • Apply blankets, warm packs, and dry dressings • Avoid unnecessary movement or rubbing • If alert, give warm liquids. If altered LOC, NPO. • Prolonged CPR may be indicated **Drowning** • CPR, if cardiac arrest. Emphasize ventilations. • High-flow O2 if spontaneous respirations • Remove wet clothing • Spinal motion restriction PRN	• Monitor/ECG • IV/IO Ⓐ • Capnography **Cardiac arrest with hypothermia** • CPR • Persistent VF/VT, defibrillate per S-163* • Epinephrine 1:10,000 per drug chart IV/IO x1† • Rewarm **Heat exhaustion/heat stroke** • Fluid bolus IV/IO per drug chart, if no rales MR x1

*Defibrillation attempts may be unsuccessful during rewarming until temperature ≥86 °F / ≥30 °C

†Limit epinephrine to 1 dose and withhold antiarrhythmic medications until temperature ≥86 °F / ≥30 °C

BLS

- O_2 saturation PRN
- O_2 and/or ventilate PRN
- NPO, anticipate vomiting
- Obtain temperature
- If febrile, remove excess clothing
- Monitor blood glucose PRN

Assess for hypotension

- <1 month: SBP <60 mmHg
- 1 month – 1 year: SBP <70 mmHg
- 1 year – 10 years:
  SBP <70mm Hg + (2x age in years)
- ≥10 years: SBP <90 mmHg

Assess for altered mental status

- 1 month – 1 year: lethargic or irritable, limp and flaccid
- 1 year – 10 years: lethargic, change in baseline per guardian

ALS

- Monitor/ECG
- IV/IO Ⓐ
- Capnography

Suspected sepsis

If history **suggestive of infection** with ≥2 of the following[1]:

1. Temperature ≥100.4 °F (38.0 °C) or <96.8 °F (36.0 °C)
2. Tachycardia
3. Tachypnea or EtCO2 <25 mmHg
4. Altered LOC
5. Hypotension
6. Weak peripheral pulses
7. Delayed capillary refill

- IV/IO fluid bolus per drug chart regardless of initial BP or lung sounds Ⓐ
  - If no rales or hypotensive for age, give additional IV/IO fluid bolus per drug chart, MR x2 Ⓐ

Hypotensive for age after fluid boluses

- Push-dose epinephrine 1:100,000 (0.01 mg/mL) IV/IO per drug chart, MR q3 min, titrate to adequate perfusion

Push-dose epinephrine mixing instructions

1. Remove 1 mL normal saline (NS) from the 10 mL NS syringe
2. Add 1 mL of epinephrine 1:10,000 (0.1 mg/mL) to 9 mL NS syringe

The mixture now has 10 mL of epinephrine at 0.01 mg/mL (10 mcg/mL) concentration.

[1] Suspected sepsis should be reported to the Base Hospital and upon transfer of care at the receiving hospital.

LBRT Color:	GREY	PINK

			1st	2nd	3rd
Age Range:	**Newborn to 6 months**				
Weight Range:	**<8 kg**				
Approximate kg:	**5 kg**	**Defib:**	**10 J**	**20 J**	**20 J**
Approximate lbs:	**10 lbs**	**Cardiovert:**	**5 J**	**10 J**	**10 J**
NG tube size:	**5-8 Fr**	**(or clinically equivalent biphasic energy dose)**			

Normal vital signs	HR: 100-160	RR: 25-60	SBP: >60 mmHg

VOL	MEDICATION	DOSE	CONCENTRATION
-	Acetaminophen **DO NOT ADMINISTER**	-	-
0.2 mL	Adenosine **IV 1st**	0.5 mg	6 mg/2 mL
0.4 mL	Adenosine **IV 2nd/3rd**	1 mg	6 mg/2 mL
6 mL	Albuterol **Nebulized**	5 mg	2.5 mg/3 mL
0.5 mL◊	Amiodarone **(VF/Pulseless VT ◊) IV/IO**	25 mg	150 mg/3 mL
1 mL	Atropine (**Bradycardia) IV/IO**	0.1 mg	1 mg/10 mL
0.3 mL*	Atropine **(Organophosphate) IV/IO**	0.1 mg	8 mg/20 mL
1 mL	Calcium Chloride **IV/IO**	100 mg	1 gm/10 mL
24 mL	Charcoal **PO**	5 gm	50 gm/240 mL
25 mL	Dextrose **10% IV**	2.5 gm	25 gm/250 mL
0.1 mL	Diphenhydramine **IV/IM**	5 mg	50 mg/1mL
0.1 mL*	Epinephrine **IM**	0.05 mg	**1:1,000** 1 mg/1 mL
0.5 mL	Epinephrine **IV/IO**	0.05 mg	**1:10,000** 1 mg/10 mL
0.5 mL	Epinephrine **(Push-Dose) IV slow/IO**	0.005 mg	**1:100,000** 0.1 mg/10 mL
2.5 mL	Epinephrine **Nebulized**	2.5 mg	**1:1,000** 1 mg/1 mL
0.1 mL	Fentanyl **IV**	5 mcg	100 mcg/2 mL
0.1 mL	Fentanyl I**N**	5 mcg	100 mcg/2 mL
0.3 mL*	Glucagon **IM**	0.25 mg	1 unit (mg)/1 mL
1.25 mL	Ipratropium Bromide **Nebulized**	0.25 mg	0.5 mg/2.5 mL
0.3 mL*,◊	Lidocaine **2% IV/IO**	5 mg	100 mg/5 mL
0.1 mL	Midazolam **IV slow**	0.5 mg	5 mg/1 mL
0.2 mL	Midazolam **IN/IM**	1 mg	5 mg/1 mL
NONE	Morphine Sulfate **IV/IM**	NONE	10 mg/1 mL
0.5 mL	Naloxone **IN/IM/IV**	0.5 mg	2 mg/2 mL
5 mL	Naloxone **IV titrated increments**	0.5 mg	Diluted to 1 mg/10 mL
100 mL	Normal Saline Fluid Bolus		Standard
1 mL	Ondansetron **IM/IV** (6 months - 3 years)	2 mg	4 mg/2 mL
½ tablet	Ondansetron **ODT** (6 months - 3 years)	2 mg	4 mg tablet
5 mL	Sodium Bicarbonate **IV**	5 mEq	50 mEq/50 mL

- Neonates involve base physician.
- To assure accuracy, be sure the designated **concentration** of medication is used.

* Volume rounded for ease of administration

◊ Dosing for stable VT per BHPO

LBRT Color: RED | PURPLE | YELLOW

Age Range: 6 months to 3 years
Weight Range: 8-14 kg
Approximate kg: 10 kg
Approximate lbs: 20 lbs
NG tube size: 5-8 Fr | 8-10 Fr | 10 Fr

	1st	2nd	3rd
Defib:	20 J	40 J	40 J
Cardiovert:	10 J	20 J	20 J

(or clinically equivalent biphasic energy dose)

Normal vital signs:	HR: 90-160	RR: 20-40	SBP: >70 mmHg

VOL	MEDICATION	DOSE	CONCENTRATION
21 mL	Acetaminophen IV (≥2 years of age)	210 mg	1 gm/100 mL
0.3 mL*	Adenosine **IV fast 1st**	1 mg	6 mg/2 mL
0.7 mL*	Adenosine **IV fast 2nd/3rd**	2 mg	6 mg/2 mL
6 mL	Albuterol **Nebulized**	5 mg	2.5 mg/3 mL
1 mL◊	Amiodarone **(VF/Pulseless VT◊) IV/IO**	50 mg	150 mg/3 mL
2 mL	Atropine **(Bradycardia) IV/IO**	0.2 mg	1 mg/10 mL
0.5 mL	Atropine **(Organophosphate) IV/IO**	0.2 mg	8 mg/20 mL
2 mL	Calcium Chloride **IV/IO**	200 mg	1 gm/10 mL
50 mL*	Charcoal **PO**	10 gm	50 gm/240 mL
50 mL	Dextrose **10% IV**	5 gm	25 gm/250 mL
0.2 mL	Diphenhydramine **IV/IM**	10 mg	50 mg/1 mL
0.1 mL	Epinephrine **IM**	0.1 mg	**1:1,000** 1 mg/1 mL
1 mL	Epinephrine **IV/IO**	0.1 mg	**1:10,000** 1 mg/10 mL
1 mL	Epinephrine **(Push-Dose) IV slow/IO**	0.01 mg	**1:100,000** 0.1mg/10 mL
2.5 mL	Epinephrine **Nebulized**	2.5 mg	**1:1,000** 1 mg/1 mL
0.3 mL	Fentanyl **IN**	15 mcg	100 mcg/2 mL
0.2 mL	Fentanyl **IV**	10 mcg	100 mcg/2 mL
0.5 mL	Glucagon **IM**	0.5 mg	1 unit (mg)/1 mL
1.25 mL	Ipratropium Bromide **Nebulized**	0.25 mg	0.5 mg/2.5 mL
0.5 mL◊	Lidocaine **2% IV/IO**	10 mg	100 mg/5 mL
0.2 mL	Midazolam **IV slow**	1 mg	5 mg/1 mL
0.4 mL	Midazolam **IN/IM**	2 mg	5 mg/1 mL
0.1 mL	Morphine Sulfate **IV/IM**	1 mg	10 mg/1 mL
1 mL	Naloxone **IN/IM/IV**	1 mg	2 mg/2 mL
10 mL	Naloxone **IV titrated increments**	1 mg	Diluted to 1 mg/10 mL
200 mL	Normal Saline Fluid Bolus		Standard
1 mL	Ondansetron **IM/IV** (6 months - 3 years)	2 mg	4 mg/2 mL
½ tablet	Ondansetron **ODT** (6 months - 3 years)	2 mg	4 mg tablet
2 mL	Ondansetron **IM/IV** (>3 years of age)	4 mg	4 mg/2 mL
1 tablet	Ondansetron **ODT** (>3 years of age)	4 mg	4 mg tablet
10 mL	Sodium Bicarbonate **IV**	10 mEq	50 mEq/50 mL

- Neonates involve base physician.
- To assure accuracy, be sure the designated **concentration** of medication is used.

* Volume rounded for ease of administration
◊ Dosing for stable VT per BHPO

LBRT Color:	WHITE

Age Range: 4-5 years
Weight Range: 15-18 kg
Approximate kg: 15 kg
Approximate lbs: 30 lbs
NG tube size: 10 Fr

	1st	2nd	3rd
Defib:	30 J	60 J	60 J
Cardiovert:	15 J	30 J	30 J

(or clinically equivalent biphasic energy dose)

Normal vital signs	HR: 80-130	RR: 20-30	SBP: >75 mmHg

VOL	MEDICATION	DOSE	CONCENTRATION
22 mL	Acetaminophen **IV** (≥2 years of age)	220 mg	1 gm/100 mL
0.5 mL	Adenosine **IV fast 1st**	1.5 mg	6 mg/2 mL
1 mL	Adenosine **IV fast 2nd/3rd**	3 mg	6 mg/2 mL
6 mL	Albuterol **Nebulized**	5 mg	2.5 mg/3 mL
1.5 mL◊	Amiodarone **(VF/pulseless VT ◊) IV/IO**	75 mg	150 mg/3mL
3 mL	Atropine **(Bradycardia) IV/IO**	0.3 mg	1 mg/10 mL
0.8 mL	Atropine **(Organophosphate) IV/IO**	0.3 mg	8 mg/20 mL
3 mL	Calcium Chloride **IV/IO**	300 mg	1 gm/10 mL
70 mL*	Charcoal **PO**	15 gm	50 gm/240 mL
75 mL	Dextrose **10% IV**	7.5 gm	25 gm/250 mL
0.3 mL	Diphenhydramine **IV/IM**	15 mg	50 mg/1 mL
0.2 mL*	Epinephrine **IM**	0.15 mg	**1:1,000** 1 mg/1 mL
1.5 mL	Epinephrine **IV/IO**	0.15 mg	**1:10,000** 1 mg/10 mL
1 mL	Epinephrine **(Push-Dose) IV slow/IO**	0.01 mg	**1:100,000** 0.1 mg/10 mL
5 mL	Epinephrine **Nebulized**	5 mg	**1:1,000** 1 mg/1 mL
0.5 mL	Fentanyl **IN**	25 mcg	100 mcg/2 mL
0.3 mL	Fentanyl **IV**	15 mcg	100 mcg/2 mL
0.8 mL*	Glucagon **IM**	0.75 mg	1 unit (mg)/1 mL
2.5 mL	Ipratropium Bromide **Nebulized**	0.5 mg	0.5 mg/2.5 mL
0.8 mL◊	Lidocaine **2% IV slow/IO**	15 mg	100 mg/5 mL
0.6 mL	Midazolam **IN/IM**	3 mg	5 mg/1 mL
0.3 mL	Midazolam **IV slow**	1.5 mg	5 mg/1 mL
0.2 mL*	Morphine Sulfate **IV/IM**	1.5 mg	10 mg/1 mL
1.5 mL	Naloxone **IN/IM/IV**	1.5 mg	2 mg/2 mL
15 mL	Naloxone **IV titrated increments**	1.5 mg	Diluted to 1 mg/10 mL
300 mL	Normal Saline Fluid Bolus		Standard
1 mL	Ondansetron **IM/IV** (6 months - 3 years)	2 mg	4 mg/2 mL
½ tablet	Ondansetron **ODT** (6 months - 3 years)	2 mg	4 mg tablet
2 mL	Ondansetron **IM/IV** (>3 years of age)	4 mg	4 mg/2 mL
1 tablet	Ondansetron **ODT** (>3 years of age)	4 mg	4 mg tablet
15 mL	Sodium Bicarbonate **IV**	15 mEq	50 mEq/50 mL

- To assure accuracy be sure the designated **concentration** of medication is used.

* Volume rounded for ease of administration

◊ Dosing for stable VT per BHPO

LBRT Color: **BLUE**

Age Range: **6-8 years**
Weight Range: **19-23 kg**
Approximate kg: **20 kg**
Approximate lbs: **40 lbs**
NG tube size: **12-14 Fr**

	1st	2nd	3rd
Defib:	**40 J**	**80 J**	**80 J**
Cardiovert:	**20 J**	**40 J**	**40 J**

(or clinically equivalent biphasic energy dose)

Normal vital signs	HR: 70-120	RR: 15-30	SBP: >80 mmHg

VOL	MEDICATION	DOSE	CONCENTRATION
30 mL	Acetaminophen **IV**	300 mg	1 gm/100 mL
0.7 mL*	Adenosine **IV fast 1st**	2 mg	6 mg/2 mL
1.3 mL*	Adenosine **IV fast 2nd/3rd**	4 mg	6 mg/2 mL
6 mL	Albuterol **Nebulized**	5 mg	2.5 mg/3 mL
2 mL◊	Amiodarone **(VF/pulseless VT ◊) IV/IO**	100 mg	150 mg/3 mL
4 mL	Atropine **(Bradycardia) IV/IO**	0.4 mg	1 mg/10 mL
1 mL	Atropine **(Organophosphate) IV/IO**	0.4 mg	8 mg/20 mL
4 mL	Calcium Chloride **IV/IO**	400 mg	1 gm/10 mL
100 mL*	Charcoal **PO**	20 gm	50 gm/240 mL
100 mL	Dextrose **10% IV**	10 gm	25 gm/250 mL
0.4 mL	Diphenhydramine **IV/IM**	20 mg	50 mg/1 mL
0.2 mL	Epinephrine **IM**	0.2 mg	**1:1,000** 1 mg/1 mL
2 mL	Epinephrine **IV/IO**	0.2 mg	**1:10,000** 1 mg/10 mL
1 mL	Epinephrine (**Push-Dose) IV slow/IO**	0.01 mg	**1:100,000** 0.1 mg/10 mL
5 mL	Epinephrine **Nebulized**	5 mg	**1:1,000** 1 mg/1 mL
0.6 mL	Fentanyl **IN**	30 mcg	100 mcg/2 mL
0.4 mL	Fentanyl **IV**	20 mcg	100 mcg/2 mL
1 mL	Glucagon **IM**	1 mg	1 unit (mg)/1 mL
2.5 mL	Ipratropium Bromide **Nebulized**	0.5 mg	0.5 mg/2.5 mL
6 mL	Levalbuterol **Nebulized** (≥6 – <12 years)	0.62 mg	0.31 mg/3 mL
1 mL◊	Lidocaine **2% IV slow/IO**	20 mg	100 mg/5 mL
0.8 mL	Midazolam **IN/IM**	4 mg	5 mg/1 mL
0.4 mL	Midazolam **IV slow**	2 mg	5 mg/1 mL
0.2 mL	Morphine Sulfate **IV/IM**	2 mg	10 mg/1 mL
2 mL	Naloxone **IN/IM/IV**	2 mg	2 mg/2 mL
20 mL	Naloxone **IV titrated increments**	2 mg	Diluted to 1 mg/10 mL
400 mL	Normal Saline Fluid Bolus		Standard
2 mL	Ondansetron **IM/IV** (>3 years of age)	4 mg	4 mg/2 mL
1 tablet	Ondansetron **ODT** (>3 years of age)	4 mg	4 mg tablet
20 mL	Sodium Bicarbonate **IV**	20 mEq	50 mEq/50 mL

- To assure accuracy be sure the designated **concentration** of medication is used.

* Volume rounded for ease of administration

◊ Dosing for stable VT per BHPO

LBRT Color: **ORANGE**

Age Range: **8-10 years**
Weight Range: **24-29 kg**
Approximate kg: **25 kg**
Approximate lbs: **50 lbs**
NG tube size: **14-18 Fr**

	1st	2nd	3rd
Defib:	**50 J**	**100 J**	**100 J**
Cardiovert:	**25 J**	**50 J**	**50 J**

(or clinically equivalent biphasic energy dose)

Normal vital signs	HR: 70-110	RR: 15-30	SBP: >85 mmHg

VOL	MEDICATION	DOSE	CONCENTRATION
37 mL	Acetaminophen **IV**	370 mg	1 gm/100 mL
0.8 mL*	Adenosine **IV fast 1st**	2.5 mg	6 mg/2 mL
1.7 mL*	Adenosine **IV fast 2nd/3rd**	5 mg	6 mg/2 mL
6 mL	Albuterol **Nebulized**	5 mg	2.5 mg/3 mL
2.5 mL◊	Amiodarone **(VF/pulseless VT ◊) IV/IO**	125 mg	150 mg/3 mL
5 mL	Atropine **(Bradycardia) IV/IO**	0.5 mg	1 mg/10 mL
1.3 mL*	Atropine **(Organophosphate) IV/IO**	0.5 mg	8 mg/20 mL
5 mL	Calcium Chloride **IV/IO**	500 mg	1 gm/10 mL
120 mL	Charcoal **PO**	25 gm	50 gm/240 mL
125 mL	Dextrose **10% IV**	12.5 gm	25 gm/250 mL
0.5 mL	Diphenhydramine **IV/IM**	25 mg	50 mg/1 mL
0.25 mL	Epinephrine **IM**	0.25 mg	**1:1,000** 1 mg/1 mL
2.5 mL	Epinephrine **IV/IO**	0.25 mg	**1:10,000** 1 mg/10 mL
1 mL	Epinephrine **(Push-Dose) IV slow/IO**	0.01 mg	**1:100,000** 0.1 mg/10 mL
5 mL	Epinephrine **Nebulized**	5 mg	**1:1,000** 1 mg/1 mL
0.7 mL	Fentanyl **IN**	35 mcg	100 mcg/2 mL
0.5 mL	Fentanyl **IV**	25 mcg	100 mcg/2 mL
1 mL	Glucagon **IM**	1 mg	1 unit (mg)/1 mL
2.5 mL	Ipratropium Bromide **Nebulized**	0.5 mg	0.5 mg/2.5 mL
6 mL	Levalbuterol **Nebulized** (≥6 – <12 years)	0.62 mg	0.31 mg/3 mL
1.3 mL*,◊	Lidocaine **2% IV slow/IO**	25 mg	100 mg/5 mL
1 mL	Midazolam **IN/IM**	5 mg	5 mg/1 mL
0.5 mL	Midazolam **IV slow**	2.5 mg	5 mg/1 mL
0.3 mL*	Morphine Sulfate **IV/IM**	2.5 mg	10 mg/1 mL
2 mL	Naloxone **IN/IM/IV**	2 mg	2 mg/2 mL
20 mL	Naloxone **IV titrated increments**	2 mg	Diluted to 1 mg/10 mL
500 mL	Normal Saline Fluid Bolus		Standard
2 mL	Ondansetron **IM/IV** (>3 years of age)	4 mg	4 mg/2 mL
1 tablet	Ondansetron **ODT** (>3 years of age)	4 mg	4 mg tablet
25 mL	Sodium Bicarbonate **IV**	25 mEq	50 mEq/50 mL

- To assure accuracy be sure the designated **concentration** of medication is used.

* Volume rounded for ease of administration

◊ Dosing for stable VT per BHPO

LBRT Color: **GREEN**

Age Range: **10-12 years**
Weight Range: **30-36 kg**
Approximate kg: **35 kg**
Approximate lbs: **70 lbs**
NG tube size: **18 Fr**

	1st	2nd	3rd
Defib:	**70 J**	**140 J**	**140 J**
Cardiovert:	**35 J**	**70 J**	**70 J**

(or clinically equivalent biphasic energy dose)

Normal vital signs	HR: 60-100	RR: 15-20	SBP: >90 mmHg

VOL	MEDICATION	DOSE	CONCENTRATION
52 mL	Acetaminophen **IV**	520 mg	1 gm/100 mL
1.2 mL*	Adenosine **IV fast 1st**	3.5 mg	6 mg/2 mL
2.3 mL*	Adenosine **IV fast 2nd/3rd**	7 mg	6 mg/2 mL
6 mL	Albuterol **Nebulized**	5 mg	2.5 mg/3 mL
3 mL◊	Amiodarone **(VF/pulseless VT ◊) IV/IO**	150 mg	150 mg/3 mL
5 mL	Atropine **(Bradycardia) IV/IO**	0.5 mg	1 mg/10 mL
1.8 mL*	Atropine **(Organophosphate) IV/IO**	0.7 mg	8 mg/20 mL
5 mL‡	Calcium Chloride **IV/IO**	500 mg	1 gm/10 mL
170 mL*	Charcoal **PO**	35 gm	50 gm/240 mL
175 mL	Dextrose **10% IV**	17.5 gm	25 gm/250 mL
0.7 mL	Diphenhydramine **IV/IM**	35 mg	50 mg/1 mL
0.3 mL	Epinephrine **IM**	0.3 mg	**1:1,000** 1 mg/1 mL
3.5 mL	Epinephrine **IV/IO**	0.35 mg	**1:10,000** 1 mg/10 mL
1 mL	Epinephrine **(Push-Dose) IV slow/IO**	0.01 mg	**1:100,000** 0.1 mg/10 mL
5 mL	Epinephrine **Nebulized**	5 mg	**1:1,000** 1 mg/1 mL
1.0 mL	Fentanyl **IN**	50 mcg	100 mcg/2 mL
0.7 mL	Fentanyl **IV**	35 mcg	100 mcg/2 mL
1 mL	Glucagon **IM**	1 mg	1 unit (mg)/1 mL
2.5 mL	Ipratropium Bromide **Nebulized**	0.5 mg	0.5 mg/2.5 mL
6 mL	Levalbuterol **Nebulized** (≥6 – <12 years)	0.62 mg	0.31 mg/3 mL
6 mL	Levalbuterol **Nebulized** (≥12 years)	2.5 mg	1.25 mg/3 mL
1.8 mL*,◊	Lidocaine **2% IV slow/IO**	35 mg	100 mg/5 mL
1 mL	Midazolam **IN/IM**	5 mg	5 mg/1 mL
0.7 mL	Midazolam **IV slow**	3.5 mg	5 mg/1 mL
0.4 mL	Morphine Sulfate **IV/IM**	3.5 mg	10 mg/1 mL
2 mL	Naloxone **IN/IM/IV**	2 mg	2 mg/2 mL
20 mL	Naloxone **IV titrated increments**	2 mg	Diluted to 1 mg/10 mL
500 mL	Normal Saline Fluid Bolus		Standard
2 mL	Ondansetron **IM/IV** (>3 years of age)	4 mg	4 mg/2 mL
1 tablet	Ondansetron **ODT** (>3 years of age)	4 mg	4 mg tablet
35 mL	Sodium Bicarbonate **IV**	35 mEq	50 mEq/50 mL

- To assure accuracy be sure the designated **concentration** of medication is used.

* Volume rounded for ease of administration

◊ Dosing for stable VT per BHPO

Length Exceeds LBRT — **TURQUOISE**

Patients up to age 15 who are longer than the LBRT are treated with the following doses. Use estimated weight in kilograms to calculate doses.

Approximate kg: **>36 kg**

Approximate lbs: **>70 lbs**

NG tube size: **18 Fr**

Defib and cardioversion: **Energy dose per manufacturer's guidelines**

Normal vital signs	HR: 60-100	RR: 15-20	SBP: >90 mmHg

VOL	MEDICATION	DOSE	CONCENTRATION
100 mL	Acetaminophen **IV**	1,000 mg	1 gm/100 mL
2 mL	Adenosine **IV fast 1st**	6 mg	6 mg/2 mL
4 mL	Adenosine **IV fast 2nd/3rd**	12 mg	6 mg/2 mL
6 mL	Albuterol **Nebulized**	5 mg	2.5 mg/3 mL
3 mL◊	Amiodarone **(VF/Pulseless VT◊) IV/IO**	150 mg	150 mg/3 mL
5 mL	Atropine **(Bradycardia) IV/IO**	0.5 mg	1 mg/10 mL
5 mL	Atropine **(Organophosphate) IV/IO**	2 mg	8 mg/20 mL
5 mL	Calcium Chloride **IV/IO**	500 mg	1 gm/10 mL
240 mL	Charcoal **PO**	50 gm	50 gm/240 mL
250 mL	Dextrose **10% IV**	25 gm	25 gm/250 mL
1mL	Diphenhydramine **IV/IM**	50 mg	50 mg/1 mL
0.3 mL	Epinephrine **IM**	0.3 mg	1:1,000 1 mg/1 mL
10 mL	Epinephrine **IV/IO**	1 mg	**1:10,000** 1 mg/10 mL
1 mL	Epinephrine **(Push-Dose) IV slow/IO**	0.01 mg	**1:100,000** 0.1 mg/10 mL
5 mL	Epinephrine **Nebulized**	5 mg	**1:1,000** 1 mg/1 mL
1 mL	Fentanyl **IN**	50 mcg*	100 mcg/2 mL
2 mL	Fentanyl **IV**	100 mcg*	100 mcg/2 mL
1 mL	Glucagon **IM**	1 mg	1 unit (mg)/1 mL
2.5 mL	Ipratropium Bromide **Nebulized**	0.5 mg	0.5 mg/2.5 mL
6 mL	Levalbuterol **Nebulized**	2.5 mg	1.25 mg/3 mL
‡,◊	Lidocaine **2% IV slow/IO**	1 mg/kg‡	100 mg/5 mL
1 mL	Midazolam **IN/IM/IV**	5 mg	5 mg/1 mL
0.4 mL	Morphine Sulfate **IV/IM**	4 mg	10 mg/1 mL
2 mL	Naloxone **IN/IM/IV**	2 mg	2 mg/2 mL
20 mL	Naloxone **IV titrated increments**	2 mg	Diluted to 1 mg/10 mL
500 mL	Normal Saline Fluid Bolus		Standard
2 mL	Ondansetron **IM/IV**	4 mg	4 mg/2 mL
1 tablet	Ondansetron **ODT**	4 mg	4 mg tablet
	Sodium Bicarbonate **IV**	1 mEq/kg	50 mEq/50 mL

- To assure accuracy be sure the designated **concentration** of medication is used.
- Ketamine only for 15 years of age or older

* First dose of fentanyl up to 100 mcg IV or 50 mcg IN

‡ Administer 1 mg/kg (note this differs from 1.5 mg/kg in adults)

◊ Dosing for stable VT per BHPO