

CPAC 09/09/26 Attachment #3

List of Policies/Procedures/Standing Orders/Treatment Guidelines intended to be released in October 2026 which were discussed in previous meetings (including their respective DRAFT document and change log):

1. Policy #309.00 & B-009 (Public Working Dog Transport)
2. Policy #310.30 and 310.31 (Trauma Triage Criteria)
3. PR-060 (Needle Thoracostomy – Adult/Adolescent)
4. PR-065 (Needle Thoracostomy – Pediatric)
5. PR-115 (Intraosseous Infusion)
6. PR-230 (Push Dose Epinephrine – Adult/Adolescent)
7. C-010 (Cardiac Arrest – Adult/Adolescent)
8. O-010 (Hypertensive Disorders of Pregnancy/Eclampsia – Adult/Adolescent)
9. O-015 (Vaginal Bleeding – Adult/Adolescent)
10. E-005 (Burns – Adult/Adolescent)
11. E-010 (Decompression Sickness -Adult/Adolescent)
12. E-015 (Drowning – Adult/Adolescent)
13. E-025 (Thermal Disorders – Adult/Adolescent)
14. E-030 (Snake Envenomation – Adult/Adolescent)
15. M-005 (Abdomen Pain – Adult/Adolescent)
16. M-010 (Diabetic Emergencies – Adult/Adolescent)
17. M-015 (Allergic Reaction – Adult/Adolescent)
18. P-060 (Pediatric Allergic Reaction)
19. P-065 (Pediatric Altered Mental Status)
20. P-075 (Pediatric Seizure)
21. P-115 (Pediatric Stroke)

Public Safety Working Dog Change Log
For October 2026 Updates

Policy 309.00 and Procedure B-009 (Transport of Public Safety Working Dogs)

- Added additional language to include other public safety working dogs instead of just police K-9's.



TRANSPORT OF PUBLIC SAFETY WORKING DOGS INJURED IN LINE OF DUTY

I. AUTHORITY:

California Health and Safety Code, Division 2.5, 1797.10, 1797.220, 1798 (a), (b).

II. APPLICATION:

This policy describes the guidelines for treatment and/or transport of an injured public safety working dog.

III. DEFINITIONS:

Public Safety Working Dog: A canine that is owned, or the service of which is employed, by a state or local law enforcement agency, a correctional agency, a fire department, a special fire district, or the State fire Marshal for the principal purpose of aiding in the detection of criminal activity, flammable materials, or missing persons (including search and rescue); the enforcement of laws; the investigation of fires; or the apprehension of offenders.

This includes, but is not limited to:

- Police K9s
- Search and rescue dog
- Detection dogs such as, but not limited to, accelerant, bomb, cadaver, arson
- Peer support dog
- Tracking / Trailing dog
- Other dogs in the service of a public agency for public safety

IV. GUIDELINES:

A. General Policy

- It is the policy in the Orange County EMS system that public safety working dogs injured in the line of duty may be transported by an Orange County EMS licensed ambulance and / or fire department vehicle for emergency care provided that there is no other person requiring medical attention or transport at that time by that crew.
- The public safety working dog's handler shall accompany and maintain control of the injured animal during transport, if feasible. If the dog's handler is unable to accompany and maintain control of the injured public safety working dog during transport, the crew should not transport the animal unless qualified individual designated by the handler is available to assume control. If no such individual is available, transport should not occur.
- Transport of an injured public safety working dog and any first aid provided is voluntary, not required.
- Transport should only occur when the handler confirms the dog is secured or under control and does not pose a safety risk to crew members.
- Following transport, crews shall perform vehicle and equipment decontamination consistent with their agency's standard post-transport cleaning and infection-control policies. Agencies electing to transport public safety working dogs should ensure appropriate decontamination supplies and procedures are available.



TRANSPORT OF PUBLIC SAFETY WORKING DOGS INJURED IN LINE OF DUTY

B. Transport to a veterinary emergency center:

- Transport destination is determined by the injured dog's handler.
- Transport procedure for ambulance crews is described in OCEMS Policy # B-009.
- Medical supplies are appropriate to supply to the dog's handler during transport of an injured public safety working dog. These include, but are not limited to: oxygen with delivery by mask or nasal cannula, gauze dressings, and hemostatic dressings.

C. Documentation / Notifications

- Transport of a public safety working dog should not be recorded on an OC-MEDS ePCR
- Following transport of a public safety working dog, the ambulance service provider shall notify the OCEMS Medical Director by email within 24 hours.

Approved:

Almaas A. Shaikh, MD
OCEMS Interim Medical Director

Daniel McDonnell, NRP
OCEMS Administrator

Original Date: 01/01/2019
Review Date: 04/2026
Initial Release Date: 10/01/2026
Final Implementation Date: 04/01/2027



ORANGE COUNTY EMERGENCY MEDICAL SERVICES
BASIC LIFE SUPPORT PROCEDURES
TRANSPORT OF PUBLIC SAFETY WORKING DOGS INJURED IN LINE
OF DUTY

#: B-009
Page: 1 of 1
Orig. Date: 01/01/2019
Revised: 04/22/2026

INDICATIONS:

- Transport of public safety working dog's handler(s) and a public safety working dog injured in the line of duty.

CONTRAINDICATIONS:

- Need to treat and / or transport human patient(s) at the same scene by the same ambulance crew / unit.

EQUIPMENT:

- None required.
- May supply public safety animal handler with access to oxygen, oxygen delivery equipment, gauze bandage, hemostatic dressings, and other medical equipment as needed.
- Agencies may elect to carry equipment specific to care of injured dogs.

PROCEDURE:

- Use personal protective equipment (PPE) appropriate for potential blood exposure.
- Allow public safety working dog handler to place dog onto gurney.
- Allow handler to stabilize dog to gurney (may use straps available).
- Assist handler with setup of oxygen and provide sterile dressings, including hemostatic dressings if available. For oxygen delivery, may provide handler with a human non-rebreather mask, nasal cannula, or canine mask (if available).
- EMTs are not to ride in patient cabin during transport; handler(s) will attend to dog.
- Transport to veterinary location as directed by handler; may transport with lights and siren if directed to do so by handler.
- After off-loading dog, clean patient cabin area consistent with their agency's standard post-transport cleaning and infection-control policies.

DOCUMENTATION:

- Notify agency dispatch center of transport, including date, time, and public safety working dog's agency name. An OCEMS ePCR should not be generated.

NOTES:

- An injured public safety working dog may manifest unpredictable behaviors due to stress. Follow directions of handler and avoid direct contact with dog. Do not get between the handler and the dog.

Approved:

Review Date: 04/2026
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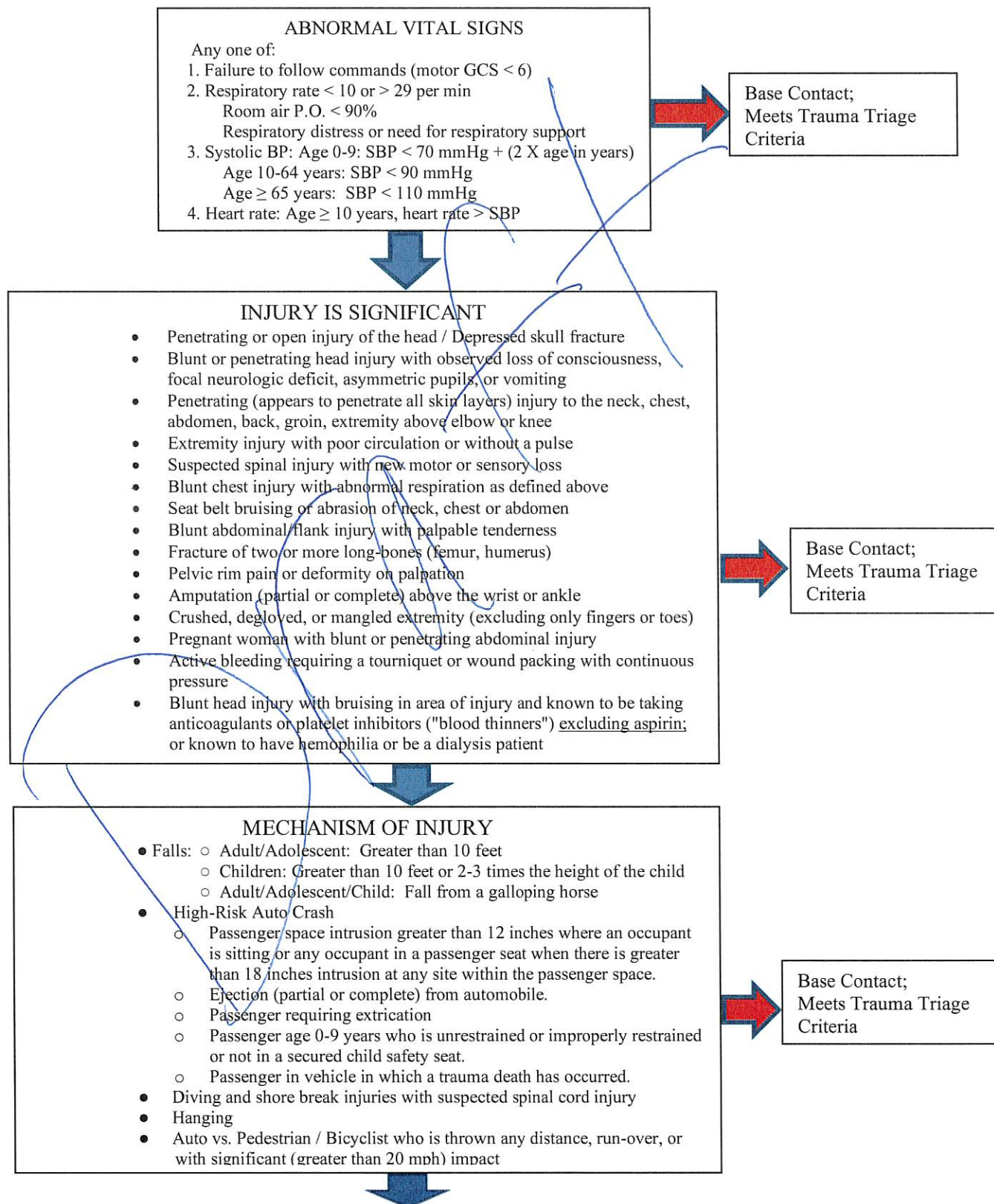
Trauma Triage Change Log
For October 2026 Updates

Policy #310.30 and #310.31 (Trauma Triage Criteria)

- Added additional language for unrestrained pediatric patient.
- Now reads: *Passenger age 0-9 years who is unrestrained or improperly restrained or not in a secured child safety seat.*

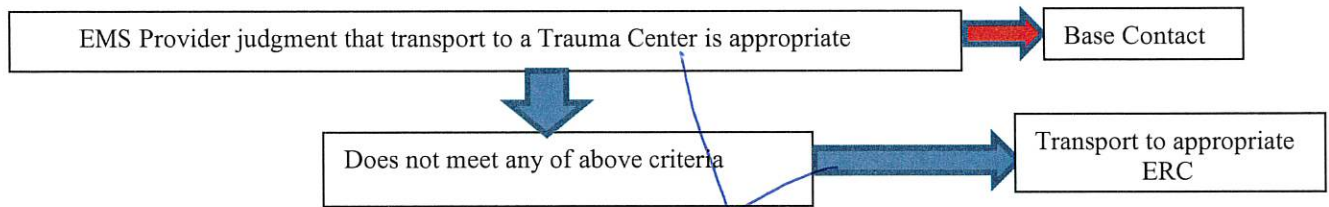


TRAUMA TRIAGE ALGORITHM: BLUNT OR PENETRATING INJURY





TRAUMA TRIAGE ALGORITHM: BLUNT OR PENETRATING INJURY



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TRAUMA TRIAGE

I. AUTHORITY:

Health & Safety Code, Division 2.5, Sections 1797.258, 1798, 1798.160-1798.169; California Code of Regulations, Title 22, Division 9, Chapter 6.

II. POLICY:

This policy identifies the types of injuries and situations that require transport of trauma victims to an Orange County EMS (OCEMS) designated Trauma Center (TC).

Base hospital contact is required for all patients described in this policy. Trauma victim destination is determined by the Base Hospital (BH).

III. DEFINITION OF A TRAUMA VICTIM (MEETS TRAUMA CRITERIA):

A PERSON SUSTAINING BLUNT OR PENETRATING INJURY WITH THE PRESENCE OF ANY OF THE FOLLOWING IS CONSIDERED TO MEET TRAUMA TRIAGE CRITERIA.

A. Abnormal Vital Signs:

- Unable to follow commands with an acute decrease in usual mental status (motor GCS < 6)
- RESPIRATION:
 - RR < 10 or > 29 breaths/minute or
 - Respiratory distress or need for respiratory support or
 - Room-air pulse oximetry < 90%
- SYSTOLIC BLOOD PRESSURE:
 - Age 0-9 years: Systolic BP < 70 mmHg + (2 X age in years)
 - Age 10-64 years: SBP < 90 mmHg
 - Age ≥ 65 years: SBP < 110 mmHg
- HEART RATE
 - For age ≥ 10 years: Heart rate > systolic blood pressure

B. Injuries:

- Penetrating or open injury of the head
- Depressed skull fracture
- Blunt or penetrating head injury with observed loss of consciousness, focal neurologic deficit, asymmetric pupils, or vomiting
- Penetrating (appears to penetrate all skin layers) injury to the neck, chest, abdomen, back, or groin
- Penetrating (appears to penetrate all skin layers) injury to extremity above elbow or knee
- Extremity injury with poor circulation or without a pulse
- Suspected spinal injury with new motor or sensory loss
- Blunt chest injury with abnormal respiration as defined above
- Seat belt bruising or abrasion of neck, chest, or abdomen
- Blunt abdominal/flank injury with palpable tenderness
- Fracture of two or more long bones (femur, humerus)
- Pelvic rim pain or deformity on palpation
- Amputation (partial or complete) above the wrist or ankle
- Crushed, degloved, or mangled extremity (excluding only fingers or toes)



TRAUMA TRIAGE

- Reported or obviously pregnant woman with blunt or penetrating abdominal injury
- Active bleeding requiring a tourniquet or wound packing with continuous pressure
- Blunt head injury with bruising in area of injury and known to be taking anticoagulants or platelet inhibitors (blood thinners) excluding aspirin or to have hemophilia or to be a dialysis patient

C. Mechanism of Injury

- Falls
 - Adult/Adolescent: Greater than 10 feet (one story is equal to 10 feet)²
 - Children¹: Greater than 10 feet or 2-3 times the height of the child²
 - Adult/Adolescent/Child: Fall from a galloping horse
- High-Risk Auto Crash
 - Passenger space intrusion greater than 12 inches where an occupant (who would be defined as a trauma victim) is sitting or any occupant in a passenger seat when there is greater than 18 inches intrusion at any site within the passenger space.²
 - Ejection (partial or complete) from automobile.
 - Passenger requiring extrication.
 - Passenger age 0-9 who is unrestrained or improperly restrained or not in a secured child safety seat.
 - Person who is in same passenger compartment in which a trauma death has occurred.
- Dive and shore break injuries with suspected spinal cord injury.
- Hanging.
- Auto vs. Pedestrian / Bicyclist who is thrown any distance, run over, or with significant (greater than 20 mph²) impact.
- Unenclosed motorized vehicle crash (motorcycle, bike, scooter, etc) greater than 20 mph², including "laying bike down"

Note #1: A child is defined as less than age 15 years old.

Note #2: Heights, speeds, and distances are best estimates

D. EMS provider judgment that transport to a Trauma Center is appropriate.

If in EMS provider (paramedic or EMT) judgment at the scene, an injury victim will benefit by transport to a Trauma Center, contact Base Hospital for destination.

IV. TRAUMATIC RESPIRATORY AND CARDIOPULMONARY ARREST:

At the discretion of the BH physician, trauma patients presenting with any of the following and for who resuscitation and transport is pursued should be triaged as follows:

- | | |
|------------------------------------|---------------------------|
| • Unmanageable airway | Triage to a Trauma Center |
| • Traumatic cardiopulmonary arrest | Triage to a Trauma Center |



TRAUMA TRIAGE

Approved:

Almaas A. Shaikh, MD, MPH, FACS
Interim OCEMS Medical Director

Daniel McDonnell, MS, NRP
Director of Emergency Medical Services

Original Date: 1/1988
Review Date(s): 3/2015; 9/2018; 9/2021; 8/1/2023; 3/2026
Revised Date(s): 11/15/16, 10/1/2018, 10/1/2021;
9/27/2023; 04/08/2026
Effective Date: 4/1/2022; 4/1/2024; 04/01/2027

NT Change Log

For October 2026 Updates

OCEMS PR-060 (Needle Thoracostomy: Adult/Adolescent)

- Redefined the indications for inserting a NT highlighting the presence of hypoxia

IMPORTANT: Hypoxia is a critical component and should be present in conjunction with signs of respiratory compromise and/or hemodynamic instability to justify a needle thoracostomy.

Signs include:

- *Chest injury (blunt or penetrating) with hypoxia*
 - *Acute respiratory distress with hypoxia*
 - *Unilateral absence of breath sounds on the affected side*
 - *Distended neck veins (JVD)*
 - *Circulatory collapse manifested by hypotension or signs of poor perfusion*
Respiratory arrest
- Added an additional site. Choices now are: 2nd intercostal space midclavicular line or 5th intercostal space anterior axillary line.
 - Cleaned up the wording within the procedure section and renaming to 'procedural guidelines'.
 - Added site photo.

OCEMS PR-065 (Needle Thoracostomy: Pediatric)

- Redefined the indications for inserting a NT highlighting the presence of hypoxia

IMPORTANT: Hypoxia is a critical component and should be present in conjunction with signs of respiratory compromise and/or hemodynamic instability to justify a needle thoracostomy.

Signs include:

- *Chest injury (blunt or penetrating) with hypoxia*
 - *Acute respiratory distress with hypoxia*
 - *Unilateral absence of breath sounds on the affected side*
 - *Distended neck veins (JVD)*
 - *Circulatory collapse manifested by hypotension or signs of poor perfusion*
Respiratory arrest
- Added graph showing normal vital signs by age.
 - Added an additional site. Choices now are: 2nd intercostal space midclavicular line or 5th intercostal space anterior axillary line.
 - Cleaned up the wording within the procedure section and renaming to 'procedural guidelines'.
 - Added site photo.



INDICATION:

Decompression of tension pneumothorax causing hemodynamic instability in a chest injury victim.

SIGNS OF TENSION PNEUMOTHORAX CAUSING HEMODYNAMIC INSTABILITY:

IMPORTANT: Hypoxia is a critical component and should be present in conjunction with signs of respiratory compromise and/or hemodynamic instability to justify a needle thoracostomy.

Signs include:

- Chest injury (blunt or penetrating) with hypoxia
- Acute respiratory distress with hypoxia
- Unilateral absence of breath sounds on the affected side
- Distended neck veins (JVD)
- Circulatory collapse manifested by hypotension or signs of poor perfusion
- Respiratory arrest

EQUIPMENT:

- 3.25-inch ARS chest decompression needle (10 G, catheter over needle); or 14 G, minimum 2.5-inch catheter over needle
- Antiseptic skin wipes
- Sterile Vaseline gauze or 4" x 4" dressings and tape

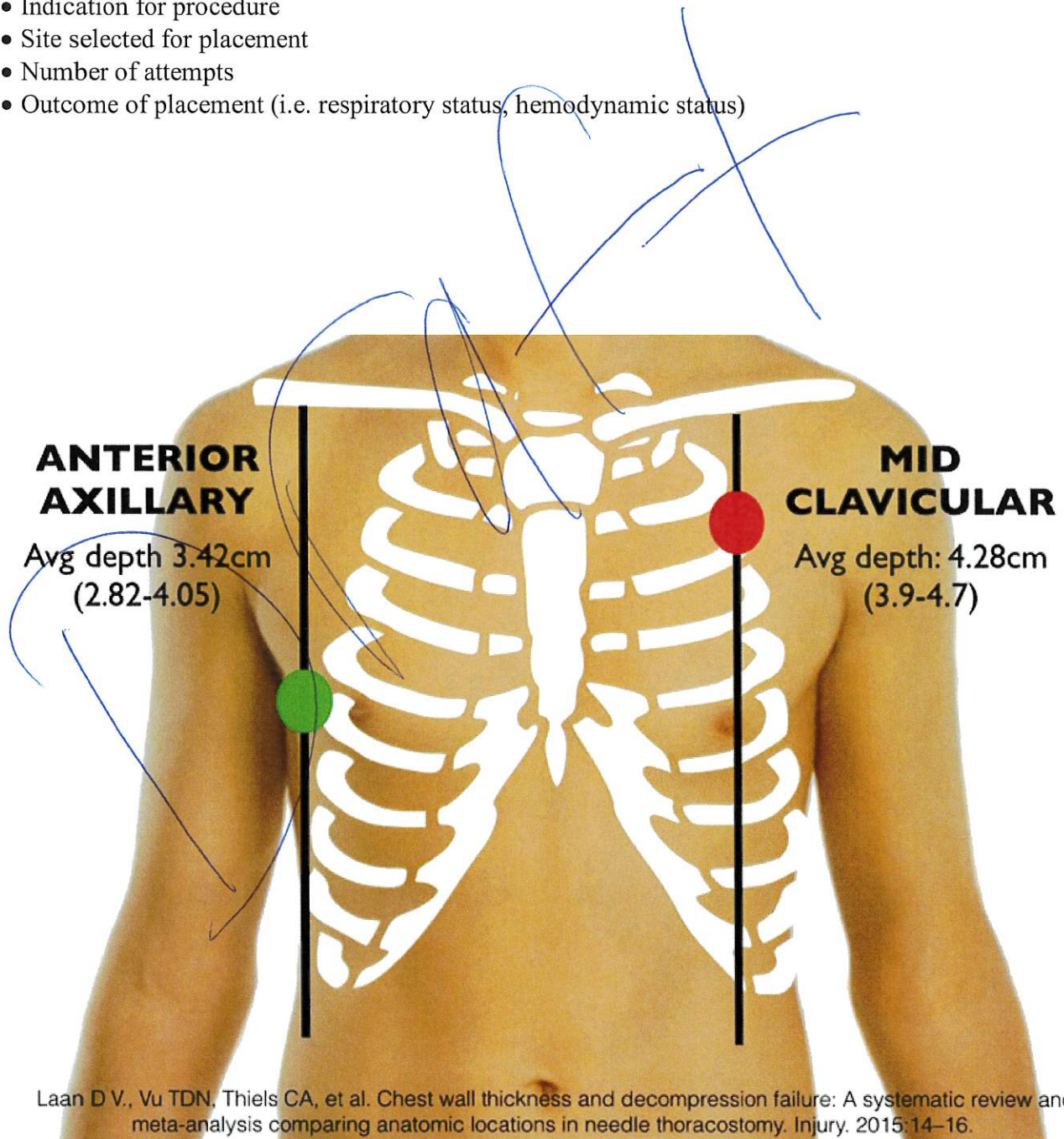
PROCEDURAL GUIDELINES:

- Make base contact (if in setting of a MCI, remote rescue, or tactically unstable scene proceed without base contact and document).
- Explain procedure to patient if conscious.
- Select one of two insertion sites based on body habitus, choosing an area with the least soft-tissue depth and easiest access.
 - 2nd intercostal space midclavicular line -OR-
 - 5th intercostal space anterior axillary line
- Special consideration: Pregnant patients should have the procedure performed between the third and fourth intercostal spaces in the anterior axillary line.
- Needle insertion using steady pressure and ninety-degree angle (perpendicular) to chest wall.
- Upon advancing the needle, one of the following should be recognized:
 - A sudden rush of air is expelled through the needle
 - A "popping" or "giving way" is felt as the tip of the needle enters the chest cavity
 - Blood or fluid is expelled through the needle
 - Improved respiratory status
- Upon removing the needle, leave the catheter in place and do not reinsert the needle due to catheter shearing risk.



DOCUMENTATION:

- Indication for procedure
- Site selected for placement
- Number of attempts
- Outcome of placement (i.e. respiratory status, hemodynamic status)





INDICATION: Decompression of tension pneumothorax causing hemodynamic instability in a pediatric chest injury victim.

SIGNS OF TENSION PNEUMOTHORAX CAUSING HEMODYNAMIC INSTABILITY:

IMPORTANT: Hypoxia is a critical component and should be present in conjunction with signs of respiratory compromise and/or hemodynamic instability to justify a needle thoracostomy.

Signs include:

- Chest injury (blunt or penetrating) with hypoxia
- Acute respiratory distress with hypoxia
- Unilateral absence of breath sounds on the affected side
- Distended neck veins (JVD)
- Circulatory collapse manifested by hypotension or signs of poor perfusion (refer to pediatric vital sign graph below)
- Respiratory arrest

Pediatric Vital Signs by Age

Age	Pulse	Systolic Blood Pressure	Respiratory Rate
Neonate (0-30 days)	100-180	> 60	30-60
Infant (31 days - < 1 yr)	100-160	> 60	30-60
Toddler (1 yr - < 3 yrs)	90-150	> 70	24-40
Pre-school (3 yrs - < 5 yrs)	80-140	> 75	22-34
School Aged (5 yrs - < 10 yrs)	70-120	> 80	18-30
Teen (≥ 10 yrs)	60-100	> 90	12-16

EQUIPMENT:

- 1.25 inch, 16-gauge catheter over needle if patient weight $\leq$ 40 kg
- Patient weight > 40 kg use adult decompression needle (3.25-inch ARS chest decompression needle (10 G, catheter over needle); or 14 G, minimum 2.5-inch catheter over needle)
- Antiseptic skin wipes
- Sterile Vaseline gauze or 4"x 4" dressings and tape

PROCEDURAL GUIDELINES:

- Make base contact (if in setting of a MCI, remote rescue, or tactically unstable scene proceed without base contact and document).
- Explain procedure to patient if conscious and able to understand.
- Select one of two insertion sites based on body habitus, choosing an area with the least soft-tissue depth and easiest access.
 - 2nd intercostal space midclavicular line -OR-

Approved:

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Final Date for Implementation: 04/01/2027
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NEEDLE THORACOSTOMY: PEDIATRIC

- 5th intercostal space anterior axillary line
- Insert needle using steady pressure and ninety-degree angle (perpendicular) to chest wall.
- Upon advancing the needle, one of the following should be recognized:
 - A sudden rush of air is expelled through the needle
 - A “popping” or “giving way” is felt as the tip of the needle enters the chest cavity
 - Blood or fluid is expelled through the needle
 - Improved respiratory status
- Upon removing the needle, leave the catheter in place and do not reinsert the needle due to catheter shearing risk.

DOCUMENTATION:

- Indication for procedure
- Site selected for placement
- Number of attempts
- Outcome of placement (i.e. respiratory status, hemodynamic status)

**ANTERIOR
AXILLARY**

Avg depth 3.42cm
(2.82-4.05)

**MID
CLAVICULAR**

Avg depth: 4.28cm
(3.9-4.7)

Laan D V., Vu TDN, Thiels CA, et al. Chest wall thickness and decompression failure: A systematic review and meta-analysis comparing anatomic locations in needle thoracostomy. Injury. 2015:14–16.

Approved:

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IO Change Log

For October 2026 Updates

OCEMS Procedure 115 (Intraosseous Infusion)

- Under Indications: Added age breakdown for unstable hypotension.
- Under Contraindications:
 - Added vascular disruption of the extremity selected for IO infusion.
 - Added obvious skin or other infection or burn at the site selected for IO insertion
 - Added joint replacement or orthopedic hardware adjacent to the site of IO insertion
- Added section titled Insertion Sites
 - Added two additional sites
 - Proximal Humerus for age 18 years old and over
 - Distal Femur for age up to 6 years old and a weight of 3-39kg
- Renamed the procedure section “procedural highlights” & removed step by step process.
 - Reinforced the site selection locations and angle to insert needle.
 - Reinforced pain management with use of Lidocaine prior to instilling fluids or other medications.
 - Reinforced the use of a pressure bag.
- Added site photos.



INTRAOSSUEOUS INFUSION

INDICATIONS:

Intraosseous (IO) access is indicated for the following conditions when fluid therapy (e.g., normal saline) or emergency life-saving medication administration is required AND adequate intravenous (IV) access is too difficult to establish rapidly:

- Cardiopulmonary arrest (adult or pediatric)
- Respiratory arrest (adult or pediatric)
- Trauma related arrest (adult or pediatric)
- Life-threatening unstable hypotension
 - Age < 10 years: Refer to Pediatric Vital Sign graph below
 - Age 10 - 64 years: SBP < 90 mm Hg
 - Age > 65 years: SBP < 110 mm Hg
- Unconscious diabetic with blood glucose less than 60, unresponsive to IM glucagon

Pediatric Vital Signs by Age

Age	Pulse	Systolic Blood Pressure	Respiratory Rate
Neonate (0-30 days)	100-180	> 60	30-60
Infant (31 days - < 1 yr)	100-160	> 60	30-60
Toddler (1 yr - < 3 yrs)	90-150	> 70	24-40
Pre-school (3 yrs - < 5 yrs)	80-140	> 75	22-34
School Aged (5 yrs - < 10 yrs)	70-120	> 80	18-30
Teen (≥ 10 yrs)	60-100	> 90	12-16

CONTRAINDICATIONS:

- Fracture of the extremity selected for IO infusion
- Vascular disruption of the extremity selected for IO infusion
- Excessive soft tissue at the insertion site, such that anatomic landmarks cannot be identified
- Previous orthopedic procedures within the past six (6) weeks on extremity selected for IO Insertion, including prior IO insertion/attempt at that site
- Obvious skin or other infection or burn at the site selected for IO insertion
- Joint replacement or orthopedic hardware adjacent to the site of IO insertion

Approved:

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INTRAOSSEOUS INFUSION

INSERTION SITES:

- Proximal Tibia—Approved site for all patients of all ages unless unsuccessful or contraindicated.
- Proximal Humerus—Adults age 18 years old and over
- Distal Femur—Pediatric patients up to 6 years old and weight 3 to 39 kg

PROCEDURAL GUIDELINES:

- Site selection:
 - *Tibia:* 1 finger width medial to tibial tuberosity on anterior flat surface, or 2 finger widths below patella if tuberosity not visible.
 - *Humeral Head:* Greater tubercle palpated with arm internally rotated.
 - *Femur:* 1 finger width above and medial to patella superior border (or 3 finger widths above and medial for older children).
- Insertion:
 - *Tibia:* 90° perpendicular to bone.
 - *Humerus:* 45° angle (supine toward opposite hip; upright toward same-side scapula).
 - *Femur:* 90° perpendicular.
- Aspiration: Check for black marrow line; if absent, switch to longer needle.
- Pain management: If utilizing IO for conditions other than cardiopulmonary arrest, lidocaine should be instilled to decrease pain associated with medication/fluid administration, prior to administration of any other medications/fluids. Infuse lidocaine 2% at the dosage listed below. Slow infusion is necessary to ensure the lidocaine remains in the medullary space of the bone. Allow lidocaine to dwell in space for 60 seconds prior to flushing with normal saline. If patient experiences pain on medication or NS flush after initial dose of lidocaine, repeat with half of the initial dose.
 - Adults: Lidocaine 2% 40 mg slow IO push
 - Pediatric: Lidocaine 2% (20 mg / mL) 0.5mg / kg slow IO push (max dose 40mg)
- Maintenance: Infused fluid should be pressurized with a pressure bag. Attach primed extension tubing, flush with saline or lidocaine, and secure device per manufacturer's instructions.
- Transport: IO insertion should not delay transport; no more than two attempts in the field unless ordered by Base Hospital Physician.

Approved:

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ORANGE COUNTY EMERGENCY MEDICAL SERVICES
ADVANCED LIFE SUPPORT PROCEDURES

INTRAOSSUEOUS INFUSION

#: PR-115
Page: 3 of 6
Original Date: 9/01/2009
Revised: 08/03/2026

DOCUMENTATION:

- Document all IO attempts, reason for site selection, and IO insertion site and time placed.
- Notify receiving hospital staff of IO use and site (even when not successful).

NOTES:

- Adenosine is not as effective when administered through an IO site, the IV route is preferred.
- The IV route is preferred for the administration of Amiodarone.
- Potential IO complications include:
 - Local infiltration of infusion fluid or medications
 - Infusion fails to flow due to IO occlusion from clot or tissue
 - Infection at site or sepsis
 - Fat or bone emboli
 - Stress fracture from insertion of IO
 - Dislodgement

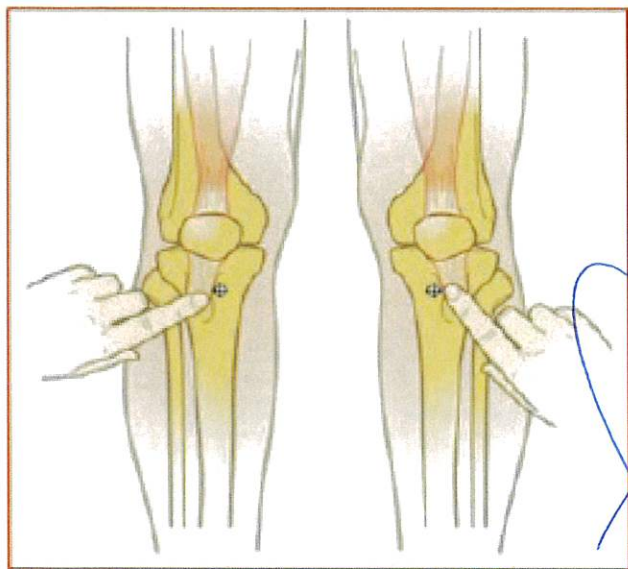
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Review Date: 9/2018; 04/2026
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APPENDIX A – Figures

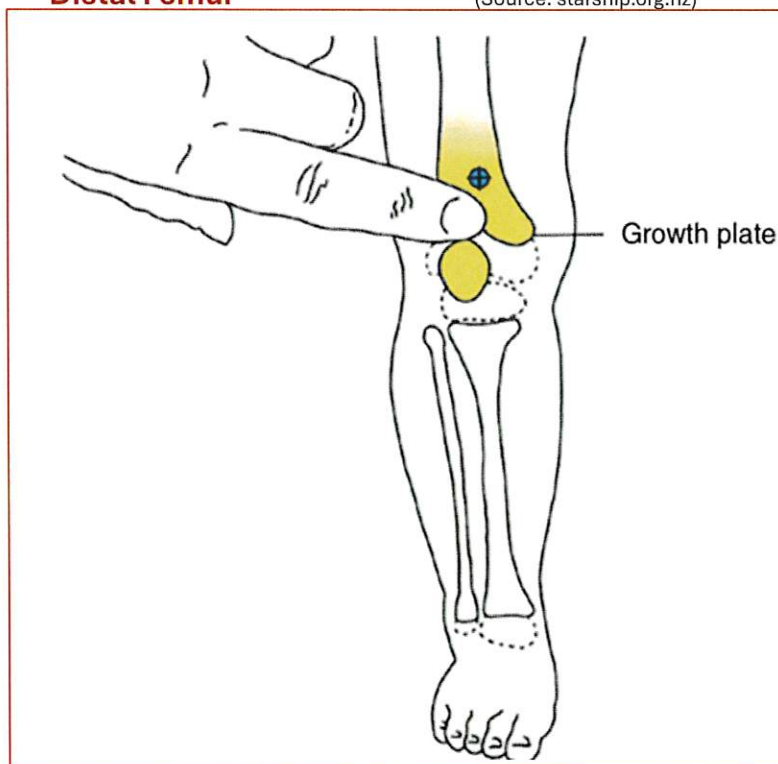
Proximal Tibia



Adult (Source: medicalguidelines.msf.org) / Infant (Source: EZ-IO)

Distal Femur

(Source: starship.org.nz)

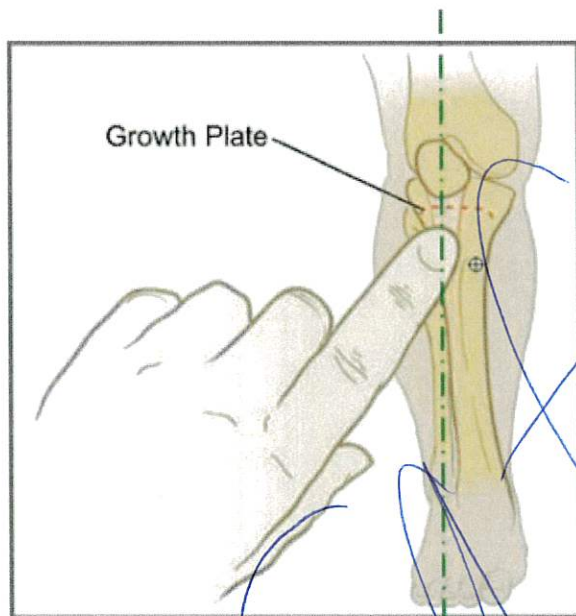


Approved:

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Proximal tibia



- 2 fingerbreadths below base of patella and 1 fingerbreadth medial

T- 509

4

Approved:

Review Date: 9/2018; 04/2026
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INTRAOSSUEOUS INFUSION

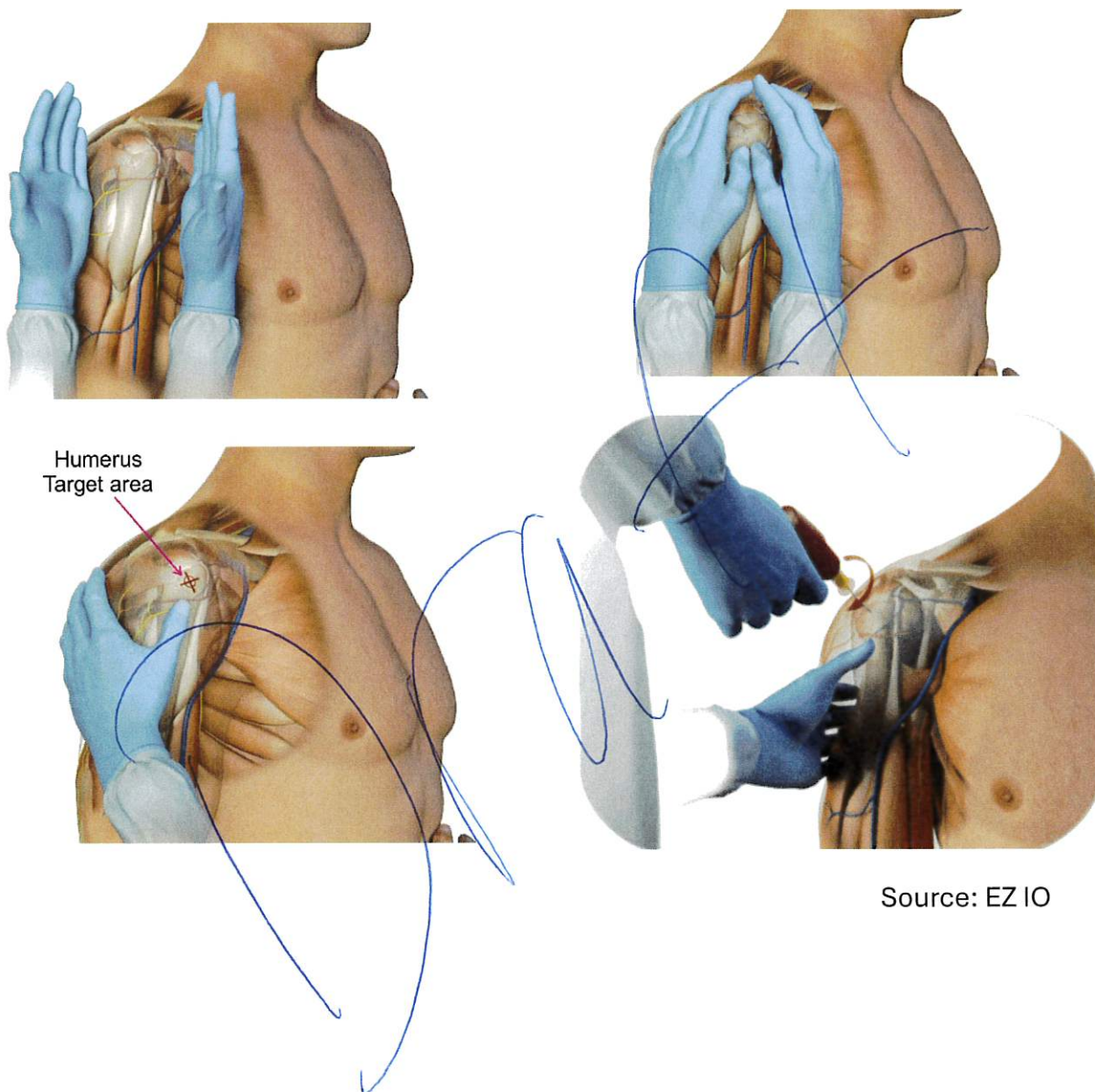
PR-115

Page: 6 of 6

Original Date: 9/01/2009

Revised: 08/03/2026

Proximal Humerus



Source: EZ IO

Approved:

Review Date: 9/2018; 04/2026
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Final Date for Implementation: 04/01/2027
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Push Dose Epinephrine Change Log
For October 2026 Updates

PR-230 Push Dose Epinephrine Adult-Adolescent

- Reworded indications, added the word considerations (see document).
- Cleaned up the contraindications list, now just says hemorrhagic shock.
- Did some adjustment with the wording in regards to preparing for administration. Took away the wording of "mixing instructions". Changed the wording for administration from "push dose" to "administration".
- Removed the statement of base hospital contact and order no longer required.



ORANGE COUNTY EMERGENCY MEDICAL SERVICES
ADVANCED LIFE SUPPORT PROCEDURES
Preparation and Dosing of Push Dose Epinephrine -
Adult / Adolescent

#: PR-230
Page: 1 of 1
Original Date: 11/01/2016
Revised: 05/05/2026

INDICATIONS / CONSIDERATIONS:

1. ROSC.
2. Shock unresponsive to initial fluid bolus.
3. Symptomatic bradycardia unresponsive to atropine and transcutaneous pacing.
4. Deteriorating patient condition with unknown shock etiology.

CONTRAINDICATIONS:

1. Hemorrhagic Shock.

PROCEDURE:

Recommended Preparation:

- Obtain epinephrine 1 mg in 10 mL (0.1 mg / mL; cardiac epinephrine).
- Waste 9 mL from the syringe, leaving 1 mL (0.1 mg).
- Withdraw 9 mL of normal saline into syringe.
- Gently mix.
- Final concentration: 10 mL total volume at 10 mcg / mL.

Administration:

- Administer 1 mL (10 mcg) IV / IO every 3 minutes.
- Titrate to maintain systolic blood pressure (SBP) > 90 mmHg.

Approved:

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Cardiac Arrest Change Log For October 2026 Updates

C-010 Cardiac Arrest – Adult/Adolescent

- BLS Interventions added:
 - Refer to SO-BLS.
 - Initiate an organized, team-based CPR management approach and continue high-quality CPR without interruption of continuous compressions unless pulse obtained.
 - Utilize BVM with OPA for initial airway management and add EtCO₂ when available.
 - If cardiopulmonary arrest was witnessed by bystanders or EMS personnel and resources are limited, consider passive ventilation procedure (OCEMS PR-025) for up to 6 minutes.
 - Apply an AED and follow instructions until an ALS crew takes over care.
 - If suspected opioid overdose, consider: Naloxone pre-load nasal spray (SO-B-002)
- ***Extensive and substantive changes have been made to this treatment guideline which are too numerous to list out.***
- Added medications:
 - Magnesium Sulfate
 - Calcium Gluconate 10%



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Notes/Definitions

- Efforts should focus on performance of high-quality CPR with continuous compressions, airway management without hyperventilation, minimal pauses for rhythm recognition, and systematic ALS interventions that do not interrupt CPR.
- Operate in approximately 2-minute CPR cycles with brief end of cycle rhythm checks driving interventions performed over the next cycle.

Base Hospital Contact Required for Conditions Below

BLS Interventions

- Refer to OCEMS General BLS Standing Orders SO-BLS.
- Initiate an organized, team-based CPR management approach and continue high-quality CPR without interruption of continuous compressions unless pulse obtained.
 - Utilize BVM with OPA for initial airway management and add EtCO₂ when available.
 - If cardiopulmonary arrest was witnessed by bystanders or EMS personnel and resources are limited, consider passive ventilation procedure (OCEMS PR-025) for up to 6 minutes.
 - Apply an AED and follow instructions until an ALS crew takes over care.
 - If suspected opioid overdose, consider:
 - ▶ **Naloxone pre-load nasal spray (SO-B-002)**

ALS Interventions

ALL CARDIAC ARRESTS

- The following are indicated as appropriate during CPR cycles until ROSC is obtained, or resuscitation is discontinued:
 - Operate in CPR cycles with the rhythm identified at the end of each cycle driving the interventions performed during the next cycle (shockable, non-shockable, or ROSC).
 - Early application of EtCO₂ measurement (including airways managed by BVM).
 - An advanced airway (ETT/SGA) may be placed at any time as long as chest compressions remain uninterrupted, and tube placement can be confirmed with EtCO₂.
 - IV/IO access
 - Use of Automatic Chest Compression Device (ACCD) when available and with minimal interruption of compressions. Consider head elevation not to exceed 30 degrees semi-fowlers position.
 - If suspected opioid overdose, consider:
 - ▶ **Naloxone IV / IO or pre-load nasal spray (SO-M-050)**
 - If Return of Spontaneous Circulation (ROSC) occurs at any time, see section below for Post-ROSC care.

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RHYTHM BASED MANAGEMENT (determined at end of each CPR cycle rhythm check)

- Shockable rhythm (VF/pVT):
 - ▶ **Defibrillate** once at pre-programmed/manufacture's recommended defibrillator setting or at maximum energy setting, then resume CPR cycle. Repeat for VF/pVT identified at the end of each CPR cycle
 - Medication administration (beginning after second defibrillation)
 - ▶ **Epinephrine 1 mg IV / IO** (0.1 mg / mL concentration), repeat every 3-5 minutes for continued VF/pVT
 - Alternated between CPR cycles with:
 - ▶ **Amiodarone 300 mg IV / IO**, may repeat 150 mg IV / IO in approximately 3-5 minutes or Lidocaine 1 mg / kg IV / IO, may repeat 0.5 mg / kg in approximately 3-5 minutes one time
 - After 10 minutes of initial cardiopulmonary-arrest management, may consider administering:
 - ▶ **Sodium Bicarbonate 50 mL IV / IO** (7.5% or 8.4% solution)
- Non-shockable rhythm (Asystole/PEA):
 - Medication administration:
 - ▶ **Epinephrine 1 mg IV / IO** (0.1 mg / mL concentration), repeat every 3-5 minutes for continued Asystole/PEA
 - ▶ **Normal Saline 250 mL bolus**, may repeat 3 times (total 1 liter) if no pulse obtained
 - Administer early if indicated by etiology; otherwise, consider after 10 minutes.
 - ▶ **Sodium Bicarbonate 50 mL IV / IO** (7.5% or 8.4% solution)

GENERAL PRINCIPLES:

- Use targeted medications only when a specific reversible cause is suspected (H's & T's).
- High-quality CPR, airway management, early defibrillation, and epinephrine remain the core of resuscitation.
- Adjunct medications must not delay or interrupt chest compressions.
 - **Magnesium Sulfate**
 - Indication: Torsades de pointes only; not for routine VF/pVT or monomorphic VT.
 - Dose: 25 mg / kg (max 2 gm) IV / IO over 2 minutes; may repeat once.
 - Key considerations: Identify Torsades on monitor; check for QT-prolonging meds or dialysis history; monitor for hypotension and rare toxicity.
 - **Calcium Gluconate 10%**
 - Indications: Suspected hyperkalemia, hypocalcemia, calcium channel blocker overdose, hypermagnesemia.

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- Dose: Calcium Gluconate 10% 3gm IV / IO
- Key considerations: Calcium Gluconate is a vesicant—ensure secure IV / IO; avoid routine use; look for dialysis clues or hyperkalemia ECG changes; do not mix with bicarbonate in the same line.
- **Sodium Bicarbonate**
 - Indications: Suspected hyperkalemia, TCA/sodium channel blocker overdose (QRS >120 ms), severe pre-existing metabolic acidosis.
 - Dose: 50 mEq (1 amp) IV/IO, may repeat after 10 minutes.
 - Key considerations: Not for routine arrest; look for TCA overdose clues; ensure adequate ventilation to avoid CO₂ buildup; flush line before/after calcium or epinephrine.
- **Naloxone**
 - Indication: Suspected opioid-associated cardiac arrest; adjunct only.
 - Dose: 2 mg IV/IO or 4 mg IN, may repeat once (max 6 mg).
 - Key considerations: CPR is still priority; naloxone requires some circulation to work; look for opioid scene clues; monitor closely post-ROSC and titrate to respirations, not full arousal.

RETURN OF SPONTANEOUS CIRCULATION CARE

- If a rhythm with a pulse develops at any time during resuscitation:
 - Continue to ventilate and oxygenate (via advanced airway, BVM or high flow oxygen as appropriate). Assess for and correct hypoxia, hypovolemia, hypoglycemia, or hypothermia.
 - **Make Base Contact** for CVRC destination. For a systolic BP < 90 mmHg,
 - ▶ **Push-dose Epinephrine 1 mL IV / IO** every 3 minutes to maintain a systolic BP > 90 mmHg (PR-230).
 - ▶ **Normal Saline 250 mL IV**, may repeat 3 times (total 1 liter).
 - Perform 12-lead ECG, if possible. If STEMI is identified, transmit it to Base Hospital and/or CVRC.
 - Continually monitor for re-arrest by palpating a pulse and monitoring EtCO₂.
 - If respiratory depression or not breathing, and if not already done, consider Advanced Airway and confirm tube placement.

Transport Consideration

- ALS escort required for all transported patients.
- Patients with ROSC require **Base Contact** for transport to a CVRC.
- After 20 minutes on scene without ROSC, consider one of the following:
 - Continue treatment on scene
 - Transport to nearest ERC
 - **Base Contact** for further orders or to request field pronouncement

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- After 30 minutes on scene without ROSC, select one of the following actions:
 - Transport to nearest ERC
 - **Base Contact** for further orders or to request field pronouncement
- Based on scene factors, providers can consider transport to the nearest ERC any time after placement of ACCD, however the goal is to obtain ROSC with transport to a CVRC.

Additional Considerations

- **Team-Based CPR** - A position-based CPR response plan (e.g., Pit Crew CPR) that facilitates a coordinated effort in the management of cardiac arrest patients. Assigning personnel pre-determined positions and duties will support a focused and coordinated strategy maximizing the effectiveness of each EMS provider on scene. Each ALS provider agency needs to implement this type of formal position-based CPR response plan, although some flexibility is appropriate based on which delivery model is selected.
- **High-Quality CPR** - Priority in cardiopulmonary arrest management that emphasizes high-quality CPR with minimal interruptions of chest compressions and with adequate depth and recoil. To maintain high-quality CPR without interruption of continuous compressions, personnel should rotate through the compressor position when possible, every 2 minutes.

High-quality CPR includes: 1) the use of a CPR feedback device that can provide immediate feedback on compression depth, rate, and proper recoil; or 2) the placement of an automatic chest compression device (ACCD).

 - **Minimizing Pauses** - High-quality CPR should be performed while the defibrillator is charging with immediate CPR resumption post defibrillation. Focus should be on minimizing the time off the chest during the defibrillation procedure while providing for personnel safety. A “hovering” technique is most widely used to accomplish minimal time off the chest before and after defibrillation.
 - **CPR Cycles** - Structured intervals of high-quality CPR with brief rhythm checks performed approximately every two minutes. The identified rhythm guides the treatments delivered during the next CPR cycle. This approach is designed to minimize interruptions in chest compressions and aid in treatment decision making. While two minutes is considered best practice, the interval may be adjusted based on scene conditions and patient care needs.
- **Automatic Chest Compression Device (ACCD)** - ACCD placement is indicated for pulseless patients where CPR is needed. If high-quality CPR can be accomplished with a CPR feedback device, then placement of the ACCD can occur at any point in the management of cardiac arrest patients prior to their movement or transport. Once providers initiate patient movement or

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transport, an ACCD is required since the ability to perform high-quality manual compressions diminishes during this activity. Patients can be managed with manual CPR on scene, if paramedics utilize a CPR feedback device to deliver and monitor high-quality compressions with minimal interruptions. If providers cannot perform manual high-quality compressions with minimal interruptions, then the ACCD should be applied as soon as possible.

- **Positive Pressure Ventilation** – This is the preferred method of ventilating a cardiac arrest patient. Avoid hyperventilation during cardiac arrest management and post ROSC care. Ventilations should be approximately 10 breaths/minute with just enough volume to see the chest rise. A two-person technique (when resources allow) should be utilized when delivering ventilations using a BVM. AHA guidelines recommend a 30:2 ventilation to compression ratio, but continuous CPR is acceptable as well.
- **ALS Airway** - An ALS airway (e.g., SGA, ETT) may be placed at any time during the management of a cardiac arrest patient if CPR is not interrupted. ALS airway selection by paramedics should be based upon patient presentation, scene conditions, and confidence in successful placement. If Endotracheal Intubation is attempted and unsuccessful, an SGA should be utilized.
- **End-Tidal CO₂** - Obtaining initial EtCO₂ values when utilizing a BVM and then monitoring the values will provide additional information on patient perfusion status while performing high-quality CPR.
 - Due to lack of perfusion, EtCO₂ is low during cardiac arrest (<10 mmHg), EtCO₂ values of 10 – 20 mmHg suggest effective CPR, and a jump in EtCO₂ during CPR may indicate ROSC.
 - A persistent EtCO₂ <10 mmHg after 20 minutes of CPR has very low predicted survival. Consider BHC for termination of resuscitation.
- **Passive Ventilation** – The use of the passive ventilation procedure is indicated for any cardiopulmonary arrest that is witnessed by either bystanders or EMS personnel to prioritize chest compressions when there are scarce resources available. However, passive oxygenation does not ensure adequate ventilation. Once an adequate number of personnel are on scene, positive pressure ventilations utilizing a BVM with an EtCO₂ sensor should be performed. Refer to OCEMS PR-025, Passive Ventilation Procedure, for further information.
- **Defibrillation** – Emergent defibrillation is highly effective for terminating Ventricular Fibrillation (VF)/ Pulseless Wide Complex Tachycardia (pVT).
 - A single shock strategy is preferred over stacked shocks due to the long duration of CPR interruption for a series of stacked shocks.

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- The energy level is best based on the manufacturer's recommendations, but if that is not available, a higher energy setting may be preferred.

- **Fine Ventricular Fibrillation (Fine VF)** - Patients in a cardiac rhythm of fine ventricular fibrillation (amplitude less than 2-3 mV) may benefit from an additional 2 minutes of high-quality CPR without interruption of continuous compressions. Fine ventricular fibrillation has a low success rate for conversion with defibrillation, thus continuing high quality CPR without interruption of continuous compressions for an additional 2 minutes may allow for further coronary perfusion and presentation of a coarser ventricular fibrillation upon reassessment of the rhythm.
- **Post ROSC Care** - Preventing re-arrest is the primary goal. Continually monitoring for a palpable pulse, rhythm changes and EtCO₂ waveform is required. Maintaining a systolic BP > 90 mmHg should take priority over 12-lead acquisition post ROSC to prevent re-arrest. EtCO₂ target range is 35-45 mmHg.
- **AICD** - If the patient has an implanted pacemaker or defibrillator/pacemaker, place electrode pads to either side or in the anterior/posterior position and not directly on top of the implanted device.
- **Medication Patches** - If the patient has a medication patch in place on the chest area, remove the patch and wipe the area clean before attaching an electrode pad.

If a patient is wearing a **LifeVest®**

- Proceed with standard evaluation and treatment measures.
- Initiate CPR unless the vest device is broadcasting "press the response buttons," "electrical shock possible, do not touch patient," or "bystanders do not interfere."
- Follow standard treatment as described in algorithms above, remove the LifeVest®, and monitor/treat the patient with the standard monitor-defibrillator.
- To remove the LifeVest®, first pull out or disconnect the battery, then remove the garment from the patient.
- Take vest, modem, charger, and extra battery to the hospital.

LVAD - If the patient has a Left Ventricular Assist Device (**LVAD**), no ACCD; Reference SO-C-045 (Cardiac Arrest with Left Ventricular Assist Device).

Base Hospital

- If patient is a dialysis patient or known to have renal failure, consider hyperkalemia and administer:

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- **Sodium Bicarbonate 50 mL IV / IO** (7.5% or 8.4% solution), may repeat in 5 minutes if there is a response to initial dose.

ROSC:

Preventing re-arrest is the primary goal. Continually monitoring for a palpable pulse, rhythm changes and EtCO₂ waveform are required. Maintaining a systolic BP > 90 mmHg should take priority. Anticipate the use of Push-Dose Epinephrine early to prevent re-arrest.

Pronouncement:

Base hospital contact is required for physician pronouncement if resuscitation efforts are not successful. Considerations:

- Most contacts for pronouncement are made after at least 20 minutes of ACLS resuscitative efforts.
- A persistent EtCO₂ <10 mmHg after 20 minutes of CPR has very low predicted survival.
- Termination of resuscitation (TOR) is recommended for patients who meet all of the following:
 - Unwitnessed arrest
 - No bystander CPR
 - No shockable rhythms during resuscitation
 - No ROSC at any time
- The following situations fall outside validated TOR criteria and warrant additional caution when considering termination of resuscitation:
 - Suspected poisoning
 - Hypothermia (core temperature < 30°C or unknown)
 - Drowning or submersion
 - Electrocution or lightning strike
 - Traumatic cardiac arrest
 - Pregnancy
 - Patients with ventricular assistive devices or other mechanical circulatory support
- Refer to Policy 330.50 & 330.51 for POLST/DNR Considerations

Cross References:

SO-BLS General Basic Life Support Standing Orders
Procedure B-040a (Automatic Chest Compression Device – Band Design)
Procedure B-040b (Automatic Chest Compression Device – Plunger Design)
SO-C-045 (Left Ventricular Assist Device)
SO-M-050 (Substance Overdose)
PR-025 (Passive Ventilation)
PR-230 (Preparation and Dosing of Push Dose Epinephrine – Adult / Adolescent)
Policy 330.50 (Withholding Prehospital CPR for the Obviously Dead)
Policy 330.51 (DNR, POLST, End of Life Options)

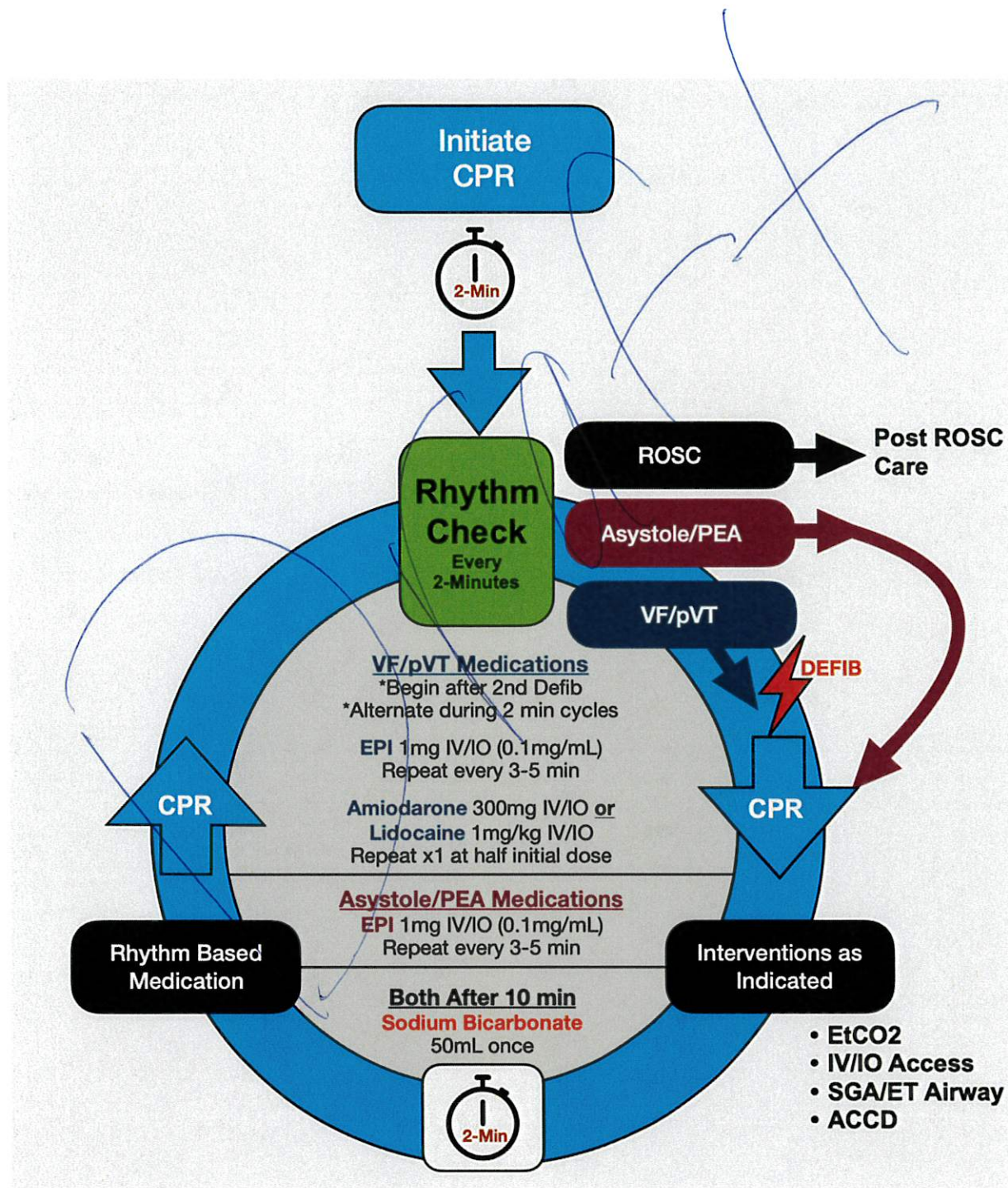
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Hypertensive Crisis in Pregnancy Change Log
For October 2026 Updates

O-010 Hypertensive Disorders of Pregnancy / Eclampsia - Adult/Adolescent

- BLS Interventions added:
 - Refer to SO-BLS.
 - Place pregnant patient in left lateral position if second or third trimester.
 - If supine positioning is required, manually displace the uterus to the left.
- Added additional information to the definition of pre-eclampsia and eclampsia.
- Added to ALS interventions the administration of Magnesium Sulfate if pre-eclampsia or eclampsia is present as exhibited by a SBP>160 or DBP>100 along with listed symptoms.
 - Magnesium Sulfate should be provided to prevent a seizure.
 - Magnesium Sulfate is the preferred first-line treatment for eclamptic seizures.
 - Magnesium Sulfate can be given either via IV / IO or IM.
 - IV dose: 4 gm / 100 mL NS IV infusion at rate of 15-20 minutes.
 - IM dose: 10 gm IM divided into 5 gm in each gluteal muscle
 - Important to monitor for magnesium toxicity: respiratory depression, bradycardia, hypotension, decreased mental status, loss of reflexes.
- Base Hospital contact is required.



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HYPERTENSIVE DISORDERS OF PREGNANCY / ECLAMPSIA (Adult / Adolescent)

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Notes/Definitions

- **Pre-eclampsia:** Pregnant or postpartum patient (> 20 weeks gestation) with SBP > 160 mmHg or DBP > 110 mmHg, or suspected pregnancy related hypertension with persistent headache, visual disturbance, epigastric or right upper quadrant pain, pulmonary edema, cyanosis, altered mental status, or seizure activity.
- **Eclampsia:** New onset generalized or focal seizure occurring during pregnancy or within 6 weeks postpartum that is not attributable to another known cause.

Base Hospital Contact Required

BLS Interventions

- Refer to OCEMS General BLS Standing Orders SO-BLS.
- Place pregnant patient in left lateral position when possible to relieve uterine pressure on the aorta.
- If supine positioning is required, manually displace the uterus to the left.

ALS Interventions

- Establish IV.
 - Cardiac monitoring.
 - Obtain blood glucose. If glucose ≤ 60 , treat per M-010 (Diabetic Emergencies).
 - If SBP > 160 or DBP > 100 with symptoms listed above, make **Base Hospital contact** and administer:
 - ▶ **Magnesium Sulfate 4 gm / 100 mL NS IV** infusion at rate of 15–20 minutes.
- *Caution: rapid infusion of Magnesium can cause respiratory depression.
- OR**
- ▶ **Magnesium Sulfate 10 gm IM**, divided into 5 gm in each gluteal muscle.
 - Monitor for signs of Magnesium toxicity. If present, stop infusion, provide supportive care as indicated and **contact Base Hospital**.
 - For eclamptic seizures unresponsive to Magnesium Sulfate, administer:
 - ▶ **Midazolam 10 mg IM** – once (preferred route)
 - ▶ **Midazolam 5 mg IV / IN / IO** – if unable to deliver IM; may repeat once after 3 minutes
 - Re-assess blood pressure at least every 15 minutes after seizure resolves or medication has been given.

Transport Considerations

- Determine from patient or family if prenatal care has been provided by an obstetrician and if there is a preferred OB receiving hospital and notify **Base Hospital**.
- ALS escort to nearest appropriate OB Receiving Center as directed by the **Base Hospital**.

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Additional Considerations

- Eclampsia is a time-critical emergency that is characterized by tonic-clonic, focal or multifocal seizures in the absence of other conditions.
- Preeclampsia and Eclampsia may occur up to 6 weeks post-delivery
- Magnesium Sulfate is the preferred first-line treatment for eclamptic seizures.
- Do not delay transport solely to complete medication administration.
- An IO should not be placed to administer Magnesium.
- Midazolam should not be considered first-line therapy unless magnesium sulfate is unavailable or seizure activity persists despite magnesium administration.
- Signs of magnesium toxicity include respiratory depression, bradycardia, hypotension, decreased mental status and loss of reflexes.
- Document pregnancy status, gestational age if known, blood pressure trends, pulse oximetry, neurologic findings, seizure duration, and medication administration details.
- If imminent childbirth anticipated in field, refer to OCEMS Procedure B-060.

Base Hospital

- Consult the Base Hospital Physician for additional doses of Magnesium Sulfate for recurrent seizure activity.
- Choosing the patient's preferred OB receiving hospital is preferred unless patient's status warrants the need to go to the nearest OB receiving hospital.

Cross References:

SO-BLS General BLS Standing Orders

Procedure B-060 Imminent Childbirth In the Field

SO-M-020 Altered Mental Status

SO-M-040 Seizure / Convulsion - Adult / Adolescent

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Vaginal Bleeding Change Log
For October 2026 Updates

O-015 Vaginal Bleeding – Adult/Adolescent

- BLS Interventions added:
 - Refer to SO-BLS.
 - Place pregnant patient in left lateral position if second or third trimester.
 - If supine positioning is required, manually displace the uterus to the left.
- Added to ALS interventions the administration of Tranexamic Acid (TXA) for patients with ongoing bleeding within 3 hours post-delivery and SBP < 90 or Shock Index > 1.
- If TXA given, then requires Base Hospital Contact.



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VAGINAL BLEEDING DURING PREGNANCY
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Notes/Definitions

- Ectopic pregnancy: A pregnancy that implants and grows outside of the uterus which is typically detected between 6-8 weeks gestation. Exhibited by abdominal pain, irregular vaginal bleeding, or radiated pain to the right shoulder.
- Miscarriage: Loss of a pregnancy that is in the correct uterine location prior to 20 weeks gestation often exhibited by light to heavy vaginal bleeding with/without abdominal cramping.
- Placental Abruption: Heavy bright red vaginal bleeding often associated with abdominal pain. Most often occurs in the third trimester due to the placenta separating from the uterus before delivery.
- Placenta Previa: Painless vaginal bleeding typically occurs after 20 weeks due to the placenta attaching to the lower part of the cervix.

Base Hospital Contact if TXA administered.

BLS Interventions

- Refer to OCEMS General BLS Standing Orders SO-BLS.
- Place pregnant patient in left lateral position if second or third trimester.
- If supine positioning is required, manually displace the uterus to the left.

ALS Interventions

- Obtain IV / IO as applicable.
- Cardiac monitoring.
- Obtain blood glucose. If glucose ≤ 60 , treat per M-010 (Diabetic Emergencies).
- Treat for hypotension (Systolic BP ≤ 90) or signs of shock:
 - ▶ **Normal Saline 250 mL IV / IO bolus** – may repeat up to 1 liter to maintain adequate perfusion
- For patients within 3 hours post-delivery with ongoing bleeding and SBP < 90 or Shock Index > 1 , refer to PR-080 as needed:
 - ▶ **Tranexamic Acid (TXA) 1 gm in 100 ml IV / IO** infusion over 10 minutes - once

Transport Considerations

- ALS escort to nearest appropriate ERC based on estimated pregnancy trimester:
 - Vaginal bleeding during the first 19 weeks of pregnancy to nearest ERC.
 - Vaginal bleeding after 20 weeks pregnancy or up to 1-month post-partum to nearest ERC with OB capability.
- **BASE HOSPITAL CONTACT** required if TXA administered.

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Additional Considerations

- If fetal tissue is passed in the field; take tissue in a container with patient to the ERC. The identification of passed tissue important in determining the degree of a miscarriage and the further management of the case.

Base Hospital

- Consider OB Capable ERC depending on gestational age and/or amount of vaginal bleeding.

Cross References:

SO-BLS General BLS Standing Orders

ALS Procedure PR-080 (Tranexamic Acid)

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ENVIRONMENT CHANGE LOG

For October 2026 Updates

E-05 Burn - Adult / Adolescent

- BLS Interventions added:
 - Refer to SO-BLS.
 - Break contact with causative agent
 - Remove jewelry and clothing from the area involved.
 - Begin flushing burns with copious amounts of cool running water (target 20 minutes; do not delay transport).
 - Specific interventions to do for thermal burns, toxic inhalation, chemical burns, and tar burns added.
- ALS Interventions added:
 - Added additional forms of pain medication that can be given.
- Under Additional Considerations explanation for 20CRW was made.
 - 20 minutes of cool running water within the first three hours prevents worsening injury, reduces pain, lowers risk of infection, and improves long-term outcomes.

E-010 Decompression Sickness / Air Embolism - Adult / Adolescent

- BLS Interventions:
 - Refer to SO-BLS.
 - Spinal motion restriction if diving or shore-break accident suspected.
 - Administer 100% O2 via mask as soon as possible.
 - Prevent and treat hypothermia by removing wet clothing and initiating rewarming when appropriate.
- No change made to ALS interventions from previous standing orders.
- Removed the statement "position patient in flat, supine position" due to recent studies on the Durant and Trendelenburg positions showing no additional benefit and it is best to place patient in a position of comfort.
- Added a list of items to obtain from diving history if available under the Additional Considerations section.

E-015 Non-Fatal Drowning - Adult / Adolescent

- BLS Interventions added:
 - Refer to SO-BLS.
 - Spinal motion restriction if diving or shore-break accident suspected.
 - Prevent and treat hypothermia by removing wet clothing and initiating rewarming when appropriate.
- No change made to ALS interventions from previous standing orders.
- Added a list of items to obtain from submersion history if available under the Additional Considerations section.
- All Drownings are now required to make Base Hospital Contact.
- Listed within the Base Hospital section are reasons to send a drowning victim to a Trauma Center which include:

ENVIRONMENT CHANGE LOG

For October 2026 Updates

- Shore break, diving, or watercraft-related incident
- External evidence of trauma
- Unwitnessed drowning
- Meets mechanism or trauma injury criteria per OCEMS Policy #310.30 (Trauma Triage)

E-025 Thermal Disorders - Adult / Adolescent

- BLS Interventions added:
 - Refer to SO-BLS.
 - Specific interventions to do for hypothermia, mild / moderate hyperthermia, and severe hyperthermia added.
- No change made to ALS interventions from previous standing orders.
- Added to Additional Considerations section "Monitor the skin if you apply ice packs for prolonged periods. The skin is susceptible to damage with prolonged exposure to ice. Covering ice packs with a sheet and adjusting the site can mitigate injury."
- Under the Base Hospital section added additional forms of pain medication that can be given.

E-030 Snake Envenomation - Adult / Adolescent

- BLS Interventions added:
 - Refer to SO-BLS.
 - Added interventions for the affected extremity to include:
 - Minimize patient movement.
 - Immobilize the affected extremity and keep it at heart level.
 - Remove any restrictive clothing or jewelry from the affected extremity.
 - Avoid blood pressure cuffs or other constrictive devices on the affected extremity.
 - Control any external bleeding if present
- ALS Interventions added:
 - Treating Allergic Reaction.
 - Treating Hypotension.
 - Added additional forms of pain medication to be given.
***Note: Ketorolac is excluded due to coagulopathy.*



ORANGE COUNTY EMERGENCY MEDICAL SERVICES
Prehospital Standing Orders / Treatment Guidelines
BURNS (THERMAL, ELECTRICAL, CHEMICAL)
(Adult / Adolescent)

#: E-005
Page: 1 of 3
Original Date: 11/86
Revised: 07/27/26

Notes/Definitions

- Prioritize life-threatening conditions and initiate appropriate care while preventing hypothermia.
- Assess burn depth, total body surface area (TBSA) involvement, and the presence of inhalation injury or associated trauma. Do not include superficial burns (first-degree) burns when calculating TBSA.

Base Hospital Contact for Burn Unit Destination if criteria met

BLS Interventions

- Refer to OCEMS General BLS Standing Orders SO-BLS.
- Break contact with causative agent.
- Remove jewelry and clothing from the area involved.
- Begin flushing burns with copious amounts of cool running water (target 20 minutes; do not delay transport).
- Keep the patient warm and prevent hypothermia.

Thermal Burns

- For burns <10% TBSA, stop burning by flushing with cool running water or saline.
- For burns >10% TBSA, in addition to cool running water, 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 a safe environment.
- 100% O2 via mask.
- Monitor respiratory status.

Chemical Burns

- Remove contaminated clothing.
- If dry chemicals, brush and flush with copious amounts of cool running water.
- If liquid, flush with copious amounts of cool running water.

Tar Burns

- Do not remove tar.
- Cool with copious amounts of cool running water.

ALS Interventions

- Cardiac monitoring if applicable.
- 12-lead ECG if applicable.
- Obtain IV / IO (in non-burned area) if applicable.
- Obtain capnography if applicable.
- Consider advanced airway management if applicable.
- Treat for respiratory distress, wheezing, bronchospasms, or suspected smoke inhalation:
 - ▶ **Albuterol 6 mL (5 mg)** – continuous nebulization
- Treat for pain choosing one of the following to administer:
 - ▶ **Fentanyl 50 mcg IV / IM** – may repeat once after 3 minutes, hold for SBP < 90
 - ▶ **Fentanyl 100 mcg IN** – may repeat once after 3 minutes, hold for SBP < 90
 - ▶ **Morphine sulfate 5 mg (or 4 mg CARPUJECT™) IV / IM / IO** – may repeat once after 3 minutes, hold for SBP < 90

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ORANGE COUNTY EMERGENCY MEDICAL SERVICES
Prehospital Standing Orders / Treatment Guidelines
BURNS (THERMAL, ELECTRICAL, CHEMICAL)
(Adult / Adolescent)

#: E-005
Page: 2 of 3
Original Date: 11/86
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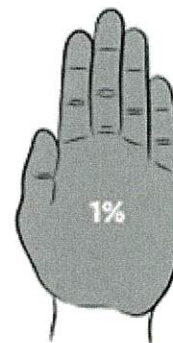
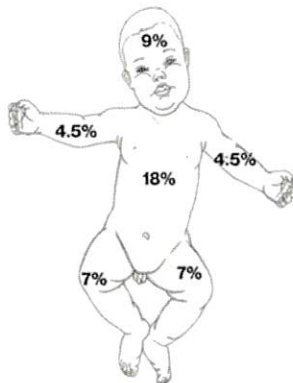
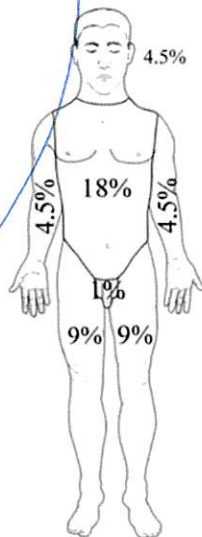
- ▶ **Ketamine 0.1 mg / kg IV** – may repeat once after 15 minutes, max single dose 10 mg
- ▶ **Ketamine 0.5 mg / kg IM** – may repeat once after 15 minutes, max single dose 50 mg
- ▶ **Ketamine 1 mg / kg IN** – once, max dose 100 mg
- ▶ **Ketorolac 15 mg IV / IO / IM** – once
- Treat for hypotension (Systolic BP $\leq$ 90) or signs of shock:
 - ▶ **Normal Saline 250 mL IV / IO bolus** – may repeat up to 1 liter to maintain adequate perfusion.

Transport Consideration

- **Base Hospital Contact** required if any of the following criteria are met:
 - Suspected inhalation injury (patients burned in an enclosed space, patients with facial burns, hoarseness, dyspnea, soot in mouth, carbonaceous sputum, singed nasal hairs)
 - Partial-thickness (second-degree) burns $>10\%$ TBSA
 - Any full-thickness (third-degree) burns
 - Burns involving the face, hands, feet, genitalia, perineum, or major joints
 - Electrical burns due to high voltage ($\geq$ 1000 volts), including lightning injuries
 - Chemical burns
 - Circumferential burns
 - Burns in patients with significant preexisting medical conditions that may complicate recovery (e.g. diabetes, renal failure, cardiac or pulmonary disease)
 - Burns with associated trauma where the burn injury increases risk of morbidity or mortality
- ALS escort to nearest appropriate ERC or as directed by the Base Hospital.

Additional Considerations

- Assessment utilizing the Rules of 9 and Palmar Method (patient's palm), refer to OCEMS PR-003.



**Palmar, palm + fingers
of patient = 1%**

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ORANGE COUNTY EMERGENCY MEDICAL SERVICES

Prehospital Standing Orders / Treatment Guidelines

BURNS (THERMAL, ELECTRICAL, CHEMICAL)

(Adult / Adolescent)

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- Suspected carbon monoxide toxicity can cause inaccurate O2 saturation readings because the pulse oximeter cannot differentiate between carbon monoxide and oxygen molecules.
- Electrical burns may cause significant internal injury with minimal external findings. Assess for cardiac dysrhythmia and associated trauma.
- Chemical burns, some chemicals can react with water and may worsen the burn or produce hazardous fumes (e.g., sodium, phosphorus, acetyl bromide, aluminum carbide, silicon tetrachloride).
- Patients with burn injuries are at an increased risk of hypothermia. Avoid prolonged cooling and keep the patient covered and warm.
- Circumferential burns of the chest and extremities may impair ventilation or circulation.
- 20CRW (20 minutes of cool running water) within the first three hours prevents worsening injury, reduces pain, lowers risk of infection, and improves long-term outcomes.

Base Hospital

- If an airway cannot be secured, consider transport to the nearest ERC.
- Inhalation of smoke generated from burning plastics or petroleum products may produce cyanide toxicity. If cyanide toxicity is known or suspected, consider treatment with:
 - ▶ **Hydroxocobalamin 5 gm in 200 mL normal saline IV - once**

Cross References:

SO-BLS General BLS Standing Orders
SO-M-035 Respiratory Distress
SO-M-045 Shock (Symptomatic Hypotension)
PR-003 Estimate of Body Surface Area Burned and Disposition
PR-030 Endotracheal Intubation (including EtCO2)
PR-070 Ketamine Analgesia
PR-130 Hydroxocobalamin for Cyanide Toxicity
PR-135 Supraglottic Airway Device Placement – Adult/Adolescent

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ORANGE COUNTY EMERGENCY MEDICAL SERVICES
Prehospital Standing Orders / Treatment Guidelines
DECOMPRESSION SICKNESS / AIR EMBOLISM
(Adult / Adolescent)

#: E-010
Page: 1 of 2
Original Date: 11/86
Revised: 07/27/26

Notes/Definitions

- Early recognition, high concentration oxygen administration, supportive care, and rapid transport are essential to reduce complications and improve outcomes.

Base Hospital Contact Required

BLS Interventions

- Refer to OCEMS General BLS Standing Orders SO-BLS.
- Spinal motion restriction if diving or shore-break accident suspected.
- Administer 100% O₂ via mask as soon as possible.
- Prevent and treat hypothermia by removing wet clothing and initiating rewarming when appropriate.

ALS Interventions

- Cardiac monitoring.
- 12-lead ECG if applicable.
- Establish IV / IO access.
- Consider advanced airway management.
- Provide IV hydration to prevent bubble formation:
 - ▶ **Normal Saline 250 mL IV / IO bolus**
- If hypotensive (Systolic BP < 90) or signs of shock noted after initial IV NS bolus given:
 - ▶ **Normal Saline 250 mL IV / IO bolus** – may repeat up to at total of 1 liter to maintain adequate perfusion
 - ▶ **Push Dose Epinephrine 1.0 mL (10 mcg) IV / IO** – every 3 minutes, titrate to SBP > 90
- Treat for nausea and vomiting if not suspected or known to be pregnant:
 - ▶ **Ondansetron (Zofran) 8 mg ODT** - once
 - ▶ **Ondansetron (Zofran) 4 mg IV** – may repeat once after 3 minutes
- Treat for seizure activity:
 - ▶ **Midazolam 10 mg IM** – once (preferred route)
 - ▶ **Midazolam 5 mg IV / IN / IO** – if unable to deliver IM; may repeat once after 3 minutes

Transport Consideration

- ALS escort to nearest appropriate ERC identified by the **Base Hospital**.

Additional Considerations

- Onset of signs and symptoms of air embolism is rapid versus decompression sickness which may be delayed as much as 48 hours.
- Obtain diving history if available:
 - Type of dive
 - Type of gas used
 - Depth
 - Bottom time

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ORANGE COUNTY EMERGENCY MEDICAL SERVICES

Prehospital Standing Orders / Treatment Guidelines

DECOMPRESSION SICKNESS / AIR EMBOLISM

(Adult / Adolescent)

#: E-010

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Original Date: 11/86

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- Number of dives
- Surface intervals
- Onset of symptom time

Base Hospital

- If mechanism of history is unclear, err on the side of transport to a Trauma Center.
- In remote areas, the Base Hospital may facilitate transport to the Catalina Hyperbaric Chamber from the field as needed.
 - Arrangements for emergency hyperbaric treatment of dive illness should be made by the contacted Base Hospital or receiving ERC by contacting the following:
 - ❖ Catalina Chamber 24-hour hotline: (310) 510-1053
 - ❖ Los Angeles County EMS Agency Medical Alert Center: (866) 940-4401
- Helipad Coordinates for the Catalina Chamber LZ are:
 - 33° 26' 41.171" N
 - 118° 29' 00.841" W
 - (Use WGC 84 Coordinate System)

Cross References:

SO-BLS General BLS Standing Orders
SO-M-035 Respiratory Distress
SO-M-040 Seizure / Convulsions
SO-M-045 Shock (Symptomatic Hypotension)
SO-M-060 Nausea / Vomiting
PR-030 Endotracheal Intubation (including EtCO₂)
PR-135 Supraglottic Airway Device Placement – Adult/Adolescent
PR-230 Preparation and Administration of Push Dose Epinephrine - Adult/Adolescent

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Notes/Definitions

- Hypoxia is the primary cause of injury in drowning; prioritize airway management and oxygenation.
- If drowning occurred after a dive, consider arterial gas embolism or decompression illness and treat per OCEMS Treatment Guideline E-010.

Base Hospital Contact Required

BLS Interventions

- Refer to OCEMS General BLS Standing Orders SO-BLS.
- Spinal motion restriction if diving or shore-break accident suspected.
- Prevent and treat hypothermia by removing wet clothing and initiating rewarming.

ALS Interventions

- Cardiac monitoring if applicable.
- 12-lead ECG if applicable.
- Obtain IV / IO access if applicable.
- Consider advanced airway management and/or high flow O₂ by either mask or nasal cannula if applicable.
- Treat for respiratory distress, wheezing, or bronchospasms:
 - ▶ **Albuterol 6 mL (5 mg)** – continuous nebulization
- Conscious and continued respiratory distress after airway clearance:
 - Apply CPAP as tolerated per OCEMS PR-120; monitor closely due to risk of vomiting.
- Unconscious or unable to protect airway:
 - Advanced airway and confirm tube placement with EtCO₂
- Treat for hypotension (SBP < 90) or signs of shock:
 - ▶ **Normal Saline 250 mL IV / IO bolus** - may repeat up to 1 liter to maintain adequate perfusion
 - ▶ **Push Dose Epinephrine 1.0 mL (10 mcg) IV / IO** - every 3 minutes, titrate to SBP > 90
- Treat for nausea and vomiting if not suspected or known to be pregnant:
 - ▶ **Ondansetron (Zofran) 8 mg ODT** - once
 - ▶ **Ondansetron (Zofran) 4 mg IV** – may repeat once after 3 minutes
- Treat for seizure activity:
 - ▶ **Midazolam 10 mg IM** - once (preferred route)
 - ▶ **Midazolam 5 mg IV / IN / IO** - if unable to deliver IM; may repeat once after 3 minutes

Transport Consideration

- **Contact Base Hospital** and ALS escort to destination as directed by the Base Hospital.

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Additional Considerations

- Obtain submersion history if available:
 - Submersion time / downtime
 - Witnessed event
 - Resuscitation prior to arrival
 - What the patient was doing prior to the submersion
- Aspiration and pulmonary edema may develop after rescue; monitor closely for worsening respiratory distress
- All unwitnessed drownings in any body of water suspect spinal cord injury from diving injury.
- A shore break injury occurs when a breaking wave picks up a person in shallow water and forcefully drives them head-first or neck-first into the sand or ocean bottom. This typically happens where waves break very close to the shoreline. Also known as “over the falls”.

Base Hospital

- Airway and ventilation should take priority as drownings are primarily respiratory in nature. Place EtCO₂ early.
- Transport to a Trauma Center if any of the following are present, otherwise transport to the nearest open ERC:
 - Shore break, diving, or watercraft-related incident
 - External evidence of trauma
 - Unwitnessed drowning
 - Meets mechanism or traumatic injury criteria per OCEMS Policy #310.30 (Trauma Triage).

Cross References:

SO-BLS General BLS Standing Orders

SO-M-035 Respiratory Distress

SO-M-060 Nausea / Vomiting

E-010 Decompression Sickness / Air Embolism

PR-030 Endotracheal Intubation (including EtCO₂)

PR-135 Supraglottic Airway Device Placement – Adult/Adolescent

Policy 310.30 or 310.31 Trauma Triage

PR-230 Preparation and Dosing of Push Dose Epinephrine - Adult / Adolescent



Notes/Definitions

- Hypothermia is a medical condition in which the body's core temperature drops below 35°C (95° F).
- Mild hyperthermia refers to a condition where the body's core temperature is elevated but not dangerously high, typically above 98.6°F (37°C). It is often associated with symptoms like heat cramps or heat rash.
- Moderate hyperthermia is a heat-related illness characterized by an elevated body temperature, typically between 100.4°F (38°C) and 104°F (40°C) and requires prompt attention to prevent progression to more severe conditions. It is often associated with symptoms like malaise, tachycardia, nausea, or vomiting.
- Severe hyperthermia is often associated with symptoms like confusion, altered level of consciousness, hot dry skin, or hypotension.

BLS Interventions

- Refer to OCEMS General BLS Standing Orders SO-BLS.

For hypothermia:

- Initiate active warming as available.
- Remove any wet clothing and cover to conserve body heat.

For mild / moderate hyperthermia:

- Move from heat source to a cool (shaded) open area with good air flow. If fan is available provide breeze directly onto victim.
- May encourage oral intake of water or electrolyte solution if patient able to tolerate.
- Apply passive cooling measures, such as cool, soaked towels or ice packs as tolerated.

For severe hyperthermia:

- Begin active cooling by:
 - Continually misting exposed skin with tepid water while fanning the victim.
 - Cover patient with sheet saturated with ice water.
 - Applying ice packs is less effective than evaporation. Ice packs to cheeks, palms, and soles are preferred to truncal application.

ALS Interventions

For hypothermia:

- Establish IV / IO access.
- Cardiac monitoring.
- Expect a slow heart rate.
- Do NOT attempt to reverse bradycardia in the field.
- 12-lead EKG if applicable.
- If no pulse is detected, refer to OCEMS Treatment Guideline C-010.
- Do NOT pronounce in the field.

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For mild / moderate hyperthermia:

- Establish IV / IO access as needed.
- Treat for hypotension (SBP < 90) or signs of shock:
 - ▶ **Normal Saline 250 mL IV / IO bolus** - may repeat up to 1 liter to maintain adequate perfusion.
- Treat for nausea and vomiting if not suspected or known to be pregnant:
 - ▶ **Ondansetron (Zofran) 8 mg ODT** – once
 - ▶ **Ondansetron (Zofran) 4 mg IV** - may repeat once after 3 minutes

For severe hyperthermia:

- Obtain IV / IO access.
- Treat for hypotension (SBP < 90) or signs of shock:
 - ▶ **Normal Saline 250 mL IV / IO bolus** - may repeat up to 1 liter to maintain adequate perfusion.
- Treat for nausea and vomiting if not suspected or known to be pregnant:
 - ▶ **Ondansetron (Zofran) 8 mg ODT** – once
 - ▶ **Ondansetron (Zofran) 4 mg IV** - may repeat once after 3 minutes
- Treat for seizure activity:
 - ▶ **Midazolam 10 mg IM** - once (preferred route)
 - ▶ **Midazolam 5 mg IV / IN / IO** - if unable to deliver IM; may repeat once after 3 minutes.
- Treat for combativeness:
 - ▶ **Midazolam 10 mg IM / IN** - onceOR
 - ▶ **Midazolam 5 mg IV** - may repeat once after 3 minutes.

Transport Consideration

- ALS escort to nearest appropriate ERC or as directed by the Base Hospital.

Additional Considerations

- Monitor the skin if you apply ice packs for prolonged periods. The skin is susceptible to damage with prolonged exposure to ice. Covering ice packs with a sheet and adjusting the site can mitigate injury.

Base Hospital

For hypothermia:

- May treat for pain if SBP > 90 choosing one of the following to administer:
 - ▶ **Fentanyl 50 mcg IV / IM** – may repeat once after 3 minutes, hold for SBP < 90
 - ▶ **Fentanyl 100 mcg IN** – may repeat once after 3 minutes, hold for SBP < 90

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ORANGE COUNTY EMERGENCY MEDICAL SERVICES

Prehospital Standing Orders / Treatment Guidelines

THERMAL DISORDERS - Adult / Adolescent

#: E-025

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Original Date: 09/87

Revised: 07/09/26

- ▶ **Morphine sulfate 5 mg (or 4 mg CARPUJECT™) IV / IM / IO** – may repeat once after 3 minutes, hold for SBP < 90
- ▶ **Ketamine 0.1 mg / kg IV** – may repeat once after 15 minutes, max single dose 10 mg
- ▶ **Ketamine 0.5 mg / kg IM** – may repeat once after 15 minutes, max single dose 50 mg
- ▶ **Ketamine 1 mg / kg IN** – once, max dose 100 mg
- ▶ **Ketorolac 15 mg IV / IO / IM** – once

For hyperthermia:

- If presenting with altered level of consciousness, obtain blood glucose in addition to initiating Normal Saline bolus.

Cross References:

SO-BLS General BLS Standing Orders
SO-M-030 Psychiatric / Behavioral Emergencies
SO-M-040 Seizure / Convulsions
SO-M-045 Shock (Symptomatic Hypotension)
SO-M-045 Nausea / Vomiting

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Notes/Definitions

- **Ensure the scene is safe and risk of second snake strikes is alleviated.**
 - If snake is located, take cell phone picture of snake (if it can be done safely) to show the receiving facility staff.
 - Do not bring the snake to the hospital.
- **Do NOT apply tourniquets, ice, or suction.**

Base Hospital Contact Required

BLS Interventions

- Refer to OCEMS General BLS Standing Orders SO-BLS.

Affected Extremity Intervention

- Minimize patient movement.
- Immobilize the affected extremity and keep it at heart level.
- Remove any restrictive clothing or jewelry from the affected extremity.
- Avoid blood pressure cuffs or other constrictive devices on the affected extremity.
- Control any external bleeding if present.

ALS Interventions

- Monitor for systemic toxicity:
 - Hypotension
 - Coagulopathy (bleeding, oozing)
 - Neuro symptoms (weakness, paresthesia)
 - Allergic / anaphylactic reaction
- Cardiac monitoring.
- Establish IV / IO access as needed.
- Treat for anaphylaxis per OCEMS Treatment Guidelines M-015:
 - ▶ **Epinephrine 0.5 mg IM** lateral thigh area (1 mg / 1 ml concentration)
*Do not administer if Epinephrine Auto-injector administered prior to arrival
 - ▶ **Diphenhydramine (Benadryl®) 50 mg IM / IV – once**
*Do not administer if taken prior to arrival
- Treat for hypotension (SBP < 90) or signs of shock:
 - ▶ **Normal Saline 250 mL IV / IO bolus** – may repeat up to 1 liter to maintain adequate perfusion
 - ▶ **Push Dose Epinephrine 1 ml (10 mcg) IV / IO** – every 3 minutes (titrate to SBP > 90)
- Treat for pain choosing one of the following to administer:
 - ▶ **Fentanyl 50 mcg IV / IM** – may repeat once after 3 minutes, hold for SBP < 90
 - ▶ **Fentanyl 100 mcg IN** – may repeat once after 3 minutes, hold for SBP < 90



ORANGE COUNTY EMERGENCY MEDICAL SERVICES

Prehospital Standing Orders / Treatment Guidelines

SNAKE ENVENOMATION - Adult / Adolescent

#: E-030

Page: 2 of 2

Original Date: 09/87

Revised: 06/18/2026

- ▶ **Morphine sulfate 5 mg (or 4 mg CARPUJECT™) IV / IM / IO** – may repeat once after 3 minutes, hold for SBP < 90
- ▶ **Ketamine 0.1 mg / kg IV** – may repeat once after 15 minutes, max single dose 10 mg
- ▶ **Ketamine 0.5 mg / kg IM** – may repeat once after 15 minutes, max single dose 50 mg
- ▶ **Ketamine 1 mg / kg IN** – once, max dose 100 mg

Transport Consideration

- ALS escort to nearest appropriate ERC identified by the **Base Hospital**.

Additional Considerations

- Past recommendations for use of tourniquet and keeping affected extremity below the level of the heart is no longer current due to increased risk of edema and subsequent circulatory compromise in the bite area.
- If envenomation involves a non-native / exotic species (i.e. snakes from Asia or Australia), consult the Base Hospital Physician, as specialized antivenin or alternative management may be needed.
- It is contraindicated to use Ketorolac for pain management due to life-threatening coagulopathy known as venom-induced consumptive coagulopathy.

Base Hospital

- Refer to the current “Antidote & CBRN Countermeasure Survey” to determine the closest ERC with immediate access to the antivenin Crotalidae Polyvalent Immune Fab (aka Crofab).

Cross References:

SO-BLS General BLS Standing Orders

SO-B-004 Snake Envenomation

M-015 Allergic Reaction / Anaphylaxis - Adult / Adolescent

SO-M-045 Shock (Symptomatic Hypotension)

SO-M-060 Nausea / Vomiting

PR-70 Ketamine Analgesia

PR-230 Preparation and Administration of Push Dose Epinephrine – Adult / Adolescent

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MEDICAL CHANGE LOG
For October 2026 Updates

M-005 Abdomen Pain – Adult/Adolescent

- BLS Interventions added:
 - Refer to SO-BLS.
 - Evaluate and treat for hypoglycemia per OCEMS Procedures B-050 and B-055.
 - NPO status.
- No change made to ALS interventions from previous standing orders.
- Additional notations were made to reinforce different causes of abdomen pain.
- Listed concerning elements from patient history to reinforce the need for ALS transport.

M-010 Diabetic Emergencies – Adult/Adolescent

- M-010 was originally just for Hyperglycemia.
- There was no separate guideline for Hypoglycemia other than the for Altered Mental Status.
- Combined the two diabetic conditions into this one treatment guideline.
- No change made to ALS interventions from previous standing orders.
- BLS intervention added:
 - Refer to SO-BLS.
 - Assess blood glucose and treat per SO-B-003.
- Added the notation in the Additional Considerations section to select 'Provision of Food' with the drop-down menu of the Procedures Tab on the ePCR.

M-015 Allergic Reaction – Adult/Adolescent

- BLS Interventions added:
 - Refer to SO-BLS.
 - Assist patients with the administration of their physician prescribed emergency devices and medications to include but not limited to bronchodilator inhaler/nebulizer or epinephrine device (autoinjector).
 - Remove the stinger / injection mechanism.
 - Ensure proper positioning for adequate ventilation and suction as needed.
- Allergic Reaction definition highlighting skin-based reaction & no airway involvement.
- Anaphylaxis definition highlighting acute onset of a systemic reaction involving two or more systems, any airway involvement, or unstable vital signs.
- Adding Diphenhydramine intervention to allergic reaction treatment.
- Allowing for BLS transport after Diphenhydramine intervention with skin-based reaction, stable, vital signs, and no history of anaphylaxis for "ADULT" patients only.



ORANGE COUNTY EMERGENCY MEDICAL SERVICES
Prehospital Standing Orders / Treatment Guidelines
ABDOMINAL EMERGENCIES, NON-TRAUMATIC
(Adult / Adolescent)

#: M-005
Page: 1 of 3
Orig. Date: 4/86
Revised: 06/09/2026

Notes/Definitions

Life threatening causes of abdominal pain include:

- Cardiac etiology: Myocardial Infarction (MI), ischemia
- Vascular: Abdominal Aortic Aneurysm (AAA), aortic dissection
- GI Bleeding
- Gynecology: ectopic pregnancy, placental disruption

Base Hospital Contact for Suspected AAA

BLS Interventions

- Refer to OCEMS General BLS Standing Orders SO-BLS.
- Evaluate and treat for hypoglycemia per OCEMS Procedures B-050 and B-055.
- NPO status.

ALS Interventions

- IV access if applicable.
- Cardiac monitoring.
- 12-lead ECG if applicable.
- Treat for hypotension (SBP $\leq$ 90) or signs of shock:
 - ▶ **Normal Saline 250 mL IV bolus** – may repeat up to 1 liter to maintain adequate perfusion.
- Treat for pain choosing one of the following to administer:
 - ▶ **Fentanyl 50 mcg IV / IM** – may repeat once after 3 minutes, hold for SBP < 90
 - ▶ **Fentanyl 100 mcg IN** – may repeat once after 3 minutes, hold for SBP < 90
 - ▶ **Morphine sulfate 5 mg (or 4 mg CARPUJECT™) IV / IM** – may repeat once after 3 minutes hold for SBP < 90
 - ▶ **Ketamine 0.1 mg / kg IV** – may repeat once after 15 minutes, max single dose 10 mg
 - ▶ **Ketamine 0.5 mg / kg IM** – may repeat once after 15 minutes, max single dose 50 mg
 - ▶ **Ketamine 1 mg / kg IN** – once, max dose 100 mg
 - ▶ **Ketorolac 15 mg IV / IM** – once
- Treat for nausea and vomiting if not suspected or known to be pregnant:
 - ▶ **Ondansetron (Zofran) 8 mg ODT** – once
 - ▶ **Ondansetron (Zofran) 4 mg IV** – may repeat once after 3 minutes

Transport Considerations

- Transport to the nearest ERC.
- BLS transport acceptable if patient is treated with Zofran only.
- Consider ALS transport if there are any concerning elements in patient history:
 - Hemodynamically unstable / Hypo-perfusion
 - Concurrent respiratory compromise

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ORANGE COUNTY EMERGENCY MEDICAL SERVICES
Prehospital Standing Orders / Treatment Guidelines
ABDOMINAL EMERGENCIES, NON-TRAUMATIC
(Adult / Adolescent)

#: M-005
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- Glasgow Coma Score ≤ 13
- Obvious hemorrhage
- Pulsatile abdominal mass
- Suspected ectopic pregnancy
- Recent trauma
- "Tearing" pain
- Coffee ground emesis
- Rectal bleeding
- Pregnancy
- Provider judgement that ALS transport is appropriate

- **BASE HOSPITAL CONTACT** required for patients suspected of AAA (see Guidelines below).

Additional Considerations

- Upper abdominal pain may be a form of angina, obtain 12-lead ECG if cardiac etiology suspected or risk factors present (age > 35, prior cardiac disease / MI, hypertension, diabetes).
- Signs of Abdominal Aortic Aneurysm (AAA) disruption include:
 - a. Sudden onset abdominal, back or flank pain
 - b. Shock (hypotension, poor skin signs)
 - c. Bradycardia or tachycardia
 - d. Pulsating mass, loss of distal pulses are not always observed
- Patients considered at risk of AAA disruption include:
 - a. Male
 - b. Age > 50 years
 - c. History of hypertension
 - d. Known AAA
 - e. Family history of AAA
 - f. Coronary artery disease or other vascular disease
- When considering pain medications:
 - a. Avoid Ketorolac for active peptic ulcer disease, recent GI bleed or perforation, renal disease, suspected AAA, or known/suspected pregnancy.
 - b. If suspected AAA and SBP < 90, consult base hospital physician for pain management.
 - c. Do not delay transport for IV access for suspected AAA.

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ORANGE COUNTY EMERGENCY MEDICAL SERVICES
Prehospital Standing Orders / Treatment Guidelines
ABDOMINAL EMERGENCIES, NON-TRAUMATIC
(Adult / Adolescent)

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Base Hospital

- If AAA suspected, patient should be routed to the nearest open Trauma Center.

Cross References:

SO-BLS General BLS Standing Orders
Procedure B-050 Administration of Oral Glucose
Procedure B-055 Glucometer (BLS Optional Equipment)
M-010 Diabetic Emergencies
SO-C-15 Chest Pain of Suspected Cardiac Origin or Suspected Angina Equivalent Symptoms
SO-M-45 Shock (Symptomatic Hypotension)
PR-70 Ketamine Analgesia
PR-075 Ketorolac for Patient Analgesia

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Notes/Definitions

- Consider hypoglycemia and check blood glucose for altered mental status, agitation, neurological deficits, seizure, weakness, diaphoresis, pallor.
- Diabetic Ketoacidosis (DKA) is a life-threatening complication of severe insulin deficiency
 - a. Symptoms: Polyuria, polydipsia, dehydration, vomiting, abdominal pain, fruity odor breath, altered mental status, Kussmaul breathing (deep, labored breathing pattern).

BLS Interventions

- Refer to OCEMS General BLS Standing Orders SO-BLS.
- Assess blood glucose and treat per OCEMS SO-B-003.
 - ▶ **Oral glucose** preparation, if airway reflexes are intact

ALS Interventions

- Assess blood glucose.
- Establish IV if applicable.
- If blood glucose < 60, treat hypoglycemia. If blood glucose 60-80, treat patient if symptomatic:
 - ▶ **Oral glucose** preparation, if airway reflexes are intact
 - ▶ **10% Dextrose 250 mL IV** - once, may titrate until symptoms improve
 - ▶ **Glucagon 1 mg IM** - once, if unable to establish IV
- If blood glucose ≥ 250 and symptomatic, consider DKA:
 - a. Administer high-flow oxygen by mask or nasal cannula at 6 L/min flow rate if tolerated.
 - b. Cardiac monitoring.
 - c. Establish IV and administer:
 - ▶ **Normal Saline 250 mL IV bolus** – may repeat up to 1 liter to maintain adequate perfusion
 - d. EtCO₂ monitoring.
- Treat for nausea or vomiting if not suspected or known to be pregnant:
 - ▶ **Ondansetron (Zofran) 8 mg ODT** - once
 - ▶ **Ondansetron (Zofran) 4 mg IV** – may repeat once after 3 minutes

Transport Considerations

- If mental status, vital signs, pulse oximetry are normal AND:
 - a. Glucose ≤ 250 with no other complaint requiring ALS intervention/transport, may transport BLS.
 - b. Glucose ≥ 250 but ≤ 400 , with no other complaint requiring ALS intervention, may transport BLS (if no other co-morbidities exist).



- ALS transport if patient has history of:
 - Active cancer
 - Renal Failure
 - Liver disease
 - Immunosuppression
 - Active abdominal pain with vomiting
 - Congestive Heart Failure
 - Organ transplant
 - Frail elderly
- Glucose ≥ 250 and any of the following symptoms, transport ALS and consider DKA:
 - Confused/lethargic
 - Heart rate ≥ 130
 - Respiratory rate ≥ 26 and labored breathing
 - Fever
 - O₂ $\leq 94\%$
- Glucose ≥ 400 , transport ALS.

Additional Considerations

Hypoglycemia:

- IO access may be used for dextrose administration when patient is unconscious with blood glucose < 60 , unable to establish IV and there is no response to IM glucagon.
- Base hospital contact required for patients wanting to sign out AMA after treatment of hypoglycemia. If patients are not transported, they should be counseled to eat a high protein meal and call their primary care physician.
- If food was provided to patient be sure to select 'Provision of Food' within the drop-down menu of the Procedures Tab on the ePCR.
- For patients with a hypoglycemic episode, review the patient's medications for long-acting hypoglycemic agents (sulfonylureas ex.: glipizide, glyburide; meglitinides ex.: nateglinide, repaglinide). These medications increase the risk of recurrent hypoglycemic episodes.
- Glucagon is effective only if there are sufficient glycogen stores in the liver. Patients with low glycogen stores such as severe malnutrition, cirrhosis, or adrenal insufficiency may not respond to glucagon.

Hyperglycemia:

- Consider base hospital contact for additional IV NS boluses if hyperglycemic and no signs of fluid overload.
- Patients with prolonged and/or severe hyperglycemia are at risk for significant volume losses leading to dehydration and electrolyte abnormalities. Fluid resuscitation with Normal Saline is recommended until their glucose can be lowered with medications.
- EtCO₂: Patients in DKA exhibit low EtCO₂ levels, typically ≤ 24 with values ≤ 12 indicating severe acidosis.



ORANGE COUNTY EMERGENCY MEDICAL SERVICES

Prehospital Standing Orders / Treatment Guidelines

DIABETIC EMERGENCIES (Adult / Adolescent)

#: M-010

Page: 3 of 3

Orig. Date: 7/2019

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Base Hospital

Hyperglycemia:

- If no signs of fluid overload, may consider additional IV NS boluses.

Cross References:

SO-BLS General BLS Standing Orders
SO-B-003 Oral Glucose Administration
M-005 Abdominal Emergencies
SO-M-020 Altered Mental Status
SO-M-035 Respiratory Distress
SO-M-040 Seizure
SO-M-045 Shock
SO-M-050 Suspected Sepsis
SO-M-060 Nausea-Vomiting

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Notes/Definitions

- **Allergic Reaction:** A skin-based reaction to an allergen with normal vital signs, such as hives, itching, flushing/redness and no airway involvement.
- **Anaphylaxis:** Acute onset of a systemic reaction involving two or more systems, any airway involvement or unstable vital signs.
- Diphenhydramine and Albuterol do not treat anaphylaxis. For patients with anaphylaxis, Epinephrine administration is the priority. Diphenhydramine and Albuterol may be administered in addition to Epinephrine.
- If there is a history of anaphylaxis, relay in report.

Base Hospital Contact for Anaphylaxis

BLS Interventions

- Refer to OCEMS General BLS Standing Orders SO-BLS.
- Assist patients with the administration of their physician prescribed emergency devices and medications to include but not limited to bronchodilator inhaler / nebulizer or epinephrine device (autoinjector).
- Remove the stinger / injection mechanism.
- Ensure proper positioning for adequate ventilation and suction as needed.

ALS Interventions

- Cardiac monitoring if applicable.
- Capnography if applicable.
- Establish IV / IO if applicable.
- Allergic Reaction treatment:
 - ▶ **Diphenhydramine (Benadryl®) 50 mg IM - once**
*Do not administer if taken prior to arrival.
 - ▶ If $SPO_2 \leq 95\%$ apply **Oxygen** by mask (high flow) or nasal cannula (for nasal cannula provide 6 l/min flow rate) as tolerated.
 - Reassess VS and symptom severity. If patient is not improving or if airway involvement, consider treating as anaphylaxis.
- Anaphylaxis: Any combination of symptoms: skin-based allergic reaction, wheezing, stridor, hypoxia ($<95\%$), signs of poor perfusion, hypotension or delayed capillary refill, intra-oral swelling, or persistent GI symptoms (N/V/D or cramping), treat as follows:
 - ▶ **Epinephrine 0.5 mg IM** lateral thigh area (1 mg/1 mL concentration).
*Do not administer if Epinephrine Auto-injector administered prior to arrival.
 - ▶ **Oxygen** by mask (high flow) or nasal cannula (for nasal cannula provide 6 l/min flow rate) as tolerated.



- Treat for hypotension (SBP < 90) or signs of shock:
 - ▶ **Normal Saline 250 mL IV / IO bolus** – may repeat up to 1 liter to maintain adequate perfusion.
 - Treat for wheezing, stridor, or hypoxia (SPO2 ≤ 95%):
 - ▶ **Albuterol 6 ml (5 mg)** – continuous nebulization
 - After initial IM epinephrine given as above, if after 5 minutes hypotension, respiratory distress, or impending airway obstruction continues, give:
 - ▶ **Epinephrine 0.5 mg IM** lateral thigh area (1 mg / 1 mL concentration)
 - OR
 - ▶ **Epinephrine 0.3 mg IV / IO** (0.1 mg / 1 mL concentration)
 - ▶ **Diphenhydramine (Benadryl®) 50 mg IM / IV** - once
- *Do not administer if taken prior to arrival.

Transport Considerations

- Transport to the nearest ERC.
- **BASE HOSPITAL CONTACT** required for anaphylaxis.
- BLS transport acceptable for patients treated with diphenhydramine with skin-based reaction, stable vital signs, and no history of anaphylaxis.
- ALS escort required for patients with signs of angioedema, anaphylaxis, self-administration of epinephrine, or history of anaphylaxis.

Additional Considerations

- Epinephrine is the priority and first line treatment for anaphylaxis. Patients in severe anaphylaxis may require multiple doses of epinephrine. Early base hospital contact encouraged.
- Maximum dose of Diphenhydramine is 50 mg IM or IV. Diphenhydramine does not treat anaphylaxis and should only be given once other treatments are complete or in stable patients with discomfort for isolated hives.
- Wheezing caused by anaphylaxis should be treated with epinephrine prior to albuterol.

Base Hospital

- For impending airway obstruction or weak palpable pulse, consider:
 - ▶ **Epinephrine 0.3 mg IV / IO** (0.1 mg / 1 mL concentration)

Cross References:

SO-BLS General BLS Standing Orders

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Pediatric Allergic Reaction Change Log

For October 2026 updates

P-060 Allergic Reaction - Pediatric

- BLS Interventions added:
 - Refer to SO-BLS.
 - Assist patients with the administration of their physician prescribed emergency devices and medications to include but not limited to bronchodilator inhaler/nebulizer or epinephrine device (autoinjector).
 - Remove the stinger / injection mechanism.
 - Ensure proper positioning for adequate ventilation and suction as needed.
- Allergic Reaction definition highlighting skin-based reaction & no airway involvement.
- Anaphylaxis definition highlighting acute onset of a systemic reaction involving two or more systems, any airway involvement, or unstable vital signs.
- ALS Interventions added:
 - Assessment of PAT (pediatric assessment triangle).
 - When to use an ALS airway for when BLS airway management is not maintain adequate ventilation.
 - Use of EtCO₂
 - Adding Diphenhydramine intervention to allergic reaction treatment.
- Added a table showing normal vital signs by age under the additional considerations section.



Notes/Definitions

- **Allergic Reaction:** A skin-based reaction to an allergen with normal vital signs, such as hives, itching, flushing/redness and no airway involvement.
- **Anaphylaxis:** Acute onset of a systemic reaction involving two or more systems, any airway involvement or unstable vital signs.
- Diphenhydramine and Albuterol do not treat anaphylaxis. For patients with anaphylaxis, Epinephrine administration is the priority. Diphenhydramine and Albuterol may be administered in addition to Epinephrine.
- If there is a history of anaphylaxis, relay in report.

Base Hospital Contact for Anaphylaxis

BLS Interventions

- Refer to General BLS Standing Orders SO-BLS.
- Assist patients with the administration of their physician prescribed emergency devices and medications to include but not limited to bronchodilator inhaler / nebulizer or epinephrine device (autoinjector).
- Remove the stinger / injection mechanism.
- Ensure proper positioning for adequate ventilation and suction as needed.

ALS Interventions

- Assess Pediatric Assessment Triangle (PAT)
 - General appearance: tone, interactiveness, consolability, look / gaze, speech / cry
 - Work of breathing: retractions, nasal flaring, abnormal airway sounds, positioning
 - Circulation to skin: pallor, mottling, cyanosis
- When BLS airway management cannot maintain adequate ventilation or oxygenation and criteria met, consider:
 - Supraglottic airway insertion for ≥ 50 kg (PR-135)
 - Endotracheal intubation for > 36 kg (PR-030)
- Apply capnography (EtCO₂) as tolerated.
 - Maintain EtCO₂ between 35 and 45 mmHg
 - If EtCO₂ > 50 : ensure proper positioning for adequate ventilation and suction as needed.
 - If no improvement, initiate BVM.
- Obtain the patient's estimated weight utilizing an appropriate length-based resuscitation tape or age-based system.
- Initiate cardiac monitor as needed. Interpret, monitor, and document rhythm.

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- Assess GCS. Use pediatric GCS for patients age ≤ 2 years. Refer to Procedure B-002.

Allergic Reaction treatment:

- ▶ **Diphenhydramine (Benadryl®) 1 mg / kg IM** - once (max dose 50 mg).

*Do not administer if taken prior to arrival.

- Reassess VS and symptom severity. If patient is not improving or if airway involvement, consider treating as anaphylaxis.

Anaphylaxis: Any one of the following symptoms: wheezing, stridor, hypoxia ($< 95\%$), signs of poor perfusion, hypotension, delayed capillary refill, or intra-oral swelling. **-OR-**

Any combination of the following symptoms: skin-based allergic reaction and persistent GI symptoms (nausea, vomiting, diarrhea, or cramping), treat as follows:

- ▶ **Epinephrine 0.01 mg / kg IM** lateral thigh (1 mg / mL concentration) (max dose 0.5 mg).

- ▶ If SPO₂ $< 95\%$ apply **Oxygen** by mask (high flow) or nasal cannula (for nasal cannula provide 6 L / min flow rate) as tolerated.

- Treat for wheezing, administer:

- ▶ **Albuterol 6 mL (5 mg)** continuous nebulization for ages 31 days and older.

OR

- ▶ **Albuterol 3 mL (2.5 mg)** continuous nebulization for ages 0 – 30 days.

- Treat for hypotension (refer to Vital Sign table below):

- ▶ **Normal Saline 20 mL / kg IV / IO** (max dose 250 mL) – may repeat same dose twice for total of 3 boluses.

- If symptoms persist after patient self-administered EpiPen or 5 minutes after initial IM epinephrine, administer:

- ▶ **Epinephrine 0.01 mg / kg IM** (1 mg / mL concentration) (max dose 0.5 mg).

- For weak or absent palpable pulse, lack of response to fluid boluses or IM Epinephrine, and/or impending airway obstruction, consider:

- ▶ **Epinephrine 0.01 mg / kg IV / IO** (1 mg / 10 mL concentration) (max dose 0.3 mg)

- ▶ **Diphenhydramine 1 mg / kg IM / IV** - once (max dose 50 mg).

*Do not administer if taken prior to arrival.

Transport Considerations

- ALS transport to the nearest ERC.
- Base Hospital Contact required (CCERC Preferred)** for anaphylaxis symptoms, self-



administration of Epi-Pen, abnormal PAT, no response to treatment, or if status worsens for any of the above conditions.

Additional Considerations

- Intraoral swelling can present as hoarse voice or swelling to tongue, lips or mouth, uvula or soft palate.
- Epinephrine is the priority and first line treatment for anaphylaxis. Patients in severe anaphylaxis may require multiple doses of epinephrine. Early base hospital contact encouraged.
- Maximum dose of Diphenhydramine is 50 mg IM or IV. Diphenhydramine does not treat anaphylaxis and should only be given once other treatments are complete or in stable patients with discomfort for isolated hives.
- Wheezing caused by anaphylaxis should be treated with epinephrine prior to albuterol.

Pediatric Vital Signs by Age

Age	Pulse	Systolic Blood Pressure	Respiratory Rate
Neonate (0-30 days)	100-180	> 60	30-60
Infant (31 days - < 1 yr)	100-160	> 60	30-60
Toddler (1 yr - < 3 yrs)	90-150	> 70	24-40
Pre-school (3 yrs - < 5 yrs)	80-140	> 75	22-34
School Aged (5 yrs - < 10 yrs)	70-120	> 80	18-30
Teen (≥ 10 yrs)	60-100	> 90	12-16

Base Hospital Considerations

- For impending airway obstruction or weak palpable pulse, consider:
 - ▶ **Epinephrine 0.01 mg / kg IV / IO** (0.1 mg / 1 mL concentration) (max dose 0.3 mg)

Cross References:

SO-BLS General BLS Standing Orders

BLS Procedure B-002 (Glasgow Coma Scale Score)

SO-P-080 Shock (Symptomatic Hypotension) - Pediatric

SO-FR-004 Oropharyngeal Airway (OPA)

SO-FR-005 Nasopharyngeal Airway (NPA)

ALS Procedure PR-030 Endotracheal Intubation (including EtCO₂)

ALS Procedure PR-135 Supraglottic Airway Device Placement – Adult / Adolescent

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Pediatric Altered Mental Status Change Log

For October 2026 updates

P-065 Altered Mental Status - Pediatric

- Updated language for capnography, EtCO₂, and VS parameters to treat with fluids to match what is in print on the Pediatric Stroke Treatment Guideline.
- Added line about hypoglycemia (see document).
- Added line to determine if meets stroke criteria (see document).
- Potential causes & considerations added (see document).



Notes/Definitions

- Hypoglycemia in pediatrics is a significant emergency.
- Potential causes for Altered Level of Consciousness (ALOC) in pediatric patients may include: seizure, stroke, hypoglycemia, hyperglycemia, overdose / ingestion, trauma, and shock.

Base Hospital Contact Required

BLS Interventions

- Refer to OCEMS General BLS Standing Orders SO-BLS.

ALS Interventions

- Assess Pediatric Assessment Triangle (PAT)
 - General appearance: tone, interactiveness, consolability, look / gaze, speech / cry
 - Work of breathing: retractions, nasal flaring, abnormal airway sounds, positioning
 - Circulation to skin: pallor, mottling, cyanosis
- When BLS airway management cannot maintain adequate ventilation or oxygenation and criteria met, consider:
 - Supraglottic airway insertion for ≥ 50 kg (PR-135)
 - Endotracheal intubation for > 36 kg (PR-030)
- Apply capnography (EtCO₂) as tolerated.
 - Maintain EtCO₂ between 35 and 45 mmHg
 - If EtCO₂ > 50 : ensure proper positioning for adequate ventilation and suction as needed.
 - If no improvement, initiate BVM.
- Obtain the patient's estimated weight utilizing an appropriate length-based resuscitation tape or age-based system.
- Initiate cardiac monitor as needed. Interpret, monitor, and document rhythm.
- Obtain IV / IO access if applicable.
- If blood glucose < 60 , administer one of the following:
 - ▶ **Glucagon 0.5 mg IM** - once
 - ▶ **10% Dextrose 5 mL / kg IV / IO** (maximum dose 250 mL)
*avoid oral glucose due to high aspiration risk
- Assess GCS. Use pediatric GCS for patients aged ≤ 2 years (Refer to B-002).
- If hypotensive (refer to Vital Sign table below), administer:
 - ▶ **Normal Saline 20 mL / kg IV / IO** (maximum dose 250 mL).
 - For continued hypotension, may repeat the same dose twice for total of three boluses.

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- If narcotic toxicity is suspected with respiratory depression, bradypnea, and / or pinpoint pupils, administer:
 - ▶ **Naloxone (Narcan ®)**
 - **0.1 mg / kg IN or IM** (maximum 1 mg), may repeat every 3 minutes
 - **0.1 mg / kg IV** (maximum 1 mg), may repeat every 3 minutes
 - **4 mg / 0.1 mL** preloaded nasal spray IN, may repeat every 3 minutes
- Determine if patient meets pediatric stroke criteria (refer to OCEMS Treatment Guideline P-115).
- If a seizure is suspected, refer to OCEMS Treatment Guideline P-075.

Transport Consideration

- **Base Hospital Contact** required (CCERC preferred).
- ALS escort to nearest open ERC (or as directed by Base Hospital).

Additional Considerations

- A seizure lasting longer than 5 minutes or multiple seizures without recovery or return to normal mental status between episodes is considered status epilepticus and is a neurological emergency.
- Not all pediatric seizure patients will present with tonic-clonic seizure activity. Subclinical seizure may present as abnormal vital signs, gaze deviation, and clenched jaw.
 - Abnormal vital signs include: hypoventilation (shallow and/or slow respirations for age), tachycardia for age, and hypoxia.
- Avoid use of oral glucose as material placed in mouth may be aspirated if recurrent seizure occurs.
- Post-ictal patients with a low GCS (<9) need careful airway monitoring.
- Simple Febrile Seizures:
 - Ages 6 months to 5 years with fever and seizure activity and typically present as generalized tonic-clonic seizure.
 - These seizures are due to a sudden rise in body temperature that disrupts normal brain activity.
 - A febrile seizure becomes a neurological emergency if the seizure meets the status epilepticus definition. These patients should be directed to a CCERC.

Pediatric Vital Signs by Age

Age	Pulse	Systolic Blood Pressure	Respiratory Rate
Neonate (0-30 days)	100-180	> 60	30-60
Infant (31 days - < 1 yr)	100-160	> 60	30-60
Toddler (1 yr - < 3 yrs)	90-150	> 70	24-40
Pre-school (3 yrs - < 5 yrs)	80-140	> 75	22-34
School Aged (5 yrs - < 10 yrs)	70-120	> 80	18-30
Teen (≥ 10 yrs)	60-100	> 90	12-16

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Base Hospital

- Diabetic ketoacidosis can present as altered mental status in the pediatric population, if suspected order a Normal Saline bolus once.
- There are multiple potential causes for altered mental status in children, consider these potential etiologies in the field setting:
 - Hypoxia
 - Hypoglycemia
 - Occult injury (particularly closed head injury)
 - Sepsis with poor cerebral perfusion
 - Poisoning (medications or other toxins)
 - Anaphylaxis with poor cerebral perfusion
 - Carbon monoxide toxicity
 - Hypovolemia due to fluid loss (such as vomiting / diarrhea)
 - Seizure, atypical
 - Meningitis / encephalitis

Cross References:

SO-BLS General BLS Standing Orders

BLS Procedure B-002 (Glasgow/Coma Scale Score)

P-075 Pediatric Seizure

P-115 Pediatric Stroke

ALS Procedure PR-030 Endotracheal Intubation (including EtCO₂)

ALS Procedure PR-135 Supraglottic Airway Device Placement – Adult/Adolescent

Pediatric Seizure Change Log

For October 2026 updates

P-075 Seizure - Pediatric

- BLS interventions added:
 - Refer to SO-BLS.
 - Turn to side, protect airway, and suction when possible.
- Added line to determine if meets stroke criteria (see document).
- Added line for "a first time, non-febrile seizure in any age and for any duration is considered a neurological emergency and should be transported to a CCERC."
- Added definition for simple febrile seizures (see document).



Notes:

- A first time, non-febrile seizure in any age and for any duration is considered a neurological emergency and should be transported to a CCERC.
- Not all pediatric seizures will present with tonic-clonic activity. Assess for and treat subclinical seizure activity:
 - Abnormal vital signs: hypoventilation (elevated EtCO₂, shallow or slow respirations for age), tachycardia, hypoxia.
 - Gaze deviation: both eyes with a fixed gaze, may be straightforward or to one-side, with inability to track.
 - Clenched jaw
 - Focal twitching
 - Lip smacking
 - No response to tactile or verbal stimuli

Base Hospital Contact Required

BLS Interventions

- Refer to OCEMS General BLS Standing Orders SO-BLS.
- Turn to side, protect airway, and suction when possible.

ALS Interventions

- Assess Pediatric Assessment Triangle (PAT)
 - General appearance: tone, interactivity, consolability, look / gaze, speech / cry
 - Work of breathing: retractions, nasal flaring, abnormal airway sounds, positioning
 - Circulation to skin: pallor, mottling, cyanosis
- When BLS airway management cannot maintain adequate ventilation or oxygenation and criteria met, consider:
 - Supraglottic airway insertion for ≥ 50 kg (PR-135)
 - Endotracheal intubation for > 36 kg (PR-030)
- Apply capnography (EtCO₂) as tolerated.
 - Maintain EtCO₂ between 35 and 45 mmHg
 - If EtCO₂ > 50 : ensure proper positioning for adequate ventilation and suction as needed.
 - If no improvement, place an airway adjunct and initiate BVM.
- Obtain the patient's estimated weight utilizing an appropriate length-based resuscitation tape or age-based system.

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- For ongoing seizures or recurrent intermittent seizure activity without return of consciousness:
 - ▶ **Midazolam 0.2 mg / kg IM** (maximum dose 10 mg).
 - If unable to administer IM or if IV / IO present, administer:
 - ▶ **Midazolam 0.1 mg / kg IN / IV / IO** (maximum dose 5 mg).
 - May repeat IN/IV/IO dose once after 3 minutes.
 - If initial dose is given IM, all subsequent doses must come from the Base Hospital Physician.
- Initiate cardiac monitor as needed. Interpret, monitor, and document rhythm.
- Obtain blood glucose and document finding.
- If blood glucose < 60, administer one of the following:
 - ▶ **Glucagon 0.5 mg IM** - once
 - ▶ **10% Dextrose 5 mL / kg IV / IO** (maximum dose 250 mL)
- Consider IV / IO access. If hypotensive (refer to Vital Sign table below), administer:
 - ▶ **Normal Saline 20 mL / kg IV / IO** (maximum dose 250 mL).
 - For continued hypotension, may repeat the same dose twice for total of three boluses.
- Assess GCS. Use pediatric GCS for patients aged ≤ 2 years (Refer to B-002).
- Determine if patient meets pediatric stroke criteria (refer to OCEMS P-115).

Transport Consideration

- **Base Hospital Contact required** (CCERC preferred) for all transported and non-transported pediatric seizures.
- ALS escort to CCERC for patients meeting status epilepticus or other neurological emergencies not associated with trauma (i.e. pediatric stroke).
- ALS escort to nearest open ERC (or as directed by Base Hospital).

Additional Considerations

- Avoid use of oral glucose as material placed in mouth may be aspirated if recurrent seizure occurs.
- Post-ictal patients with a low GCS (<9) need careful airway monitoring.
- Simple Febrile Seizures:
 - Ages 6 months to 5 years with fever and seizure activity that typically present as generalized tonic-clonic seizure.
 - These seizures are due to a sudden rise in body temperature that disrupts normal brain activity.
 - A febrile seizure becomes a neurological emergency if the seizure meets the status epilepticus definition. These patients should be directed to a CCERC.

**SEIZURE / CONVULSION - PEDIATRIC**

- Status Epilepticus:
 - A seizure lasting more than 5 minutes or more than one seizure without full recovery of consciousness between them. This is a neurological emergency.
- Petit Mal Seizures / Absence Seizures:
 - Brief, sudden lapse in consciousness.
 - May have associated eye fluttering / blinking or other non-purposeful movement.
- Potential Causes:
 - Neurologic: epilepsy, brain tumor, hemorrhagic or ischemic stroke, head trauma, aneurysms, and non-accidental trauma.
 - Other: hypoglycemia, electrolyte abnormalities, toxic ingestion, infection.

Pediatric Vital Signs by Age

Age	Pulse	Systolic Blood Pressure	Respiratory Rate
Neonate (0-30 days)	100-180	> 60	30-60
Infant (31 days - < 1 yr)	100-160	> 60	30-60
Toddler (1 yr - < 3 yrs)	90-150	> 70	24-40
Pre-school (3 yrs - < 5 yrs)	80-140	> 75	22-34
School Aged (5 yrs - < 10 yrs)	70-120	> 80	18-30
Teen (≥ 10 yrs)	60-100	> 90	12-16

Base Hospital

- If initial dose of Midazolam given IM, all subsequent doses must come from a Base Physician.
- Patients exhibiting status epilepticus or other neurological emergencies not associated with trauma (i.e. stroke) should be directed to a CCERC.

Cross References:

SO-BLS General BLS Standing Orders

BLS Procedure B-002 Glasgow Coma Scale (Score)

P-015 General Injury and Trauma - Pediatric

P-065 Altered Mental Status - Pediatric

P-115 Suspected Acute Stroke or Intracranial Hemorrhage - Pediatric

SO-FR-004 Oropharyngeal Airway (OPA)

SO-FR-005 Nasopharyngeal Airway (NPA)

ALS Procedure PR-030 Endotracheal Intubation (including EtCO₂)

ALS Procedure PR-135 Supraglottic Airway Device Placement – Adult/Adolescent

Policy 310.31 Trauma Triage Algorithm

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Pediatric Stroke Change Log For October 2026 updates

P-115 Suspected Acute Stroke or Intracranial Hemorrhage - Pediatric

- Brand new guideline
- Wording within the guideline would exclude simple febrile seizures
- Trying to catch first-time seizure pediatric patients



ORANGE COUNTY EMERGENCY MEDICAL SERVICES

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SUSPECTED ACUTE STROKE OR INTRACRANIAL HEMORRHAGE - PEDIATRIC

#: P-115

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Original Date: 05/01/2026

Revised:

Notes/Definitions:

- A first time, non-febrile seizure in any age and for any duration is considered a neurological emergency and should be transported to a CCERC.
 - **Ischemic Stroke Suspected:**
 - Last seen at usual neurological baseline within the past 24 hours AND one or more of the following new onset neurologic signs:
 - Asymmetric weakness affecting one side of the body in the upper extremity, lower extremity, or both
 - Facial weakness or droop on one side
 - Loss of speech in previously verbal child
 - Responds to verbal or visual stimuli inappropriately for baseline mentation
 - New onset seizure activity that does not meet simple febrile seizure criteria (refer to SO-P-75).
 - **Intracranial Hemorrhage Suspected:**
 - Sudden, severe headache with onset in past 24 hours AND one or more of the following:
 - Vomiting (repeated)
 - Neurological deficit (hemi-paresis or weakness, new vision loss, gait problem, or asymmetric pupils without prior eye surgery)
 - Altered mental status (AMS) or lethargy
 - New onset seizure activity that does not meet simple febrile seizure criteria (refer to SO-P-75)
- OR**
- Unable to obtain history of severe headache due to AMS or age AND one or more of the following:
 - Neurological deficit (hemi-paresis or weakness, new vision loss, gait problem, asymmetric pupils without prior eye surgery)
 - New onset seizure activity that does not meet simple febrile seizure criteria (refer to SO-P-75).

Base Hospital Contact Required

BLS Interventions

- Refer to OCEMS General BLS Standing Orders SO-BLS.
- Do not give fluid or solids orally (may be risk for aspiration).

ALS Interventions

- Assess Pediatric Assessment Triangle (PAT)
 - General appearance: tone, interactivity, consolability, look / gaze, speech / cry
 - Work of breathing: retractions, nasal flaring, abnormal airway sounds, positioning
 - Circulation to skin: pallor, mottling, cyanosis

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SUSPECTED ACUTE STROKE OR INTRACRANIAL HEMORRHAGE - PEDIATRIC

#: P-115

Page: 2 of 3

Original Date: 05/01/2026

Revised:

- When BLS airway management cannot maintain adequate ventilation or oxygenation and criteria met, consider:
 - Supraglottic airway insertion for ≥ 50 kg (PR-135)
 - Endotracheal intubation for > 36 kg (PR-030)
- Apply capnography (EtCO₂) as tolerated.
 - Maintain EtCO₂ between 35 and 45 mmHg
 - If EtCO₂ > 50 : ensure proper positioning for adequate ventilation and suction as needed.
 - If no improvement, initiate BVM.
- Obtain the patient's estimated weight utilizing an appropriate length-based resuscitation tape or age-based system.
- For ongoing seizure activity, administer:
 - ▶ **Midazolam 0.2 mg / kg IM** (maximum dose 10 mg).
 - If unable to administer IM or if IV / IO present, administer:
 - ▶ **Midazolam 0.1 mg / kg IN / IV / IO** (maximum dose 5 mg).
 - May repeat IN/IV/IO dose once after 3 minutes.
 - If initial dose is given IM, all subsequent doses must come from the Base Hospital Physician.
- Initiate cardiac monitor as needed. Interpret, monitor, and document rhythm.
- Consider IV / IO access. If hypotensive (refer to Vital Sign table below), administer:
 - ▶ **Normal Saline 20 mL / kg IV / IO** (maximum dose 250 mL).
 - For continued hypotension, may repeat the same dose twice for total of three boluses.
- If hypoglycemic, administer one of the following:
 - ▶ **Glucagon 0.5 mg IM** - once
 - ▶ **10% Dextrose 5 mL / kg IV / IO** (maximum dose 250 mL)
- Assess GCS. Use pediatric GCS for patients aged ≤ 2 years (Refer to B-002).

Transport Consideration

- **Base Hospital Contact** required (CCERC preferred).
- ALS escort to nearest open CCERC.

Additional Considerations

- Refrain from IO and EJ access, if possible, in potential stroke patients due to potential for thrombolytic use. However, these may be used if there are no other options.
- Keep head of bed flat, unless increased ICP is suspected.
- Suspected pediatric stroke patients should be sent to a CCERC regardless of improvement of symptoms or improvement after treating hypoglycemia.

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#: P-115

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Original Date: 05/01/2026

Revised:

- Document the “last known well” time or onset of time of stroke symptoms reported by patient, family, or bystanders. Attempt to get the contact phone number of family or witness to allow receiving CCERC to verify the last known well time.
- Pediatric stroke symptoms can wax and wane. Take the verbalized history into account when triaging.
- Risk factors to consider include the following: history of congenital heart disease, coagulopathy, sickle cell disease, malignancy, autoimmune disorders, down syndrome, acute systemic illness (fever, viral illness, sepsis), head/neck trauma, and oral contraceptives.

Pediatric Vital Signs by Age

Age	Pulse	Systolic Blood Pressure	Respiratory Rate
Neonate (0-30 days)	100-180	> 60	30-60
Infant (31 days - < 1 yr)	100-160	> 60	30-60
Toddler (1 yr - < 3 yrs)	90-150	> 70	24-40
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Teen (≥ 10 yrs)	60-100	> 90	12-16

Base Hospital

- If initial dose of Midazolam given IM, all subsequent doses must come from a Base Physician.

Cross References:

SO-BLS General BLS Standing Orders

BLS Procedure B-002 (Glasgow Coma Scale Score)

P-065 Pediatric Altered Mental Status

P-075 Pediatric Seizure

ALS Procedure PR-030 Endotracheal Intubation (including EtCO₂)

ALS Procedure PR-135 Supraglottic Airway Device Placement – Adult/Adolescent

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