GD-097-PHS-EMS

Triage, Treatment and Transport Guidelines (T3G)

As Recommended by the Bureau of EMS and Trauma System

Arizona Department of Health Services

Updated and approved (minus the drug profiles) by MDC September 19, 2019. Clarification edits by Bureau January 15, 2020.

DISCLAIMER

These guidelines are designed to be a resource document for use by Medical Direction Authorities, as defined by A.R.S. § 36-2205, responsible for the administrative, organizational and on-line medical direction of pre-hospital Emergency Medical Care Technicians (EMCTs). It is specifically recognized that documented regional or local variations from the guidelines contained within are not only acceptable, but also appropriate, depending on the individual circumstances of the involved areas and organizations.

By Statute and Rule, all advanced life support pre-hospital EMCTs shall have administrative and on-line medical direction. These guidelines are not meant to act as a substitute, proxy or alternative to that medical direction. Any conflict between these guidelines and the EMCT's medical direction shall default to the Administrative or on-line medical direction.

These guidelines are deemed by the Bureau of EMS and Trauma System to be within the acceptable standard of medical care. It is specifically recognized that there are acceptable documented regional or local variations from these procedures and protocols, which may also satisfy the standard of care. This manual does NOT define, limit, expand, or otherwise purport to establish the legal standard of care.

HOW TO USE THESE GUIDELINES

These guidelines have been adapted from the National Association of State EMS Officials (NASEMSO) Model EMS Clinical Guidelines published online in January 2019. These algorithms include specific recommendations for evaluation and treatment.

Inclusion and exclusion patient criteria are listed under the title of each guideline.
The recommendations within each guideline are listed in order by provider level scope of practice. It is assumed that more advanced levels of EMCT will perform all recommended evaluations and treatments included in the preceding level of care.

STR stands for Special Training Required. "STR skill" means "Specialty Training Requirement skill," defined as a medical treatment, procedure, or technique or administration of a medication for which an EMCT needs specific training per R9-25-502. This includes oversight by administrative and online medical direction.

The guidelines include specific pediatric recommendations, highlighted by the EMS for Children bear logo, where specific pediatric recommendations differ from those for adults. It is assumed that children will receive the evaluation and care recommended for all patients, unless specific pediatric recommendations are included in the algorithm.

A pediatric patient is defined as age less than 15 years. Age 15 and above is considered an adult patient in regard to treatment guidelines.

The guidelines include specific energy/shock recommendations for cardioversion and defibrillation highlighted by the lighting bolt symbol.

The Universal Care treatment guideline should be applied to all patient encounters, and encompasses both adult and pediatric patients. All initial patient care is included in this guideline to reduce the need for extensive reiteration of basic assessment and other considerations in every guideline.

On-line medical direction may be utilized at any time during the patient encounter per local protocols.

The appendix contains additional reference material applicable to these guidelines, such as burn assessment and neurologic assessment tools.

The NASEMSO model guidelines include additional information that medical direction authorities may find helpful for education, training, and quality improvement activities, including patient safety considerations, educational pearls, performance measures, and literature references:
https://nasemso.org/wp-content/uploads/National-Model-EMS-Clinical-Guidelines-2017-PDF-Version-2.2.pdf
Version 2.2 Updated January 5, 2019.

"TOC" = Table of Contents

Universal Care: Adult & Pediatric (2 pages)

These general recommendations apply to all patient encounters. Patient care goals are to facilitate appropriate initial assessment and manage treatment of any EMS patient.

EMT

- Assess scene safety
- Use appropriate personal protective equipment (PPE)
- Determine number of patients
- Determine need for formal triage and additional resources
- Determine mechanism of injury
- Determine SMR needs

- It is preferable for minors to have a parent or legal guardian who can provide consent for treatment on behalf of the child; however, EMS providers may provide emergency treatment when a parent is not available to provide consent.
- Use commercially available tool for weight estimate

Primary Survey (Airway, Breathing, Circulation, Disability, Exposure)

- Open airway as indicated
  - Consider position, suction, and use of airway adjuncts as indicated
- Administer oxygen as appropriate
- Assess circulatory status
  - Control any major external bleeding & Initiate chest compressions as indicated
- Evaluate patient responsiveness: AVPU/GCS
- Evaluate gross motor and sensory function in all extremities
- Expose patient as appropriate to the chief complaint

Secondary Survey

- Obtain baseline vital signs
- Assess blood glucose as indicated
- OPQRST history
- SAMPLE history
- Check temperature as indicated, treat environmental hyperthermia/hypothermia

Ongoing Reassessment

- Proceed to the appropriate guideline as indicated
- Determine need for transport, resources available, and location of most appropriate destination - transport as indicated
- Reassess chief complaint, assessment findings, and response to treatment
- Assess vital signs at least every 5 minutes for unstable patients; every 15 minutes for stable

AEMT

- Consider appropriate airway management adjuncts. $EtCO_2$ monitoring should be performed after placement of any supraglottic or advanced airway.
- IV/IO access as indicated
- Initiate IV fluids as indicated

- Use commercially available tool for medication dosing and equipment size selection.

EMT-I/Paramedic

- Consider appropriate airway management adjuncts, escalate as indicated.
- 12-lead ECG should be performed early, where available, in patients with suspected cardiac complaints, goal within 5 minutes of patient contact.
- In patients with cardiac or respiratory complaints:
  - Continuous cardiac monitoring
  - Consider waveform capnography ($EtCO_2$) in addition to pulse oximetry (SaO_2)

Pediatric Assessment Triangle

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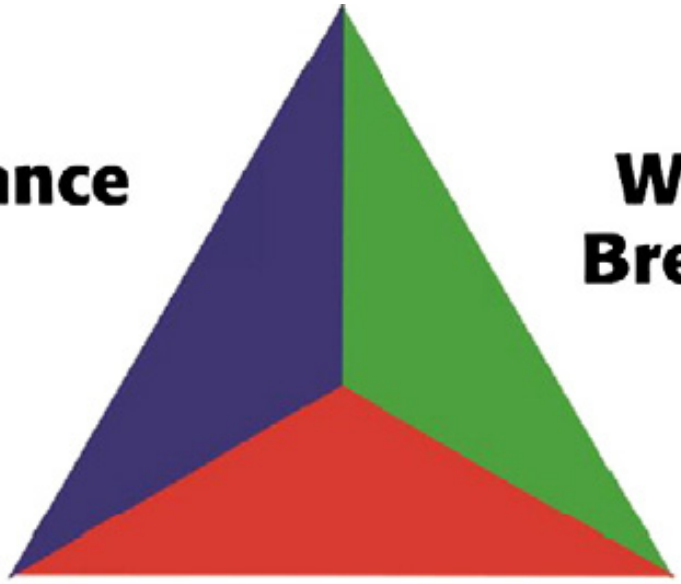

Appearance

Abnormal Tone
↓ Interactiveness
↓ Consolability
Abnormal Look/Gaze
Abnormal Speech/Cry

Work of Breathing

Abnormal Sounds
Abnormal Position
Retractions
Flaring
Apnea/Gasping

Circulation to Skin

Pallor
Mottling
Cyanosis

Functional Needs: Adult & Pediatric

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Includes: Patients with physical, sensory, mental health, and cognitive and/or intellectual disabilities affecting their ability to function independently without assistance.

EMT

- Identify the functional need by means of information from the patient, the patient's family, bystanders, medic alert bracelets or documents, or the patient's adjunct assistance devices
- The physical examination should not be intentionally cut short, although the manner in which the exam is performed may need to be modified to accommodate the specific needs of the patient
- Medical care should not intentionally be reduced or abbreviated during the triage, treatment and transport of patients with functional needs, although the manner in which the care is provided may need to be modified to accommodate the specific needs of the patient

- For patients with communication barriers (language or sensory), it may be desirable to obtain secondary confirmation of pertinent data (e.g. allergies) from the patient's family, interpreters, or written or electronic medical records.
- The family members can be an excellent source of information and the presence of a family member can have a calming influence on some of these patients
- Transport patients with all assistance adjuncts and service animals if feasible

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Patient Refusals: Adult & Pediatric

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If an individual (or the parent or legal guardian of the individual) declines or refuses secondary care and/or ambulance transport to a hospital after EMS providers have been called to the scene, providers should determine the decision maker's capacity to make medical decisions.

Decision-Making Capacity

An individual who is alert, oriented, and has the ability to understand the circumstances surrounding his/her illness or impairment, as well as the possible risks associated with refusing treatment and/or transport, typically is considered to have decision-making capacity. Decision-making capacity should be demonstrated and documented as defined by the presence of all 4 criteria. The patient must be able to:

- Receive and comprehend information needed to make a decision,
- Process and deliberate a decision and its potential consequences,
- Make and articulate a decision that is consistent over time,
- Justify that decision with logic that fits the individual's own value system.

The individual's judgement must not be impaired by illness, injury, or clinically apparent drug/alcohol intoxication. GCS score must be normal (15).

Individuals who have attempted suicide, verbalized suicidal intent, or who otherwise exhibit indicators that lead EMS providers to reasonably suspect suicidal intent may not decline transport to a receiving facility. In addition, patients with court order for psychiatric care may not refuse care.

EMT

- EMS providers should make all reasonable efforts to avoid danger to themselves.
- Obtain a complete set of vital signs.
- Complete an initial assessment with particular attention to neurologic and mental status.
- Perform appropriate medical care with the consent of the individual.

- It is preferable for a minor to have a parent or legal guardian who can provide consent for treatment on behalf of the minor. However, EMS providers may provide emergency treatment when a parent is not available to provide consent.
- Parent or legal guardian must refuse care on behalf of a minor.
- Parents may not refuse care if abuse or neglect is suspected. Notify law enforcement as necessary to facilitate transport to the hospital.
- Emancipated minors must provide state-issued emancipated identification card.

- Individuals must be advised of the risks and consequences resulting from refusal of medical care.
- Assess the patient's understanding of the medical emergency: the possible medical problems, the proposed medical care, the benefits of medical care and risks of refusal.
- Contact on-line medical direction based on local protocol.
- Provider must document patient encounter.

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Abuse and Maltreatment: Adult & Pediatric

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Be aware of potential clues to abuse/maltreatment from caregivers, the general environment, and the patient's physical condition.

Recognize any act, or series of acts of commission or omission by a caregiver or person in a position of power over the patient, that results in harm, potential for harm, or threat of harm to a patient.

EMS role is to:

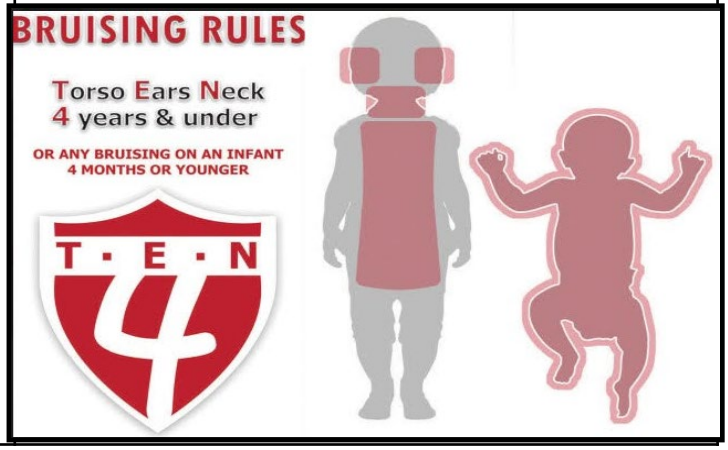
- Document concerns,
- Assess and stabilize potentially serious injuries,
- Disclose concerns to the appropriate authorities (hospital *and* law enforcement or state authorities).
- EMS personnel are mandatory reporters of any suspicion for abuse, maltreatment, neglect, or suspected human trafficking or sex trafficking of a minor per **A.R.S. §13-3620.A** and **A.R.S. §13-3212**
- Notify the following applicable entities:
  1. Law enforcement and one of the following:
     a. Arizona Department of Child Safety (**1-888-SOS-CHILD** (1-888-767-2445))
     b. Adult Protective Services Central Intake Unit (**1-877-SOS-ADULT** (1-877-767-2385)) https://www.azdes.gov/landingforms.aspx?form=13004
  2. A tribal law enforcement or social services agency for any Native American minor who resides on an Indian reservation

  NOTE: Reporting to hospital personnel *does not* qualify as having fulfilled the mandatory reporting requirement.
- Leave the investigation to law enforcement.

EMT

- **Primary survey**
  - Identify potentially life-threatening issues.
  - Refer to **General Trauma Management** as needed.
- **Secondary survey**
  - Assess physical issues, document any statements made spontaneously by patient, avoid extensive investigation of the specifics of abuse.
- Report concerns immediately about caregivers impeding your ability to assess/transport patient or refusing care for the patient.
- Attempt to preserve the evidence, but the overriding concern should be providing emergency care to the patient.

- Scenarios that call for a high index of suspicion for abuse in children include:
  - **Brief Resolved Unexplained Event (BRUE)**
  - Any bruising on a patient <4 months, or any bruising on the torso, ears, neck on a patient < 4 years.



Agitated or Violent Patient/Behavioral Emergency: Adult & Pediatric

Includes: patients who are exhibiting agitated, violent, or uncooperative behavior or who are a danger to self or others.

Excludes: patients exhibiting agitated or violent behavior due to medical conditions including, but not limited to:

- Acute head trauma.
- Metabolic disorders (e.g. hypoglycemia, hypoxia).

EMT

- Dispatch law enforcement immediately when necessary to secure and maintain scene safety. Do not attempt to enter scene before safety is ensured.
- Initiate **Universal Care**.
- Obtain blood glucose level (if possible).
- Attempt verbal reassurance and calm patient.
- Engage family members/loved ones to encourage patient cooperation if their presence does not exacerbate the patient's agitation.

- Consider physical restraints:
  Body:
  - Sheets can be used in addition to stretcher straps; place around the lower lumbar region, below buttocks, or around the thighs, knees and legs.
  - Do not apply restraints that restrict the patient's chest wall motion.

  Extremities:
  - Soft or leather restraints should not require key.
  - Restrain all four extremities to stationary frame of stretcher.

- Place stretcher in sitting position.
- If in police handcuffs, key must be in ambulance with patient at all times.

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- Apply cardiac monitor as soon as possible, particularly when chemical restraints have been administered.
- Utilize $EtCO_2$ if available for all patients receiving chemical restraints.
- Consider chemical restraints based upon patient's clinical condition; use caution as all these medications can cause respiratory depression/compromise. Time intervals for repeat dosing will vary; refer to specific drug profile.
- Benzodiazepines:
  - **Midazolam:** 5 mg IM/IN/IV/IO
    Max total dose 20 mg
  - **Lorazepam:** 2-4 mg IM or 2 mg IV/IO
    Max total dose 4 mg
- **Ketamine** (Paramedic only):
  - 4 mg/kg IM/IN, max initial dose of 250 mg
  - 2 mg/kg IV/IO, max initial dose 150 mg

- Chemical restraints should be a later consideration for pediatric patients. Call for medical direction.

- Consider chemical restraints based upon patient's clinical condition; use caution as all these medications can cause respiratory depression/compromise. Time intervals for repeat dosing will vary; refer to specific drug profile.
- Benzodiazepines:
  - **Midazolam:** 0.1-0.15 mg/kg IM or 0.05-0.1 mg/kg IV/IO or 0.3 mg/kg IN. Max initial dose 5 mg
  - **Lorazepam:** 0.05 mg/kg IM/IV/IO. Max initial dose 2 mg IV/IO and 4 mg IM

Management of Acute Pain: Adult & Pediatric

Assess pain as part of general patient care in children and adults. Consider all patients as candidates for management of acute pain, regardless of transport interval.

Caution: Multi-system trauma patients.

Excludes:
- Hypotension for age
- SaO_2 < 90%
- Hypoventilation
- Allergy to morphine or fentanyl
- Active labor

EMT

- Initiate **Universal Care**.
- Use an age-appropriate pain scale to assess pain, such as Numeric Rating Scale.
- If available, consider use of non-pharmaceutical pain management techniques:
  - Place patient in position of comfort, while adhering to safe transport recommendations.
  - Apply ice packs and/or splints.
  - Verbal reassurance (will lower anxiety).
- Apply a pulse oximeter and administer oxygen as needed to maintain $SaO_2 \geq$ 94%.

Use an age-appropriate pain scale to assess pain:
- Age < 4 years: Consider using an observational scale such as FLACC (face, legs, activity, cry consolability) or CHEOPS (Children's Hospital of Eastern Ontario Pain Scale).
- Age 4-12 years: Consider using a self-report scale such as Faces Pain Scale-revised or Wong-Baker Faces.
- Age > 12 years: Consider using a self report scale such as Numeric Rating Scale.

AEMT

- **Morphine**: 0.1 mg/kg/dose IV/IO, max 2-5 mg increments, max total dose 15 mg.
- Reassess pain every 5 minutes.
- Evidence of serious adverse effects should preclude further morphine administration.
- If still in significant pain, re-dose at the original dose.
- Additional analgesics per local protocol.
- Reassess pain every 5 minutes, observe for adverse effects, and re-dose as above.

EMT-I/Paramedic

- **Fentanyl**: 1 mcg/kg/dose IN/IV/IO, max initial dose 100 mcg, max total dose 200 mcg.
- **Ketamine** (Paramedic only): 0.25 mg/kg IV/IO, max per dose 25 mg, max total dose 100 mg.

- Consider intranasal route for medication if available.
- **Fentanyl**: 1 mcg/kg/dose IN/IV/IO, max initial dose 100 mcg, max total dose 200 mcg.

Syncope and Presyncope: Adult & Pediatric

Includes: patients presenting with both abrupt loss of consciousness and loss of postural tone. Presyncope or prodromal symptoms may be described as "nearly blacking out" or "nearly fainting" and should be considered to have the same or similar risk for significant illness as any patient who has lost consciousness.

Excludes:
- Patients with trauma – refer to **Traumatic Brain Injury (EPIC-TBI).**
- Patients with ongoing mental status changes or coma should be treated per the **Altered Mental Status**.
- Evidence of other alternate etiology. Refer to appropriate guideline: **Seizures**, **Suspected Stroke**, **Hypoglycemia**.

EMT

- Initiate **Universal Care.**
- Assess blood glucose, refer to **Hypoglycemia** as indicated.

AEMT

- If symptoms of poor perfusion, give 500 mL IV/IO fluid bolus, and repeat as necessary. Max 30 ml/kg. Titrate to SBP > 90.
- Refer to **Shock** as needed.

- If symptoms of poor perfusion, give 20 mL/kg IV/IO fluid bolus, repeat as needed. Titrate to age appropriate SBP (**Abnormal Vital Signs**) **using push-pull methods.**
- Refer to **Shock** as needed.

EMT-I/Paramedic

- Place on cardiac monitor – treat arrhythmias if present.
  - **Bradycardia**
  - **Tachycardia with a Pulse**
  - **Cardiac Arrest (VF/VT/Asystole/PEA): Age 8 and Older** or **Cardiac Arrest (VF/VT/Asystole/PEA): Pediatric Age < 8**
- Perform 12-lead ECG.

Chest Pain/Acute Coronary Syndrome/ST-segment Elevation Myocardial Infarction (STEMI): Adult

Includes: patients with non traumatic chest pain or anginal equivalents. This includes discomfort in the arm, jaw, or epigastric region of suspected cardiac origin, shortness of breath, sweating, nausea, vomiting, and dizziness. Atypical or unusual symptoms are more common in women, the elderly and diabetic patients. Patients may also present with CHF, syncope, and/or shock.

Caution: do not give **Nitroglycerin** to any patient who has taken PDE5-inhibitor medication (sildenafil, tadalafil) for erectile dysfunction or pulmonary hypertension within 24-48 hours.

EMT

- Initiate **Universal Care**.
- If short of breath, hypoxic, or with obvious signs of heart failure, administer oxygen and titrate to SaO_2 of ≥ 94%
- Administer **Aspirin** 325 mg PO or 325 mg chewed.
- Assist patient in self-administration of **Nitroglycerin** 0.4 mg tablets or spray if prescribed to patient and SBP > 100 mm Hg.
  - Repeat every 3-5 minutes x 2, until pain resolves, as blood pressure allows.
  - Contraindicated with erectile dysfunction medication (sildenafil, tadalafil) within 24-48 hours.

AEMT

- Administer **Nitroglycerin** 0.4 mg SL tablets or 1 full spray if SBP > 100 mm Hg.
  - May repeat every 3-5 minutes x 2, until pain resolves, as blood pressure allows.
  - Contraindicated with erectile dysfunction medication within 24-48 hours.
- For STEMI only: consider treating chest pain unresponsive to nitrates.
  - **Morphine** 0.05 mg/kg/dose IV, max of single dose of 3 mg. May repeat in 10 minutes to a total max of 10 mg if pain unresolved, if blood pressure allows.
  - Morphine should be used with caution in unstable angina/non-STEMI due to an association with increased mortality.

EMT-I/Paramedic

- Additional treatment option for STEMI chest pain unresponsive to nitrates:
  - **Fentanyl** 0.5 mcg/kg/dose IN/IV/IO, max total dose 200 mcg.
- Obtain 12 lead ECG and transmit, goal within 5 minutes of patient contact.
- Use caution administering nitroglycerin to patients that demonstrate inferior STEMI patterns (STE in II, II, aVF).
- Transport patient to **Cardiac Receiving or Referral Center** per local protocol or procedure
- Notify receiving facility immediately for STEMI.
- Transmit 12 lead ECG to receiving facility if possible.
- Performance of serial ECGs is recommended if not diagnostic or change in patient condition.

Bradycardia: Adult & Pediatric

Includes: Heart rate < 60 with either symptoms (altered mental status, chest pain, congestive heart failure, seizure, syncope, shock, pallor, diaphoresis) or evidence of hemodynamic instability.

EMT

- Initiate **Universal Care**.

- For age ≤ 6 months and heart rate <60 and signs of poor perfusion, initiate chest compressions and refer to **Cardiac Arrest (VF/VT/Asystole/PEA): Pediatric Age < 8**.

AEMT

- If signs of poor perfusion, give 500 mL IV/IO fluid bolus (unless signs of fluid overload). May repeat to maximum of 30 ml/kg.

- If signs of poor perfusion, give 20 mL/kg IV/IO fluid bolus (unless signs of fluid overload). May repeat as needed to a max 60 mL/kg.

EMT-I/Paramedic

- Place on cardiac monitor.
- Perform 12-lead ECG.

- If bradycardia and symptoms of hemodynamic instability continue, consider the following:
  - **Atropine Sulfate:** 0.5 mg IV/IO every 3-5 min, max total dose 3 mg.
  - **Epinephrine:**
    - Drip 0.02 - 0.2 mcg/kg/min.
    - Push Dose *** 10-20 mcg boluses (1-2 mL) every 2 minutes.

- If bradycardia and symptoms or hemodynamic instability continue, consider the following:
  - **Epinephrine*****: Push 1 mcg/kg (0.1 mL/kg), max single dose 10 mcg (1 mL) every 3-5 minutes.
  - **Atropine Sulfate:** 0.02 mg/kg IV/IO (min dose 0.1 mg), max initial dose 0.5 mg, max total dose 3 mg.

***** **Push dose epinephrine preparation**: mix 1 mL of 0.1 mg/mL epinephrine with 9 mL of NS. This results in 10 mcg/mL concentration.

- If bradycardia and symptoms of hemodynamic instability continue, consider transcutaneous pacing.
- If pacing is performed, consider sedation or pain control per **Management of Acute Pain**.
- Utilize $EtCO_2$ if available for all patients receiving sedation.

- Sedation (if age >60 consider reducing dose by half):
  - **Midazolam:** 1 mg IV slowly every 2-3 minutes, max dose 5 mg.
  - **Lorazepam:** 1 mg IV every 5-10 minutes, max dose 4 mg.

- Sedation:
  - **Midazolam:** 0.1 mg/kg IV slowly, every 2-3 minutes, max dose 5 mg.
  - **Lorazepam:** 0.1 mg/kg IV every 10 minutes, max dose 4 mg.

Implantable Ventricular Assist Devices (VAD, LVAD, etc.): Adult & Pediatric

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Includes: patients that have had an implantable ventricular assist device (VAD), including a left ventricular assist device (LVAD), right ventricular assist device (RVAD), or biventricular assist device (BiVAD).

EMT

- Initiate **Universal Care**.
- BP measurement will require manual cuff and doppler to obtain mean arterial pressure (MAP), assess patient for signs of hypoperfusion, pallor, altered LOC.
- Pulse is variable and not clinically significant in VAD patients.
- Pulse oximetry can be unreliable – look for physical signs and symptoms .
- Contact the patient's VAD program on-call coordinator using the phone number on the device; follow coordinator's advice.
  - Banner University Phoenix VAD -----602-819-7910
  - Banner University Tucson VAD ------ 520-694-6000
  - Dignity St. Joseph's VAD----------602-406-8000
  - Mayo VAD ---------- 480-342-2999
- Decision to perform CPR should be made in consultation with patient's VAD-trained companion and VAD coordinator. CPR may be initiated only where:
  - Confirmation that the pump has stopped and troubleshooting efforts have failed, and
  - Patient is unresponsive and has no detectable signs of life.

- Assess for alarms.
- Assess for possible pump malfunction – mechanical hum should be present on auscultation.
- Contact the patient's VAD-trained companion, if available.
- Check all the connections to system controller, change VAD batteries, and/or change system controller if indicated.
- Follow appropriate cardiovascular condition-specific protocol(s) as indicated.
- If patient is experiencing VAD-related complications or cardiovascular problems, transport destination preference is his/her VAD program, nearest VAD-trained facility, nearest appropriate facility.

AEMT

- Establish IV/IO.
- If patient has a functioning VAD and is hypoperfusing (pale, diaphoretic, delayed capillary refill, altered mental status), administer 30 mL/kg IV/IO fluid bolus, maximum 1 L, over < 15 minutes, using push-pull method.
- May repeat up to 3 times based on patient's condition and clinical impression.
- **Do not administer nitroglycerin.**

EMT-I/Paramedic

- Apply cardiac monitor.
- Acquire 12-lead EKG.
- Patient's baseline may be arrhythmia; obtain VAD coordinator's advice prior to administering antiarrhythmics.

Tachycardia with a Pulse: Adult & Pediatric

Includes: Elevated heart rate for age, with or without associated symptoms such as palpitations, dyspnea, chest pain, syncope/near-syncope, hemodynamic compromise, altered mental status or other signs of end organ malperfusion. Adults: HR > 100.
Excludes: sinus tachycardia. Rate-related symptoms are uncommon when heart rate <150.

EMT

- Initiate **Universal Care**. Search for underlying causes (medications, drugs, history of dysrhythmia, CHF, etc.)

AEMT

EMT-I/Paramedic

All Unstable tachycardias
- Deliver a synchronized cardioversion.

Consider the following if stable symptomatic tachycardia (if known WPW contact on-line medical direction):

Stable SVT
- Perform vagal maneuvers.
- **Adenosine:**
  - 6 mg IV/IO.
  - If tachycardia continues, give 12 mg IV.
  - Always follow with 10 mL fluid bolus.
- **Diltiazem:** (Paramedic only)
  - 0.25 mg/kg IV/IO.
  - Give half of dose slowly over 2 minutes.
  - May give remainder of dose in 10 minutes as needed and as blood pressure allows.
  - Patients > 65 years old, max initial dose 10 mg.

Irregular narrow complex tachycardia (A-fib, A-flutter, multifocal atrial tachycardia), Stable
- **Diltiazem:** (Paramedic only)
  - 0.25 mg/kg IV/IO
  - Give half of dose slowly over 2 minutes.
  - May give remainder of dose in 10 minutes as needed and as blood pressure allows.
  - Patients > 65 years old, max initial dose 10 mg.

Regular wide complex tachycardia, Stable
- **Adenosine:**
  - 6 mg IV/IO.
  - If tachycardia continues, give 12 mg IV.
  - Always follow with 10 mL fluid bolus.
- **Amiodarone:** (Paramedic only)
  - 150 mg IV/IO over 10 minutes; may repeat.
- **Lidocaine:**
  - 1-1.5 mg/kg IV/IO repeated every 5 minutes, max total dose 3 mg/kg. May repeat at half the original dose.

Irregular wide complex tachycardia, Stable
- **Amiodarone:** (Paramedic only)
  - 150 mg IV over 10 minutes; may repeat.

Torsades (In addition to above)
- **Magnesium sulfate:** (Paramedic only)
  - 1-2 g IV over 15 minutes.

Unstable SVT or unstable wide complex tachycardia
- Deliver a synchronized cardioversion 1 J/kg.
- Repeat doses should be 2 J/kg.

Consider the following if stable symptomatic tachycardia (if known WPW contact on-line medical direction):

Stable SVT
- Perform vagal maneuvers.
- **Adenosine:**
  - 0.1 mg/kg IV/IO, max 6 mg.
  - May repeat with 0.2 mg/kg IV/IO, max 12 mg.
  - Always follow with 10 mL fluid bolus.

Wide complex tachycardia, stable
- **Adenosine:** (for SVT with aberrancy)
  - 0.1 mg/kg IV/IO, max 6 mg.
  - May repeat with 0.2 mg/kg IV/IO, max 12 mg.
  - Always follow with 10 mL fluid bolus.
- **Amiodarone:** (Paramedic only)
  - 5 mg/kg IV/IO over 10 minutes, max 150 mg over 10 minutes.

Suspected Stroke/Transient Ischemic Attack: Adult & Pediatric

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Includes:
Acute neurologic deficit such as facial droop, localized weakness, gait disturbance, slurred speech, altered mental status that fall within 24 hours of onset or last known well time eligible for stroke treatment and transport to a stroke center as outlined by local protocol.

Excludes:
If trauma and GCS < 14, refer to **Traumatic Brain Injury (EPIC-TBI)** and **General Trauma Management**. If seizure activity present, refer to **Seizures**.

EMT

- Initiate **Universal Care**.
- Use a validated **prehospital stroke scale**.
- Document patient weight and last known well time or time of onset.
- Obtain blood glucose level.
- Transport to Stroke Center:
  - Acute Stroke Ready Hospital.
  - Primary Stroke Center.
  - Comprehensive Stroke Center or other healthcare institution participating in a recognized stroke telemedicine program if approved by local protocol/medical direction.
- Notify receiving facility as soon as possible.

- Although rare, pediatric patients can have strokes.
- Higher risk in sickle cell anemia patients.
- Stroke scales are not validated for pediatric patients.
- Per local protocols, call receiving facility or base hospital to ensure appropriate destination decision.
- Transport to most appropriate facility, per local protocols.
- Notify receiving facility as soon as possible.

AEMT

EMT-I/Paramedic

Bronchospasm (due to Asthma and Obstructive Lung Disease): Adult & Pediatric

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Respiratory distress with wheezing or decreased air entry in patients ≥ 2 years of age.
Includes: asthma exacerbation, COPD exacerbation, wheezing from suspected pulmonary infection (e.g. pneumonia, bronchitis).
Excludes: anaphylaxis, bronchiolitis, croup, epiglottitis, foreign body aspiration, drowning, congestive heart failure, trauma.

EMT

- Initiate **Universal Care**.
- Provide supplemental O_2 as needed to maintain $SaO_2 \geq 94\%$.
- Assist patient with own medication: **albuterol** by nebulization or metered dose inhaler.

- Maintain position of comfort.
- Suction the nose and/or mouth (via bulb, Yankauer or catheter) if excessive secretions are present.

AEMT

- **Albuterol**
  - 5 mg nebulized; Repeat as needed.
- **Epinephrine** (consider for severe respiratory distress without clinical improvement)
  - 1 mg/mL, 0.01 mg/kg IM, max dose 0.3 mg.

- IV/IO placement IF:
  - Clinical evidence of dehydration.
  - Need for IV medication(s).

EMT-I/Paramedic

- Initiate $EtCO_2$ monitoring.
- **Ipratropium:** 0.5 mg nebulized with albuterol, may repeat x 2
- Steroids:
  - **Methylprednisolone**
    - 2 mg/kg IV/IM max dose 125 mg
  - **Dexamethasone**
    - 0.6 mg/kg IV/IM/PO, max dose 16 mg
- **Magnesium sulfate** (consider for severe respiratory distress) (Paramedic only)
  - (40 mg/kg, max dose =2 g) IV over 15-30 minutes
- **NIPPV: Non-invasive positive pressure ventilation** (Paramedic Only)
  - CPAP/B-PAP.
  - Should be administered for severe respiratory distress or if not improving with less invasive support.
  - Discontinue NIPPV for shock or altered LOC.
  - If NIPPV is contraindicated or if no improvement with less invasive support, refer to **Airway Management**.
- Supraglottic devices and intubation should be utilized only if BVM ventilation fails.
- BVM ventilation is reasonable for pediatric patients or when non-invasive positive pressure ventilation is not available.

Pulmonary Edema: Adult & Pediatric

Includes:
- Respiratory distress with signs of pulmonary edema and fluid overload .

Excludes:
- Clinical impression consistent with infection (e.g. fever).
- Clinical impression consistent with asthma/COPD.

EMT

- Initiate **Universal Care**.
- Manage airway as necessary.
- Provide supplemental O_2 as needed to maintain $SaO_2 \geq 94\%$.

AEMT

- **Nitroglycerin:** 0.4 mg SL tablets or 1 full spray if SBP > 100
  - Repeat every 3 minutes as blood pressure allows
  - Contraindicated when patients have taken an PDE5-inhibitor medication (sildenafil, tadalafil) for erectile dysfunction or pulmonary hypertension within 24-48 hours.
- Nitroglycerin not indicated in pediatric patients.

EMT-I/Paramedic

- Initiate $EtCO_2$ monitoring.
- Initiate continuous cardiac monitoring.
- Perform 12-lead ECG, refer to **Chest Pain/ACS/STEMI**.
- **NIPPV**: **Non-invasive positive pressure ventilation (Paramedic Only)**
  - CPAP/B-PAP.
  - Should be administered for severe respiratory distress or if not improving with less invasive support.
  - Discontinue NIPPV for shock or development of altered LOC.
  - If NIPPV is contraindicated or if no improvement with less invasive support, refer to **Airway Management**.

Anaphylaxis and Allergic Reaction: Adult & Pediatric

Includes: patients of all ages with known or suspected allergic reaction and/or anaphylaxis.

EMT

- Initiate **Universal Care**.
- Evaluate for patent airway and presence of oropharyngeal edema.
- Auscultate for wheezing and assess level of respiratory effort.
- Assess adequacy of perfusion.

Determine whether:

- Anaphylaxis:
  - severe and acute onset (and)
  - respiratory compromise (dyspnea, wheeze, stridor, hypoxemia)
  - decreased BP (SBP<90), (or)
  - combination of 2 of the following:
    - Urticaria
    - Swollen tongue and lips
    - Vomiting
    - abdominal pain
    - Syncope
    - Incontinence
- Non-anaphylactic allergic reaction:
  - localized symptoms,
  - localized angioedema without airway or GI symptoms,
  - hives alone.

- Hypotension: Minimum SBP = 70 + 2x (age in years.) (Refer to **Abnormal Vital Signs**)

- Any patient with concern for anaphylaxis or who has received epinephrine IM, patient should be transported to the ED, even if symptoms have resolved.
- If signs of anaphylaxis, assist with patient's own auto-injector, when available.

AEMT

- If signs of anaphylaxis and no auto-injector available, administer **Epinephrine** 1 mg/mL, 0.3 mg IM (anterolateral thigh).
- If signs of anaphylaxis persist, additional IM **Epinephrine** can be repeated every 5-15 minutes.

- If signs of anaphylaxis and no auto-injector available, administer **Epinephrine** 1 mg/mL
  - If < 25 kg, 0.15 mg IM (anterolateral thigh).
  - If ≥ 25 kg, 0.3 mg IM (anterolateral thigh).
- If signs of anaphylaxis persist, additional IM **Epinephrine** can be repeated every 5-15 minutes.

- If respiratory distress with wheezing, consider administering:
  - **Albuterol** 5 mg nebulized (or)
  - **Epinephrine** 1 mg/mL, 5 mL nebulized.
- For stridor, consider administering **Epinephrine** 1 mg/mL, 5 mL nebulized.

Assess for sign of **Shock**, fluid bolus IV/IO as indicated.

EMT-I/Paramedic

- For urticaria, rash, itching, or anaphylaxis, administer:
  - **Diphenhydramine:** 1 mg/kg IV/IM/PO, max dose of 50 mg (IV preferred if patient in severe shock).
- If signs of cardiovascular collapse (persistent hypotension with altered mental status, pallor, diaphoresis, or delayed capillary refill) despite administration of IM **Epinephrine** along with at least 60 mL/kg IV fluid bolus, start **Epinephrine** IV drip, 0.5 mcg/kg/minute.

Altered Mental Status: Adult & Pediatric

Excludes: **Traumatic Brain Injury (EPIC-TBI).**

Assessment: Evaluate for treatable causes, refer to specific guidelines when applicable.

- **Shock**
- Dysrhythmia
- **Hypoglycemia**, **Hyperglycemia**, acidosis, metabolic disorder
- Intoxication
- **Hyperthermia**, hypothermia
- **Opioid poisoning/Overdose**
- **Agitated or Violent Patient/Behavioral Emergency**
- **Seizures**

EMT

- Initiate **Universal Care.**
- Check blood glucose, treat **Hypoglycemia** or **Hyperglycemia** if indicated.
- Assess for possible stroke using a validated **prehospital stroke scale**.
- Check temperature – refer to **Sepsis** as needed.

- **Naloxone**: SPECIAL TRAINING REQUIRED (STR)
  - Intranasal (IN)
    - 4 mg/0.1 mL nasal spray
    - 1 spray in single nostril
      (or)
    - 2 mg/2 mL single dose Luer-Jet® prefilled syringe with mucosal atomizer device (MAD)
    - Divide dose equally between nostrils to max of 1 mL per nostril
  - Intramuscular (IM)
    - 2 mg/0.4 mL auto-injector
    - Place on thigh and inject 0.4 mL
- All routes may be repeated as indicated.

AEMT

- IVF if indicated refer to **Shock.**
- **Naloxone:** 0.4-2 mg IV/IM/IN. Repeat if indicated.

- Consider IV/IO refer to **Shock.**
- **Naloxone:** 0.1 mg/kg IV/IM/IN. Repeat if indicated.

EMT-I/Paramedic

- Treat dysrhythmias as indicated.
- Treat **Shock** as indicated.

- Maintain ventilatory support in least invasive way possible.
- BVM ventilation is reasonable for pediatric patients.

Hypoglycemia: Adult & Pediatric

Includes: Adult or pediatric patient with blood glucose < 60 mg/dL with symptoms of hypoglycemia.

EMT

- Initiate **Universal Care**.
- Assess GCS, mental status, stroke tool (FAST) and refer to **Altered Mental Status** or **Suspected Stroke** as needed.

- If hypoglycemia (glucose < 60 mg/dL), administer **Glucose** 25 g PO (ONLY if Alert level of consciousness).

- If hypoglycemia (glucose < 60 mg/dL), administer **Glucose** 0.5-1 g/kg PO, max dose 25 g (ONLY if Alert level of consciousness).

- Reassess vital signs, mental status, finger stick blood glucose.

- Criteria for release without transport:
  - Patient returns to normal mental status, with no focal neurologic signs/symptoms after receiving glucose/dextrose,
  - Repeat glucose is > 80 mg/dL,
  - Patient takes insulin or metformin (use caution with patients taking long-acting insulins or other oral diabetic medications),
  - Tolerating oral intake,
  - Patient or legal guardian refuses transport,
  - A reliable adult will be staying with patient,
  - No major co-morbid symptoms exist (chest pain, dyspnea, seizures, intoxication).
- Document patient's current medications and doses.

AEMT

- If hypoglycemia (glucose < 60 mg/dL), administer
  - **Dextrose** 25 g IV/IO
    - **D_{10}** – max dose 250 mL, titrate to effect (or)
    - **D_{50}** – 50 mL (or)
  - **Glucagon** 1 mg IM/IN
- Reassess VS, mental status, finger stick blood glucose.

- If continued altered mental status and hypoglycemia, may repeat dose of dextrose or glucagon until symptoms have resolved.
- Patients with Insulin pump:
  - ALOC/AMS – stop insulin pump or disconnect at insertion site.
  - GCS 15 and able to take oral glucose – leave connected with pump running.

- If hypoglycemia (glucose < 60 mg/dL), administer
  - **Dextrose** 0.5 g/kg IV/IO (or)
    - **D_{10}** - 5 mL/kg (or)
  - **Glucagon**
    - 1 mg IM/IN (if > 20 kg or > 5 yo)
    - 0.5 mg IM/IN (if < 20 kg or < 5 yo)

EMT-I/Paramedic

Hyperglycemia: Adult & Pediatric

Includes:
- Adult or pediatric patient with symptoms of hyperglycemia (e.g. polyuria, polydipsia, weakness, dizziness, abdominal pain, tachypnea).
- Adult or pediatric patient with history of diabetes and other medical symptoms.

Excludes: Patient in **Cardiac Arrest (VF/VT/Asystole/PEA): Age 8 and Older**, **Cardiac Arrest (VF/VT/Asystole/PEA): Pediatric Age < 8.**

EMT

- Initiate **Universal Care**.
- Obtain blood glucose level.
- Assess GCS, mental status, **prehospital stroke scale**, and refer to **Altered Mental Status** or **Suspected Stroke** accordingly.
- Evaluate for possible sepsis and septic shock, refer to **Sepsis** or **Shock** as needed.

AEMT

- If hyperglycemia (glucose >250 mg/dL) with symptoms of dehydration, vomiting, or altered level of consciousness, give 20mL/kg IV/IO fluid bolus.

- If hyperglycemia (glucose >250 mg/dL) with symptoms of dehydration, vomiting, or altered level of consciousness, give 10mL/kg IV/IO bolus.

- Reassess and repeat fluid bolus to max of 30 mL/kg.
- Transport to closest appropriate receiving facility.

EMT-I/Paramedic

- Obtain 12-lead ECG to assess for peaked T waves or other findings consistent with hyperkalemia. Refer to **ECG Changes in Hyperkalemia** as needed.
- If findings of hyperkalemia are present, maintain continuous cardiac monitoring, administer IV fluids and:
  - **Calcium Gluconate** (Paramedic only) 2 g IV/IO over 5 minutes (or)
  - **Calcium Chloride** (Paramedic only) 1 g IV/IO over 5 minutes, ensure IV patency and do not exceed 1 mL/minute (and)
  - **Albuterol** 5 mg nebulized.

- Maintain ventilatory support in least invasive way possible.
- BVM ventilation is reasonable for pediatric patients.
- Obtain 12-lead ECG to assess for peaked T waves or other findings consistent with hyperkalemia. Refer to **ECG Changes in Hyperkalemia** as needed.
- If findings of hyperkalemia are present, maintain continuous cardiac monitoring, administer IV fluids and:
  - **Calcium Gluconate** (Paramedic only) 100 mg/kg IV/IO over 5 minutes, max dose 2 g (or)
  - **Calcium Chloride** (Paramedic only) 20 mg/kg (0.2 mL/kg) IV/IO over 5 minutes, max dose 1 g, ensure IV patency and do not exceed 1 mL/minute (and)
  - **Albuterol** 5 mg nebulized.

Seizures: Adult & Pediatric

Includes: Ongoing seizure or seizure lasting >5 minutes, more than two seizures in one hour, or status epilepticus.
Seizures during 3rd trimester of pregnancy or up to six weeks postpartum (regardless of the age of the patient) are managed with magnesium sulfate. See below.

EMT

- Initiate **Universal Care**.
- Provide airway support as needed.
- Assess neurologic status (AVPU/GCS).
- If pregnant, place in left lateral recumbent position.
- Check blood glucose – refer to **Hypoglycemia**.

AEMT

- Establish IV access.
- If blood glucose <60 mg/dL, refer to **Hypoglycemia**.

EMT-I/Paramedic

- Administer **benzodiazepines**.
  - If age >60, consider reducing dose by half.
  - May repeat for a total of 2 doses regardless of route.
- **Midazolam: 0.2 mg/kg IM/IN**
  - Max 5 mg if <40kg.
  - Max 10 mg if ≥40kg.
- **Lorazepam, Midazolam: 0.1 mg/kg IV**
  - Administer slowly over 2 minutes.
  - Max single dose 4 mg.
- If in 3rd trimester of pregnancy or postpartum up to six weeks, administer **Magnesium sulfate: (Paramedic only)** 4 g slow push IV/IO over 5 minutes (Paramedic only). Refer to **Obstetrical/Gynecological Conditions**.
- Initiate continuous cardiac and $EtCO_2$ monitoring.

Nausea/Vomiting: Adult & Pediatric

Includes: Patients currently nauseated and/or vomiting.

EMT

- Initiate **Universal Care**.

AEMT

- Consider 500 mL IV/IO fluid bolus, unless contraindicated (history of CHF, renal failure).
- May repeat as indicated to a max of 30 mL/kg.

- Consider 10-20 mL/kg IV/IO fluid bolus, unless contraindicated (history of CHF, renal failure).
- May repeat as indicated.

EMT-I/Paramedic

- **Ondansetron** 4 mg PO/SL/IV.
- Contraindicated for known or suspected prolonged QT syndrome.

- Patients 6 mo. – 14 yo.:
  - **Ondansetron** 0.15 mg/kg PO/SL/IV, max 4 mg.
- Contraindicated for known or suspected prolonged QT syndrome.

Shock: Adult & Pediatric

For shock due to suspected trauma, refer to **General Trauma Management** section guidelines. For shock due to anaphylaxis, refer to **Anaphylaxis** and **Allergic Reaction**.

Emergency medical conditions can trigger signs of poor perfusion such as these:

- Tachycardia out of proportion to temperature
- Altered mental status
- Delayed/flash capillary refill >2 seconds
- Hypoxia
- Decreased urine output
- Tachypnea
- Hypotension for age, refer to **Abnormal Vital Signs**
- Weak, decreased or bounding pulses
- Cool/mottled or flushed/ruddy skin

EMT

- Initiate **Universal Care**.
- Check blood glucose, treat per **Hypoglycemia** or **Hyperglycemia** as indicated.
- If pregnant, place in left lateral recumbent position.

AEMT

- Administer 30 mL/kg, max 1 L, IV/IO fluid bolus over < 15 minutes.
- May repeat up to 3 times until either:
  - Vital signs/perfusion normal (or)
  - Rales, crackles or respiratory distress.

- Administer 30 mL/kg, max 1 L, IV/IO fluid bolus over <15 minutes, **using push-pull methods.**
- May repeat up to 3 times until either:
  - Vital signs/perfusion normal (or)
  - Rales, crackles or respiratory distress or hepatomegaly.

- Reassess after each IVF bolus.

- If history of adrenal insufficiency (congenital adrenal hyperplasia, daily steroid use) refer to Adrenal Insufficiency treatment under EMT-I/Paramedic below. Assist with patient's own hydrocortisone.

EMT-I/Paramedic

- For shock unresponsive to IV fluids, or cardiogenic shock with signs of fluid overload, consider vasopressors, refer to appendix drip calculations:
  - **Epinephrine:** 0.05-0.3 mcg/kg/min IV/IO
  - **Norepinephrine:** 0.05-0.5 mcg/kg/min IV/IO (**Paramedic Only) (Pump Only)**
  - **Dopamine:** 2-20 mcg/kg/min IV/IO **(Paramedic Only)**

Adrenal Insufficiency Treatment:

- Patient's hydrocortisone (Solu-Cortef): is preferred:
  - ≥ 12 years: 100 mg IM.
- **Methylprednisolone:**
  - 2 mg/kg IV/IO, max 125 mg.

Adrenal Insufficiency Treatment:

- Patient's hydrocortisone (Solu-Cortef): is preferred:
  - 0-3 years: 25 mg IM.
  - 3-12 years: 50 mg IM.
  - ≥ 12 years: 100 mg IM.
- **Methylprednisolone:**
  - 2 mg/kg IV/IO, max 125 mg.

Sepsis: Adult & Pediatric

Includes: patients meeting sepsis criteria (Elements from Boxes 1 and 2) as well as severe sepsis or septic shock (Elements from Boxes 1, 2, and 3).

1

- Suspected Infection or immunosuppression
- Open wounds, sores, cellulitis
- UTI
- Pneumonia
- Meningitis
- Indwelling medical device
- Vomiting, diarrhea
- Recent surgery/procedure
- Chemotherapy < 6 weeks
- Chronic steroid use

Suspected Infection

- Temperature abnormality on assessment or within 4 hours of assessment
- Open wounds, sores, cellulitis
- UTI or Pneumonia
- Meningitis

High-Risk Criteria

- Malignancy
- Asplenia or sickle cell disease
- Bone marrow transplant
- Indwelling medical device
- Solid organ transplant
- Severe intellectual disability or cerebral palsy
- Immunocompromise, chronic steroid use

2

Two or more markers of Systemic Inflammatory Response Syndrome (SIRS)

- Temp ≥ 100 or ≤ 97
- HR ≥ 90
- RR ≥ 20
- Glucose > 140 in non-diabetic
- Altered mental status

Exam Criteria 	0-2 y	≥ 2-10 y	≥ 10-14 y
HR	>190	>140	>100
RR	>50	>34	>30
Pulses	Decreased, weak, or bounding		
Cap refill	Delayed (>2 sec) or flash (<1 sec)		
Skin	Mottled, ruddy, petechiae		
Mental status	Decreased, irritability, confusion, inappropriate crying, poor interaction, diminished arousability		

3

Findings of **Shock**

- SBP < 90 or MAP < 65 or SBP drop of 40 mmHg from prior baseline
- $EtCO_2$ ≤ 25
- O_2 sat ≤ 92% on RA
- Mottled or cold extremities
- Central cap refill ≥ 3 seconds
- Purpuric rash
- No radial pulse

- SBP < 70 + (age in yr X 2).
- 3 or more exam criteria.
- 2 or more exam criteria in patient meeting high-risk criteria.

EMT

- Initiate **Universal Care**.

AEMT

- Administer 20 mL/kg IV/IO fluid bolus, refer to treatment for **Shock** as indicated.
- 2 large bore IVs preferred for IV fluids. Consider IO placement early.
- Do not delay transport if unsuccessful.

EMT-I/Paramedic

Cardiac Arrest (VF/VT/Asystole/PEA): Age 8 and Older

Includes: patients with cardiac arrest. For adult patients who obtain return of spontaneous circulation (ROSC), refer to **Post-Cardiac Arrest and Return of Circulation (ROSC): Adult**.

Excludes:

- Patients suffering cardiac arrest due to severe hypothermia.
- Patients with identifiable Do Not Resuscitate (or equivalent) order, refer to **Do Not Resuscitate**.
- Patients with traumatic cardiac arrest, refer to **General Trauma Management** and **Traumatic Cardiac Arrest TOR**.

EMT

- For patients with PRESUMED CARDIAC ETIOLOGY for cardiac arrest immediately perform 200 continuous chest compressions (**CCR/MICR**).
  - Compression rate: 100-120/minute.
  - Depth at least 2 to 2.4 inches (5 cm).
  - Ensure adequate recoil.
  - Chest compressions should resume immediately after defibrillation attempts with no pauses for pulse checks.
  - Initiate passive oxygenation at flush rate O_2 (non-rebreather mask with oral airway).
- If NON-CARDIAC ETIOLOGY, immediately begin manual ventilation (BVM or supraglottic airway (STR)) at rate of 10 breaths per minute.
- Attach AED without interruption of chest compressions.
  - If arrest witnessed by EMS or adequate bystander CPR has been performed, immediately perform rhythm analysis and defibrillation, if appropriate.
  - If arrest is unwitnessed or inadequate bystander chest compressions, perform 200 compressions prior to rhythm analysis.
- Perform 4 rounds chest compressions. Check rhythm (and pulse when indicated), defibrillate if indicated between rounds.
- CARDIAC ETIOLOGY: If no response after 8 minutes, begin manual ventilation (BVM or supraglottic airway (STR)) at rate of 10 breaths per minute.
  - Airway management should not interrupt compressions.
  - Avoid excessive ventilation volume and pressure.

AEMT

- IV/IO access as soon as possible without interrupting chest compressions.

EMT-I/Paramedic

- Apply cardiac monitor/defibrillator.
- Defibrillate at 360 J monophasic or biphasic equivalent.
- Place advanced airway after 4 rounds of compressions (or immediately if NON-CARDIAC ETIOLOGY suspected).

- **Epinephrine:** 1 mg (0.1 mg/mL) IV/IO every 3-5 minutes (max 3 total doses of epinephrine).

- For shock-refractory VF/Pulseless VT, consider:
  - **Amiodarone:** 5 mg/kg, max 300 mg IV/IO, repeat at half the original dose (Paramedic Only) (or)
  - **Lidocaine:** 1-1.5 mg/kg IV/IO, may repeat at half the original dose every 5 minutes (max total dose of 3 mg/kg).
- For Torsades de Pointes:
  - **Magnesium sulfate:** 2 g IV/IO (Paramedic only).

Consider reversible causes of cardiac arrest:

- Hyperkalemia
- Hypovolemia
- Tricyclic antidepressant overdose
- Tension pneumothorax
- If patient remains unresponsive to treatment – refer to **Non-Traumatic TOR**.

- If findings of **hyperkalemia** are present, administer IV fluids and:
  - **Calcium Gluconate** : 2 g IV/IO over 5 minutes (Paramedic only) (or)
  - **Calcium Chloride**: 1 g IV/IO over 5 min (Paramedic only), ensure IV patency and do not exceed 1 mL/minute.

Cardiac Arrest (VF/VT/Asystole/PEA): Pediatric Age < 8

TOC

Includes: pediatric patients aged < 8 with cardiac arrest.

Excludes:

- Newborns, refer to **Neonatal Resuscitation**.
- Patients suffering cardiac arrest due to severe hypothermia.
- Patients with identifiable Do Not Resuscitate (or equivalent) order, refer to **Do Not Resuscitate**.
- Patients in arrest due to traumatic etiology, refer to **General Trauma Management**.

EMT

- Initiate chest compressions.
  - Compression rate: 100-120/minute.
  - Depth: at least greater than or equal to one-third AP chest diameter. No deeper than 2.4 inches.
  - Ensure adequate recoil.
  - Chest compressions should resume immediately after defibrillation attempts with no pauses for pulse checks.
- Attach AED.
  - If arrest witnessed by EMS or adequate bystander CPR has been performed, immediately perform rhythm analysis and defibrillation, if appropriate.
  - An AED equipped with a pediatric attenuator is preferred for infants and children; if not available, may use adult AED.

- Ensure patent airway - place OPA or supraglottic airway (STR), begin ventilations.
- Airway management should not interrupt compressions.
- Compression-to-breath ratio, if ventilating with BVM:
  - Single rescuer = 30:2 or 2-rescuers = 15:2

AEMT

- IV/IO access as soon as possible without interrupting chest compressions.
- Place advanced airway as indicated.

EMT-I/Paramedic

- Apply cardiac monitor/defibrillator.
- If arrest witnessed by EMS or adequate bystander CPR has been performed, immediately perform rhythm analysis and defibrillation, if appropriate.
- Defibrillate at 2 J/kg, second shock 4 J/kg, subsequent shocks greater than or equal to 4 J/kg, max 10 J/kg.

- **Epinephrine:** every 3-5 minutes
  - 0.1 mg/mL, 0.01 mg/kg IV/IO (or)
  - 1 mg/mL, 0.1 mg/kg ETT.

- For VF/Pulseless VT, consider:
  - **Amiodarone** (Paramedic only)**:** 5 mg/kg IV/IO (max 300 mg) (or)
  - **Lidocaine:** 1 mg/kg IV/IO.
- For Torsades de Pointes:
  - **Magnesium sulfate:** 25-50 mg/kg IV/IO (Paramedic only).

Consider reversible causes of cardiac arrest:

- Hyperkalemia
- Hypovolemia
- Tension pneumothorax

- If **ECG Changes in Hyperkalemia** are present, administer IV fluids and:
  - **Calcium Gluconate**: 100 mg/kg IV/IO over 5 minutes, max dose 2 g (Paramedic only) (or)
  - **Calcium Chloride**: 20 mg/kg (0.2 mL/kg) IV/IO over 5 min, max dose 1 g (Paramedic only), ensure IV patency and do not exceed 1 mL/minute.

Post-Cardiac Arrest and Return of Spontaneous Circulation (ROSC) Care, Transport to Cardiac Receiving Center (CRC): Adult

TOC

Includes: patients with return to spontaneous circulation following cardiac arrest resuscitation.

EMT

Support Airway/Oxygenation/Ventilation.

- Titrate oxygen to SaO_2 of ≥ 94%. Avoid hyperoxygenation.
- Maintain ventilation rate of 8 bpm if no spontaneous respirations. Avoid hyperventilation.

Evaluate and treat hypoglycemia.

- Check blood glucose.
- If hypoglycemic (BG <60 mg/dL), refer to **Hypoglycemia**.
- If hyperglycemic, notify hospital on arrival, refer to **Hyperglycemia**.

- Notify receiving facility as soon as possible.
- Transport to a recognized **Cardiac Receiving Center** when feasible and resources available.

***Exclusion Criteria* for Transport to a Recognized Cardiac Receiving Center:**

Transport to the closest appropriate facility, if any of the following apply:

- Traumatic cardiac arrest,
- Ongoing CPR without ROSC,
- If transport to CRC will add >15 additional minutes to transport time,
- Age < 15 years.

AEMT

- Advanced airway as indicated (supraglottic/esophageal).

Maintain hemodynamic stability.

- If systolic BP < 90 mmHg consider fluid bolus IV/IO, refer to **Shock**.
- While administering fluid boluses, frequently reassess perfusion for improvement and/or fluid overload. If patient develops signs of fluid overload, discontinue IVF infusion.

- Prevent hyperthermia.
- Do not warm patient unless environmental hypothermia is suspected.

EMT-I/Paramedic

- Advanced airway as indicated.
- If $EtCO_2$ available, maintain at 35-45 mmHg. Avoid hyperventilation.
- Perform 12-lead ECG.
- For persistent hypotension unresponsive to IV fluids, refer to **Shock**.

Obvious/Apparent Death: Adult & Pediatric

At a likely crime scene, disturb as little potential evidence as possible.

Excludes:

- Hypothermia, drowning, or lightning strikes.
- If patient does not meet the criteria below, refer to **Traumatic Cardiac Arrest TOR** or **Non-Traumatic TOR** or **Do Not Resuscitate Status/Advanced Directives/Healthcare Power of Attorney (POA) Status** as indicated.

EMT

- If the patient meets the criteria listed below, no resuscitative efforts need to be initiated. On-line medical direction is NOT necessary. Contact law enforcement and initiate grief support. An EMS provider must remain with the patient until released to law enforcement, medical examiner, crisis response, or other authorized personnel.

- For these conditions, documentation of pulseless and apneic state is NOT required:
  - Decapitation
  - Decomposition
  - Transection of the torso
  - Incineration: 90% of body surface area with full thickness burns as exhibited by ash rather than clothing and complete absence of body hair with charred skin

- For these conditions, documentation of pulseless and apneic state IS required:
  - Dependent lividity
  - Rigor mortis
  - Injuries incompatible with life (such as massive crush injury, complete exsanguination, severe displacement of brain matter)

- For all others that do not meet above criteria:
  - Refer to **Traumatic Cardiac Arrest TOR** or **Non-Traumatic TOR** or **Do Not Resuscitate Status/Advanced Directives/Healthcare Power of Attorney (POA) Status** as indicated.

AEMT

EMT-I/Paramedic

Do Not Resuscitate Status/Advanced Directives/Healthcare Power of Attorney (POA) Status: Adult & Pediatric

1. Patients must have one of the following documents or a valid alternative (such as identification bracelet indicating wishes) immediately available:
   - **Do Not Resuscitate (DNR)** order "orange form": identifies that CPR and intubation are not to be initiated if the patient is in arrest. The interventions covered by this order and the details around when to implement them can vary widely.
   - **Provider Orders for Life Sustaining Treatment (POLST) or Medical Orders for Life Sustaining Treatment (MOLST):** explicitly describes acceptable interventions for the patient in the form of medical orders, must be signed by a physician or other licensed medical provider to be valid.
   - **Advanced directives:** document that describes acceptable treatments under a variable number of clinical situations including some or all of the following; what to do for cardiac arrest, whether artificial nutrition is acceptable, organ donation wishes, dialysis, etc. Frequently does not apply to emergent or potentially transient medical conditions.
   - In the absence of formal written directions (MOLST, POLST, DNR, advanced directives), a person on scene with power of attorney for healthcare, or healthcare proxy, may prescribe limits of treatment.
2. Any of the documents described above are valid when they meet all of the following criteria:
   - Intact condition; it should not been cut, broken or shows signs of being repaired (and)
   - Displays the patient's name and the physician's name.
3. If there is question about the validity of the document/instrument, the best course of action is to proceed with the resuscitation until additional information can be obtained to clarify the best course of action and contact on-line medical direction.

EMT

- If the patient has a valid DNR, no CPR or airway management should be attempted. Comfort measures should still be offered. If resuscitative efforts were initiated and a valid DNR was recovered later, efforts may be discontinued.
- If the patient has a MOLST, POLST, or advanced directive, initiate CPR and airway management and contact on-line medical direction for consideration or termination of resuscitation.

- If there is a valid DNR and there are signs of life (pulse and respirations), EMS providers should provide standard, appropriate treatment under existing protocols according to the patient's condition.
- If the patient has a MOLST or POLST, contact on-line medical direction for specific guidance on how to proceed in this situation.
- Contact on-line medical direction if for any reason an intervention that is prohibited by an advanced directive is being considered.

AEMT

EMT-I/Paramedic

Non-Traumatic Termination of Resuscitative Efforts (TOR): Adult & Pediatric

Includes:

- Any **non-traumatic** cardiac arrest patient that has received resuscitation in the field, but has not responded to treatment.
- After termination, do not alter body condition in any way or remove equipment (lines, tubes, etc.). Doing so may compromise potential Medical Examiner investigation.

Excludes:

- Patients in cardiac arrest associated with medical conditions that may have better outcome despite prolonged efforts, such as hypothermia, lightning strikes, submersion/drowning. Consider continuing efforts in such cases or contact on-line medical direction.
- Patients meeting criteria for **Obvious/Apparent Death**.

EMT

- Initiate resuscitation, refer to **Cardiac Arrest (VF/VT/Asystole/PEA: Age 8 and Older** or **Cardiac Arrest (VF/VT/Asystole/PEA): Pediatric Age < 8**. If a valid DNR is available refer to **Do Not Resuscitate Status/Advanced Directives/Healthcare Power of Attorney (POA) Status**.
- Perform 4 rounds of CCR/MICR or ACLS. Focus on resuscitation on-scene versus "load and go."
- Apply AED and follow prompts.

- Consider Termination of Resuscitation (TOR) if the following criteria are met:
  - Not Witnessed,
  - No shock advised by AED,
  - No ROSC (return of spontaneous circulation).
- If patient meets all 3 TOR criteria after 4 rounds of CCR/MICR, consider TOR. TOR requires on-line medical direction. If ROSC is achieved, continue treatment and refer to **Post Cardiac Arrest and Return of Spontaneous Circulation (ROSC) Care, Transport to Cardiac Receiving Center (CRC).**

- Contact on-line medical direction if patient does not meet all TOR criteria or other special circumstances surround resuscitation or if the patient is < 18.

AEMT

- IV/IO access as soon as possible without interrupting chest compressions.

EMT-I/Paramedic

- Apply cardiac monitor/defibrillator.
- For narrow complex PEA with rate > 40 or refractory VF/VT, consider resuscitation for up to 60 minutes from time of dispatch.

- In addition to above criteria for TOR, consider TOR if the following:
  - > 30 minute downtime, pulseless >60 sec, non-shockable rhythm (PEA/Asystole) (OR)
  - Witnessed arrest, 20 minutes of resuscitation with PEA and $ETCO_2$ <10 (OR) non-shockable rhythm (PEA/Asystole)

Traumatic Cardiac Arrest - Termination of Resuscitative (TOR) Efforts: Adult & Pediatric

Includes:

- Any **traumatic** cardiac arrest patient that has received resuscitation in the field but has not responded to treatment.
- After termination, do not alter body condition in any way or remove equipment (lines, tubes, etc.). Doing so may compromise potential Medical Examiner investigation.

Excludes:

- Patients meeting criteria for **Obvious/Apparent Death.**
- Patients who are found in shockable rhythm or whose rhythm changes to shockable. These patients should, in general, have full resuscitation continued.
- Patients in cardiac arrest associated with medical conditions that may have better outcome despite prolonged efforts, such as hypothermia, lightning strikes, submersion/drowning. Consider continuing efforts in such cases or contact on-line medical direction.
- When the mechanism does not correlate with the clinical condition (suggesting a non-traumatic cause of cardiac arrest) standard resuscitative measures should be followed.

EMT

- Provide resuscitation according to **Cardiac Arrest (VF/VT/Asystole/PEA) Age 8 and Older** or **Cardiac Arrest (VF/VT/Asystole/PEA) Pediatric Age ≤ 8.**

AEMT

EMT-I/Paramedic

Termination of Resuscitation (TOR) is appropriate in the following scenarios:

- **Blunt/Penetrating Trauma**:
  - If pulses are not restored despite treatment of suspected airway obstruction with OPA/NPA .
  - Consider bilateral needle thoracostomy for suspected tension pneumothorax.

- **Penetrating Trauma:** Consider transport to Trauma Center if transport time < 15 minutes.

Contact on-line medical direction:

- patient is <18 years old
- if patient does not meet all TOR criteria
- other special circumstances surround resuscitation

Airway Management: Adult & Pediatric

Includes:
- Children and adults with signs of severe respiratory distress/respiratory failure.
- Patients with evidence of hypoxemia or hypoventilation.

Excludes:
- Patients with tracheostomies.
- Chronically ventilated patients.
- Newborn patients.
- Patients in whom oxygenation and ventilation is adequate with supplemental oxygen via nasal cannula or face mask alone.

EMT

- Use BVM ventilation in the setting of respiratory failure or arrest.
- Consider the addition of oropharyngeal airways (OPA) or nasopharyngeal airways (NPA) or supraglottic (STR) for effective BVM.
- Avoid excessive pressures or volumes during BVM ventilation.
- Monitor pulse oximetry

- Use appropriate sized mask with BVM.

AEMT

- Consider the use of a supraglottic airway (SGA) if BVM is not effective in maintaining oxygenation or ventilation.

- Use least invasive means of airway management.

EMT-I/Paramedic

- Non-invasive ventilation techniques for severe respiratory distress or impending respiratory failure **without** decreased level of consciousness:
  - Continuous positive airway pressure (CPAP)
  - Bi-level positive airway pressure (B-PAP)

- When less invasive methods are ineffective, use endotracheal intubation.
- Tubes should be continuously secured with a commercial tube holder or tape.
- Continuously monitor clinical signs and $EtCO_2$ for the intubated patient.
  - $EtCO_2$ should be used to verify tube placement and prevent hyper- or hypoventilation.

- Gastric decompression may improve oxygenation and ventilation.

- Consider cricothyroidotomy (**Paramedic only**) when patients cannot be oxygenated/ventilated with above interventions and the risk of death seems to outweigh the risk of a procedural complication.

- Endotracheal intubation should be considered only when less invasive methods fail.
- For children < 8 years old, the only option for cricothyroidotomy is needle cricothyroidotomy.

Pediatric Respiratory Distress – Wheezing < 2 Years Old (Bronchiolitis)

Includes: Child < 2 yo with wheezing or diffuse rhonchi.

Excludes: Suspected **Anaphylaxis**, **Croup**, epiglottitis, foreign body aspiration, submersion/**Drowning**.

EMT

- Initiate **Universal Care**.
- Suction the nose and/or mouth (via bulb, Yankauer or catheter) if excessive secretions are present.
- Supplemental oxygen: escalate from nasal cannula to face mask to non-rebreather mask as needed in order to maintain normal oxygenation.
- BVM ventilation for children with respiratory failure.

AEMT

- IV should only be placed for clinical concerns of severe dehydration requiring immediate treatment or for administration of IV medications.
- For severe respiratory distress, if suctioning and oxygen fail to result in clinical improvement, administer
  - **Epinephrine:** 1 mg/mL, 3 mg (3 mL in 3 mL NS) nebulized.
    - Patients receiving inhaled epinephrine should be transported to definitive care.

EMT-I/Paramedic

- For severe respiratory distress, non-invasive positive pressure ventilation or high flow nasal cannula may be administered, if available.
  - Do not delay administration of medication to administer non-invasive positive pressure ventilation.
- Supraglottic devices and intubation should be utilized only if BVM ventilation fails.
- The airway should be managed in the least invasive way possible.

Pediatric Stridor (e.g., Croup)

Includes: History of stridor or barky cough.

Excludes: Suspected **Anaphylaxis**, foreign body aspiration, submersion/**Drowning**, **Asthma**, **Bronchiolitis**.

EMT

- Initiate **Universal Care**.
- Initiate BVM ventilation for children with respiratory failure.
- Suction the nose and/or mouth (via bulb, Yankauer or catheter) if excessive secretions are present.
- Monitor pulse oximetry.

AEMT

- For severe respiratory distress, if suctioning and oxygen fail to result in clinical improvement, administer
  - **Epinephrine:** 1 mg/mL, 5 mg (5 mL in 3 mL NS) nebulized
    - Repeat epinephrine at the above dose with unlimited frequency for ongoing distress.
    - Patients receiving inhaled epinephrine should be transported to definitive care.

EMT-I/Paramedic

- $EtCO_2$ should be routinely monitored as an adjunct to other forms of monitoring.
- **Dexamethasone:** 0.6 mg/kg PO/IM/IV/IO, max dose 16 mg.
- For severe respiratory distress, non-invasive positive pressure ventilation may be administered, if available.
  - Do not delay administration of medication(s) to administer non-invasive positive pressure ventilation.
- Supraglottic devices and intubation should be utilized only if BVM ventilation fails.
- The airway should be managed in the least invasive way possible.
- Consider performing 12-lead ECG if there are no signs of clinical improvement after treating respiratory distress.

Pediatric Brief Resolved Unexplained Event (BRUE)/Pediatric Apparent Life Threatening Event (ALTE)

Includes:
A patient with an episode that is frightening to the observer with some combination of the following:
- Absent, decreased or irregular breathing (apnea: central or obstructive) including choking or gagging,
- Color change (usually cyanosis or pallor),
- Marked change in muscle tone (flaccid or rigid).

Excludes:
- Age > 12 months,
- **Seizures**,
- **Respiratory distress**,
- Cardiopulmonary arrest, refer to **Cardiac Arrest (VF/VT/Asystole/PEA): Pediatric Age < 8**,
- Trauma with known mechanism of injury, refer to **General Trauma Management**.

EMT

- Initiate **Universal Care**.
- Have high index of suspicion for abuse in children presenting with BRUE/ALTE.
- Check blood glucose; refer to **Hypoglycemia** if appropriate.

AEMT

- IVs should only be placed in children for clinical concerns of shock, or when administering IV medications.

EMT-I/Paramedic

- Supraglottic devices and intubation should be utilized only if bag-valve-mask ventilation fails in setting of respiratory failure or apnea. The airway should be managed in the least invasive way possible.
- Regardless of patient appearance, all patients with a history of signs or symptoms of BRUE/ALTE should be transported for further evaluation.
- Given possible need for intervention, all patients should be transported to facilities with baseline readiness to care for children, where available, per local protocol.

Neonatal Resuscitation page 1 of 2

Includes: all neonates immediately following birth.

EMT

- Wait at least 30 – 60 seconds post-delivery before clamping and cutting the umbilical cord.
- Clamp cord in 2 places and cut between clamps if still attached to the mother.
- Warm, dry, and stimulate baby for 30 seconds.
- Wrap infant in dry towel and keep as warm as possible during resuscitation. Keep head covered if possible. If gestational age is less than 32 weeks, additional thermoregulation interventions are recommended (plastic wrap or bag).
- If strong cry, regular respiratory effort, good tone, and term gestation, infant should be placed skin to skin with mother and covered with dry linen.
- If weak cry, signs of respiratory distress, poor tone, or preterm gestation, then position airway (sniffing position) and clear airway as needed. If thick meconium or secretions are present and signs of respiratory distress, suction mouth then nose.
- Consider checking blood glucose for ongoing resuscitation, maternal history of diabetes, ill appearing, or unable to feed. Refer to **Hypoglycemia** as needed.

First 30-60 seconds:

If heart rate > 100 beats per minute:

- Monitor for central cyanosis and provide blow-by oxygen as needed.
- Monitor for signs of respiratory distress. If apneic or in significant respiratory distress, initiate BVM ventilation with room air at 40-60 breaths per minute.

If heart rate < 100 beats per minute:

- Initiate BVM ventilation with room air at 40-60 breaths per minute while monitoring heart rate closely.
- If no improvement after 90 seconds: change O_2 delivery to 100% FiO_2 until heart rate normalizes

If heart Rate < 60 beats per minute:

- Ensure effective ventilations with supplementary oxygen and adequate chest rise.
- If no improvement after 30 seconds, initiate chest compressions (2 thumb technique preferred).
- Coordinate chest compressions with BVM ventilations (3:1 ratio, 90 compressions and 30 breaths per minute).

AEMT

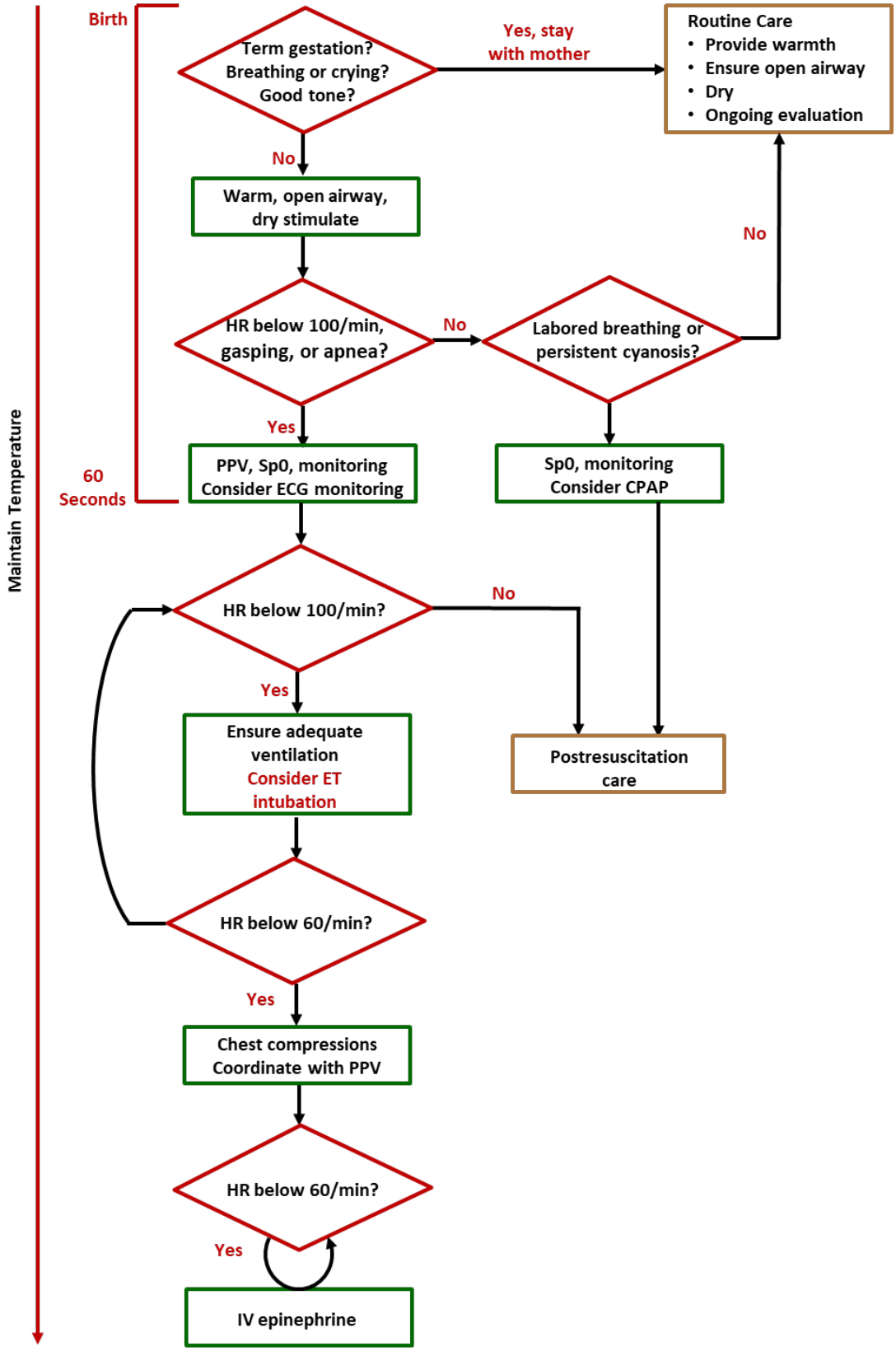
EMT-I/Paramedic

- If apneic or in significant respiratory distress, consider endotracheal intubation as per local protocols.
- Intubation is recommended prior to beginning chest compressions. If intubation is not successful or not feasible, a laryngeal mask may be used.
  - Newborns > 2 kg and greater than 34 weeks gestation require a size 3.5 endotracheal tube.
- **Epinephrine** is indicated if the newborn's heart rate remains less than 60 beats/min after at least 30 seconds of positive-pressure ventilations (PPV) that move the chest, preferably through a properly inserted endotracheal tube or laryngeal mask, and another 60 seconds of chest compressions coordinated with PPV using 100% oxygen.
  - Epinephrine is not indicated before you have established ventilation that effectively inflates the lungs.
  - **Epinephrine:**
    - 0.1 mg/mL, 0.01 mg/kg IV/IO (or)
    - 0.1 mg/mL, 0.1 mg/kg via ETT if no IV/IO access.
- Administer 20 mL/kg IV/IO fluid bolus for signs for shock or post-resuscitative care.

Neonatal Resuscitation page 2 of 2 –

Providers to stay within their Scope of Practice

Neonatal Resuscitation Algorithm



Childbirth

Includes: Imminent delivery with crowning.
Excludes: Vaginal bleeding in any stage of pregnancy without signs of imminent delivery, refer to **Obstetrical/Gynecological Conditions**.
Emergencies in first or second trimester of pregnancy, refer to **Obstetrical/Gynecological Conditions**.
Seizure from eclampsia, which can occur up to 6 weeks postpartum, refer to **Seizures**.

EMT

- Delivery should be controlled and support the newborn's head.
- Check the umbilical cord. If surrounding the neck, slip it over the head. If unable to free the cord from the neck, double clamp the cord and cut between the clamps.
- Do NOT routinely suction the infant's airway (even with a bulb syringe) during delivery.
- Grasping the head with hand over the ears, gently pull down to allow delivery of the anterior shoulder.
- Gently pull up on the head to allow delivery of the posterior shoulder.
- Slowly deliver the remainder of the infant.
- Wait at least 30 – 60 seconds post delivery before clamping and cutting the umbilical cord.
- Clamp cord 2 inches from the abdomen with 2 clamps and cut the cord between the clamps.
- Record APGAR scores at 1 and 5 minutes. After delivery of infant, suctioning (including suctioning with a bulb syringe) should be reserved for infants who have obvious obstruction to the airway or require positive pressure ventilation. Refer to **Neonatal Resuscitation** for further care of the infant.

If complications of delivery are identified, perform the following steps:

- **Shoulder Dystocia:** if delivery fails to progress after head delivers, quickly attempt the following:
  - Hyperflex mother's hips to severe supine knee-chest position.
  - Apply firm suprapubic pressure to attempt to dislodge shoulder.
  - Apply high-flow oxygen to mother.
- **Prolapsed Umbilical Cord:**
  - Place gloved fingers between infant and uterus to avoid compression of cord.
  - Consider placing mother in prone knee-chest position.
  - Apply high-flow oxygen to mother.
- **Maternal cardiac arrest:**
  - Apply manual pressure to displace uterus from right to left.
  - Refer to **Cardiac Arrest (VF/VT/Asystole/PEA): Age 8 and Older**.
  - Transport as soon as possible if infant is estimated to be over 24 weeks gestation (perimortem Cesarean section at receiving facility is most successful if done within 5 minutes of maternal cardiac arrest).
- **Breech birth – if head fails to deliver:**
  - Place gloved hand into vagina with fingers between infant's face and uterine wall to create an open airway.
  - Apply high-flow oxygen to mother.
  - Transport as soon as possible and contact on-line medical direction and/or closest appropriate receiving facility for direct medical oversight and to prepare team.

- The placenta will deliver spontaneously, often within 5-15 minutes of the infant. Do not force the placenta to deliver. Contain all tissue in plastic bag and transport.
- After delivery, massaging the uterus and allowing the infant to nurse will promote uterine contraction and help control bleeding.

AEMT

EMT-I/Paramedic

- If signs or symptoms of pre-eclampsia (BP >140/90 and blurred vision, dizziness, headache, altered mental status, peripheral edema, abdominal pain, nausea, or vomiting):
  - **Magnesium sulfate:** 4 g IV over 10-15 minutes (Paramedic Only).

Obstetrical/Gynecological Conditions

Includes:
- Female patient with vaginal bleeding in any trimester of pregnancy,
- Female patient with pelvic pain or possible ectopic pregnancy,
- Maternal age at pregnancy may range from 10 to 60 years of age.

Excludes:
- Childbirth and active labor. Refer to **Childbirth**.
- Seizure related to pregnancy/eclampsia, which can occur up to 6 weeks postpartum, refer to **Seizures**.
- Post-partum hemorrhage, refer to **Shock**.

EMT

- Initiate **Universal Care**.
- Check blood glucose. Refer to **Hypoglycemia** if needed.
- Monitor pulse oximetry if signs of hypotension or respiratory symptoms.
- If signs of **Shock** or orthostasis are present, position patient supine and keep patient warm.
- Patients in third trimester of pregnancy should be transported on left side or with uterus manually displaced to left if hypotensive.
- Do not place hand/fingers into vagina of bleeding patient except in cases of prolapsed cord or breech birth that is not progressing. Refer to **Childbirth**.

AEMT

- If signs of shock or orthostasis, refer to **Shock**.
- Reassess vital signs and response to fluid resuscitation.

EMT-I/Paramedic

- Initiate cardiac monitoring and obtain 12-lead ECG if there is history of syncope or lightheadedness.
- Pre-eclamptic symptoms:
  - BP >140/90 and blurred vision
  - dizziness
  - headache
  - altered mental status
  - peripheral edema
  - abdominal pain
  - nausea or vomiting
    - If pre-eclamptic, treat with **Magnesium sulfate:** 4 g IV over 10-15 minutes (Paramedic Only).

General Trauma Management: Adult & Pediatric

Includes:
- Blunt trauma,
- Penetrating trauma,
- Burns.

EMT

- Initiate **Universal Care**.

Primary survey
- Establish patent airway with cervical spine precautions (refer to **Airway Management** and **Spinal Motion Restriction** as needed).
- Hemorrhage control, refer to **External Hemorrhage Management**.
  - Apply direct pressure or tourniquet (if extremity hemorrhage) as needed to control bleeding.
- Monitor oxygen saturation, provide supplemental oxygen.
- For open chest wound, place semi-occlusive dressing.
- If pelvis is unstable and patient is hypotensive, place pelvic binder or sheet to stabilize pelvis.
- Maintain spine precautions per **Spinal Motion Restriction**.
- Splint extremity deformities per **Extremity Trauma**.
- If clinical signs of traumatic brain injury, refer to **Traumatic Brain Injury (EPIC-TBI)**.
- Evaluate for increased risk for bleeding, see **Blood Thinner List**.

AEMT

- If SBP < 90 mmHg or HR > 120, give 1 L IV/IO fluid bolus, may repeat as indicated.
- Provide pain medications per **Management of Acute Pain.**

- If tachycardia for age with signs of poor perfusion, give 20 mL/kg IV/IO fluid bolus, may repeat as indicated.
- Provide pain medications per **Management of Acute Pain**.

EMT-I/Paramedic

- If absent or diminished breath sounds in a hypotensive patient, consider tension pneumothorax. Perform needle decompression.
- Avoid hypothermia.
- Transport to most appropriate facility per local protocol.

Burns: Adult & Pediatric

Includes:
- Patients sustaining thermal burns,
- Patients who are exposed to electrical current (AC or DC),
- Patients of all ages who have been the victim of lightning strike injury.

Excludes:
- Chemical and radiation burns, refer to **Radiation Exposure** or **Chemical Burns**, as needed.

EMT

- Verify scene is secure.
- Initiate **Universal Care**.
- Assess for cardiac arrest.
  - Even patients who appear dead may have good outcomes with prompt intervention, refer to **Cardiac Arrest (VF/VT/Asystole/PEA): Age 8 and Older** or **Cardiac Arrest (VF/VT/Asystole/PEA): Pediatric Age < 8.**
- Determine characteristics of source if possible. AC or DC, voltage, amperage, time of injury.
- Consider pain management, refer to **Management of Acute Pain**.
- Monitor oxygen saturation, provide supplemental oxygen as needed or if patient rescued from confined space.
- Refer to **Cyanide Poisoning** and **Carbon Monoxide/Smoke Inhalation** as needed.
- Assist respirations as needed.
- Stop the burning:
  - Soak clothing and skin with water if burning or smoldering.
  - Remove clothing if not stuck to patient.
  - Remove jewelry.
- Evaluate for high risk burn injuries, refer to **Burn Triage**.
- Leave blisters intact.
- Cover burns with dry dressing or clean sheet.
- Keep patient warm.
- Estimate BSA burned and depth of burn, refer to **Burn Estimation Charts**.

AEMT

- If establishing IV access, avoid placement through burned skin.
- Initiate fluid resuscitation:
  - 20 mL/kg IV/IO fluid bolus, repeat as needed.
  - If patient in shock, give fluid per **Shock**.
  - Manage pain appropriately, refer to **Management of Acute Pain**.

EMT-I/Paramedic

- Initiate cardiac and $EtCO_2$ monitoring.
- If thermal burn to airway is suspected, early airway control is vital. Refer to **Airway Management**.

External Hemorrhage Management: Adult & Pediatric

Includes: patients with uncontrolled bleeding.

EMT

- Apply direct pressure/pressure dressing/wound packing to injury.

- If direct pressure ineffective or impractical (hemorrhage not controlled)
  - Apply a tourniquet.

- If hemorrhage is not controlled (e.g. junctional injury)
  - Apply a topical hemostatic agent with direct pressure or commercially available junction hemorrhage control device.

- If tourniquet applied:
  - Do not release a properly-applied tourniquet until the patient reaches definitive care.
  - Use of tourniquet for extremity hemorrhage is strongly recommended if sustained direct pressure is ineffective or impractical.
  - Use a commercially available, windlass, pneumatic, or ratcheting device that has been demonstrated to reliably occlude arterial flow.
  - Avoid applying narrow, elastic, or bungee-type devices.
  - Utilize improvised tourniquets only if no commercial device is available.

- Apply a topical hemostatic agent, in combination with direct pressure, for wounds in anatomic areas where tourniquets cannot be applied and sustained direct pressure alone is ineffective or impractical.
  - Only apply topical hemostatic agents in a gauze format that supports wound packing.
  - A commercially available junction hemorrhage control device may also be considered.

AEMT

EMT-I/Paramedic

Extremity Trauma: Adult & Pediatric

Includes: patients with amputations or potential extremity fractures or dislocations.

EMT

- For active bleeding, refer to **External Hemorrhage Management**.
- Evaluate for
  - deformity or instability,
  - neuro status of extremity,
  - pallor,
  - pulse,
  - capillary refill,
  - degree of bleeding/blood loss, with assessment of the color of the blood and if it is pulsatile or not.
- Stabilize suspected fractures/dislocations.
- Apply splint to limit movement of suspected fracture.
  - Reassess distal neurovascular status after any manipulation or splinting.
- Elevate extremity fractures above heart level whenever possible to limit swelling.
- Apply ice/cool packs to limit swelling in suspected fractures or soft tissue injury; do not apply ice directly to skin.
- Amputation:
  - Transport amputated part(s) wrapped in a dry, sterile dressing.
  - Place in a water tight container or plastic bag.
  - Keep cool, but do not place directly on ice.
- Manage pain, refer to **Management of Acute Pain**.

AEMT

- Strongly consider administering pain medication according to **Management of Acute Pain** before attempting to move a suspected fracture.

EMT-I/Paramedic

Crush Injury:

- High flow oxygen.
- Initiate 10-15 mL/kg IV/IO fluid bolus prior to extrication if possible.
- For significant crush injury or prolonged entrapment of extremity, consider
  - **Sodium Bicarbonate:** 1 mEq/kg IV/IO, maximum dose 50 mEq bolus over 5 minutes.
- Apply cardiac monitor to assess for peaked T waves or other findings consistent with hyperkalemia. Refer to **ECG Changes in Hyperkalemia** as needed.

- If findings suggestive of hyperkalemia, continue fluid resuscitation with 500-1000 mL/hr IV/IO fluid infusion.
- If findings of hyperkalemia are present, maintain continuous cardiac monitoring, administer IV fluids and:
  - **Calcium Gluconate** (Paramedic only) 2 g IV/IO over 5 minutes (or)
  - **Calcium Chloride** (Paramedic only) 1 g IV/IO over 5 minutes, ensure IV patency and do not exceed 1 mL/minute (and)
  - **Albuterol** 5mg nebulized.

- If findings suggestive of hyperkalemia, continue fluid resuscitation with 10 mL/kg/hr IV/IO fluid infusion.
- If findings of hyperkalemia are present, maintain continuous cardiac monitoring, administer IV fluids and:
  - **Calcium Gluconate** (Paramedic only) 100 mg/kg IV/IO over 5 minutes, max dose 2 g (or)
  - **Calcium Chloride** (Paramedic only) 20 mg/kg (0.2 mL/kg) IV/IO over 5 minutes, max dose 1 g, ensure IV patency and do not exceed 1 mL/minute (and)
  - **Albuterol** 5mg nebulized.

Traumatic Brain Injury (EPIC-TBI): Adult & Pediatric

TOC

Includes: Adult or pediatric patient with suspicion of Traumatic Brain Injury (EPIC-TBI) by mechanism, GCS, or exam.

EMT

Airway/Breathing:
- Continuously monitor pulse oximetry.
- Oxygen supplementation 15 L/min
- Prevent any desaturation < 90%.
- BLS airway maneuvers as indicated.
- BVM 10 breaths/min as needed to maximize SaO_2
- Do not hyperventilate patient.

- BLS airway maneuvers as indicated:
  - Infants (0-24 mo): 25 breaths/min
  - Children (2-14 yrs): 20 breaths/min
  - Adolescents (15-17 yrs): 10 breaths/min (same as adults)

Circulation:
- Frequent blood pressure, SaO_2, HR measurement (every 5 minutes).
- Watch for early signs of shock such as tachycardia, falling systolic blood pressure.

Disability:
- Evaluate blood glucose, refer to **Hypoglycemia**.
- Maintain cervical stabilization (refer to **Spinal Motion Restriction**).
- Control bleeding with direct pressure if no suspected open skull injury.
- Trend neurologic status assessment (GCS).

AEMT

- IV/IO access as needed for fluid administration.
- Avoid hypotension.
- For SBP approaching < 90 mmHg or other signs of shock:
  - Initial treatment: 1 L IV/IO fluid bolus.
  - Repeat 500 mL IV/IO fluid bolus until SBP > 90 mmHg.

- Approaching hypotension in children:
  - 0-9 yrs: SBP < [70 + (age in years x 2)]
  - ≥ 10 yrs: SBP < 90 mmHg
- For hypotension or other signs of shock:
  - 20 mL/kg IV/IO fluid bolus.
  - Repeat until hypotension resolves.

EMT-I/Paramedic

- Initiate $EtCO_2$ monitoring for hypoventilation and apnea; target $EtCO_2$ 35-45 mmHg.
- If O_2 saturation < 90% despite BLS airway, consider advanced airway:
  - Pre-oxygenate with 100% O_2 BVM at age appropriate rate.
  - Use with caution and monitor blood pressure if administering medications for intubation/sedation and/or for pain control.
  - Avoid nasal intubation.

Spinal Motion Restriction (SMR): Adult & Pediatric

Includes: Adult or pediatric patient with potential for spinal injury due to blunt traumatic injury.

Exclusion: Adult or pediatric patient with penetrating spinal injury (SMR not indicated).

EMT

Apply SMR if ANY of the following are present:

- Any altered mental status (GCS < 15) including possible intoxication from alcohol or drugs, agitation.
- Pediatric patients may demonstrate altered mental status with agitation, apnea, hypopnea, or somnolence (drowsiness).
- Midline neck or back pain and/or tenderness.
- Focal neurologic signs and/or symptoms (ie. weakness, tingling, or numbness).
- Anatomic deformity of the spine.
- Torticollis (self-splinting or painful rotation/tilt of the neck).
- Unreliable patient interaction including distraction from painful injury or distressing circumstances.
- Communication/language barrier that prevents accurate assessment.
- Lack of cooperation or contribution during exam.

Consider SMR with ANY high risk characteristics:

- Guideline for Field Triage mechanism criteria (Step 3),
- Age > 65,
- Axial load injuries (diving injuries, spearing tackle),
- Sudden acceleration/deceleration, lateral bending forces to neck/torso.

Apply SMR with ANY high risk mechanisms of injury:

- High speed MVC or rollover,
- Axial load injuries (diving injuries, spearing tackle),
- Sudden acceleration/deceleration, lateral bending forces to neck/torso.

- Patients without any of the above findings may be transported without the use of a cervical collar or any other means to restrict spinal motion. Low risk characteristics include:
  - Simple rear end collision,
  - No neck pain on scene,
  - No midline cervical tenderness,
  - Ambulatory on scene at any time.

- Low risk characteristics have not been studied in pediatric patients are should not be used alone to determine need for SMR.

- SMR may be achieved by use of a scoop stretcher, vacuum splint, ambulance stretcher, or long spine board with the patient safely secured.
- Minimize time on backboards.
- SMR cannot be safely performed with a patient in a sitting position.
- If elevation of the head is required, the device used to stabilize the spine should be elevated at the head while maintaining alignment of the neck and torso.

- Children may require additional padding under the shoulders to avoid excessive cervical spine flexion with SMR.

AEMT

EMT-I/Paramedic

Poisoning/Overdose Universal Care: Adult & Pediatric

Presentation may vary depending on the concentration and type of poison or medication and duration of exposure. Poisoning may occur by:

- Skin or mucous membrane absorption
- Ingestion
- Inhalation
- Injection

- Refer to guidelines for specific agents as indicated
- Arizona Opioid Assistance and Referral Line (OAR) 1-888-688-4222.
- Call the regional poison control center: 1-800-222-1222.

EMT

- Ensure scene is safe.
- Consider Body Substance Isolation or appropriate skin and respiratory personal protective equipment (PPE).
- Safely remove patient from hazardous material environment.
- Remove clothing and decontaminate skin if contaminated.
- Initiate **Universal Care**, including pulse oximetry monitoring for respiratory decompensation.
- Maintain or normalize patient temperature.
- Attempt to record and obtain all involved medications or products. Bring in medication containers or consider taking pictures with camera-equipped, agency-owned device.
- Identify intoxicating agent by history, toxidrome, or environmental testing.
- Identify antidote or mitigating agent.

- Children often show signs of poisoning before adults due to increased absorption of poisons.
- When wet decontaminating children, attempt to prevent hypothermia.
- Wet infants are slippery; care should be exercised during decontamination to avoid additional injuries.

AEMT

- Initiate IV/IO access.
- Administer 20 mL/kg IV/IO fluid bolus if there is evidence of hypoperfusion.

EMT-I/Paramedic

- Initiate $EtCO_2$ monitoring for respiratory decompensation.
- Initiate cardiac monitoring and consider 12-lead ECG (special attention to abnormal rate, rhythm, QRS prolongation, and QT prolongation).
- Consider blood samples if EMS management might change value (e.g. carbon monoxide, glucose, cyanide).

- Use chemical sedation for patients with agitated delirium (combativeness, tachycardia, hyperthermia).
- Refer to **Agitated or Violent Patient/Behavioral Emergency**.
- Symptomatic dystonia, with extrapyramidal signs or symptoms: consider **Diphenhydramine**: 25 mg IV/IO/IM.

- Symptomatic dystonia, with extrapyramidal signs or symptoms: consider **Diphenhydramine:** 1 mg/kg IV/IO/IM (max dose 25 mg).
- Supraglottic devices and intubation should be utilized only if BVM ventilation fails. The airway should be managed in the least invasive way possible.

Acetylcholinesterase Inhibitor Poisoning (Nerve Agents, Organophosphates, and Carbamates): Adult & Pediatric

DUMBELS mnemonic used to describe the signs and symptoms of organophosphate toxicity:

D - Diarrhea
U - Urination
M - Miosis (pinpoint pupils)/Muscle weakness
B - Bronchospasm/Bronchorrhea/Bradycardia
E - Emesis
L - Lacrimation/Laryngospasm
S - Salivation/Sweating/Seizures

Central nervous system effects can manifest with seizures, coma, and/or apnea.

EMT

- Don appropriate personal protective equipment (PPE)
- Remove patient's clothing and wash the skin with soap and water.
- Initiate **Universal Care**.
- ABCDE assessment including pupils.
- Monitor pulse oximetry

- When wet decontaminating children, attempt to prevent hypothermia.

AEMT

- Establish IV/IO access.

EMT-I/Paramedic

- Initiate continuous cardiac and $EtCO_2$ monitoring.

- **Atropine Sulfate** 2-6 mg IV/IO.
- Repeated doses (2x previous dose) should be administered as needed every 3-5 minutes.

- **Atropine Sulfate** 0.1 mg/kg IV/IO, up to 1-4 mg/dose.
- Repeated doses (2x previous dose) should be administered as needed every 3-5 minutes.

- Clinical improvement should be based upon the drying of secretions, improved respiratory effort and pulse oximetry.
- Continuous and ongoing patient reassessment is critical.
- For patients with seizure activity refer to **Seizures** as needed.

Radiation Exposure: External and/or Internal Contamination: Adult & Pediatric

Includes: Patients exposed to a known or suspected source of radiation or contaminated with a radioactive source, particularly patients exhibiting the signs and symptoms of acute radiation syndrome:

- Nausea
- Vomiting
- Diarrhea
- Dizziness
- Headache
- Altered mental status or loss of consciousness

Most patients will be asymptomatic, initially.

All body fluids from patients receiving *systemic radiation therapy (particularly radioactive iodine)* carry a potential risk of minor exposure, usually to primary caregivers and family members. Use Body Substance Isolation techniques, personal protective equipment (PPE), and Universal Precautions when caring for these patients.

Standard PPE does not protect against penetrating radiation from a radioactive source, it only mitigates contamination. Limit radiation exposure effectively by limiting time around, maintaining distance from , and using effective shielding against the source. Turnout gear and paper coveralls can be potentially adequate PPE to prevent contamination.

EMT

- Ensure scene safety.
- Don appropriate personal protective equipment.
- Exercise universal precautions at all times.
- Initiate **Universal Care**.
- Decontamination should not delay stabilization of limb- or life-threatening traumatic injuries.
- Place contaminated towels, wastewater, and body fluids in secured containers denoted for radioactive waste materials.

- For skin contaminated with radioactive sources:
  - Remove patient's clothing and wash the skin with wet gauze, skin wipes, or soap and water.
  - Collect the wastewater, if possible.

- For inhalation contamination:
  - Administer oxygen as appropriate
  - Maintain the airway as needed

- When wet decontaminating children, attempt to prevent hypothermia.

- Trauma patients who have been exposed to radiation or contaminated with radioactive sources should be triaged and treated on the basis of the severity of their conventional traumatic injuries. If possible, decontamination of the patient and wounds in particular should occur prior to arrival into a trauma bay (on scene, outside of the ED). Refer to **General Trauma Management**.
- Consider transport to a burn center in cases of severe radiation exposure.

AEMT

EMT-I/Paramedic

Dermal Chemical Burns: Adult & Pediatric

Includes: Patients exposed to a chemical that can cause a topical burn including eyes and mucous membranes.

EMT

- Ensure scene safety.
- Don appropriate personal protective equipment.
- Remove the patient's clothing, if necessary.
- Contaminated clothing should preferably be placed in impermeable bags.
- Carefully brush off solid chemicals and/or blot off liquid chemicals prior to flushing with copious amounts of water.
- Flush the patient's skin (and eyes, if involved) with copious amounts of tepid (body temperature) water or normal saline.
- Take measures to minimize hypothermia.
- Calculate the estimated total body surface area that is involved; refer to **Burn Estimation Charts**.
- For hydrofluoric acid exposure:
  - Apply generous amounts of calcium gluconate gel to the exposed skin sites, after irrigating with water for 3 minutes.
- Refer to **Management of Acute Pain** as needed.

AEMT

- Initiate IV fluid resuscitation if necessary to obtain hemodynamic stability.

EMT-I/Paramedic

- For chemical burns of the eye:
  - **Proparacaine** or **Tetracaine** eye drops for pain control: 1-2 drops in affected eye(s). Wait 30-60 seconds for anesthetic effect.
  - Consider the use of Morgan Lens to facilitate decontamination.
- For hydrofluoric acid exposure:
  - Apply cardiac monitor due to risk of hyperkalemia and hypocalcemia. Refer to **ECG Changes in Hyperkalemia** as needed.

- If findings of hyperkalemia are present, maintain continuous cardiac monitoring, administer IV fluids and:
  - **Calcium Gluconate** (Paramedic only) 2 g IV/IO over 5 minutes (or)
  - **Calcium Chloride** (Paramedic only) 1 g IV/IO over 5 minutes, ensure IV patency and do not exceed 1 mL/minute (and)
  - **Albuterol** 5 mg nebulized.
- If clinically significant signs and symptoms of hypocalcemia:
  - **Calcium Chloride** 1 g IV/IO over 5 minutes, ensure IV patency and do not exceed 1 mL/minute (**Paramedic Only**).

- If findings of hyperkalemia are present, maintain continuous cardiac monitoring, administer IV fluids and:
  - **Calcium Gluconate** (Paramedic only) 100 mg/kg IV/IO over 5 minutes, max dose 2 g (or)
  - **Calcium Chloride** (Paramedic only) 20 mg/kg (0.2 mL/kg) IV/IO over 5 minutes, max dose 1 g, ensure IV patency and do not exceed 1 mL/minute (and)
  - **Albuterol** 5mg nebulized.
- If clinically significant signs and symptoms of hypocalcemia:
  - **Calcium Chloride** 0.2 mL/kg IV/IO slowly (**Paramedic Only**).

Stimulant Toxicity: Adult & Pediatric

Includes: cocaine, amphetamines, methamphetamine, Ecstasy, phencyclidine (PCP), bath salts, etc.

EMT

- Initiate **Universal Care**.
- Refer to **Hyperthermia/Heat Exposure** as needed.
- Check for trauma, self-inflicted injury.
- Ask about chest pain and difficulty breathing.
- For chest pain refer to **Chest Pain/Acute Coronary Syndrome/ST-segment Elevation Myocardial Infarction (STEMI).**
- Refer to **Agitated or Violent Patient/Behavioral Emergency** as needed.

- Children may experience acute coronary syndrome due to coronary artery vasospasm caused by cocaine.
- Seizures are a more common serious event to stimulant poisoning.

AEMT

- Initiate IV fluid resuscitation if necessary to obtain hemodynamic stability or to treat dehydration and hyperthermia.

EMT-I/Paramedic

- Initiate cardiac monitor and examine rhythm strip for arrhythmias.
- Monitor $EtCO_2$ for respiratory decompensation.
- Obtain 12-lead ECG.
- Refer to **Agitated or Violent Patient/Behavioral Emergency** as needed.

Suspected Cyanide Poisoning: Adult & Pediatric

Includes: occupational or smoke exposures (e.g., firefighting), industrial accidents, natural catastrophes, suicide and murder attempts, and chemical warfare and terrorism. Signs and symptoms of high concentration of cyanide include:

- Arrhythmias
- Cardiovascular collapse
- Cardiac arrest
- Loss of consciousness
- Seizures
- Apnea

EMT

- Ensure scene safety.
- Don appropriate personal protective equipment, e.g., special equipment for low oxygen environments (SCBA).
- Initiate **Universal Care** including pulse oximetry monitoring.
- Safely remove patient from toxic environment and provide high flow supplemental oxygen via non-rebreather mask or BVM.
- If indicated, expose patient, then cover to protect against hypothermia.
- Consider consulting with Regional Poison & Drug Information Center (800-222-1222) from the scene as needed.

AEMT

EMT-I/Paramedic

- Initiate cardiac and $EtCO_2$ monitoring and analyze rhythm strip for arrhythmias.
- Obtain 12-lead ECG.
- For patients with appropriate history and manifesting one or more signs or symptoms of high concentrations of cyanide:
  - **Hydroxocobalamin** (Cyanokit®)(Paramedic only)
    - Collect pre-treatment blood sample, if possible
    - 5 g IV/IO over 2 minutes
    - Additional dose per local protocol (or)
- **Sodium Nitrite**
  - 300 mg IV/IO over 2 minutes (and)
- **Sodium Thiosulfate**
  - 12.5 g IV/IO over 5-10 minutes

- For patients with appropriate history and signs/symptoms of cyanide poisoning (e.g. cardiovascular collapse, shock, or cardiopulmonary arrest):
  - **Hydroxocobalamin** (Cyanokit®)(Paramedic only)
    - Collect pre-treatment blood sample, if possible
    - 70 mg/kg IV/IO over 2 minutes; (maximum dose 5 g)
    - Additional dose per local protocol (or)
- **Sodium Nitrite**
  - 6 mg/kg IV/IO (0.2 mL/kg) at rate of 5 mL/minute, max dose 300 mg (and)
- **Sodium Thiosulfate**
  - 250 mg/kg (1 mL/kg) over 5-10 minutes

- May repeat Sodium Nitrite/Thiosulfate combination at one-half original doses if signs of poisoning reappear.
- Refer to **Seizures** as needed.

Carbon Monoxide/Smoke Inhalation: Adult & Pediatric

Includes: known or suspected exposure to carbon monoxide (CO) or smoke from fire, propane or charcoal stoves/heaters, or combustion engines, and recreational enclosed smoking areas. Consider scene/environment monitoring with commercial CO monitors if available. Patient and environmental CO levels are helpful information for hospital personnel.

Patients may present with:

Mild	Moderate to Severe
• Nausea • Fatigue • Headache • Vertigo • Lightheadedness • Dyspnea	• Altered Mental Status • Tachypnea • Tachycardia • Seizure/Convulsions • Chest pain, shortness of breath • Cardiopulmonary Arrest

EMT

- Ensure scene safety.
- Don appropriate personal protective equipment, e.g., special equipment for low oxygen environments (SCBA).
- Initiate **Universal Care** including pulse oximetry monitoring.
- Safely remove patient from toxic environment.
- Inquire about other possible exposed persons (other inhabitants, neighbors, family member coming home later).
- Monitor transcutaneous CO levels, if available.
- 100% oxygen via non-rebreather mask or bag valve mask.
- Refer to **Seizures** as needed.

AEMT

EMT-I/Paramedic

- Initiate cardiac and $EtCO_2$ monitoring and analyze rhythm strip for arrhythmias.
- Obtain 12-lead ECG.
- Obtain blood sample as soon as possible (for later testing at the hospital) per local protocol.

COHb	Severity	Signs and Symptoms
<20%	Mild	Headache, nausea, vomiting, dizziness, blurred vision
21-40%	Moderate	Confusion, syncope, chest pain, dyspnea, tachycardia, tachypnea, weakness
41-59%	Severe	Dysrhythmias, hypotension, cardiac ischemia, palpitations, respiratory arrest, pulmonary edema, seizures, coma, cardiac arrest
>60%	Fatal	Death

Sulfide Poisoning: Adult & Pediatric

Includes: known or suspected sulfide poisoning. Sulfide is a Cellular Asphyxiant.

- Signs and symptoms of sulfide poisoning may include:
  - May report "rotten egg" odor
  - Upper airway irritation
  - Non-Cardiogenic Pulmonary Edema (late onset)
  - Rapid collapse
  - Rapid olfactory overload- may not report rotten egg odor
- Causative agents include:
  - Decaying organic matter
  - Petroleum refining
  - Mining
  - Pulp/Paper factories
  - Sewage
  - Hot Asphalt fumes
  - Septic systems
- Note: "Rotten egg" odor may be present with as little as 0.025 PPM

EMT

- Ensure scene safety.
- Don appropriate personal protective equipment, e.g., special equipment for low oxygen environments (SCBA).
- Initiate **Universal Care** including pulse oximetry monitoring.
- Safely remove patient from toxic environment and provide high flow supplemental oxygen via non-rebreather mask or BVM.
- If indicated, expose patient, then cover to protect against hypothermia.
- Consider consulting with Regional Poison & Drug Information Center (800-222-1222) from the scene as needed.
- Confirm exposure, amount, and duration.

AEMT

EMT-I/Paramedic

- Initiate cardiac monitoring.
- Consider 12-lead ECG.

- **Sodium Nitrite (Tox Paramedic only)**:
  - 300mg IV over 5-10 minute, can administer faster during cardiac arrest.
  - May repeat if no response in 15-30 minutes.

Sodium Nitrite (Tox Paramedic only):

- 0.33 ml/kg of 3% solution IV over 5-10 minutes, can administer faster during cardiac arrest.
- May repeat if no response in 15-30 minutes.

Opioid Poisoning/Overdose: Adult & Pediatric

Includes: patients of all ages with access to opioids and known or suspected opioid use or abuse.
Excludes: patients with altered mental status exclusively from other causes (e.g., head injury, hypoxia, or hypoglycemia).

EMT

- Initiate **Universal Care**.
- For respiratory depression, perform immediate resuscitation first, then consider:
- **Naloxone**: SPECIAL TRAINING REQUIRED (STR)
  - Intranasal (IN)
    - 4 mg/0.1 mL nasal spray
    - 1 spray in single nostril
      (or)
    - 2 mg/2 mL single dose Luer-Jet® prefilled syringe with mucosal atomizer device (MAD)
    - Divide dose equally between nostrils to max of 1 mL per nostril
  - Intramuscular (IM)
    - 2 mg/0.4 mL auto-injector
    - Place on thigh and inject 0.4 mL
- All routes may be repeated as indicated.

- May assist with patient's own auto-injector.
- Identify medication taken, noting immediate release vs. sustained release formulations, time of ingestion, and quantity.
- Bring pill container(s) to hospital, if possible (or take pictures with photography equipped, agency-owned device).
- Assess for other etiologies of altered mental status including hypoxia, hypoglycemia, hypotension, and traumatic head injury.
- Monitor for recurrent respiratory depression and decreased mental status.
- Recommend transport to hospital.
- If patient refuses transfer, with or without receiving naloxone, call the Arizona Opioid Assistance and Referral (OAR) Line at 888-688-4222.

AEMT

- Naloxone should be given via IV/IO route to apneic patients while supporting airway and breathing through traditional methods.

- IVF if indicated refer to **Shock**.
- **Naloxone:** 0.4-2 mg IV/IM/IN. Repeat if indicated.

- Consider IV/IO refer to **Shock**.
- **Naloxone:** 0.1 mg/kg IV/IM/IN. Repeat if indicated.

EMT-I/Paramedic

Bites and Envenomations: Adult & Pediatric

Bites, stings, and envenomations can come from a variety of marine and terrestrial animals, arthropods, and insects causing local or systemic effects. Patients may present with toxin-specific reactions. There is a spectrum of toxins or envenomations and limited EMS interventions that will have any mitigating effect on the patient in the field. The critical intervention is to get the patient to a hospital that has access to the relevant antivenin, if applicable, as soon as possible.

EMT

- Initiate **Universal Care**.
- Check blood glucose level.
- Monitor pulse oximetry for respiratory decompensation.
- Pain control, including limited external interventions to reduce pain, refer to **Management of Acute Pain**.
- Refer to **Seizures** as needed.

DO NOT perform the following:

- Tourniquet or constricting bands.
- Incision and/or suction.
- Application of cold packs.

- Envenomations known to have specific antivenin or antitoxin (scorpions, rattlesnakes, and black widow spider):
  - Consider transport to hospital that has access to antivenin, if feasible,
  - Call the **Poison & Drug Information Center** (**800-222-1222**) for treatment advice and location of antivenin.

AEMT

- Consider 20 mL/kg IV/IO fluid bolus.

- Consider 20 mL/kg IV/IO fluid bolus.

EMT-I/Paramedic

- Initiate cardiac and $EtCO_2$ monitoring and analyze rhythm strip for arrhythmias.
- Obtain 12-lead ECG.
- Consider vasopressors after adequate fluid resuscitations if hypotension persists, refer to **Appendix Drip Calculations**.
  - **Epinephrine** 0.05-0.3 mcg/kg/min IV/IO,
  - **Dopamine**: 2-20 mcg/kg/min (Paramedic Only).
  - **Norepinephrine** 0.05-0.5 mcg/kg/min IV/IO (**Paramedic Only) (Pump Only)**
- Titrate to maintain SBP > 90 mm Hg.
- Refer to **Shock** as needed.

Hyperthermia/Heat Exposure: Adult & Pediatric

Includes:

- Heat cramps are minor muscle cramps usually in the legs and abdominal wall. Temperature is normal.
- Heat exhaustion has both salt and water depletion usually of a gradual onset. As it progresses tachycardia, hypotension, elevated temperature, and very painful cramps occur. Symptoms of headache, nausea and vomiting occur. Heat exhaustion can progress to heat stroke.
- Heat stroke occurs when the cooling mechanism of the body (sweating) ceases due to temperature overload and/or electrolyte imbalances. Temperature is usually > 104 F. When no thermometer is available, it is distinguished from heat exhaustion by altered level of consciousness.

Excludes:

- Fever from infectious or inflammatory conditions.
- Malignant hyperthermia.
- Neuroleptic malignant syndrome.

EMT

- Initiate **Universal Care**.
- Move patient to a cool area and shield from the sun or any external heat source.
- Remove as much clothing as is practical and loosen any restrictive garments.
- If alert and oriented, give small sips of cool liquids.
- If altered mental status, check blood glucose level.
- Maintain airway vigilance for emesis, seizure.
- If temperature is > 104° F (40° C) or if altered mental status is present, begin active cooling by:
  - Continually misting the exposed skin with tepid water while fanning the victim (most effective);
  - Truncal ice packs may be used, but are less effective than evaporation;
  - Shivering should be treated as soon as possible.

AEMT

- Establish IV/IO access for heat stroke.
- Administer 20 mL/kg IV/IO cool fluid bolus and reduce to 10 mL/kg IV/IO boluses when vital signs are stable.

EMT-I/Paramedic

- Initiate cardiac monitoring and record ongoing vital signs and level of consciousness.
- Monitor for arrhythmia and cardiovascular collapse (refer to appropriate guidelines as needed).

- Treat shivering with single dose of:
  - **Midazolam:**
    - 2.5 mg IV/IN/IO (or)
    - 5 mg IM (or)
  - **Lorazepam**:
    - 1 mg IV/IO or 2 mg IM (or)
  - **Diazepam:**
    - 2 mg IV/IO.
- Refer to **Seizures** as needed.

- Treat shivering with single dose of:
  - **Midazolam:**
    - 0.1 mg/kg IV/IO (or)
    - 0.2 mg/kg IN/IM. Max 1 mg (or)
  - **Lorazepam:**
    - 0.1 mg/kg IV/IM/IO. Max 1 mg (or)
  - **Diazepam:**
    - 0.2 mg/kg IV/IO. Max 2 mg.
- Refer to **Seizures** as needed.

Drowning: Adult & Pediatric

Includes: patients suffering from drowning or drowning events independent of presence or absence of symptoms.

EMT

- Initiate **Universal Care**.
- Ensure scene safety.
- Remove patient from water as soon as possible.
- Initiate aggressive airway management and restoration of adequate oxygenation and ventilation.
- A-B-C approach.
- Administer Oxygen to maintain $SaO_2 \geq 94\%$. Refer to **Airway Management** as needed.
- Assist ventilation as needed.
- Refer to **Cardiac Arrest (VF/VT/Asystole/PEA): Age 8 and Older** or **Cardiac Arrest (VF/VT/Asystole/PEA): Pediatric Age < 8** as indicated.
- Consider possible C-spine injury; consider **Spinal Motion Restriction** as indicated.
- Consider hypothermia and treat as indicated.
- Remove wet clothing.
- Do not aggressively re-warm cold water drownings.
- Initiate pulse oximetry.

AEMT

- Establish IV/IO access.
- Fluid bolus as indicated.
- Escalate airway management as indicated, assist ventilation as needed.

EMT-I/Paramedic

- Escalate airway management as indicated, assist ventilation as needed.
- Initiate cardiac and $EtCO_2$ monitoring.
- Consider nasogastric or orogastric tube for gastric decompression.

Conducted Electrical Weapon (TASER): Adult & Pediatric

Includes:

- Patients who received either the direct contact discharge or the distance two-barbed dart discharge of the conducted electrical weapon.
- Patient may have sustained fall or physical confrontation trauma.
- Patient may be under the influence of toxic substances and/or may have underlying medical or psychiatric disorder.

EMT

- Once patient has been appropriately secured or restrained with assistance from law enforcement, initiate **Universal Care**.
- May remove barbed dart(s) if they are not in a high risk area (face, neck, hand, bone, groin, or spinal column) where it may injure bone, nerves, blood vessels, or an eye.
- Evaluate patient for evidence of excited delirium. Refer to **Agitated or Violent Patient/Behavioral Emergency** as indicated.
- Refer to **General Trauma Management** as indicated.

AEMT

EMT-I/Paramedic

- Initiate cardiac monitoring.
- Consider 12-lead ECG.

Abnormal Vital Signs

Age	Heart Rate	Resp Rate	Systolic BP	Temp (°C)
0 d – 1 m	> 205	> 60	< 60	<36 or >38
≥ 1 m - 3 m	> 205	> 60	< 70	<36 or >38
≥ 3 m - 1 r	> 190	> 60	< 70	<36 or >38.5
≥ 1 y - 2 y	> 190	> 40	< 70 + (age in yr × 2)	<36 or >38.5
≥ 2 y - 4 y	> 140	> 40	< 70 + (age in yr × 2)	<36 or >38.5
≥ 4 y - 6 y	> 140	> 34	< 70 + (age in yr × 2)	<36 or >38.5
≥6 y- 10 y	> 140	> 30	< 70 + (age in yr × 2)	<36 or >38.5
≥ 10 y - 13 y	> 100	> 30	< 90	<36 or >38.5
> 13 y	> 100	>16	< 90	<36 or >38.5

General Vital Signs and Guidelines

Age	Heart Rate (beats/min)	Blood Pressure (mmHg)	Respiratory Rate (breaths/min)
Premature	110-170	SBP 55-75 DBP 35-45	40-70
0-3 months	110-160	SBP 65-85 DBP 45-55	35-55
3-6 months	110-160	SBP 70-90 DBP 50-65	30-45
6-12 months	90-160	SBP 80-100 DBP 55-65	22-38
1-3 years	80-150	SBP 90-105 DBP 55-70	22-30
3-6 years	70-120	SBP 95-110 DBP 60-75	20-24
6-12 years	60-110	SBP 100-120 DBP 60-75	16-22
> 12 years	60-100	SBP 110-135 DBP 65-85	12-20

Neurologic Status Assessment: Adult & Pediatric, page 1 of 2

AVPU (Medical and Trauma)

A: The patients is alert
V: The patient responds to verbal stimulus
P: The patient responds to painful stimulus
U: The patient is completely unresponsive

Motor/Sensory Exam for Suspected Spinal Injury

- Wrist/hand/finger extension bilaterally
- Foot plantarflexion/dorsiflexion bilaterally
- Gross sensation in all extremities
- Check for paresthesias

Traditional Glasgow Coma Scale (Trauma)

	Points	Adult	Pediatric
Eyes	1	No eye opening	
	2	Eye opening to pain	
	3	Eye opening to verbal	
	4	Eyes open spontaneously	
Verbal	1	No verbal response	No vocalization
	2	Incomprehensible sounds	Inconsolable, agitated
	3	Inappropriate words	Inconsistently consolable, moaning
	4	Confused	Cries but consolable, inappropriate interactions
	5	Oriented	Smiles, oriented to sounds, follows objects, interacts
Motor	1	No motor response	
	2	Extension to pain	
	3	Flexion to pain	
	4	Withdraws from pain	
	5	Localizes pain	
	6	Obeys commands	

2014 Updated Glasgow Coma Score (Trauma)

The updates to the GCS 2014 are intended to increase reliability. These provide a basis for standardizing practice and ensure the scale is useful, in a practical sense, in the future.

	Points	≥ 6 years old	< 6 years old
Eyes	4	Eye opening Spontaneously	
	3	Eye opening to Sounds	
	2	Eye opening to Pressure	
	1	No Response	
	NT	Not Testable	
Verbal	5	Oriented	Smiles, oriented to sounds, follows objects, interacts
	4	Confused	Cries but consolable, inappropriate interactions
	3	Words	Inconsistently consolable, moaning
	2	Sounds	Inconsolable, moaning
	1	No Response	No vocalization
	NT	Not Testable	Not Testable
Motor	6	Obeys Commands	
	5	Localizes to Pressure	
	4	Normal Flexion to Pressure	
	3	Abnormal Flexion to Pressure	
	2	Extension to Pressure	
	1	No Response	
	NT	Not Testable	

There are several distinct differences between the Traditional GCS and 2014 versions:

- Scoring for each component of the assessment (Eyes: Verbal: Motor) are recommended rather than reporting an aggregate score.
- A Not Testable (NT) descriptor is now recommended rather than scoring the component as a 1 for None when the assessment is, in fact, not testable for a particular reason.
- Terminology has been changed to reduce subjective interpretations, ie, inappropriate words to Words and Incomprehensible /garbled sounds to Sounds.
- Pain is no longer used to elicit responses. Pressure is applied instead.
- Pressure is applied in the same method for each assessment beginning with the periphery and moving to the central areas of the body above the clavicles, as necessary.
- The sternum rub is strongly discouraged, as it may cause tissue damage with repeated maneuvers.

Prehospital Stroke Scales

FAST/Cincinnati Stoke Scale

FACE	ARMS	SPEECH	TIME
Ask patient to smile	Ask patient to raise both arms	Ask patient to speak a simple phrase	Time is BRAIN
Does the face look uneven?	Does one arm drift down?	Does the speech sound strange?	Time of symptom onset?
Yes= 1 point	Yes= 1 point	Yes= 1 point	

VAN: Acute Stroke Screening Tool

Time of onset: < 4 hr, > 4 hr, or unknown

Is ARM weakness present?

- □ Yes Continue the VAN exam
- □ No Patient is VAN negative. Stop VAN Exam.

	Yes	No
Visual Disturbance?	□	□
Aphasia?	□	□
Neglect?	□	□

If patient has **any degree of weakness PLUS any one of the below:**
Visual Disturbance (Assess field cut by testing both sides, 2 fingers right, 1 left)
Aphasia (Inability to speak or understand. Repeat and name 2 objects, close eyes, make fist)
Neglect (Forced gaze to one side or ignoring one side, touching both sides)
This is likely a large artery clot (cortical symptoms) = VAN Positive

Guidelines for field triage of injured patients
United States, 2011

Measure vital signs and level of consciousness				
Step 1	Glascow Coma Scale Systolic Blood Pressure (mmHg) Respiratory rate	≤ 13 <90 mmHg <10 or >29 breaths per minute (<20 in infant aged <1 year), or need for ventilatory support	Yes	Transport to a trauma center. Steps 1 and 2 attempt to identify the most seriously injured patients. These patients should be transported preferentially to the highest level of care within the defined trauma system.
	No			
	Assess anatomy of injury			
Step 2	• All penetrating injuries to the head, neck, torso, and extremities proximal to elbow or knee • Chest wall instability or deformity (e.g. fail chest) • Two or more proximal long-bone fractures • Crushed, degloved, mangled or pulseless extremity • Amputation proximal to wrist or ankle • Pelvic fractures • Open or depressed skull fracture • Paralysis			
	No			
	Assess mechanism of injury and evidence of high-energy impact			
Step 3	• Falls – Adults: >20 feet (one story is equal to 10 feet) – Children: >10 feet or two or three times the height of the child • High-risk auto crash – Intrusion, **including roof: > 12 inches occupant site: > 18 inches any site – Ejection (partial or complete) from automobile – Death in the same passenger compartment – Vehicle telemetry data consistent with a high risk of injury • Auto vs. Pedestrian/bicyclist thrown, run over, or with significant (> 20 mph) impact • Motorcycle crash >20 mph		Yes	Transport to a trauma center, which, depending on the defined trauma system, need not be the highest level trauma center.
	No			
	Assess special patient or system considerations			
Step 4	• Older adults – Risk of injury/death increases after age 55 years – SBP <110 might represent shock after age 65 years – Low impact mechanisms (e.g. ground level falls) might result in severe injury • Children – Should be triages preferentially to pediatric capable trauma centers • Anticoagulants and bleeding disorder – Patients with head injury are at high risk for rapid deterioration • Burns – Without other trauma mechanism: triage to burn facility – With trauma mechanism: triage to trauma center • Pregnancy > 20 weeks • EMS Provider judgement		Yes	Transport to a trauma center or hospital capable of timely and thorough evaluation and initial management of potentially serious injuries. Consider consultation with medical control.
	No			
	Transport according to protocol When in doubt, transport to a trauma center			

Burn Triage

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Does The Patient Have Any Of The Following?

1. Partial thickness burns ≥ 10% Total Body Surface Area
2. Any full thickness burns of any age group
3. Burns that involve the face, hands, feet, genitalia, perineum, or major joints
4. Circumferential Burns
5. Electrical burns including lightning injury
6. Chemical burns
7. Radiation Burns
8. Inhalation injury or airway compromise
9. Burn injury with pre-existing medical disorders: CHF, ESRD, COPD, or cardiac that could complicate management, prolong recovery, and affect mortality
10. Burns with concomitant trauma (such as fractures)
11. Pediatric burns, especially requiring ICU care
12. Burn injury in patients who will require special social, emotional or long tern rehabilitation

No	Yes
Courtesy notification to receiving facility of patient's choice.	Prepare patient for transport to burn or trauma center based on regional guidelines.

Burn Estimation Charts

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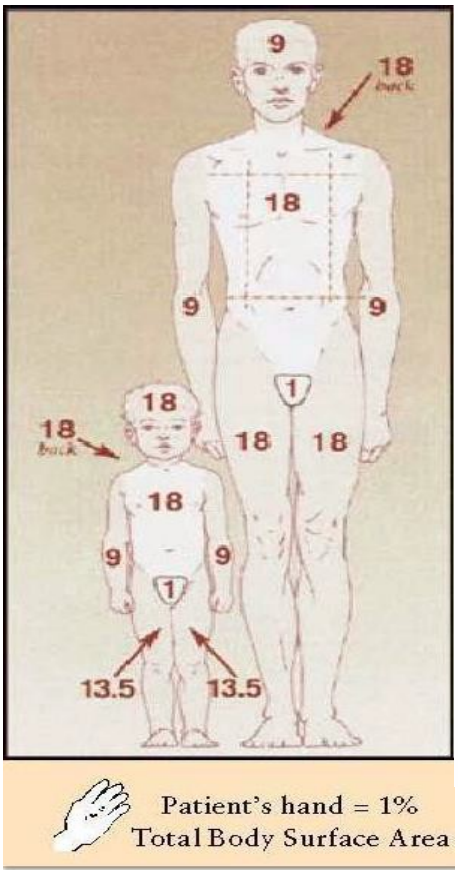
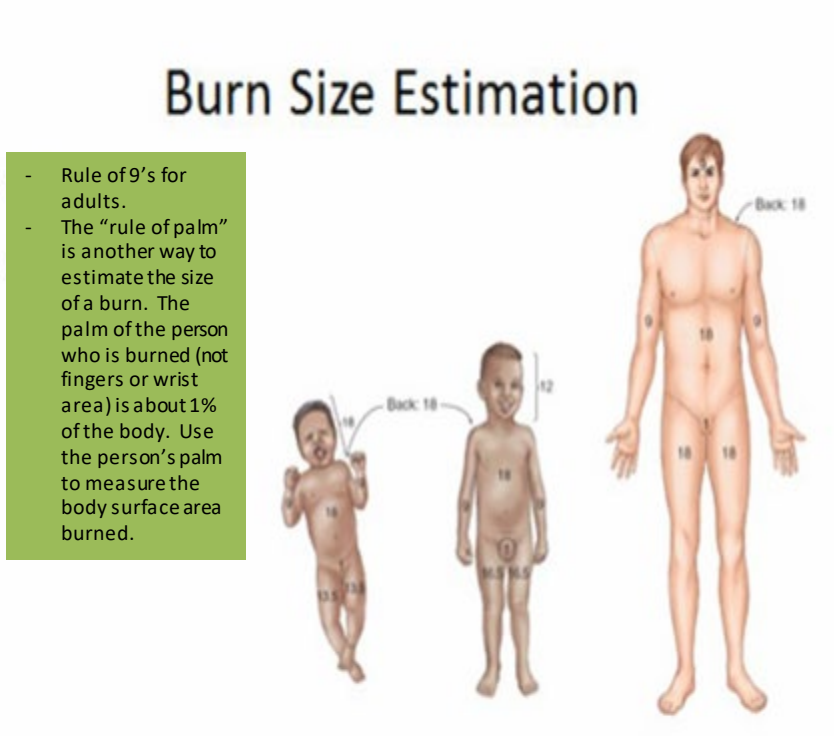
Burn Size Chart 1



Source: University of Utah Burn Center

Burn Size Chart 2



Percentage of Total Body Surface Area by Age and Anatomic Structure			
	Infant < 10 kg	Child	Adult
Head and neck	20%		
Anterior head		9%	4.5%
Posterior head		9%	4.5%
Anterior torso	16%	18%	18%
Posterior torso	16%	18%	18%
Leg, each	16%		
Anterior leg, each		6.75%	9%
Posterior leg, each		6.75%	9%
Arm, each	8%		
Anterior arm, each		4.5%	4.5%
Posterior arm, each		4.5%	4.5%
Genitalia/perineum	1%	1%	1%

Appendix: Drip Calculations

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Lidocaine Infusion Chart Mix 2 g in 500 mL of NS (4/mg/mL)		**Epinephrine** Infusion Chart Mix 2 mg of 1 mg/mL (2000mcg) in 250 mL of NS (8/mcg/mL)	
Dose ordered in mg/min	Amount to infuse in mcgtts/min or mL/hr	Dose ordered in mcg/min	Amount to infuse in mcgtts/min or mL/hr
1	15	2	15
2	30	4	30
3	45	6	45
4	60	8	60
5	75	10	75

Dopamine Infusion Chart Mix 400 mg in 250 mL of NS (1600 mcg/mL)													
Dose in mcg/kg/min	Body Weight (lbs on top, kg on bottom)												
	99	110	121	132	143	154	165	176	187	198	209	220	231
	45	50	55	60	65	70	75	80	85	90	95	100	105
2.5	4	5	5	6	6	7	7	8	8	8	9	9	10
5	8	9	10	11	12	13	14	15	16	17	18	19	20
7.5	13	14	15	17	18	20	21	23	24	25	27	28	30
10	17	19	21	23	24	26	28	30	32	34	36	38	39
12.5	21	23	26	28	30	33	35	38	40	42	45	47	49
15	25	28	31	34	37	39	42	45	48	51	53	56	59
20	34	38	41	45	49	53	56	60	64	68	71	75	79

Dopamine Infusion Chart Mix 400 mg in 250 mL of NS (1600 mcg/mL)	
Dose ordered in mcg/min	Amount to infuse in mcgtts/min or mL/hr
400	15
800	30
1200	45
1600	60

Blood Thinner List

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Antiplatelets	Anticoagulants
• Salicylate (Aspirin) • Clopidogrel (Plavix) • Prasugrel (Effient) • Triagrelor (Brilinta) • Dipyridamole (Persantine) • Dipyridamole/Aspirin (Aggrenox)	• Enoxaparin (Lovenox) • Dabigatran (Pradaxa) • Rivaroxaban (Xarelto) • Warfarin (Coumadin) • Apixaban (Eliquis) • Heparin • Fondaparinux (Arixtra)

FYI: The most common new drugs you will see patients on are Xarelto and Eliquis. Several Cardiologists are starting to use these for patients with A-Fib instead of Coumadin. Aggrenox is used for a lot of stroke/TIA patients.

Drug Category	**BRAND NAMES** of Blood Thinners	**GENERIC NAMES** of Blood Thinners
Vitamin K antagonists	Coumadin	Warfarin
	Dicumarol	Dicumarol
	Miradon	Anisinidione
Heparin (Carbohydrate) drugs	Clexane, Lovenox	Enoxaparin
	Hep-Lock, Hep-Pak	Heparin
	Fragmin	Dalteparin
	Arixtra	Fondaparinux
	Orgaran	Danaparoid
	Innohep	Tinzaparin
Thrombin (enzyme) inhibitors	Argatroban	Argatroban
	Refludan	Lepirudin
	Angiomax, Angiox	Bivalirudin
	Pradaxa	Dabigatran
Salicylate	Aspirin	Acetylsalicylic acid
P2Y (Platelet receptor) inhibitor	Plavix	Clopidogrel bisulphate
Thromboxane (specialized small molecule) inhibitor	Persantine Aggrenox	Dipyramidole Aspirin dipyramidole

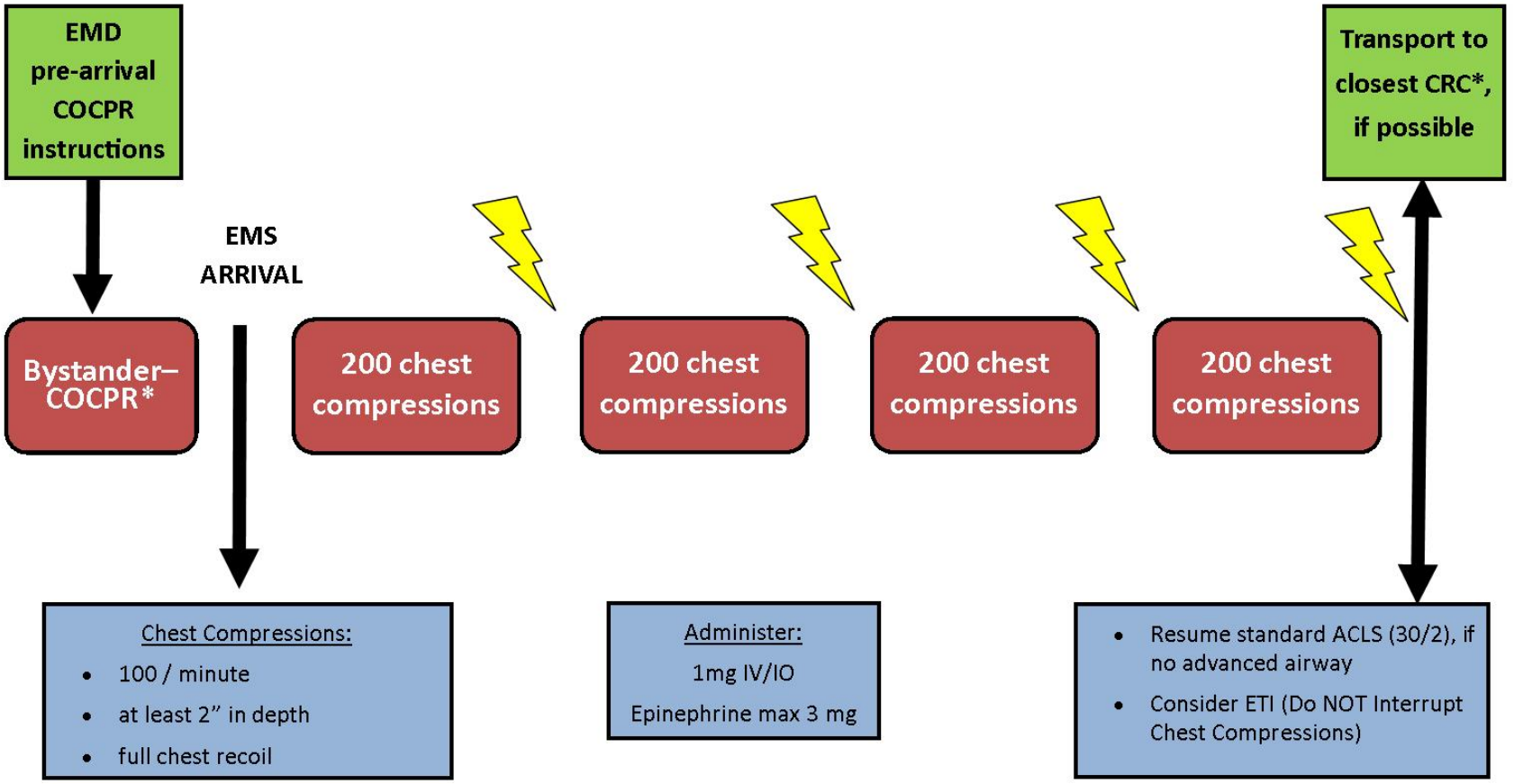
Appendix: ECG Changes in Hyperkalemia

ECG Changes in Hyperkalemia

QRS Complex	Approximate Serum Potassium (mmol/l)	ECG Change
	~4	Normal
	6–7	Peaked T waves
	7–8	Flattened P wave, prolonged PR interval, depressed ST segment, peaked T wave
	8–9	Atrial standstill, prolonged QRS duration, further peaking T waves
	>9	Sine wave pattern

CARDIOCEREBRAL RESUSCITATION (CCR)

AKA MINIMALLY INTERRUPTED CARDIAC RESUSCITATION (MICR)



- If **adequate uninterrupted** bystander chest compressions are provided, EMS providers should perform immediate rhythm analysis.
- Single shock after each set of 200 chest compressions, if indicated. Do not perform pulse check.
- Apply passive oxygenation via a non-rebreather mask and airway adjunct.

COCPR = Compression –only CPR CRC = Cardiac Receiving Center EMD = Emergency Medical Dispatch

FLACC / CHEOPS

TOC

FLACC Scale[2]	0	1	2
1 Face	No particular expression or smile.	Occasional grimace or frown, withdrawn, disinterested.	Frequent to constant frown, clenched jaw, quivering chin.
2 Legs	Normal position or relaxed.	Uneasy, restless, tense.	Kicking, or legs drawn up.
3 Activity	Lying quietly, normal position, moves easily.	Squirming, shifting back and forth, tense.	Arched, rigid or jerking.
4 Cry	No crying (awake or asleep).	Moans or whimpers; occasional complaint.	Crying steadily, screams or sobs, frequent complaints.
5 Consolability	Content, relaxed.	Reassured by occasional touching, hugging or being talked to, distractible.	Difficult to console or comfort.

Score	0	1	2
Cry	No cry	Crying, moaning	Scream
Facial	Smiling	Composed	Grimace
Verbal	Positive	None or other complaints	Pain complaint
Torso	Neutral	Shifting, tense, upright	Restrained
Legs	Neutral	Kicks, squirm, drawn up	Restrained

Modified CHEOPS (Children's Hospital of Eastern Ontario Pain Scale)

ARIZONA CARDIAC RECEIVING & REFERRAL CENTERS

RECEIVING CENTERS – can treat	CITY
Abrazo Arizona Heart Hospital	Phoenix
Abrazo Arrowhead Campus	Glendale
Abrazo Central Campus (Old Phoenix Baptist)	Phoenix
Abrazo Scottsdale Campus (Old Paradise Valley)	Phoenix
Abrazo West Campus (Old West Valley Hospital)	Goodyear
Banner Boswell Medical Center	Sun City
Banner Del E Webb Medical Center	Sun City West
Banner Desert Medical Center	Mesa
Banner Estrella Medical Center	Phoenix
Banner Heart Hospital at Banner Baywood Medical Center	Mesa
Banner Thunderbird Medical Center	Glendale
Banner University Center Phoenix	Phoenix
Banner University Center South	Tucson
Banner University Center Tucson	Tucson
Carondelet St. Joseph's Hospital	Tucson
Carondelet St. Mary's Hospital	Tucson
Chandler Regional Medical Center	Chandler
Flagstaff Medical Center	Flagstaff
Havasu Regional Medical Center	Lake Havasu
HonorHealth John C. Lincoln Deer Valley Medical Center	Phoenix
HonorHealth John C. Lincoln North Mountain Center	Phoenix
HonorHealth Scottsdale Osborn Medical Center	Scottsdale
HonorHealth Scottsdale Shea Medical Center	Scottsdale
Kingman Regional Medical Center	Kingman
Valleywise Health Medical Ctr (formerly Maricopa Med Ctr)	Phoenix
Mayo Clinic Hospital	Phoenix
Mercy Gilbert Medical Center	Gilbert
Mountain Vista Medical Center	Mesa
Northwest Medical Center	Tucson
Oro Valley Hospital	Tucson
Phoenix Children's Hospital	Phoenix
St. Joseph's Hospital and Medical Center	Phoenix
St. Luke's Medical Center	Phoenix
Tucson Medical Center	Tucson
Verde Valley Medical Center	Cottonwood
Western Arizona Regional Medical	Bullhead City
Yavapai Regional Medical Center, West Campus	Prescott
Yuma Regional Medical Center	Yuma
REFERRAL CENTERS – can stabilize	**CITY**
Banner Gateway Medical Center	Mesa
Banner Goldfield	Apache Junction
Banner Ironwood	Queen Creek
HonorHealth Scottsdale Thompson Peak	Scottsdale
Tempe St. Luke's Hospital	Tempe