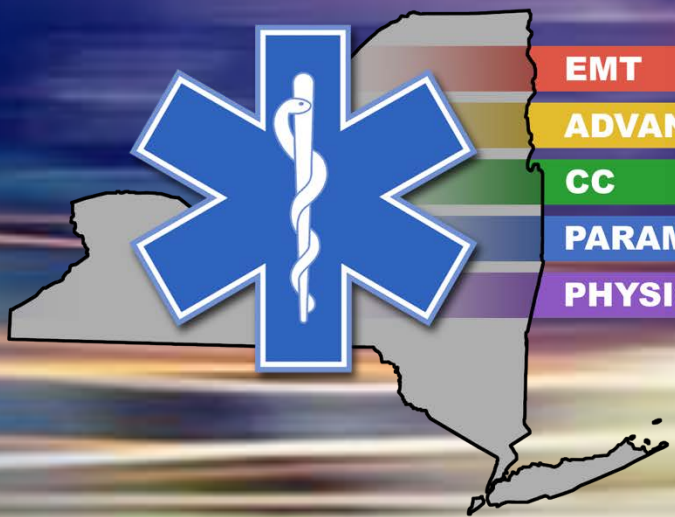
NEW YORK STATE | Department of Health | Bureau of Emergency Medical Services and Trauma Systems

Collaborative Advanced Life Support
Adult and Pediatric Patient Care Protocols



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Effective 07.01.2025*

health.ny.gov/EMS

* Protocols effective 07/01/2025 unless otherwise approved for a region by the Department.

Background

These protocols are intended to guide and direct patient care by EMS. They reflect the current evidence-based practice and consensus of content experts. These protocols are not intended to be absolute treatment documents, rather, as principles and directives which are sufficiently flexible to accommodate the complexity of patient management.

No protocol can be written to cover every situation that a provider may encounter, nor are protocols a substitute for good judgment and experience. Providers are expected to utilize their best clinical judgment and deliver care and procedures according to what is reasonable and prudent for specific situations. However, it will be expected that any deviations from protocol shall be documented and reviewed, according to regional procedure.

THESE PROTOCOLS ARE NOT A SUBSTITUTE FOR GOOD CLINICAL JUDGEMENT

Introduction

Pursuant to Article 3004-A, the Regional Emergency Medical Advisory Committee (REMAC) shall develop policies, procedures, and protocols for triage, treatment, and transport. These protocols are put forth on behalf of the REMACs of the participating regions.

These protocols are consistent with the Statewide BLS Protocols. Advanced providers are also responsible for, and may implement, the standing orders indicated for BLS care. Protocols are listed for each provider level and "STOP" lines indicate the end of standing orders. Generally, BLS interventions should be completed before ALS interventions.

Bullets are used throughout this document. Many processes are not sequential, and tasks should be performed as most appropriate for patient care.

Regional procedures and policies may accompany these protocols.

The color-coded format of the protocols allows each EMS professional to easily follow the potential interventions that could be performed by level of certification.

These collaborative protocols have been developed to serve all the levels of certification within New York State. Each region will determine which levels will be credentialed to practice within their jurisdiction.

CRITERIA

- Any specific information regarding the protocol in general

CFR AND ALL PROVIDER LEVELS

- CFR standing orders
- These are also standing orders for all levels of credential above CFR

CFR STOP

EMT

- EMT standing orders
- These are also standing orders for all levels of credential above EMT

EMT STOP

ADVANCED

- AEMT standing orders
- These are also standing orders for all levels of credential above AEMT

ADVANCED STOP

CC

- EMT-CC and paramedic standing orders

CC STOP

PARAMEDIC

- Paramedic standing orders
- EMT-CC medical control (non-standing order) options
    - There may be instances in which a particular medication or intervention is specific to the paramedic level / scope of practice only, represented by the symbol: Ⓟ

PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- Medical control may give any order within the scope of practice of the provider
- Options listed in this section are common considerations that medical control may choose to order as the situation warrants

Key Points/Considerations

- This area includes additional points specific to patients that fall within the protocol
- These protocols do not supplant regionally required equipment specifications or the items required under Public Health Law and/or Regulation
- These protocols should not serve as a demonstration of required equipment or training, as regional and agency variations will exist
- Regions will determine the requisite training that providers must review prior to utilizing these protocols
- Regions are expected to maintain a Quality Improvement program and develop training programs that will improve proficiency
- Throughout these protocols, the following symbols are used:

‡ Refers to "If equipped and trained." This indicates the intervention(s) may be performed if an agency or region chooses to implement the intervention and the practitioner is trained to the standard of the agency or region and has the intervention (medication, equipment, etc) available to them during the course of patient care. These are not required.

Ⓟ Refers to "Paramedic Only." This indicates the intervention(s) may only be performed by a Paramedic and no other lower level of care (AEMT-CC, AEMT, EMT, or CFR).

Pediatric Definition and Discussion

The period of human development from childhood to adulthood is a continuum with the transition occurring during puberty. Since the completion of this transition is not sharply demarcated and varies among individuals, it is difficult to set a precise age when childhood ends and adulthood begins. It follows that use of such a definition to determine when a pediatric or an adult protocol is to be used is also problematic.

The medical control agreement contained within these protocol document states, "providers are expected to utilize their best clinical judgment and deliver care and procedures according to what is reasonable and prudent for specific situations." The determination of when to utilize an adult or pediatric protocol shall be no different and subject to the same clinical review that is compulsory with any other aspect of prehospital emergency care.

As a *general guideline* for use with these protocols, the following definition has been established:

> **Pediatric protocols should be considered for patients who have not yet reached their 15th birthday**

In protocols requiring weight-based dosing guidelines, pediatric dosing should be calculated on a per-kilogram (kg) basis using the adult dose as the pediatric dose maximum. It is strongly recommended that length-based resuscitation tapes or similar weight calculation devices be used for all pediatric medication doses or treatments to confirm a patient's weight.

Acknowledgements

The State and Regional Emergency Medical Services Councils, State and Regional Emergency Medical Advisory Committees, State Emergency Medical Services for Children Advisory Committee, and Regional Program Agency staff of all that contributed to this and previous versions of these protocols.

The BLS Protocols Advisory and Writing Group.

NYS DOH Bureau of EMS staff.

Special thanks to Robin Snyder-Dailey for the protocol design.

(1.0) General Approach to Prehospital Care

General Approach to the EMS Call

Applies to adult and pediatric patients

CRITERIA

- This general approach guidance document is intended to provide a standardized framework for approaching the scene. Follow common sense, apply good clinical judgment, and follow regionally approved polices and protocols.

CFR AND ALL PROVIDER LEVELS

EMT

ADVANCED

CC

PARAMEDIC

Consider dispatch information while responding:

- Type of response (emergency/non)
- Prevailing weather
- Road conditions
- Time of day
- Location of call
- EMD determinant / mechanism of illness / injury
- Number of anticipated patients
- Need for additional resources

Survey the scene – do not approach the scene unless acceptably safe to do so. Stage proximate to the scene until scene is rendered acceptably safe:

- Environmental hazards
- CBRNE hazards
- Evidence of unknown powders/other unknown substances/sharps
- Indicators of a chemical suicide
- Mechanical hazards
- Violence / threat of violence
- Traffic hazards
- Number of actual patients
- Activate local MCI plan as necessary

Consider shelter-in-place or evacuation based on hazards; consider additional support resources:

- ALS intercept
- Additional ambulance
- Air medical services
- EMS physician
- Fire department / heavy rescue
- Law enforcement
- Utilities

Ongoing situational awareness and patient assessment

- Scene safety is not just a yes / no question; it is continual situational awareness
- Take note of the effect of patients and bystanders
- Don't get pinned into area
- Be aware of your egress routes

Ensure universal precautions / personal protective equipment appropriate to the task

For situations in which EMS PPE would not sufficiently protect the provider, the provider should assist the other emergency responders in determining response objectives based on life safety, property preservation, and environmental protection

Establish or participate in NIMS (e.g. unified command, ICS) structure, as appropriate

For MCIs, establish a command structure as soon as possible

General Approach to the Patient

Applies to adult and pediatric patients

CRITERIA

- This general approach guidance document is intended to provide a standardized framework for approaching the patient. Always follow common sense, apply good clinical judgment, and follow regionally approved polices and protocols.

CFR AND ALL PROVIDER LEVELS

EMT

ADVANCED

CC

PARAMEDIC

History of present illness and other subjective information

- What events led up to the EMS contact
- Use SAMPLE, OPQRST or similar, to guide approach to events/illness/complaint
- Pertinent past medical history/medications/allergies
- Obtain additional pertinent medical information from the family and bystanders

Physical exam

- Focused or complete exam directed by patient presentation, chief complaint, and mechanism of injury or illness
- Check for medical alert tags

Primary Patient Assessment

Airway

- Identify and correct any existing or potential airway obstruction while protecting the cervical spine, if appropriate
    - Is the airway patent
    - Will it stay open on its own
    - Is intervention necessary (OPA, NPA, Suction)

Breathing

- Apply oxygen and/or positive pressure ventilation as indicated
- See "Resources: Oxygen Administration and Airway Management"
    - Is breathing present
    - Is breathing too fast or too slow to sustain life
    - Is the patient speaking effectively

Circulation

- Control serious life-threatening hemorrhage
- See "Trauma: Bleeding / Hemorrhage Control"
    - Is a pulse present
    - Is the pulse too fast or too slow to sustain life
    - Is the pulse regular or irregular
    - What is the skin color, condition, and temperature

- Is there serious external hemorrhage
- Is there evidence of internal hemorrhage or signs of shock

Continually reassess and correct any existing or potentially compromising threats to the ABCs

Disability

- Determine level of consciousness
  - Alert, Voice, Pain, Unresponsive (AVPU)
  - GCS
  - Pupils
  - Cincinnati Pre-Hospital Stroke Scale (and other regionally approved stroke scale, as applicable)

Expose

- Appropriately expose, as needed, to perform complete physical exam and interventions
  - Are exposed patients sufficiently protected from public view

Transport Decision

- See "General Approach: to Transportation"

Secondary Patient Assessment

- Vital Signs (repeated frequently if abnormal or critical patient)
  - Pulse: rate and quality
  - Respiration: rate and quality
  - Blood pressure
    - Obtain BP by palpation only if necessary
  - Skin: color, condition, and temperature
- Blood glucose determination, if approved, equipped, and appropriate

Locate records including: MOLST, eMOLST, or DNR, as appropriate

MEDICAL CONTROL CONSIDERATIONS

- Medical control may give any order within the scope of practice of the provider
- Options listed in this section are common considerations that medical control may choose to order as the situation warrants

Key Points/Considerations

- If a patient chooses to refuse care or transportation, see "Resources: Refusal of Medical Attention" and regional policy
- Develop a prehospital patient impression by combining all information available in the history of present illness, past medical history, and physical exam
- Submit a verbal report to the responsible medical personnel when transferring care
- Label any items that were transported with the patient such as ECGs, paperwork from facilities, medications, or belongings
- Submit written documentation prior to leaving the facility in accordance with state, regional and agency policy

General Approach to Safety Restraining Devices

Applies to adult and pediatric patients

CRITERIA

- This general approach guidance document is intended to provide a standardized framework for patient transport. Follow common sense, apply good clinical judgment, and follow regionally approved policies and procedures.

CFR AND ALL PROVIDER LEVELS

EMT

ADVANCED

CC

PARAMEDIC

All passengers including patients and EMS personnel should be restrained

- It is not permissible or safe to have a parent or caregiver hold a child in his/her arms or lap. The child and parent/caregiver should *each* be restrained appropriately.
- All patients on the stretcher must be secured when the vehicle is in motion or the stretcher is being carried or moved; stretcher harness straps should always be used
- A child's own safety seat – when available and intact – can be used to restrain a child during transport. He/she should be placed in the device and the device should be belted to an ambulance seat. If the child is the patient, the seat should be secured onto the stretcher and the child belted in the child safety seat.
- If the ambulance service does not have an ambulance equipped with child safety seats or restraint, it is recommended that the agency purchase approved child safety seat(s) or restraint(s) for each ambulance. More than one size seat/restraint may be needed as location of the restraint (i.e., stretcher, or captain's chair) may not accommodate all size children.
- Agencies should routinely train EMS personnel in the use of various child safety seats/restraints available and have a policy for how injured or uninjured children will be transported
- As an agency considers the purchase of new vehicles, or is retrofitting current vehicles, design considerations, such as integrated child restraints, should be considered
- All safety seats/restraints should be used according to manufacturer's recommendations

Key Points/Considerations

- If a patient chooses to refuse safety restraints, see "Resources: Refusal of Medical Attention", as well as agency and regional policy

General Approach to Transportation

Applies to adult and pediatric patients

CRITERIA

- This general approach guidance document is intended to provide a standardized framework for patient transport. Follow common sense, apply good clinical judgment, and follow regionally approved policies and procedures.

CFR AND ALL PROVIDER LEVELS

EMT

ADVANCED

CC

PARAMEDIC

Consideration for ALS intercept and air medical services should be made based on agency and regional protocol, policy, patient needs, regional capabilities, and travel times. Do not delay transport waiting for ALS to arrive. The closest ALS may be a hospital.

Transport to the closest appropriate receiving hospital in accordance with regional hospital destination policies for travel time, hospital capabilities, and NY State designation

- The closest appropriate hospital may not be the nearest hospital, even for patients in extremis such as those in cardiac or respiratory arrest
- Patient preference may influence the determination of the appropriate receiving hospital

Ensure ongoing patient assessment, check for improving / deteriorating patient condition, and respond accordingly. Check to ensure that previously initiated therapies remain functional.

Carefully consider use of appropriate emergency warning devices for transport:
Lights and siren use is a medical intervention – does the patient condition warrant the use?

Provide a brief pre-arrival report to receiving hospital in accordance with regional policy. Ensure early notification for serious trauma, STEMI, stroke, and sepsis.

MEDICAL CONTROL CONSIDERATIONS

- Medical control may assist with questions of care especially in the setting of complex medical conditions
- Medical control may assist with the determining the most appropriate receiving facility

Key Points/Considerations

- If a patient chooses to refuse care or transportation, see “Resources: Refusal of Medical Attention” as well as agency and regional policy

(2.0) Extremis / Cardiac Arrest Protocols

Cardiac Arrest – Adult: General Approach

For pediatric see, **"Cardiac Arrest – Pediatric: General Approach"**

CRITERIA

- For patients who are unresponsive without signs of life
- For patients that do not meet the criteria of the "Extremis: Obvious Death" protocol or otherwise excluded by a DNR/MOLST order, see "Resources: Advance Directives/MOLST/DNR"
- See "Environmental: Hypothermia" if there is concern for severe/profound hypothermia

CFR AND ALL PROVIDER LEVELS

- CPR should be initiated prior to defibrillation unless the cardiac arrest is witnessed by the responding EMS provider
    - Perform compressions while awaiting the application of defibrillation pads
- Push hard and fast (100-120 compressions/min)
    - Metronome or feedback devices are strongly encouraged
- Ensure full chest recoil
- Minimize interruptions in chest compressions
- Cycle of CPR = 30 compressions then 2 breaths
    - 5 cycles ≈ 2 minutes
    - Rotate compressors every two minutes with pulse checks, as resources allow
    - Minimize interruptions in chest compressions
- Continuous compressions with asynchronous ventilation (not stopping compressions while ventilating) is permitted to substitute for cycles of CPR that have pauses for ventilation even in non-intubated patients
- Avoid hyperventilation (breathing too quickly or deeply for the patient)
- Use of airway adjuncts and bag-valve-mask (BVM), as indicated, with BLS airway management, including suction (as needed),
- Rhythm check or AED "check patient" every 5 cycles or two minutes of CPR
- Defibrillate as appropriate
    - Resume CPR immediately after defibrillation (do not check a pulse at this time)
    - Continue CPR for approximately 2 minutes cycles before doing a pulse check, or until the patient no longer appears to be in cardiac arrest

CFR STOP

EMT

- After 20 minutes without achieving ROSC, consider calling medical control for: termination of resuscitation, continuing efforts, or (only in extenuating circumstances) transportation

EMT STOP

ADVANCED

CC

PARAMEDIC

- Manage the airway and confirm placement of any advanced airway device utilized with waveform capnography

    - Waveform capnography is encouraged on any ventilated patient, regardless of the use of an airway adjunct
- Check heart rhythm every two minutes, refer to rhythm-specific protocols
- See "Resources: Vascular Devices – Pre-Existing" as needed
- After an advanced airway is placed, no longer deliver "cycles" of CPR
    - Give continuous chest compressions without pauses for breaths
    - Give 8-10 breaths/minute
- Search for and treat possible contributing factors according to your level of certification:
    - **H**ypoglycemia, **H**ypovolemia, **H**ypoxia, **H**ydrogen ion (acidosis), **H**yperkalemia, **T**oxins, **T**ension pneumothorax, **T**rauma
- For cardiac arrest associated with fire, see also "Smoke Inhalation / Cyanide Poisoning–Symptomatic"
- For cardiac arrest associated with hypothermia:
    - If defibrillation is required, provide no more than three shocks
    - Limit administration of medication in cardiac arrest associated with hypothermia to one round
    - Rhythm changes may be treated with a single round of the appropriate drug
    - See "General: Environmental: Cold Emergencies"

ADVANCED, CC AND PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- Termination of resuscitation in instances that are not covered by standing order criteria may be authorized by medical control

Key Points/Considerations

- Do not interrupt compressions for placement of an advanced airway
- Minimize interruption in compressions for placement of a mechanical CPR device
- Do not delay beginning compressions to begin ventilations
- Do not delay ventilations to connect supplemental oxygen
- Adequate ventilation *may* require disabling the pop-off valve if the bag-valve-mask (BVM) if so equipped
- AED should be placed as soon as possible without interrupting compressions to do so
- If a patient has a medication patch, it may be removed (use appropriate PPE)
- Vibrations in a moving ambulance may compromise the effectiveness of the AED
- Compressions in moving ambulances pose a significant danger to providers, are less effective, and should be avoided
    - Consider mechanical CPR devices when available for provider safety if there is a need to do compressions in moving ambulances

Cardiac Arrest – Pediatric: General Approach

CRITERIA

- For patients who are unresponsive without signs of life
- For patients that do not meet the criteria of the "Extremis: Obvious Death" protocol or otherwise excluded by a DNR/MOLST order, see "Resources: Advance Directives/MOLST/DNR"
- See "Environmental: Hypothermia" if there is concern for severe/profound hypothermia

CFR AND ALL PROVIDER LEVELS

EMT

- CPR should be initiated prior to defibrillation unless the cardiac arrest is witnessed by the responding EMS provider
    - Perform compressions while awaiting the application of defibrillation pads
- Push hard and fast (100-120 compressions/min)
    - Metronome or feedback devices are strongly encouraged
- Ensure full chest recoil
- Minimize interruptions in chest compressions
- Cycle of CPR = 30 compressions then 2 breaths (single rescuer)
  15 compressions then 2 breaths (if two rescuers available)
    - 5 cycles ≈ 2 minutes (10 cycles ≈ 2 minutes for 2-rescuers)
    - Rotate compressors every two minutes with rhythm checks, as resources allow
    - Minimize interruptions in chest compressions
- Avoid hyperventilation
- Use of level-appropriate airway adjuncts and bag-valve-mask (BVM), as indicated, with BLS airway management, including suction (as needed)
- Rhythm check or AED "check patient" every two minutes of CPR
- Defibrillate as appropriate (pediatric pads preferred for children with weight <25 kg or age <8 years, if available)
    - Resume CPR immediately after defibrillation (do not check a pulse at this time)
    - Continue CPR for approximately 2 minutes cycles before doing a pulse check, or until the patient no longer appears to be in cardiac arrest

CFR AND EMT STOP

ADVANCED

CC

- See also rhythm-specific protocols

ADVANCED AND CC STOP

PARAMEDIC

- Consider intubation *only* if unable to effectively ventilate with a bag-valve-mask (BVM) and basic airway adjuncts

PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- Termination of resuscitation in instances that are not covered by standing order criteria may be authorized by medical control

Key Points/Considerations

- Intubation is not necessary if oxygenating and ventilating patient well with BLS airway management
- Do not interrupt compressions for placement of an advanced airway
- Minimize interruption in compressions for placement of a mechanical CPR device
- Do not delay beginning compressions to begin ventilations
- Do not delay ventilations to connect supplemental oxygen
- Adequate ventilation *may* require disabling the pop-off valve if the bag-valve-mask (BVM) if so equipped
- AED should be placed as soon as possible without interrupting compressions to do so
- If a patient has a medication patch, it may be removed (use appropriate PPE)
- Artifact from vibrations in a moving ambulance may compromise the effectiveness of the AED
- Consider calling medical control for termination of resuscitation or initiation of transport after 20 minutes of CPR
- Compressions in moving ambulances pose a significant danger to providers, are less effective, and should be avoided
    - Consider mechanical CPR devices when available for provider safety, if there is a need to do compressions in moving ambulances
    - Note: The use of a particular mechanical CPR device may be contraindicated in the pediatric patient; refer to manufacturer's recommendation

Cardiac Arrest – Adult: Asystole or Pulseless Electrical Activity (PEA)

For pediatric see, **"Asystole or Pulseless Electrical Activity (PEA) – Pediatric"**

CFR AND ALL PROVIDER LEVELS

EMT

- General cardiac arrest care, see "Extremis: Cardiac Arrest - Adult: General Approach"

CFR AND EMT STOP

ADVANCED

- Manage airway: Use of naso- and/or oropharyngeal airway and bag-valve-mask (BVM) is acceptable while deferring advanced airway until more urgent care is completed
- Vascular access; check glucose level
- Normal Saline 500 mL bolus
- Epinephrine (1:10,000 / 0.1 mg/mL) 1 mg IV; repeat every 3-5 minutes to a max of 5 doses

ADVANCED STOP

CC

- Cardiac monitor

CC STOP

PARAMEDIC

- For suspected hyperkalemia:
  - Sodium Bicarbonate 50 mEq IV
  - Calcium Chloride 1 gram IV

PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- Additional Epinephrine
- Termination of resuscitation in instances that are not covered by standing order criteria may be authorized by medical control

Key Points/Considerations

- Do not interrupt compressions for placement of an advanced airway
- Minimize interruption in compressions for placement of a mechanical CPR device
- If the cardiac monitor shows asystole, confirm in more than one lead
- A minimum of 50 mL of Normal Saline should be given between the bolus of Calcium Chloride and the bolus of Sodium Bicarbonate
- As indicated, see "Extremis: Termination of Resuscitation"
- Search for and treat possible contributing factors that EMS can manage according to your level of certification:
  - **H**ypoglycemia, **H**ypovolemia, **H**ypoxia, **H**ydrogen ion (acidosis), **H**yperkalemia, **T**oxins, **T**ension pneumothorax, **T**rauma

- Advanced and above: Consider bilateral chest decompression in patients with an organized cardiac rhythm presenting in cardiac arrest thought to be secondary to trauma
    - Note that a pneumothorax may also occur spontaneously (without trauma)
- For cardiac arrest associated with fire, see "Smoke Inhalation / Cyanide Poisoning – Symptomatic"

Cardiac Arrest – Pediatric: Asystole / Pulseless Electrical Activity (PEA)

CFR AND ALL PROVIDER LEVELS

EMT

- General pediatric cardiac arrest care, "Extremis: Cardiac Arrest: General Approach - Pediatric"

CFR AND EMT STOP

ADVANCED

- Vascular access; check glucose level

ADVANCED STOP

CC

- Cardiac monitor
- Normal Saline 20 mL/kg bolus (up to 500 mL bolus) rapid IV/IO
- Epinephrine (1:10,000 / 0.1 mg/mL) 0.01 mg/kg IV/IO; Repeat every 3 – 5 minutes to max of 5 doses

CC STOP

PARAMEDIC

- Consider intubation *only* if unable to effectively ventilate with a bag-valve-mask (BVM) and basic airway adjuncts

PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- Additional Epinephrine
- Sodium Bicarbonate 1 mEq/kg IV

Key Points/Considerations

- Intubation is not necessary if oxygenating and ventilating patient well with BLS airway management
- Do not interrupt compressions for placement of an advanced airway
- Confirm asystole in more than 1 lead
- Perform CPR for at least 3 minutes between medication doses
- Consider airway obstruction
- Search for and treat possible contributing factors that can be managed according to level of certification:
    - **H**ypoglycemia, **H**ypovolemia, **H**ypoxia, **H**ydrogen ion (acidosis), **H**yperkalemia, **T**oxins, **T**ension pneumothorax, **T**rauma
- For cardiac arrest associated with fire, see "Smoke Inhalation / Cyanide Poising – Symptomatic"
- Consider bilateral chest decompression in patients with an organized cardiac rhythm presenting in cardiac arrest thought secondary to trauma if within scope

- Note that a pneumothorax may also occur spontaneously (without trauma)

Cardiac Arrest – Adult: Return of Spontaneous Circulation (ROSC)

CFR AND ALL PROVIDER LEVELS

- Airway management and appropriate oxygen therapy

CFR STOP

EMT

- Acquire and transmit 12-lead ECG‡

EMT STOP

ADVANCED

- Vascular access, ideally at 2 sites (no more than one IO)
- If needed, administer Normal Saline to a total of 2 L to maintain MAP >65 mmHg or SBP >100 mmHg, provided there is no concern of pulmonary edema

ADVANCED STOP

CC

- Cardiac monitor with 12-lead ECG as soon as possible
- Treatment for appropriate presenting rhythm
    - Discuss antiarrhythmic treatment options with medical control if patient was in a shockable rhythm
        - If an AED shock was delivered for a rhythm that was not seen on a monitor, treat as ventricular fibrillation / ventricular tachycardia
- Maintain MAP >65 mmHg or SBP >100 mmHg
    - If needed, administer normal saline to a total of 2 L, provided there is no concern of pulmonary edema
    - Consider Norepinephrine 2 mcg/min, titrated to 20 mcg/min, if needed, after fluid bolus infused, to maintain MAP >65 mmHg or SBP >100 mmHg

CC STOP

PARAMEDIC

- If hypotension persists after crystalloid bolus, consider Epinephrine by push dose‡:
    - Prepare by combining 1 mL Epinephrine 1 mg/10 mL with 9 mL Normal Saline to create Epinephrine 10 mcg/mL
    - Administer 10-20 mcg (1-2 mL Epinephrine 10 mcg/mL)
    - Repeat every 3-5 minutes, titrate to SBP >100 mmHg

PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- Amiodarone 150 mg in 100 mL Normal Saline over 10 min
  or,
- Lidocaine 1.5 mg/kg bolus and/or lidocaine infusion
- Management of hypertension SBP >200 mmHg:
    - Metoprolol 5 mg IV over 5 minutes, up to four doses

Key Points/Considerations

- Acquisition of a 12-lead ECG should be completed *before* transport
    - Appropriate patient assessment and stabilization should be completed as soon as possible following ROSC
    - Voice communication with receiving facility must be completed as soon as possible after ROSC
- ALL patients with STEMI and ROSC should be transported to a receiving hospital capable of primary angioplasty, if feasible, within a transport time recommended per regional procedure
- Patients who are in recurrent cardiac arrest should be transported to the closest appropriate hospital unless otherwise authorized by medical control

Cardiac Arrest – Adult: Ventricular Fibrillation or Pulseless Ventricular Tachycardia

For pediatric see, **"Ventricular Fibrillation or Pu**lseless Ventricular Tachycardia - Pediatric**"**

CFR AND ALL PROVIDER LEVELS

EMT

- General cardiac arrest care
- AED defibrillation, as indicated
- Consider vector change for refractory shockable rhythms[1]

CFR AND EMT STOP

ADVANCED

- Manage airway: Initial use of naso- and/or oropharyngeal airway and bag-valve-mask (BVM) device is acceptable while deferring advanced airway until initial care is complete
- Vascular access; check glucose level
- Normal Saline 500 mL IV bolus
- Epinephrine (1:10,000 / 0.1 mg/mL) 1 mg IV; repeat every 3-5 minutes to max of 5 doses

ADVANCED STOP

CC

- Cardiac monitor
- Defibrillate every 2 minutes
- Administer EITHER:
  Amiodarone 300 mg IV. may repeat 150 mg in 5 minutes if VT/VF persists.
  Or
  Lidocaine 1.5 mg/kg IV, may repeat 0.75 mg/kg in 5 minutes if VT/VF persists
- If pulses return, see "Extremis: Cardiac Arrest – Adult: Return of Spontaneous Circulation (ROSC)"

CC STOP

PARAMEDIC

- Consider Magnesium 2 grams IV if suspected hypomagnesemia or torsades de pointes
- For suspected hyperkalemia:
  - Sodium Bicarbonate 50 mEq IV
  - Calcium Chloride 1 gram IV

PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- Additional Epinephrine
- Additional Lidocaine and/or infusion
- Additional amiodarone
- Termination of resuscitation in instances that are not covered by standing order criteria may be authorized by medical control

Key Points/Considerations

1 – A vector change refers to altering the placement of the defibrillation pads (e.g. changing from sternum/apex to anterior/posterior). A refractory shockable rhythm means that multiple shocks were given and the patient is suspected to remain in a pulseless, shockable rhythm such as VF or pulseless VT.

- Do not interrupt compressions for placement of an advanced airway
- Minimize interruption in compressions for placement of a mechanical CPR device
- A minimum of 50 mL of Normal Saline should be given between the bolus of Calcium Chloride and the bolus of Sodium Bicarbonate
- Consult medical control if patient has return of pulses (even transiently)
- Advanced and above: consider bilateral chest decompression in patients with an organized cardiac rhythm presenting in cardiac arrest thought to be secondary to trauma
    - Note that a pneumothorax may also occur spontaneously (without trauma)
- As indicated, see "Extremis: Termination of Resuscitation"
- For cardiac arrest associated with fire, see "General: Smoke Inhalation / Cyanide Poisoning – Symptomatic"

Cardiac Arrest – Pediatric: Ventricular Fibrillation or Pulseless Ventricular Tachycardia

CFR AND ALL PROVIDER LEVELS

EMT

- General pediatric cardiac arrest care, see "Extremis: Cardiac Arrest – Pediatric: General Approach"
- Consider vector change for refractory shockable rhythms[1]

CFR AND EMT STOP

ADVANCED

- Vascular access
- Defibrillate as appropriate
    - Pediatric pads preferred for children with weight <25 kg or age <8 years

ADVANCED STOP

CC

- Cardiac monitor
- Normal Saline 20 mL/kg bolus (up to 500 mL bolus) rapid IV
- Epinephrine (1:10,000 / 0.1 mg/mL) 0.01 mg/kg IV; repeat every 3 – 5 minutes to max of 5 doses
- Defibrillate at 4 J/kg between doses of medication
    - Higher doses of energy may be considered for refractory ventricular fibrillation not to exceed the lesser of 10 J/kg or the recommended adult maximum dose

CC STOP

PARAMEDIC

- Consider intubation *only* if unable to effectively ventilate with a bag-valve-mask (BVM) and airway adjuncts
- Administer EITHER:
  Amiodarone 5 mg/kg IV (maximum 300 mg), may repeater once (max 150 mg) in 5 minutes in VF/VT persists
  or
  Lidocaine 1.5 mg/kg IV, may repeat 0.75 mg/kg in 5 minutes if VT/VF persists

PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- Additional epinephrine
- Additional lidocaine and/or infusion
- Additional amiodarone

Key Points/Considerations

1 – A vector change refers to altering the placement of the defibrillation pads (e.g. changing from sternum/apex to anterior/posterior). A refractory shockable rhythm means that multiple shocks

were given and the patient is suspected to remain in a pulseless, shockable rhythm such as VF or pulseless VT.

- Intubation is not necessary if oxygenating and ventilating patient well with BLS airway management
- Do not interrupt compressions for placement of an advanced airway
- Use the small (pediatric) pads for patients weighing less than 10 kg
- Artifact from vibrations in a moving ambulance may compromise the effectiveness of an AED
- Consider toxic ingestions, including tricyclic antidepressants
- Search for and treat possible contributing factors that EMS can manage according to your level of certification:
    - **H**ypoglycemia, **H**ypovolemia, **H**ypoxia, **H**ydrogen ion (acidosis), **H**yperkalemia, **T**oxins, **T**ension pneumothorax, **T**rauma
- For cardiac arrest associated with fire, see "Smoke Inhalation / Cyanide Poisoning-Symptomatic"

Foreign Body Obstructed Airway – Adult

For pediatric see, **"Foreign Body Obstructed Airway** - Pediatric**"**

CRITERIA

- Patients with a partial or complete foreign body airway obstruction

CFR AND ALL PROVIDER LEVELS

EMT

ADVANCED

CC

PARAMEDIC

- If the patient is **conscious** and **can** breathe, cough, or speak
  - Encourage the patient to cough
  - Transport in a sitting position or other position of comfort
  - Administer supplemental oxygen; see "Resources: Oxygen Administration and Airway Management"
  - Perform ongoing assessment and watch for progression to complete obstruction
- Facilitate transportation, ongoing assessment, and supportive care
  - Perform ongoing assessment and watch for progression to complete obstruction
- If the patient is **conscious** and **cannot** breathe, cough, or speak
  - Perform airway maneuvers according to current AHA/ARC/NSSC guidelines
- If the patient is **unconscious**
  - Remove any *visible* airway obstruction by hand
  - Perform level-appropriate airway maneuvers, as indicated
  - Perform CPR, see "Extremis: Cardiac Arrest – Adult: General Approach"

CFR, EMT, ADVANCED, CC AND PARAMEDIC STOP

Foreign Body Obstructed Airway – Pediatric

CRITERIA

- Pediatric patients with a partial or complete foreign body airway obstruction

CFR AND ALL PROVIDER LEVELS

EMT

ADVANCED

CC

PARAMEDIC

- If the patient is **conscious** and **can** breathe, cough, or speak
  - Encourage the patient to cough
  - Transport in a sitting position or other position of comfort
  - Administer supplemental oxygen; see "Resources: Oxygen Administration and Airway Management"
  - Consider allowing parent to hold face mask with oxygen 6-8 inches from the child's face as tolerated
- Facilitate transportation, ongoing assessment, and supportive care
  - Perform ongoing assessment and watch for progression to complete obstruction
- If the patient is **conscious** and **cannot** breathe, cough, or speak
  - Perform airway maneuvers according to current AHA/ARC/NSSC guidelines
    - In infants (<1 yr old): perform 5 chest thrusts alternating with 5 back-blows. Do not use abdominal thrusts/Heimlich maneuvers.
- If the patient is **unconscious**
  - Remove any *visible* airway obstruction by hand
  - Perform level-appropriate airway maneuvers
  - Perform CPR, see "Extremis: Cardiac Arrest – Pediatric: General Approach"

CFR, EMT, ADVANCED, CC AND PARAMEDIC STOP

Key Points/Considerations

- Agitating a child with a partial airway obstruction could cause a complete airway obstruction
- Limit interventions that may cause unnecessary agitation such as assessment of blood pressure in a child who can still breathe, cough, cry, or speak

Obvious Death

Applies to adult and pediatric patients

CFR AND ALL PROVIDER LEVELS

EMT

ADVANCED

CC

PARAMEDIC

- Criteria for obvious death may be different in the severe or profoundly hypothermic patient; see "Environmental: Hypothermia"
- CPR, ALS treatment, and transport to an emergency department may be withheld in an apneic and pulseless patient that meets **ANY** one of the following:
    - Presence of a valid MOLST, eMOLST, or DNR indicating that no resuscitative efforts are desired by the patient[1]
    - Patient exhibiting signs of obvious death as defined by ANY of the following:
        - Body decomposition
        - Rigor mortis
        - Dependent lividity (livor mortis)
        - Injury not compatible with life (e.g. decapitation, burned beyond recognition, massive open or penetrating trauma to the head or chest with obvious organ destruction, etc.)
    - Patient who is pulseless and apneic with no organized cardiac activity on ECG (performed by an ALS provider) following significant blunt or penetrating traumatic injury[2]
        - Cardiopulmonary arrest patients in whom the mechanism of injury does not correlate with clinical condition, suggesting a nontraumatic cause of the arrest, are excluded from this criterion
    - Patient who has been submerged for greater than one hour in any water temperature
- If a patient meets any of the aforementioned criteria, resuscitation efforts may be withheld, even if they have already been initiated. If any pads, patches, or other medical equipment have been applied, they should be left in place.
- Notify law enforcement. The patient may be covered and, if allowed by law enforcement, may be moved to an adjacent private location. If there is any concern for suspicious activity, the patient should not be disturbed.

CFR, EMT, ADVANCED, CC AND PARAMEDIC STOP

Key Points/Considerations

1. See "Resources: Advance Directives / DNR / MOLST"
2. Significant blunt or penetrating trauma includes any that meet "Red" criteria of the "Trauma: Trauma Patient Destination"

- ALS is not required for the determination of obvious death

Respiratory Arrest / Failure – Adult

For pediatric see, **"Respiratory Arrest / Failure – Pediatric"**

CRITERIA

- Patients with absent or ineffective breathing may have cyanosis, visible retractions, severe use of accessory muscles, altered mental status, respiratory rate less than 10 breaths per minute, signs of poor perfusion

CFR AND ALL PROVIDER LEVELS

EMT

ADVANCED

CC

PARAMEDIC

- Open the airway using the head-tilt/chin-lift or modified jaw-thrust maneuver
- Remove any *visible* airway obstruction by hand
- Clear the airway of any accumulated secretions or fluids by suctioning
- Provide positive pressure ventilation using a bag-valve-mask (BVM)
    - If ventilations are not successful, refer immediately to "Extremis: Foreign Body Obstructed Airway – Adult"
- Level-appropriate airway management with use of airway adjuncts and bag-valve-mask (BVM), as indicated, including suction as needed, if available
    - Bag-valve-mask should be connected to supplemental oxygen, if available
- Ventilate every 5-6 seconds (adult patient)
- Each breath is given over 1 second and should cause visible chest rise
- Attach pulse oximeter if available and have a goal of oxygen saturation ≥92%
    - See "Resources: Oxygen Administration and Airway Management"

CFR, EMT, ADVANCED, CC AND PARAMEDIC STOP

Key Points/Considerations

- Do not delay ventilations to connect supplemental oxygen
- Ongoing assessment is required to assess:
    - The effectiveness of ventilations
    - The need for compressions should the patient lose his or her pulse (refer immediately to "Extremis: Cardiac Arrest – Adult: General Approach")
- Adequate ventilation *may* require disabling the pop-off valve if the bag-valve-mask (BVM) is so equipped

Respiratory Arrest / Failure – Pediatric

CRITERIA

- Patients with absent or ineffective breathing may have cyanosis, visible retractions, severe use of accessory muscles, altered mental status, respiratory rate less than 12 breaths per minute, signs of poor perfusion

CFR AND ALL PROVIDER LEVELS

EMT

ADVANCED

CC

PARAMEDIC

- Open the airway using the head-tilt/chin-lift or modified jaw-thrust maneuver
- Remove any *visible* airway obstruction by hand
- Clear the airway of any accumulated secretions or fluids by suctioning
- Provide positive pressure ventilation using an appropriate size bag-valve-mask (BVM)
    - If ventilations are not successful, refer immediately to the "Extremis: Foreign Body Obstructed Airway – Pediatric"
- Use of level-appropriate airway adjuncts and bag-valve-mask (BVM), as indicated, with BLS airway management, including suction (as needed), as available
    - The bag-valve-mask (BVM) should be connected to supplemental oxygen, if available
- Ventilate every 3-5 seconds
- Each breath is given over 1 second and should cause visible chest rise
- Attach pulse oximeter if available and have a goal of oxygen saturation ≥92%
    - See "Resources: Oxygen Administration and Airway Management"

CFR, EMT, ADVANCED, CC AND PARAMEDIC STOP

Key Points/Considerations

- Do not delay ventilations to connect to supplemental oxygen but add supplemental oxygen when available
- Ongoing assessment is required to assess:
    - The effectiveness of ventilations
    - The need for compressions should the patient lose his or her pulse (refer immediately to the "Extremis: Cardiac Arrest – Pediatric: General Approach")
- Adequate ventilation *may* require disabling the pop-off valve, if the bag-valve-mask (BVM) is so equipped

Termination of Resuscitation

Applies to adult and pediatric patients

CFR AND ALL PROVIDER LEVELS

EMT

ADVANCED

- See "Extremis: Obvious Death"

CFR, EMT AND ADVANCED STOP

CC

PARAMEDIC

- Patients who do not meet the "Extremis: Obvious Death" protocol, but are in cardiopulmonary arrest, must meet **ALL** of the following requirements for termination of resuscitative efforts to be considered without a medical control order:
  - Age 18 or older
  - Arrest not witnessed by a bystander or by EMS
  - No bystander-administered CPR
  - No automated external defibrillator or manual shock delivered
  - No return of spontaneous circulation up to the time termination is considered
  - At least 20 minutes of resuscitation has been provided
  - Not thought to be in severe or profound hypothermia

CC AND PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- Termination of resuscitation in instances that are not covered by standing order criteria may be authorized by medical control

Key Points/Considerations

- See "Resources: Advance Directives/MOLST/DNR" as appropriate
- Patients that do not meet the above standing order termination of resuscitation may be considered for termination of resuscitation with medical control
- Consider the $EtCO_2$ when discussing termination with medical control
- If resuscitative efforts are terminated, contact law enforcement per regional or jurisdictional procedure. Do not remove endotracheal tubes, other airway management devices, or IV/IO tubing. The patient may be covered and may be moved back onto a bed or sofa, if appropriate and approved by law enforcement.
- If the family is present, appropriate emotional support by other family, neighbors, clergy, or police should be available when considering termination of resuscitation

(3.0) General Adult and Pediatric Medical Protocols

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

Applies to pediatric patients under 2 years of age

CRITERIA

- ALTE/BRUE is an episode in an infant or child less than 2 years old which is frightening to the observer, has now resolved and is characterized by one or more of the following:
  - Apnea (central or obstructive)
  - Skin color change: cyanosis, erythema (redness), pallor, plethora (fluid overload)
  - Marked change in muscle tone
  - Choking or gagging not associated with feeding or a witnessed foreign body aspiration
  - Seizure-like activity

CFR AND ALL PROVIDER LEVELS

- Airway management and appropriate oxygen therapy
- Ongoing assessment of the effectiveness of breathing
  - See "Extremis: Respiratory Arrest / Failure - Pediatric" if necessary
  - See "General: Opioid (Narcotic) Overdose" if necessary
- See "General: Altered Mental Status", if necessary

CFR STOP

EMT

ADVANCED

CC

PARAMEDIC

- Check blood glucose level‡
  - See "Hypoglycemia – Adult or Hypoglycemia – Pediatric

EMT, ADVANCED, CC AND PARAMEDIC STOP

Key Points/Considerations

- Most patients will appear stable and exhibit a normal physical exam. However, this episode may be a sign of underlying serious illness or injury and further evaluation by medical staff is strongly recommended. See "Resources: Refusal of Medical Attention" if the caregiver wishes to refuse transportation.

Altered Mental Status

Applies to adult and pediatric patients

CRITERIA

- For the undifferentiated patient with altered mental status
- See also as indicated the following protocols:
  - ALTE/BRUE – Pediatric
  - Behavioral Emergencies: Agitated Patient
  - Hypoglycemia – Adult
  - Hypoglycemia – Pediatric
  - Opioid (Narcotic) Overdose
  - Poisoning / Overdose: Undifferentiated – Adult
  - Poisoning / Overdose: Undifferentiated – Pediatric

CFR AND ALL PROVIDER LEVELS

- Airway management and appropriate oxygen therapy
- Ongoing assessment of the effectiveness of breathing, see as necessary:
  - "Extremis: Respiratory Arrest / Failure – Adult"
  - "Extremis: Respiratory Arrest / Failure – Pediatric"
  - "General: Opioid (Narcotic) Overdose"

CFR STOP

EMT

- Check blood glucose level‡, if known or suspected to be below 60 mg/dL, see "Hypoglycemia – Adult" or "Hypoglycemia – Pediatric"

EMT STOP

ADVANCED

CC

PARAMEDIC

- See etiology-specific protocols cross referenced in the "CRITERIA" section above

ADVANCED, CC AND PARAMEDIC STOP

Key Points/Considerations

- Assess the scene for safety and, if it is not, retreat to a safe location and obtain police assistance
- Consider closed head injury and non-accidental trauma, especially in children
- Consider drug ingestion, meningitis/encephalitis

Anaphylaxis and Allergic Reaction – Adult

For pediatric see, "Allergic Reaction and Anaphylaxis – Pediatric"

CRITERIA

- Anaphylaxis is a rapidly progressing, life threatening allergic reaction, not simply a rash or hives

CFR AND ALL PROVIDER LEVELS

- Allow the patient to maintain position of comfort
- Airway management and appropriate oxygen therapy
- Ongoing assessment of the effectiveness of breathing
    - See "Extremis: Respiratory Arrest / Failure – Adult" if necessary

If severe respiratory distress, facial or oral edema, and/or hypoperfusion

OR

If patient has ***a history of anaphylaxis*** and has an exposure to an allergen developing respiratory distress and/or hypoperfusion and/or rash:

- Epinephrine (1 mg/mL) 0.3 mg IM‡[1]
- If the patient does not improve within 5 minutes, may repeat once

CFR STOP

EMT

- If wheezing, Albuterol[2] 2.5 mg via nebulizer; may repeat to a total of three doses
    - May be combined with Ipratropium (Atrovent) 0.5 mg in 2.5 mL (unit dose) ‡

EMT STOP

ADVANCED

- Vascular access as appropriate
- Normal Saline 500 mL bolus, if SBP <100 mmHg or MAP <65 mmHg; may repeat up to a total of 2 L if lung sounds remain clear
    - Goal SBP >100 mmHg and MAP >65 mmHg

ADVANCED STOP

CC

PARAMEDIC

- Cardiac monitor

For signs of allergic reaction, including, but not limited to rash, itching, nausea, etc, consider:

- Diphenhydramine (Benadryl) 50 mg IV or IM
- Dexamethasone (Decadron) 10 mg PO, IM, or IV

CC AND PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- Additional Albuterol
- Additional Epinephrine for levels with limited standing orders

- Additional IV fluid
- Epinephrine infusion starting at 5 mcg/min titrated to MAP >65 mmHg or SBP >100 mmHg℗

Key Points/Considerations

1. Epinephrine 0.3 mg may be administered via Adult Autoinjector (CFR or higher) or Syringe Epinephrine Kit (EMT or higher)
2. A combination unit dose (such as a DuoNeb®) may be substituted for Albuterol 2.5 mg in 3 mL (unit dose) & Ipratropium (Atrovent) 0.5 mg in 2.5 mL (unit dose) mixed together

- If Epinephrine is administered by crew or patient self-administered Epinephrine, regional procedure may require consulting medical control prior to honoring a request for refusal of medical care
- Though a previous history of anaphylaxis is an important indicator for treatment, providers should be aware that anaphylaxis may develop in patients with no prior history
- Anaphylaxis may present with shock associated only with GI symptoms. In the setting of a known exposure to an allergen associated with shock, nausea, vomiting, abdominal pain, and/or diarrhea, consider anaphylaxis in consult with medical control.

Anaphylaxis and Allergic Reaction – Pediatric

CRITERIA

- Anaphylaxis is a rapidly progressing, life threatening allergic reaction, not simply a rash or hives

CFR AND ALL PROVIDER LEVELS

- Allow the patient to maintain position of comfort
  - Do not force the child to lie down
  - Do not agitate the child
- Airway management and appropriate oxygen therapy
- Ongoing assessment of the effectiveness of breathing
  - See "Extremis: Respiratory Arrest / Failure – Pediatric" as necessary
  - See "Dif Breathing – Pediatric: Stridor" as necessary

If severe respiratory distress, facial or oral edema, and/or hypoperfusion

OR

If patient has ***a history of anaphylaxis*** and has an exposure to an allergen developing respiratory distress and/or hypoperfusion and/or rash:

- Epinephrine (1 mg/mL) 0.3 mg IM if ≥30 kg‡[1]
- Epinephrine (1 mg/mL) 0.15 mg IM if <30 kg‡[2,3]
- If the patient does not improve within 5 minutes, may repeat once

CFR STOP

EMT

ADVANCED

- If wheezing, Albuterol[4] 2.5 mg via nebulizer; may repeat to a total of three doses
  - May be combined with Ipratropium (Atrovent) 0.5 mg in 2.5 mL (unit dose) ‡

EMT AND ADVANCED STOP

CC

- Cardiac monitor
- Diphenhydramine (Benadryl) 1 mg/kg IM; max dose 50 mg

CC STOP

PARAMEDIC

- Vascular access, if indicated (Resources: Vascular Access)
- Normal Saline 20 mL/kg IV bolus

For signs of allergic reaction, including, but not limited to rash, itching, nausea, etc, consider:

- Diphenhydramine (Benadryl) 1 mg/kg IM/IV; max total dose 50 mg
- Dexamethasone (Decadron) 10 mg PO, IM, or IV for patients ≥2 years old

PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- CC vascular access
- Epinephrine for indications other than those above
- Additional Albuterol
- Epinephrine 0.1-1.5 mcg/kg/minute IV drip℗
    - Start at 0.1 mcg/kg/minute, titrate gradually; max 1.5 mcg/kg/minute
- Dexamethasone (Decadron) 0.6 mg/kg PO, IM, or IV for patients <2 years old

Key Points/Considerations

1. Epinephrine 0.3 mg may be administered via Adult Autoinjector (CFR or higher) or Syringe Epi Kit (EMT or higher)
2. Epinephrine 0.15 mg may be administered via Pediatric Autoinjector (CFR or higher) or Syringe Epi Kit (EMT or higher)
3. Infant Auto Injector (0.1 mg IM) may be substituted for pediatric patients <15 kg, if available (CFR or higher)
4. A combination unit dose (such as a DuoNeb®) may be substituted for Albuterol 2.5 mg in 3 mL (unit dose) & Ipratropium (Atrovent) 0.5 mg in 2.5 mL (unit dose) mixed together

- If Epinephrine is administered by crew or patient self-administered Epinephrine, regional procedure may require consulting medical control prior to honoring a request for refusal of medical care
- Though a previous history of anaphylaxis is an important indicator for treatment, providers should be aware that anaphylaxis may develop in patients with no prior history
- Anaphylaxis may present with shock associated only with GI symptoms. In the setting of a known exposure to an allergen associated with shock, where the presenting symptom is, nausea, vomiting, abdominal pain, and/or diarrhea, consider anaphylaxis in consult with medical control.

Behavioral: Agitated Patient – Adolescent

Applies to adolescent patients only

CRITERIA

- This protocol is intended to be utilized to help outline the approach to an individual in the transitional stage of physical and psychological development between puberty and adulthood in instances in which the adult or pediatric protocol may not provide sufficient guidance
- This protocol is intended to be used to assist in safe provision of care with agitated adolescent patients requiring medical evaluation, treatment, and transportation
- This may include any patient who demonstrates potentially violent behavior, regardless of underlying etiology
- This protocol includes consideration for patients who are extremely combative and are at immediate risk of causing physical harm to emergency responders, the public, and/or themselves
- Pharmacologic management of behavioral emergencies is only to be utilized for situations in which environmental modification and verbal de-escalation (utilizing interpersonal communication skills) is not successful or not possible
- See "Resources: De-escalation Techniques"

CFR AND ALL PROVIDER LEVELS

- Airway management, vital signs, and appropriate oxygen therapy, if tolerated
- Verbal de-escalation (utilizing interpersonal communication skills)
- If verbal de-escalation is not successful or not possible, apply soft restraints, such as towels, triangular bandages, or commercial medical restraints, only if necessary to protect the patient and others from harm

CFR STOP

EMT

ADVANCED

- Check blood glucose level‡, as soon as you are able to safely do so. If low, see "General: Altered Mental Status / Hypoglycemia".

EMT AND ADVANCED STOP

CC

- Midazolam (Versed) up to 5 mg IM or IV; may repeat up to 10 mg

CC STOP

PARAMEDIC

For patients who are extremely combative and are at immediate risk of causing physical harm to emergency responders, the public, and/or themselves who present with a clinical triad of psychomotor agitation, physiologic excitation, and **failure to respond to verbal and environmental de-escalation** in the setting of destructive, erratic, bizarre, or violent behavior. Common features include:

- Unusual strength
- Lack of tiring
- Unnatural pain tolerance
- Tachypnea

- Diaphoresis
- Psychomotor agitation
- Tactile hyperthermia
- Altered mental status

- Ketamine[Ⓟ‡] 2 mg/kg up to 250 mg IM OR Midazolam (Versed) 0.1 mg/kg up to 5 mg IM; may repeat Midazolam (Versed) up to 10 mg
- May administer Ketamine[Ⓟ‡] 2 mg/kg up to 250 mg IM after 5 minutes (as a single repeat dose or as a single dose after Midazolam [Versed]), should the patient remain uncontrolled
- If the agitated patient goes into cardiac arrest, refer to the appropriate protocol and administer Sodium Bicarbonate 50 mEq IV

PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- Olanzapine 10 mg IM[Ⓟ‡] once, or 5 mg SL[Ⓟ‡] once – use caution if midazolam given or anticipated
- Midazolam (Versed) IV, IM
- Ketamine[Ⓟ‡] 0.5-2 mg/kg IV or IM
  - Consider initial dose of Ketamine 250 mg IM for the appropriate patient
  - Use caution ordering Ketamine after Midazolam (Versed) because apnea may occur

Key Points/Considerations

- **Patient must NOT be transported in a face-down position**
- Assess the scene for safety and, if it is not, retreat to a safe location and obtain police assistance
- Consider medical causes of abnormal behavior such as: hypoxia, hypoperfusion, hypoglycemia, head injury, intoxication, other drug ingestion, and trauma
- Consider the possibility of a behavioral/developmental disorder such as autism spectrum disorder or mental health problems
- Utilize waveform capnography as soon as practicable following administrations of any medications in this protocol
- A team approach should be attempted at all times for the safety of the patient and the providers
- If the patient is in police custody and/or has handcuffs on, a police officer should accompany the patient in the ambulance to the hospital. EMS must have the ability to immediately remove any mechanical restraints that hinder patient care at all times.
- All uses of this protocol may require Agency Medical Director review or regional QA, depending on regional procedure

Behavioral: Agitated Patient – Adult

For pediatric and adolescent patients see, **"Behavioral: Agitated Patient – Pediatric"** or **"Behavioral: Agitated Patient – Adolescent"**

CRITERIA

- This protocol is intended to be used with agitated patients requiring sedation for medical evaluation and treatment
- This may include any patient who demonstrates potentially violent behavior, regardless of underlying etiology
- Pharmacologic management of behavioral emergencies is only to be utilized for situations in which environmental modification and verbal de-escalation (utilizing interpersonal communication skills) is not successful or not possible
- This protocol includes consideration for patients who are extremely combative and are at immediate risk of causing physical harm to emergency responders, the public, and/or themselves
- See "Resources: De-escalation Techniques"

CFR AND ALL PROVIDER LEVELS

- Airway management, vital signs, and appropriate oxygen therapy, if tolerated
- Verbal de-escalation (utilizing interpersonal communication skills)
- If verbal de-escalation is not successful or not possible, apply soft restraints, such as towels, triangular bandages, or commercial medical restraints, only if necessary to protect the patient and others from harm

CFR STOP

EMT

ADVANCED

- Check blood glucose level‡, as soon as you are able to safely do so. If low, see "General: Altered Mental Status / Hypoglycemia"

EMT AND ADVANCED STOP

CC

- Midazolam (Versed) up to 5 mg IM or IV; may repeat up to 10 mg

CC STOP

PARAMEDIC

For patients who are extremely combative and are at immediate risk of causing physical harm to emergency responders, the public, and/or themselves who present with a clinical triad of psychomotor agitation, physiologic excitation, and, failure to respond to verbal and environmental de-escalation in the setting of destructive, erratic, bizarre, or violent behavior. Common features include:

- Unusual strength
- Lack of tiring
- Unnatural pain tolerance
- Tachypnea
- Diaphoresis
- Psychomotor agitation

- Tactile hyperthermia
- Altered mental status

- Ketamine[Ⓟ‡] 250 mg IM
- May administer Ketamine[Ⓟ‡] 250 mg IM after 5 minutes (as a single repeat dose or as a single dose after Midazolam [Versed]), should the patient remain uncontrolled
- If the agitated patient goes into cardiac arrest, refer to the appropriate protocol and Sodium Bicarbonate 50 mEq IV

PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- Olanzapine 10 mg IM[Ⓟ‡] once, or 5 mg SL[Ⓟ‡] once – use caution if midazolam given or anticipated
- Midazolam (Versed) IV, IM
- Ketamine[Ⓟ‡] 0.5-2 mg/kg IV or IM
  - Consider initial dose of Ketamine 250 mg IM for the appropriate patient
  - Use caution ordering Ketamine after Midazolam (Versed) because apnea may occur

Key Points/Considerations

- **Patient must NOT be transported in a face-down position**
- Assess the scene for safety and, if it is not, retreat to a safe location and obtain police assistance
- Utilize caution and consider smaller doses in high-risk populations such as the elderly, small patients, or those with significant comorbidities
- Consider medical causes of abnormal behavior such as: hypoxia, hypoperfusion, hypoglycemia, head injury, intoxication, other drug ingestion, and trauma
- Consider the possibility of a behavioral/developmental disorder such as autism spectrum disorder or mental health problems
- Utilize waveform capnography as soon as practicable following administration of any medications in this protocol
- A team approach should be attempted at all times for the safety of the patient and the providers
- If the patient is in police custody and/or has handcuffs on, a police officer should accompany the patient in the ambulance to the hospital. EMS must have the ability to immediately remove any mechanical restraints that hinder patient care at all times.
- All uses of this protocol may require Agency Medical Director review or regional QA, depending on regional procedure

Behavioral: Agitated Patient – Pediatric

CRITERIA

- This protocol is intended to be used with patients who are deemed to pose a danger to themselves or others
- See "Resources: De-escalation Techniques"

CFR AND ALL PROVIDER LEVELS

- Airway management, vital signs, and appropriate oxygen therapy, if tolerated
- Verbal de-escalation (utilizing interpersonal communication skills)
- If verbal de-escalation is not successful or not possible, apply soft restraints, such as towels, triangular bandages, or commercial soft medical restraints, only if necessary to protect the patient and others from harm
- See as necessary "General: Altered Mental Status"

CFR STOP

EMT

ADVANCED

CC

PARAMEDIC

- Check blood glucose level‡, as soon as you are able to safely do so. If abnormal, see "General: Hypoglycemia – Pediatric"

EMT, ADVANCED, CC AND PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- Midazolam (Versed) 0.1 mg/kg IV or IM
- Ketamine℗‡ 0.5-2 mg/kg IV or IM

Key Points/Considerations

- **Patient must NOT be transported in a face-down position**
- Assess the scene for safety and, if it is not, retreat to a safe location and obtain police assistance
- Consider hypoxia, hypoperfusion, hypoglycemia, head injury, intoxication, other drug ingestion, and other medical/traumatic causes of abnormal behavior
- Consider the possibility of a behavioral/developmental disorder such as autism spectrum disorder or mental health problems
- Utilize waveform capnography as soon as practicable following administration of any medications in this protocol
- A team approach should be attempted for the safety of the patient and the providers
- If the patient is in police custody and/or has handcuffs on, a police officer should accompany the patient in the ambulance to the hospital. The provider must have the ability to immediately remove any mechanical restraints that hinder patient care at all times

Carbon Monoxide Exposure – Suspected

Applies to adult and pediatric patients

CRITERIA

- For patients with smoke inhalation, patients for whom a carbon monoxide (CO) alarm has gone off in the residence, or any other potential exposure to CO
- See also "Smoke Inhalation / Cyanide Poisoning – Symptomatic", as indicated

CFR AND ALL PROVIDER LEVELS

- Any patient with suspected carbon monoxide poisoning should receive high flow oxygen via non-rebreather mask

CFR STOP

EMT

ADVANCED

CC

PARAMEDIC

- An objective carbon monoxide evaluation tool may be used to guide therapy, if available
- Any pregnant (or potentially pregnant) woman should receive high flow oxygen and be transported to the hospital

ASYMPTOMATIC potentially exposed people:

- An asymptomatic patient with a known CO level >25% should receive high flow oxygen and be transported to the hospital
- An asymptomatic patient with a CO level 12-25% should receive high flow oxygen for 30 minutes and then should be reassessed, unless the patient requests transport to the hospital
    - Strongly encourage transport if CO levels are not decreasing

SYMPTOMATIC patients:

- Carbon monoxide poisoning does not have specific, clear cut symptoms; other medical conditions may present with dizziness, nausea, and/or confusion
- All symptomatic patients should be transported, regardless of CO level
- If there is no soot in the airway, consider CPAP‡ 5-10 cm H_2O (if the device delivers 100% oxygen) for adult patients or older pediatric patients as equipment size allows

MULTIPLE patients:

- Consult medical control for guidance regarding transport decisions and on-scene treatment and release when multiple patients are involved
- If there is potential for greater than 5 patients, consider requesting an EMS physician to the scene, if available

EMT, ADVANCED, CC AND PARAMEDIC STOP

Key Points/Considerations

- When using noninvasive carbon-monoxide measuring devices:
    - Consider contacting medical control to discuss appropriate hospital destination for patients with the following:

        - SpCO reading >25%
        - Loss of consciousness
        - Significant altered mental status or an abnormal neurologic exam
        - Pregnancy
    - Pediatrics: Assure your device is approved for pediatric use and, if so, that pediatric appropriate sensors are utilized
    - Pregnant women: The fetal SpCO may be 10-15% higher than maternal reading
    - Smokers: Heavy smokers may have baseline SpCO levels up to 10%
    - A misapplied or dislodged sensor may cause inaccurate readings
    - Do not use tape to secure the sensor
    - Do not place the sensor on the thumb or 5th digit

Cardiac – Adult: Bradycardia / Heart Blocks – Symptomatic

For pediatric see, "Cardiac – Pediatric: Bradycardia"

CFR AND ALL PROVIDER LEVELS

EMT

- ABCs and vital signs
- Airway management and appropriate oxygen therapy
- See "Environmental: Hypothermia" if there is concern for severe/profound hypothermia

CFR AND EMT STOP

ADVANCED

- Vascular access

ADVANCED STOP

CC

- Cardiac monitor
- 12-lead ECG, when possible
- Atropine 1 mg IV every 3 min, up to a max of 3 mg
- Transcutaneous pacing, consider sedation (General: Procedural Sedation – Adult)

CC STOP

PARAMEDIC

- Consider Norepinephrine 2 mcg/min titrated to 20 mcg/min, if needed, after fluid bolus completed to maintain MAP >65 mmHg or SBP >100 mmHg

PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- Epinephrine infusion starting at 5 mcg/min titrated to MAP >65 mmHg or SBP >100 mmHg℗

Key Points/Considerations

- Only treat bradycardia if the patient is symptomatic: chest pain, dyspnea, altered mental status, pulmonary edema, ischemia, infarction, or hypotension (systolic BP <90 mmHg or MAP <60 mmHg)
- Heart rate may be slow and difficult to detect in hypothermia, consider medical control consultation
- Consider immediate transcutaneous pacing for patients with poor perfusion
    - May also consider in cases when Atropine may have little or no effect, such as cardiac transplant patients
- Patients with high degree AV block (2nd degree type II and 3rd degree) may have limited response to Atropine

Cardiac – Pediatric: Bradycardia

CFR AND ALL PROVIDER LEVELS

EMT

ADVANCED

- ABCs and vital signs
- Airway management and appropriate oxygen therapy
- If the heart rate is markedly bradycardic, and the patient's mental status or respiratory rate are decreased, ventilate with a bag-valve-mask (BVM) and consider chest compressions
- See "Environmental: Hypothermia" if there is concern for severe/profound hypothermia

CFR, EMT AND ADVANCED STOP

CC

- Cardiac monitor
- Consider a 12-lead ECG

CC STOP

PARAMEDIC

- Epinephrine (1:10,000 / 0.1 mg/mL) 0.01 mg/kg IV, maximum dose 0.3 mg
  - Repeat Epinephrine every 3 – 5 minutes
- Atropine 0.02 mg/kg, with a minimum dose of 0.1 mg IV and a maximum dose of 1 mg
  - Repeat Atropine once in 5 minutes, to a maximum total dose of 0.04 mg/kg

PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- CC vascular access
- Transcutaneous pacing
- Epinephrine 0.1-1.5 mcg/kg/minute IV drip℗
  - Start at 0.1 mcg/kg/minute, titrate gradually; max 1.5 mcg/kg/minute

Key Points/Considerations

- A Newborn/Infant is bradycardic if pulse less than 60 bpm
- Altered mental status with mild bradycardia this for age group is likely not secondary to the bradycardia; consider alternate etiologies
- "Symptomatic" includes poor systemic perfusion, hypotension, respiratory difficulty, or altered level of consciousness
- If you suspect bradycardia is due to increased vagal tone, primary AV block, or organophosphate exposure, give Atropine before giving Epinephrine
- Do not treat asymptomatic bradycardia
  - Heart rate may be slow and difficult to detect in hypothermia, consider medical control consultation

Cardiac – Adult: Tachycardia – Narrow Complex

For pediatric see, **"**Cardiac – Pediatric: Tachycardia**"**

CFR AND ALL PROVIDER LEVELS

EMT

- ABCs and vital signs
- Airway management and appropriate oxygen therapy

CFR AND EMT STOP

ADVANCED

- Vascular access
- Consider Normal Saline if there is concern for tachycardia due to dehydration/hypovolemia
  - 500 mL bolus; may repeat if necessary up to 2 L provided lung sounds remain clear

ADVANCED STOP

CC

PARAMEDIC

- Cardiac monitor
- ***UNSTABLE***[1] and if the rhythm is ***REGULAR***:
  - Consider sedation (General: Procedural Sedation – Adult)
  - Synchronized cardioversion starting at 100 Joules or equivalent biphasic
  - 12-lead ECG, when possible
- ***UNSTABLE***[1] and if the rhythm is ***IRREGULAR***:
  - Consider sedation (General: Procedural Sedation – Adult)
  - Synchronized cardioversion 200 Joules or equivalent biphasic
  - 12-lead ECG, when possible
- ***STABLE*** and if the rhythm is ***REGULAR:***
  - Vagal maneuver
  - Adenosine 6 mg IV with rapid saline flush, may repeat Adenosine 12 mg IV, if needed
  - 12-lead ECG, when possible
- ***STABLE*** and if the rhythm is ***IRREGULAR:***
  - Diltiazem (Cardizem) 0.25 mg/kg (max 25 mg) IV infused over 2 minutes
    - Metoprolol 5 mg IV infused over 2 minutes ***instead of*** Diltiazem (Cardizem) if patient is on a prescribed beta-blocker
  - 12-lead ECG, when possible
- If patient remains ***STABLE*** and rhythm remains uncontrolled or unconverted by Diltiazem (Cardizem) after 15 minutes, Adenosine, vagal maneuvers; or if tachycardia is recurrent:
  - Diltiazem (Cardizem) 0.35 mg/kg (max 35 mg) IV infused over 2 minutes
    - Metoprolol 5 mg IV infused over 2 minutes ***instead of*** Diltiazem (Cardizem) if Metoprolol was administered initially

CC AND PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- Additional Adenosine
- Additional Diltiazem (Cardizem) slow IV
- Additional Metoprolol 5 mg slow IV (or initial dose, if not covered under standing order)
- Amiodarone 150 mg in 100 mL Normal Saline, infused over 10 minutes
- Synchronized cardioversion outside standing orders

Key Points/Considerations

1. ***UNSTABLE*** includes significant cardio-respiratory compromise, hypotension, or altered level of consciousness
- This protocol generally applies to HR ≥150
- Do NOT use carotid sinus massage as a vagal maneuver
- Combined use of IV Metoprolol and Diltiazem (Cardizem) may precipitate hypotension and may not be done on standing order

Cardiac – Adult: Tachycardia – Wide Complex with a Pulse

For pediatric see, "Cardiac – Pediatric: Tachycardia"

CFR AND ALL PROVIDER LEVELS

EMT

- ABCs and vital signs
- Airway management and appropriate oxygen therapy

CFR AND EMT STOP

ADVANCED

- Vascular access
- Consider Normal Saline if there is concern for tachycardia due to dehydration/hypovolemia
  - 500 mL bolus; may repeat if necessary up to 2 L provided lung sounds remain clear

ADVANCED STOP

CC

- Cardiac monitor
- If ***UNSTABLE***[1]:
  - Consider sedation (General: Procedural Sedation – Adult)
  - Synchronized cardioversion starting at 100 Joules or the equivalent biphasic setting
    - If irregularly irregular, cardioversion may be initiated at 200 Joules
    - Repeated as needed, to a maximum of 3 times
  - If the rhythm is converted, discuss the administration of antiarrhythmics with medical control
- 12-lead ECG, when possible

CC STOP

PARAMEDIC

- If ***STABLE***:

  Amiodarone 150 mg in 100 mL Normal Saline, over 10 minutes
  OR
  Lidocaine 1.5 mg/kg IV

PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- Unsynchronized cardioversion or synchronized cardioversion outside standing orders
- Adenosine 6 mg or 12 mg IV with rapid Normal Saline flush
- Additional Amiodarone
- Additional Lidocaine 0.75 mg/kg IV or lidocaine infusion
- Magnesium 2 grams IV, over 10 minutes for STABLE patient; over 2 minutes for UNSTABLE patient

Key Points/Considerations

1. UNSTABLE includes significant cardio-respiratory compromise, hypotension, or altered level of consciousness
- If no pulse, treat as ventricular fibrillation
- Wide complex is defined as a QRS complex >0.12 sec / 120 msec / 3 small boxes

Cardiac – Pediatric: Tachycardia

CFR AND ALL PROVIDER LEVELS

EMT

ADVANCED

- ABCs and vital signs
- Airway management and appropriate oxygen therapy

CFR, EMT AND ADVANCED STOP

CC

- Cardiac monitor
- Consider a 12-lead ECG

CC STOP

PARAMEDIC

- Vascular access, if indicated (Resources: Vascular Access)
- Normal Saline 20 mL/kg bolus IV; may repeat once

PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- CC vascular access

UNSTABLE[1] patient:

- Synchronized cardioversion 0.5 – 1 J/kg
- Consider sedation, if vascular access is available (General: Procedural Sedation – Pediatric)

STABLE patient, wide QRS:

- Amiodarone 5 mg/kg IV (max 150 mg) diluted in 100 mL given over 20 minutes
  OR
- Lidocaine 1.5 mg/kg IV

STABLE patient, narrow QRS[2]:

- Vagal maneuvers
- Adenosine 0.1 mg/kg IV (max 6 mg); may repeat at 0.2 mg/kg (max 12 mg)

Key Points/Considerations

1. UNSTABLE includes significant cardio-respiratory compromise, hypotension, or altered level of consciousness
2. Newborn/Infant SVT pulse >220 bpm; child >1 year SVT if pulse >180 bpm and has no discernible p-waves and regular R-R interval on printed ECG strip

- The most common causes of sinus tachycardia in children are fever and dehydration, not cardiac etiology
- Do not treat asymptomatic tachycardia. Contact medical control.

Cardiac – Adult: ST Elevation MI (STEMI)

CFR AND ALL PROVIDER LEVELS

- Airway management and appropriate oxygen therapy
- Aspirin 324 mg (4 x 81 mg tabs) chewed, only if able to chew‡[1]

CFR STOP

EMT

- Acquire and transmit 12-lead ECG‡
  - For patients with a STEMI, confirmed by medical control, begin transport to a facility capable of primary angioplasty if estimated arrival to that facility is within 90 minutes of patient contact or if directed by medical control or regional procedure
- If the patient requests, assist patient with his or her prescribed Nitroglycerin, up to 3 doses, 5 minutes apart, provided the patient's systolic BP is >120 mmHg
- Additional Nitroglycerin may be given by an EMT with a medical control order
- For patients with signs of hypoperfusion "General: Cardiogenic Shock"

EMT STOP

ADVANCED

- Vascular access
- Nitroglycerin 0.4 mg SL per dose, as needed, 5 minutes apart, provided the patient's systolic BP is >120 mmHg or MAP >90 mmHg
- See "General: Pain Management – Adult", as indicated

ADVANCED STOP

CC

PARAMEDIC

- Cardiac monitor with 12-lead ECG
- Strongly recommend transport to a facility capable of primary angioplasty, if transport time is less than 90 minutes, or as otherwise directed by medical control or regional procedure
- Notify the receiving hospital ASAP for ST elevation myocardial infarction (STEMI) or to discuss transport options if the patient requests a facility not capable of primary angioplasty
- If systolic BP drops below 100 mmHg, place the patient in a supine position, if possible
  - Consider Normal Saline 500 mL bolus, if SBP <100 mmHg or MAP <65 mmHg; may repeat up to a total of 2 L if lung sounds remain clear to achieve goal SBP >100 mmHg and MAP >65 mmHg

CC AND PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- Additional Nitroglycerin 0.4 mg SL every 5 minutes for EMT/AEMTs
- Additional Saline
- Metoprolol 5 mg slow IV, IF HR >80 and BP >120 mmHg or MAP >90 mmHg to a total of 4 doses

Key Points/Considerations

1 Aspirin should not be enteric coated

- The patient may have been advised to take aspirin prior to arrival by emergency medical dispatch. You may give an additional dose of aspirin (324 mg chewed) if there is any concern about the patient having received an effective dose prior to your arrival.
- Focus on maintaining ABCs, rapid identification, rapid notification, and rapid transport to an appropriate facility
- A 12-lead ECG should be transmitted to the receiving facility, if possible
- If the patient becomes hypotensive after Nitroglycerin administration, place the patient in a supine position, if there is no contraindication to doing so such as severe pulmonary edema
    - An IV is not required for Nitroglycerin administration, particularly in the absence of pulmonary edema because positioning is the primary intervention for Nitroglycerin-induced hypotension
- Consider a right-sided ECG in the setting of a suspected inferior STEMI
- Consider placing defibrillation pads

Cardiac – Adult: Total Artificial Heart (TAH)

CRITERIA

- Evaluation and/or transport of a patient with a total artificial heart (TAH)

CFR AND ALL PROVIDER LEVELS

EMT

- Assess airway and breathing. Hypertension or volume overload can quickly cause pulmonary edema to develop.
- Do **not** use an AED or cardiac monitor
- Assess pulse, perfusion, and artificial heart function
    - If no pulse present:
        - Consider early consult with TAH coordinator[1] or medical control
        - Check for severed or kinked TAH driveline (address as possible)
        - Check battery position and power status (replace as possible)
        - Use the backup driver, or hand pump, if available
        - Do **not** perform chest compressions or place an AED
- Assess blood pressure: goal blood pressure is >90 mmHg and <150 mmHg
- Perform a secondary assessment and treat per protocol
    - If unresponsive with a pulse, evaluate for noncardiac etiologies
- Notify the receiving hospital that your patient has a TAH while on scene or promptly after initiation of transport *regardless* of patient's complaint
- Assure that patient has drivers (compressor), hand pump, all batteries, and power cords for transport
- Any trained support member[2] should remain with patient

CFR AND EMT STOP

ADVANCED

CC

PARAMEDIC

- If blood pressure is >150 mmHg administer sublingual Nitroglycerin 0.4 mg
    - Repeat sublingual Nitroglycerin 0.4 mg every 5 minutes if BP >150 mmHg
- Assess for hypovolemia. If blood pressure <90 mmHg, or evidence of distributive shock, blood loss, or dehydration:
    - Normal Saline in 250 mL boluses; may be repeated to one liter total if hypotension is persistent. Contact medical control for additional fluids beyond one liter.
- Do **not** apply a cardiac monitor, or perform pacing or defibrillation and do **not** administer vasopressors or antiarrhythmics

ADVANCED, CC AND PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- Termination of resuscitation
- Consultation with a TAH program provider

Key Points/Considerations

1 Institution TAH coordinator phone number may be found along with pump model information on a tag located with the controller. Patients may also have a medical bracelet, necklace, or wallet card with this information.

2 Trained support members include family and caregivers who have extensive knowledge of the device, its function, and its battery units. They may act as a resource to the EMS provider when caring for a VAD patient.

- TAH patients have had their heart removed and replaced with a rigid device which pneumatically pumps blood throughout the body. As these patients do not have a heart, there is no indication for an ECG or cardiac monitoring. A functioning TAH will not result in any measurable electrical activity.
- TAH patients are on multi-agent anticoagulation and may have significant bleeding with minor injuries
- The TAH patient has normal pulse and blood pressure detectable by conventional methods and are highly preload and afterload sensitive:
    - Target Blood Pressure is <150 mmHg and >90 mmHg
    - Pulse rate is set and regular, between 120-135 bpm

Cardiac – Adult: Ventricular Assist Device (VAD)

CRITERIA

- Evaluation and/or transport of a patient with a ventricular assist device (VAD)

CFR AND ALL PROVIDER LEVELS

- Assess airway and breathing. Treat airway obstruction or respiratory distress per protocol.
- Assess perfusion:
  - Assess perfusion based on mental status, capillary refill, and skin color
  - In continuous flow VAD patients (HeartMate II©, Heartware©, or axial flow device), the absence of a palpable pulse is normal even in the setting of a normally functioning device. Patients may not have a readily measurable blood pressure.
  - In pulsatile flow VAD patients with a HeartMate 3© centrifugal device, patients may have a palpable pulse (pulse is generally set to 30 BPM) in the setting of a normally functioning device, yet may not have a readily measurable blood pressure
- Assess pump function:
  - Auscultate (listen with a stethoscope) over the precordial/epigastric (heart/upper stomach) area for a motorized "hum" and simultaneously visualize the controller for a green light or lit screen
- Perform CPR **only** when there are no signs of flow or perfusion (the person is unresponsive, pulseless, or there is no evidence of the pump functioning [eg: no motor "hum"])
- Perform a secondary assessment and treat per appropriate protocol
- Notify the receiving facility promptly and consider early consultation with the VAD coordinator[1] or medical control, *regardless* of the patient's complaint
- Assure the power unit, extra batteries, and backup controller accompany patient
- A trained support member[2] should remain with patient

CFR STOP

EMT

- Unless otherwise directed by medical control, transport patient to a facility capable of managing VAD patients

EMT STOP

ADVANCED

CC

PARAMEDIC

- Apply cardiac monitor and obtain 12-lead ECG
- If hypotensive (poor perfusion based on mental status, capillary refill, or skin color):
  - Establish IV/IO access and administer a 500 mL Saline bolus
  - Reassess and repeat up to 1000 mL total. Contact medical control for additional fluid boluses.
- If inadequate perfusion or oxygenation, despite the device being on, contact medical control for guidance

ADVANCED, CC AND PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- Termination of resuscitation
- Consider Norepinephrine 2 mcg/min titrated up to 20 mcg/min, if needed, after the fluid bolus is complete to maintain MAP >65 mmHg or SBP >100 mmHg
- Consultation with a VAD program provider

Key Points/Considerations

1 Institution VAD coordinator phone number may be found along with pump model information on a tag located on the pocket controller. Patients may also have a medical bracelet, necklace, or wallet card with this information.

2 Trained support members include family and caregivers who have extensive knowledge of the device, its function, and its battery units. They may act as a resource to the EMS provider when caring for a VAD patient.

- One set of fully charged batteries provides 8-10 hours of power:
  - If the battery or power is low, the batteries need to be replaced immediately
  - Assist with the replacement of batteries if directed by patient/caregiver
  - **Never disconnect both batteries at once as this can cause complete loss of VAD power**
- Keep the device components dry
- The most common complication in VAD patients is infection. VAD patients are susceptible to systemic illness, sepsis, and septic shock due to their abdominal driveline as a conduit of infection.
- Patients with a VAD are highly preload dependent and afterload sensitive. Low flow alarms are frequently due to MAP >90 mmHg. The devices are sensitive to alterations in volume status and careful volume resuscitation is often necessary.
- VAD patients are heavily anticoagulated and susceptible to bleeding complications
- Patients may have VF/VT and be asymptomatic

Controller Device Normal Values:

	Heartmate II©	Heartmate 3©	HVAD©
Speed	8,000-10,000 RPM	5,000-6,000 RPM	2,400-3,200 RPM
Power	4-7 watts	3-7 watts	3-6 watts
Flow	4-8 L/min	3-6 L/min	3-6 L/min
Pulsatility Index (PI)	4-6	1-4	N/A

Cardiac Related Problem / Chest Pain – Adult

For pediatric see, **"Cardiac** Related Problem **– Pediatric"**

CRITERIA

- For patients presenting with suspected cardiac chest pain, angina, or an anginal equivalent[1]
- For the patient with a confirmed STEMI see, "General: Cardiac – Adult: ST Elevation MI (STEMI)" as soon as confirmed

CFR AND ALL PROVIDER LEVELS

- Airway management and appropriate oxygen therapy
- Aspirin 324 mg (4 x 81 mg tabs) chewed, only if able to chew‡[2]

CFR STOP

EMT

- Acquire and transmit 12-lead ECG‡
  - For patients with a STEMI, confirmed by medical control, begin transport to a facility capable of primary angioplasty if estimated arrival to that facility is within 90 minutes of patient contact or if directed by medical control or regional procedure
- If the patient requests, assist patient with his or her prescribed Nitroglycerin, up to 3 doses, 5 minutes apart, provided the patient's systolic BP is >120 mmHg
- For patients with signs of hypoperfusion, see also "General: Cardiogenic Shock – Adult"

EMT STOP

ADVANCED

- Vascular access
- Nitroglycerin 0.4 mg SL per dose, as needed, 5 minutes apart, provided the patient's systolic BP is >120 mmHg or MAP >90 mmHg[3]

ADVANCED STOP

CC

PARAMEDIC

- Cardiac monitor with 12-lead ECG (if capable, transmit to hospital if there is any question or if there is a significant finding)
- If systolic BP drops below 100 mmHg, place patient in a supine position, if possible, and consider Normal Saline 500 mL IV bolus
- See "General: Pain Management - Adult" as indicated

CC AND PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- Additional Nitroglycerin 0.4 mg SL every 5 minutes for EMT
- Consider medical control consultation, as needed, for determination of most appropriate destination facility

Key Points/Considerations

1 Consider 12-lead ECG for adults, with any one of the following: dyspnea, syncope, dizziness, fatigue, weakness, nausea, or vomiting

2 Aspirin should not be enteric coated

2 The patient may have been advised to take Aspirin prior to arrival by emergency medical dispatch. You may give an additional dose of Aspirin (324 mg chewed) if there is any concern about the patient having received an effective dose prior to your arrival.

3 If the patient becomes hypotensive after Nitroglycerin administration, place the patient in a supine position, if there is no contraindication to doing so, such as severe pulmonary edema

- If the patient does not have prescribed Nitroglycerin, a 12-lead ECG should be obtained prior to administering any Nitroglycerin

Cardiac Related Problem – Pediatric

CRITERIA

- Pediatric patients who have known heart disease and/or have been operated on for congenital heart disease have medical emergencies that are different from adults with heart disease
- Pediatric patients with congenital heart disease may:
  - have baseline oxygen saturations between 65 and 85% rather than above 92% (ask care provider about patient's usual oxygen saturation level)
  - develop sudden heart rhythm disturbances
  - be fed by either a nasogastric tube (tube in nose) or by gastrostomy (tube through abdominal wall)
  - not have a pulse or accurate blood pressure in an extremity after heart surgery
  - have a pacemaker

CFR AND ALL PROVIDER LEVELS

- ABCs and vital signs, including blood pressure
- Keep patient on continuous pulse oximeter monitoring, if available (will monitor both heart rate and SpO_2)
- Ask parents if the patient has a heart condition and/or has been operated on (look for a scar in the middle or side of chest); ask what type of heart condition it is
- Keep the child in a somewhat upright position to enable optimal breathing, or allow child to be in position of comfort
- Ask parents what the child's usual oxygen saturation is and provide only sufficient oxygen to bring the SpO_2 to his/her usual baseline
- Ask parent if the patient has a pacemaker and/or internal defibrillator
- Do not give anything by mouth
- If patient has a fever, minimize the child's clothing and keep the ambulance at a comfortable temperature

CFR STOP

EMT

ADVANCED

CC

- Assess for signs of poor perfusion (such as prolonged capillary refill >2 seconds, cool and dusky distal extremities, poor radial and dorsalis pedis pulses, and/or hypotension)
- If patient has a gastrostomy tube, suggest to parent/caregiver to open the tube to air or aspirate stomach contents to improve the child's ability to breathe
- Obtain vital signs including blood pressure every 15 minutes
- If patient has altered mental status, obtain blood glucose‡ and see "General: Hypoglycemia – Pediatric" and/or "General: Altered Mental Status" as indicated

EMT, ADVANCED AND CC STOP

PARAMEDIC

- Cardiac monitor with 12-lead ECG (if capable, transmit to hospital if there is any question or if there is a significant finding)

PARAMEDIC STOP

Key Points/Considerations

- Chest pain in children is rarely a sign of a cardiac condition
- Notify the destination hospital ASAP and communicate if the patient has signs of cardiac failure or decompensation
- Infants with congenital heart disease may present with symptoms very similar to septic shock (poor perfusion, poor distal pules, tachypnea, or dusky appearance)
- Pediatric patients with a congenital heart condition often have oxygen saturations 65-85%. Too much oxygen may be detrimental and result in worsening circulation.
- Pediatric patients with a cardiac condition may have sudden arrhythmias that require treatment, including SVT, refer to appropriate protocol
- Transport to hospital should not be delayed in ill pediatric cardiac patients
- Hypotension in children:

Age	**Systolic Hypotension**
<1 month	<60 mmHg
1 month to 1 year	<70 mmHg
1 – 10 years	< (70 + 2 x age in years) or <90 mmHg

Cardiogenic Shock – Adult

For pediatric see, **"Sepsis / Shock / Hypoperfusion** - Pediatric**"**

CRITERIA

- This protocol is for use with "General: ST Elevation MI (STEMI) – CONFIRMED" or "General: Cardiac Related Problem / Chest Pain – Adult" protocols for patients with signs of hypoperfusion

CFR AND ALL PROVIDER LEVELS

- Airway management and appropriate oxygen therapy
- Aspirin 324 mg (4 x 81 mg tabs) chewed, only if able to chew‡

CFR STOP

EMT

- ABCs and vital signs
- Acquire and transmit 12-lead ECG‡
  - Hospital destination may be determined in consultation with medical control
- Place patient supine unless dyspnea is present

EMT STOP

ADVANCED

- Vascular access
- Normal Saline 500 mL bolus, if SBP <100 mmHg or MAP <65 mmHg; may repeat up to a total of 2 L if lung sounds remain clear to goal SBP >100 mmHg and MAP >65 mmHg

ADVANCED STOP

CC

- Cardiac monitor with 12-lead ECG
- Notify hospital ASAP for ST elevation myocardial infarction (STEMI)

CC STOP

PARAMEDIC

- If UNSTABLE[1] or in pulmonary edema, Norepinephrine 2 mcg/min, titrated to 20 mcg/min if needed after fluid bolus complete to maintain MAP >65 mmHg or SBP >100 mmHg

PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- Additional Normal Saline

Key Points/Considerations

1 UNSTABLE includes significant cardio-respiratory compromise, hypotension, or altered level of consciousness

- Refer to appropriate dysrhythmia protocols, as needed

Childbirth: Obstetrics

CRITERIA

- Childbirth is a natural phenomenon and the type of delivery cannot be regulated by your level of certification – if a CFR is faced with anything but a normal delivery, please feel comfortable calling medical control for assistance

CFR AND ALL PROVIDER LEVELS

- **Management of a normal delivery**
  - Support the baby's head over the perineum with gentle pressure
  - If the membranes cover the head after it emerges, tear the sac with your fingers or forceps to permit escape of the amniotic fluid
  - Gently guide the head downward until the shoulder appears
  - The other shoulder is delivered by gentle upward traction
  - The infant's face should be upward at this point
  - Maintain firm grasp on infant

CFR STOP

EMT

ADVANCED

CC

PARAMEDIC

- **Management of Umbilical Cord Around Neck (Nuchal Cord)**
  - Umbilical cord around the neck is an emergency, as the baby is no longer getting any oxygen either through the cord or by breathing
  - If the cord is around the neck:
    - Unwrap the cord from around the neck, if possible
    - Clamp the umbilical cord with two clamps
    - Cut the cord between them
- **Management of a Breech Delivery**
  - Support the buttocks or extremities until the back appears
  - Grasp the baby's iliac wings and apply gentle downward traction. DO NOT pull on the legs or back, as this may cause spine dislocation or adrenal hemorrhage.
  - Gently swing the infant's body in the direction of least resistance
  - By swinging anteriorly and posteriorly, both shoulders should deliver posteriorly
  - Splint the humerus bones with your two fingers; apply gentle traction with your fingers
  - Gentle downward compression of the uterus will assist in head delivery
  - Swing the legs upward until the body is in a vertical position. This will permit delivery of the head.
- **Management of Prolapsed Cord or Limb Presentation**
  - Place the mother in a face-up position with hips elevated
  - Place a gloved hand in the vagina; attempt to hold baby's head away from the cord and maintain an airway for the baby

- Keep the cord moist using a sterile dressing and sterile water
- Transport as soon as possible to closest appropriate facility

EMT, ADVANCED, CC AND PARAMEDIC STOP

Key Points/Considerations

- Obtain additional help for multiple births, as needed
- See "General: Childbirth – Newborn / Neonatal Care" for subsequent instructions
- Determine the estimated date of expected birth, the number of previous pregnancies and number of live births
- Determine if the amniotic sac (bag of waters) has broken, if there is vaginal bleeding, mucous discharge, or the urge to bear down
- Determine the duration and frequency of uterine contractions
- Examine the patient for crowning:
  - If delivery is not imminent, transport as soon as possible
  - If delivery is imminent, prepare for an on-scene delivery
- If multiple births are anticipated, but the subsequent births do not occur within 10 minutes of the previous delivery, transport immediately
- After delivery of the placenta, massage the lower abdomen
- Take the placenta and any other tissue to the hospital for inspection
- Do not await the delivery of the placenta for transport
- If uterine inversion occurs (uterus turns inside out after delivery and extends through the cervix), treat for shock and transport immediately. If a single attempt to replace the uterus fails, cover the exposed uterus with moistened sterile towels.

Childbirth: Preterm Labor (24 – 37 weeks)

CFR AND ALL PROVIDER LEVELS

EMT

- ABCs and vital signs
- Airway management and appropriate oxygen therapy

CFR AND EMT STOP

ADVANCED

CC

PARAMEDIC

- Vascular access
- Normal Saline 500 mL IV bolus

ADVANCED, CC AND PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- Magnesium 4 grams in 100 mL IV over 20 minutes
- Additional Normal Saline

Key Points/Considerations

- Transport to the closest appropriate hospital, if delivery is imminent or occurs on scene
  - Notify the destination hospital ASAP
  - If a patient is unwilling to go to the closest appropriate hospital, consult medical control for assistance in determining an appropriate destination

Childbirth: Newborn / Neonatal Care

CRITERIA

- For the evaluation and resuscitation of babies just delivered

CFR AND ALL PROVIDER LEVELS

EMT

ADVANCED

CC

- Assess the infant's respiratory status, pulse, responsiveness, and general condition

If the infant is breathing spontaneously and crying vigorously, and has a pulse >100/min:

- Clamp the umbilical cord with two clamps, three inches apart, and cut the cord between them at least 1 min after delivery. The first clamp should be 8 – 10 inches from the baby. Place the second clamp 3 inches from the first clamp toward the mother.
- Cover the infant's scalp with an appropriate warm covering
- Wrap the infant in a dry, warm blanket or towels and a layer of foil or plastic wrap over the layer of blankets or towels or use a commercial-type infant swaddler, if one is provided with the OB kit. Do not use foil alone.
- Keep the infant warm and free from drafts. Continuously monitor respirations.

If the infant is not breathing spontaneously or not crying vigorously:

- Gently rub the infant's lower back
- Gently tap the bottom of the infant's feet

If the respirations remain absent, gasping, or become depressed (<30/min) despite stimulation, if the airway is obstructed, or if the heart rate is <100/min:

- Clear the infant's airway by suctioning the mouth and nose gently with a bulb syringe, and then ventilate the infant at a rate of 40 – 60 breaths/minute with an appropriate bag-valve-mask (BVM) as soon as possible, with a volume just enough to see chest rise. Start with room air. If no response after 30-60 seconds of effective ventilation add oxygen.
- Each ventilation should be given gently, over one second per respiratory cycle, assuring that the chest rises with each ventilation
- Monitor the infant's pulse rate (by palpation at the base of the umbilical cord or by auscultation over the heart), and apply continuous pulse oximetry using (ideally the right) wrist or palm‡

If the pulse rate drops <60 beats per minute at any time:

- Perform chest compressions with assisted ventilations at a 3:1 compression to ventilation ratio

CFR, EMT, ADVANCED AND CC STOP

PARAMEDIC

- Consider intubation
- If the heart rate <60 seconds and there is no improvement in the heart rate within 60 seconds of chest compressions, administer Epinephrine (1:10,000 / 0.1 mg/mL) 0.01 mg/kg IV every 3 minutes until HR >60
- Treat blood glucose <40 mg/dL:
    - Dextrose 10% 5 mL/kg IV via syringe ***NOT*** via drip

PARAMEDIC STOP

Key Points/Considerations

- Hypothermia and hypoglycemia may decrease the likelihood of successful resuscitation
- Begin transport to the closest appropriate hospital as soon as possible

Dif Breathing – Adult: Asthma / COPD / Wheezing

For pediatric see, **"Dif Breathing** – Pediatric**: Asthma / Wheezing" or "Dif Breathing** – Pediatric**: Stridor"**

CRITERIA

- Patients with effective but increased work of breathing with wheezing not due to trauma or suspected pneumothorax

CFR AND ALL PROVIDER LEVELS

- Assess for foreign body airway obstruction
  - See "Extremis: Foreign Body Obstructed Airway – Adult" if suspected
- Ongoing assessment of the effectiveness of breathing
  - See "Extremis: Respiratory Arrest / Failure – Adult", if necessary
- Administer supplemental oxygen; see "Resources: Oxygen Administration and Airway Management"
- Assist patient with their own medications; see "Resources: Prescribed Medication Assistance"
- Facilitate transportation, ongoing assessment, and supportive care

CFR STOP

EMT

- If wheezing, Albuterol 2.5 mg via nebulizer, may repeat to a total of three doses‡
  - May be combined with Ipratropium (Atrovent) 0.5 mg in 2.5 mL (unit dose) ‡
- Continuous Positive Airway Pressure (CPAP) 5-10 cm H_2O, as needed‡
- If the patient is in severe distress, seek medical control for consideration of Epinephrine‡

EMT STOP

ADVANCED

- Epinephrine (1:1,000 / 1 mg/mL) 0.3 mg IM for severe distress
  - If severe distress persists, may repeat in 5 minutes
- Vascular access, if not improving with nebulizer treatment

ADVANCED STOP

CC

PARAMEDIC

- Consider cardiac monitor and 12-lead ECG
- Dexamethasone (Decadron) 10 mg PO, IM, or IV
- ***For the patient with asthma***, if the patient is not responding to treatments above:
  - Consider Magnesium 2 grams in 100 mL Normal Saline IV over 10 minutes
- May administer Albuterol and Ipratropium via ET tube nebulizer

CC AND PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- Use of Albuterol via nebulizer by EMT‡ for indications other than asthma
- Use of Epinephrine by EMT‡ for critical asthma attack
- Additional Albuterol unit doses via nebulizer
- Epinephrine (1:1,000 / 1 mg/mL) 3 mg via nebulizer or racemic Epinephrine (2.25%) 0.5 mL in 3 mL of Normal Saline via nebulizer
- Magnesium for COPD exacerbation
- Repeat Magnesium

Key Points/Considerations

- Wheezing does not always indicate asthma. Consider allergic reaction, airway obstruction, pulmonary edema.
- Allow the patient to maintain position of comfort when safe to do so
    - Do not force the patient to lie down
    - Do not agitate the patient
- A combination unit dose (such as a DuoNeb®) may be substituted for Albuterol 2.5 mg in 3 mL (unit dose) & Ipratropium (Atrovent) 0.5 mg in 2.5 mL (unit dose) mixed together
- IM administration of Epinephrine should be used if the patient is in severe distress and tidal volume is so small that nebulized medications will not work
- If an ALS provider has administered any medications, regional procedure *may* require consultation with medical control prior to honoring a request for refusal of medical care or before sending the patient with BLS care
- Observe airborne and/or droplet precautions in appropriate patients, such as those with suspected tuberculosis
- Do not delay transport to complete medication administration
- BiPAP may be used in place of CPAP‡

Dif Breathing – Adult: Pulmonary Edema

No Pediatric Protocol

CFR AND ALL PROVIDER LEVELS

- ABCs and vital signs
- Sit patient upright, if possible
- Administer supplemental oxygen; see "Oxygen Administration and Airway Management"
- Facilitate transportation, ongoing assessment, and supportive care

CFR STOP

EMT

- Continuous Positive Airway Pressure (CPAP) 5-10 cm H_2O as needed‡

EMT STOP

ADVANCED

- Vascular access
- Aggressive Nitroglycerin 0.4 mg SL or 0.1 mg IV‡ⓟ as needed:
  - One dose/tablet every 5 minutes if the patient's systolic BP 120 – 160 mmHg
  - Two doses/tablets every 5 minutes if the patient's systolic BP 160 – 200 mmHg
  - Three doses/tablets every 5 minutes if the patient's systolic BP >200 mmHg

ADVANCED STOP

CC

PARAMEDIC

- Cardiac monitor
- 12-lead ECG

CC AND PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- Additional sublingual Nitroglycerin

Key Points/Considerations

- All patients with rales do not have pulmonary edema; consider the possibility of pneumonia or chronic obstructive pulmonary disease (COPD) exacerbation
- Monitor BP closely, particularly when administering Nitroglycerin for pulmonary edema (may not be able to lay patient in a supine position if he or she becomes hypotensive)
- BiPAP may be used in place of CPAP‡

Dif Breathing – Pediatric: Asthma / Wheezing

CRITERIA

- Patients with increased work of breathing (retractions, grunting, nasal flaring) and prolonged expiration and/or poor air movement
  - Excludes traumatic causes of dyspnea
  - Excludes pneumothorax
  - Excludes stridor / croup (see "Difficulty Breathing: Stridor - Pediatric")

CFR AND ALL PROVIDER LEVELS

- Assess for foreign body airway obstruction
  - See "Extremis: Foreign Body Obstructed Airway – Pediatric" if suspected
- Ongoing assessment of the effectiveness of breathing
  - See "Extremis: Respiratory Arrest / Failure – Pediatric" if needed
- Allow patient to determine position of comfort. If patient cannot do so, have patient sit upright or elevate the head of the stretcher.
- Administer supplemental oxygen; see "Resources: Oxygen Administration and Airway Management"
- Assist patient with his or her own asthma medications; see "Resources: Prescribed Medication Assistance"
- Facilitate transportation, ongoing assessment, and supportive care

CFR STOP

EMT

ADVANCED

- Administer Albuterol 2.5 mg via nebulizer, may repeat to a total of three doses‡
  - May be combined with Ipratropium (Atrovent) 0.5 mg in 2.5 mL (unit dose) ‡
- If the patient is in severe distress, seek medical control for consideration of Epinephrine‡
- For older pediatric patients consider CPAP‡, as equipment size allows

EMT AND ADVANCED STOP

CC

- If patient is not improving:
  - Epinephrine (1:1,000 / 1 mg/mL) 0.01 mg/kg IM (Max 0.3 mg), if patient is in severe distress
- Cardiac monitor

CC STOP

PARAMEDIC

- Vascular access, if indicated
- Dexamethasone (Decadron) 10 mg PO, IM, or IV for patients ≥2 years old

PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- For EMT and Advanced: ‡
    - Additional Albuterol
    - Epinephrine for critical asthma attack
- CC vascular access
- Epinephrine (1:1,000 / 1 mg/mL) 0.01 mg/kg IM, max 0.3 mg (repeat doses)
- Epinephrine (1:1,000 / 1 mg/mL) 3 mg via nebulizer or racemic Epinephrine (2.25%) 0.5 mL in 3 mL of Normal Saline via nebulizer
- Epinephrine 0.1-1.5 mcg/kg/minute IV drip
    - Consider 0.1 mcg/kg/minute and titrate gradually to max 1.5 mcg/kg/minute
- Magnesium 50 mg/kg over 10 minutes IV, max 2 grams
- Continuous Albuterol administration via nebulizer
- Dexamethasone (Decadron) 0.6 mg/kg PO, IM, or IV for patients <2 years old

Key Points/Considerations

- Absence of breath sounds can be indicative of status asthmaticus. Be prepared for respiratory arrest.
- A combination unit dose (such as a DuoNeb®) may be substituted for Albuterol 2.5 mg in 3 mL (unit dose) & Ipratropium (Atrovent) 0.5 mg in 2.5 mL (unit dose) mixed together
- Expiratory wheezing does not always indicate asthma. Consider allergic reaction, airway obstruction, pulmonary edema.
- In children under 2 yr old, bronchiolitis is the most common cause of wheezing. Bronchiolitis may not respond to albuterol. Gentle nasal suctioning is the primary treatment along with oxygen, particularly in infants.
- Allow the patient to maintain position of comfort when safe to do so
    - Do not force the patient to lie down
    - Do not agitate the patient
- Observe airborne and/or droplet precautions in appropriate patients, such as those with suspected pertussis (whooping cough)
- Do not delay transport to complete medication administration

Dif Breathing – Pediatric: Stridor

CFR AND ALL PROVIDER LEVELS

EMT

ADVANCED

- Assess for foreign body airway obstruction
  - See "Extremis: Foreign Body Obstructed Airway - Pediatric" if suspected
- Assess for anaphylaxis
  - See "General: Anaphylaxis – Pediatric"
- Ongoing assessment of the effectiveness of breathing
  - See "Extremis: Respiratory Arrest / Failure – Pediatric" if necessary
- Administer supplemental oxygen; see "Resources: Oxygen Administration and Airway Management"
  - Consider high concentration, humidified‡, blow-by oxygen delivered by tubing or face mask held about 3-5 inches from face (as tolerated)
- Facilitate transportation, ongoing assessment, pulse oximeter, and supportive care

CFR, EMT AND ADVANCED STOP

CC

- Cardiac monitor

CC STOP

PARAMEDIC

- If SEVERE respiratory distress (severe stridor especially with drooling), Epinephrine (1:1,000 / 1 mg/mL) 3 mg via nebulizer or racemic Epinephrine (2.25%) 0.5 mL in 3 mL of Normal Saline via nebulizer
- Dexamethasone (Decadron) 10 mg PO or IM for patients ≥2 years old (may give the IV formulation orally, if tolerated)

PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- Vascular access
- Dexamethasone (Decadron) 0.6 mg/kg up to 10 mg PO, IM, or IV
- Epinephrine (1:1,000 / 1 mg/mL) 3 mg, via nebulizer for CC or additional doses for CC/P

Key Points/Considerations

- If the patient has stridor (inspiratory), it is often an upper airway problem (physiologic or mechanical obstruction)
- Viral croup should be considered in children presenting with absent or low grade fever, barking cough, stridor, and/or sternal retractions
- Epiglottitis should be considered in children with a high fever, muffled voice, tripod position, and/or drooling
  - A vaccination history should be obtained because unvaccinated children are at higher risk of epiglottitis

- Agitating a child with croup or epiglottitis could cause a complete airway obstruction
- Limit interventions that may cause unnecessary agitation in a child with stridor such as assessment of blood pressure in a child who can still breathe, cough, cry, or speak

Environmental: Hypothermia

Applies to adult and pediatric patients

CRITERIA

Classification	Clinical Manifestations	Correlating Core Temperature[1]
Cold Stressed (NOT Hypothermic)	Shivering Intact Movement	>35°C (>95°F)
Mild	Shivering Impaired Movement	35 - 32°C (89.6-95°F)
Moderate	Decreased LOC Usually No Longer Shivering	32 - 28°C (82.4-89.6°F)
Severe/Profound	Unconscious, Not Shivering High Risk of VF/Asystole	<28°C (<82.4°F)

- This protocol does not apply to cold stressed patients as these patients are not hypothermic

CFR AND ALL PROVIDER LEVELS

EMT

Mild Hypothermia:

- Handle gently
- Remove wet clothing once moved into a warm environment
- Provide insulation[2] (blankets)
- Provide vapor barrier[3], if available (plastic tarp or mylar sheets)
- Heat inside of the ambulance

Moderate Hypothermia:

- Treat for mild hypothermia and
- Minimize movement during extrication (NO standing or walking)
- Attempt to maintain the patient in a horizontal position
- Begin active external rewarming:
    - Apply heat sources to axilla, chest, and back; place a thin barrier between heat source & skin to avoid thermal burns[4]
    - Assess skin frequently for any signs of impending burns

Severe/Profound Hypothermia:

- Treat for Moderate hypothermia and
- In patients with no signs of life:
    - Assess pulse and breathing for 60 seconds[5]
    - If no pulse or breathing, begin standard cardiac arrest resuscitation, see "Cardiac Arrest: General Approach"
        - Limit AED to one shock, if indicated

- Rigor mortis, fixed pupils, & dependent lividity are not obvious signs of death in a hypothermic patient
- Obvious signs of death include trauma inconsistent with life or extensive chest wall rigidity that interferes with the ability to perform chest compressions

CFR AND EMT STOP

ADVANCED

- Vascular access, if necessary, see "Vascular Access" protocol
- If SBP <100 mmHg or MAP <65 mmHG, see "Shock: Shock/Hypoperfusion – Adult" or "Shock: Sepsis/Shock/Hypoperfusion – Pediatric" protocol
- Administer warmed‡ IV fluids if fluid resuscitation is indicated

ADVANCED STOP

CC

PARAMEDIC

- Limit manual defibrillation to one shock, if indicated
- Limit indicated medications to one dose

CC AND PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- Patients with severe/profound hypothermia, hemodynamic instability, or cardiac arrest may benefit from transport to a facility capable of performing extracorporeal life support (ECLS) if available and <1-hour transport; facilities with cardio-pulmonary bypass capabilities may be an alternative if transport times are significant

Key Points/Considerations

1. Core temperatures are for reference only and refer to esophageal temperature monitoring
2. Insulating material includes clothing, blankets, sleeping bags, insulated pads, etc.
3. Common vapor barriers include tarps, plastic sheets, reflective blankets, commercial emergency blankets
4. **Avoid using non-medical heat packs (e.g., those commonly used for hand and foot warming)** as they do not provide sufficient surface area to warm the patient effectively but increase the probability of thermal burns due to high surface temperature
5. Heart and respiratory rates may be slow and difficult to detect in hypothermia

- A hypothermic patient meeting trauma center criteria should be transported to a trauma center
- Pulse oxygenation measurement may be inaccurate if the patient is hypothermic. If the patient is cyanotic and in respiratory distress, administer oxygen.
- Perform a complete examination to assess potential causes of altered mental status other than hypothermia
- Classification of hypothermia should be based on clinical manifestations. Oral temperature readings are inaccurate in hypothermic states while bladder and rectal temperatures can lag behind esophageal temperatures by up to one hour.

Environmental: Localized Cold Emergencies

Applies to adult and pediatric patients

CRITERIA

- For patients presenting with localized cold injury
- For patients with hypothermia, see "Environmental: Hypothermia", do ***not*** utilize this protocol

CFR AND ALL PROVIDER LEVELS

- ABCs, vital signs
- Remove the patient from the cold environment
- For local cold injury:
  - Protect areas from pressure, trauma, and friction
  - Do not break blisters
  - Do not rub the injured area
  - Remove clothing and jewelry

CFR STOP

EMT

ADVANCED

CC

PARAMEDIC

- Rewarm the extremity (if the means to do so are available) only if anticipated time to the hospital exceeds 60 minutes, the patient presents with early or superficial local cold injury only, and there is no concern that the extremity will freeze again:
  - Immerse the affected part in a warm water bath ≤105°F; water should feel warm, but not hot
  - Frequently stir the water and assure it remains warm
  - Continue the immersion in warm water until the extremity is soft, and color and sensation return
  - Dress the area with dry, sterile dressings
    - If a hand or foot is involved, place sterile dressings between fingers or toes
- Prevent the warmed part from freezing again

EMT, ADVANCED, CC AND PARAMEDIC STOP

Key Points/Considerations

- Do not rewarm the extremity if the patient is exhibiting signs of hypothermia

Environmental: Heat Emergencies

Applies to adult and pediatric patients

CFR AND ALL PROVIDER LEVELS

EMT

- ABCs and vital signs
- Loosen or remove outer clothing
- For patients presenting with normal to cool skin temperature:
  - If the patient is not nauseated and able to drink water without assistance, have the patient drink water
- For patients presenting with elevated skin temperature:
  - Apply cold packs to patient's palms, soles, neck, groin, or armpits as able
  - Keep the patient's skin wet by applying wet sponges or towels

CFR AND EMT STOP

ADVANCED

CC

PARAMEDIC

- Vascular access, as needed
- For adult patients only, consider Normal Saline 500 cc IV bolus; may repeat up to 2 liters as needed if there are no signs of pulmonary edema

ADVANCED, CC AND PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- Additional IV fluid hydration or IV fluid hydration in children

Key Points/Considerations

- If the means to effectively cool patients with a heat emergency are available on the scene, the intervention should be initiated without delay and transport may be delayed if active cooling can be provided; if the means to cool a patient are not available, do not delay transport
- Stable patients with normal mental status may only require oral rehydration and cooling
- Tympanic and oral temperatures may read 1-2 degrees cooler than the patient's core temperature

Epistaxis

CFR AND ALL PROVIDER LEVELS

EMT

ADVANCED

- ABCs and vital signs
- Airway management and appropriate oxygen therapy
- Unless other patient care precludes, position the patient upright with head leaning forward. Pinch the nose at the highest area of soft-tissue for at least 20 minutes. DO NOT RELEASE TO RE-EVALUATE during that time.
- Have patient spit out any blood in the oropharynx
- Patient may be instructed on the personal use of suction for the oropharynx if able to assist

CFR, EMT AND ADVANCED STOP

CC

PARAMEDIC

- Consider Oxymetolazone‡
    - Have patient blow nose vigorously
    - Deliver two sprays of Oxymetolazone in each nare, and reapply pressure

CC AND PARAMEDIC STOP

Key Points/Considerations

- If epistaxis is associated with trauma, then appropriate management of airway with spinal motion restriction must take precedent for positioning and care if necessary

Fever – Adult

For pediatric see, **"Fever – Pediatric"**

CRITERIA

Adult patient with ***any*** of the following:

- Temperature >100.4°F (38°C)
- Temperature ≥2°F (1°C) over baseline and suspected infection[1]
- Temperature ≥2°F (1°C) over baseline and recipient of a blood / blood product transfusion within the last 4 hours[2]

EMT

- ABCs and vital signs, to include SpO_2 and temperature‡
- Airway management and appropriate oxygen therapy

EMT STOP

ADVANCED

- Large bore vascular access
- Normal Saline 500 mL bolus; may repeat once, if lung sounds remain clear (no concerns for pulmonary edema)
- If able to tolerate oral fluid consider one of the following: ‡
  - Acetaminophen[3] up to 1000 mg PO
  - Ibuprofen[4] up to 400 mg PO

ADVANCED STOP

CC

- Consider cardiac monitor, continuous SpO_2
- Consider a 12-lead ECG if appropriate

CC STOP

PARAMEDIC

- Acetaminophen[3] 1000 mg IV over 15 minutes‡Ⓟ

PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- Additional Acetaminophen[3]
- Additional Ibuprofen[4]

Key Points/Considerations

1 If fever is due to suspected viral or bacterial infection, see "General: Severe Sepsis / Septic Shock"

2 If fever is due to suspected reaction to blood / blood product transfusion, immediately stop the transfusion, replace all tubing (save for receiving hospital blood bank) and maintain IV access with new bag of Normal Saline, contact medical control, and treat per appropriate protocol to include:

- Temperature monitoring‡, take initial and every 10 minutes
- Cardiac monitor, continuous SpO_2 and continuous pCO_2 monitoring
- Consider a 12-lead ECG, if appropriate

3 Acetaminophen contraindications (unless medical control approved):
- >650 mg of Acetaminophen or an Acetaminophen-containing product within 4 hours
- Hx of liver problems / acute liver failure
- Acute liver inflammation due to hepatitis C virus
- In the setting of shock or overdose (especially Acetaminophen overdose)

4 Ibuprofen contraindications (unless medical control approved):
- >400 mg of Ibuprofen or an Ibuprofen-containing product within 4 hours
- Severe renal impairment (dialysis dependent)
- In the setting of shock or overdose
- Prescribed anticoagulants (i.e. Warfarin / Factor Xa Inhibitors, etc)
- Allergy to any NSAID / Aspirin
- Pregnancy (late)

Fever – Pediatric

CRITERIA

Pediatric patient with ***any*** of the following:

- Temperature >100.4°F (38°C)
- Temperature ≥2°F (1°C) over baseline and suspected infection[1]
- Temperature ≥2°F (1°C) over baseline and recipient of a blood / blood product transfusion within the last 4 hours[2]

EMT

- ABCs and vital signs, to include SpO_2 and temperature‡
- Airway management and appropriate oxygen therapy
- Check blood glucose level‡, if abnormal, see "General: Hyperglycemia – Pediatric" or "General: Hypoglycemia – Pediatric"

EMT STOP

ADVANCED

- If able to tolerate oral fluid consider <u>one</u> of the following:

Acetaminophen‡[3] 15 mg / kg PO: (325 mg / 10.15 mL concentration)

Weight in Kgs	mL of Acetaminophen
<2.7	Medical Control
2.7 – 5.0	1.25
5.1 – 7.7	2.5
7.8 – 10.9	3.75
11.0 – 22.3	5
≥22.3	10.15

Ibuprofen‡[4] 10 mg/kg PO if >6 months age: (100 mg / 5 mL concentration)

Weight in Kgs	mL of Ibuprofen
5.1 – 7.7	2.5
7.8 – 10.9	3.75
11.0 – 22.3	5
≥22.3	10

ADVANCED STOP

CC

PARAMEDIC

- Consider cardiac monitor, continuous SpO_2
- If indications of hypoperfusion[5] see "General: Sepsis / Shock / Hypoperfusion – Pediatric"

CC AND PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- Additional oral Acetaminophen[3]
- Additional Ibuprofen[4]
- Acetaminophen 12.5 mg/kg IV over 15 minutes‡Ⓟ[3]

Key Points/Considerations

1 If fever is due to suspected viral or bacterial infection, see "General: Sepsis / Shock / Hypoperfusion – Pediatric"
2 If fever is due to suspected reaction to blood / blood product transfusion, immediately stop the transfusion, replace all tubing (save for receiving hospital blood bank) and maintain IV access with new bag of Normal Saline, contact medical control, and treat per appropriate protocol to include:
   - Temperature monitoring‡, take initial and every 10 minutes
   - Cardiac monitor, continuous SpO_2 and continuous pCO_2 monitoring
   - Consider a 12-lead ECG, if appropriate
3 Acetaminophen contraindications (unless medical control approved):
   - Acetaminophen or an Acetaminophen-containing product within 4 hours
   - Hx of liver problems / acute liver failure
   - Acute liver inflammation due to hepatitis C virus
   - In the setting of shock or overdose (especially Acetaminophen overdose)
4 Ibuprofen contraindications (unless medical control approved):
   - >400 mg of Ibuprofen or an Ibuprofen-containing product within 4 hours
   - Severe renal impairment (dialysis dependent)
   - In the setting of shock or overdose
   - Prescribed 'blood thinners' (i.e. Warfarin / Coumadin)
   - Allergy to any NSAID / Aspirin
   - Pregnancy (late)
5 Diagnostic indications for hypoperfusion include:
   - Cool / clammy or mottled skin
   - Inability to recognize parents
   - Restlessness
   - Listlessness
   - Tachycardia
   - Tachypnea
   - Hypotension:

Age	**Systolic Hypotension**
<1 month	<60 mmHg
1 month to 1 year	<70 mmHg
1 – 10 years	< (70 + 2 x age in years) or <90 mmHg

- If no length-based tape available, but weight in pounds available:

Weight in Lbs	Weight in Kgs
<6	<2.7
6 – 11	2.7 – 5.0
12 – 17	5.1 – 7.7
18 – 24	7.8 – 10.9
25 – 49	11.0 – 22.3
≥50	≥22.3

Hospice Care

CRITERIA

For patients in a Hospice system when EMS practitioners have been summoned to provide care and possible transportation to the hospital. The patient's goals of care may be unusual or difficult for EMS practitioners. The objective must be compassionately integrate with the patient, family, and Hospice team to alleviate symptoms and provide comfort.

CFR AND ALL PROVIDER LEVELS

- Review goals of care and documentation with family/caregivers and determine what care has already been provided
- Seek root causes and refer to existing protocols where appropriate
- Contact the Hospice team (preferred) or Medical Control consultation to coordinate/ facilitate further care including administration of hospice kit medications by caregiver
- Consider paramedic response for additional medication administration

Dyspnea:

- If a fan is available, blow air directly at the patient's face
- Administer oxygen via nasal cannula to relieve shortness of breath and achieve a respiratory rate of < 20 and/or SpO_2 ≥92%

Oral Secretions:

- Reposition as needed
- Gentle suction as tolerated and as needed
- Consider music or other white noise into patient's environment to reduce noises that the family hears
- If severely distressed, patients may require care at an inpatient hospice facility if available

Terminal Secretions:

- Reassure family that noisy breathing is generally not distressing to the patient
- Suggest administration of medication from the comfort care kit by caregiver

CFR, EMT, ADVANCED AND CC STOP

PARAMEDIC

- Follow hospice kit orders for medications (See: "Prescribed Medication Assistance")
- Consider consultation with Hospice provider or Medical Control

Anxiety/Agitation:

- Confirm that dyspnea or pain is not the cause of anxiety
- For hallucinations or delusions/psychosis:
  - Midazolam 1-2 mg IN/IM/IV
- For terminal delirium without psychosis:
  - Midazolam 2.5 mg IN/IM/IV
  - May repeat in 15 minutes for IV/IN, or 30 minutes for IM route

Breakthrough Pain:

- Ask patient/family if the person is on opioid medications:
  - If opioid tolerant or cancer patient, contact Medical Control for additional dosing.
  - If on multiple opiates, and unclear opiate tolerance or amount of total daily use, treat with a lower initial dose of opiate.
- See: "Pain Management - Adult" - If IM route and if needed, repeat dose in 30 minutes to prevent dose stacking

PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- Olanzapine 10 mg IM[Ⓟ‡] once, or 5 mg SL[Ⓟ‡] once – use caution if midazolam given or anticipated

Key Points/Considerations

EMS providers should avoid the following interventions:

- Sirens, lights or aggressive interventions
- IV therapy (except where other forms of medication administration are not possible)
- Cardiopulmonary Resuscitation including ventilations, medications, and electrical therapy if consistent with the patient's wishes (See: "Advanced Directives / DNR / MOLST")
- Hospice patients should not be transported to the hospital unless specifically requested by the patient or their healthcare agent or surrogate, and preferably only after consultation with the hospice team and exhaustion of other treatments that do not require transport to the hospital

PEARLS

- Breakthrough pain management is important in patients with advanced disease. First seek to determine and treat the underlying cause.
- Anxiety (from increased pain and/or shortness of breath) is common in patients nearing death and should be treated promptly.
- Opioid related constipation is a frequent cause of nausea and vomiting. Surgical treatment is often not appropriate.
- Fever and infection treatment should be guided by the patient's dying trajectory and goals of care. Overwhelming sepsis may be a sign of death not to be reversed.
- Confusion / Delirium is common and often caused by a combination of medications, dehydration, infections, or hypoxia. It is distressing to families. It often heralds the end of life and may require sedation. Speak slowly and calmly to the person. Remind the patient of where they are, and who you are. Avoid contradicting the patient's statements. Ensure a patient's hearing aid and glasses are available. Limit activity/noise in the room.
- Suctioning bleeding from the airway may help with family and patient distress if coming from the oropharynx or lungs. Clean the patient as much as possible/reasonable to make the scene less distressing for the family. Utilize dark towels or sheets to cover the patient if possible.
- For terminal dehydration, moisten the patient's lips with petroleum jelly, use artificial saliva/mouth sponges and ice chips

Hyperkalemia – Adult

Applies to adult patients only

CRITERIA

- For the prevention of potentially fatal cardiac rhythm abnormalities in patients with known or suspected hyperkalemia including:
  - Patients with known elevated laboratory values
  - Patients with renal failure who should be receiving dialysis
  - Patients with suspected renal failure who are not yet receiving dialysis
- For patients with crush injury see "Trauma: Crush Injuries – Adult"

CFR AND ALL PROVIDER LEVELS

EMT

- ABCs and vital signs
- Airway management and appropriate oxygen therapy

CFR AND EMT STOP

ADVANCED

- Vascular access
- Normal Saline 500 mL bolus

ADVANCED STOP

CC

- Cardiac monitor
- 12-lead ECG

CC STOP

PARAMEDIC

- If cardiac arrest meeting above criteria ***or*** QTc prolongation[1] and/or QRS widening[2] during rapid sequence intubation with a depolarizing neuromuscular blocker:
  - Calcium Chloride 1 gram IV[3]
  - Sodium Bicarbonate 50 mEq IV[4]
- Contact medical control for treatment of other indications

PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- Albuterol 2.5 mg in 3 mL (unit dose), via nebulizer (without Ipratropium) repeated every 10 minutes
- Sodium Bicarbonate and Calcium Chloride in patients who do not meet standing order criteria

Key Points/Considerations

1 QTc prolongation should be considered when QTc >500 milliseconds
2 Significant QRS widening should be considered when QRS >150 milliseconds

3 Calcium Chloride is not a benign medication and should only be given if there are dangerous ECG changes such as QTc prolongation or suspected QRS widening
3 Calcium Chloride *should* only be given through a large, proximal, easily flowing IV
4 A minimum of 50 mL of Normal Saline should be given between the bolus of Calcium Chloride and the bolus of Sodium Bicarbonate

Hyperglycemia – Adult

For pediatric see, **"Hyperglycemia – Pediatric"**

CFR AND ALL PROVIDER LEVELS

- ABCs and vital signs
- Airway management and appropriate oxygen therapy
- If altered mental status, see "General: Altered Mental Status"

CFR STOP

EMT

- Check blood glucose level‡
  - If high, do not administer oral glucose

EMT STOP

ADVANCED

CC

PARAMEDIC

- Vascular access
- If glucose above 400 mg/dL, administer Normal Saline 500 mL IV bolus if there is no concern for pulmonary edema
  - May repeat bolus x1 if no concern for pulmonary edema

ADVANCED, CC AND PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- Additional Normal Saline IV bolus

Hyperglycemia – Pediatric

CFR AND ALL PROVIDER LEVELS

- ABCs and vital signs
- Airway management and appropriate oxygen therapy
- If altered mental status, see "General: Altered Mental Status"

CFR STOP

EMT

ADVANCED

- Check blood glucose level‡
  - If high, do not administer oral glucose

EMT AND ADVANCED STOP

CC

PARAMEDIC

- If blood glucose is above 400 mg/dl ***and*** signs of dehydration are present, administer Normal Saline 20 mL/kg IV

CC AND PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- Additional fluid hydration

Hypoglycemia – Adult

For pediatric see, **"Hypoglycemia – Pediatric"**

CRITERIA

- For patients with known or suspected hypoglycemia
- See as appropriate "General: Altered Mental Status"

CFR AND ALL PROVIDER LEVELS

- Airway management and appropriate oxygen therapy
- See, as necessary:
  - "Extremis: Respiratory Arrest / Failure – Adult"
  - "General: Altered Mental Status"
  - "General: Opioid (Narcotic) Overdose"

CFR STOP

EMT

- Check blood glucose level‡
  - If blood glucose is known or suspected to be below 60 mg/dL and patient can self-administer and swallow on command:
    - Give one unit dose (15-30 grams) of oral glucose, or available sugar source (such as maple syrup, fruit juice or non-diet soda)
    - If the patient is unable to swallow on command, do not administer oral glucose and begin transport
  - If mental status remains altered following administration of oral glucose, do not delay transport

EMT STOP

ADVANCED

CC

PARAMEDIC

- Vascular access
- If glucose level is below 60 mg/dL and the patient cannot swallow on command, administer Dextrose 10%, up to 25 grams (250 mL) IV; may redose once if hypoglycemia reoccurs
- If unable to obtain vascular access, consider Glucagon 1 mg IM

ADVANCED, CC AND PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- Additional Dextrose 10%, if patient remains hypoglycemic

Key Points/Considerations

- If the patient wishes to refuse transportation to a hospital and you have administered any medications, including oral glucose, regional procedure *may* require you to contact medical control prior to leaving the patient or completing the refusal of care, particularly if you

know or suspect the patient may be on oral glycemic medications, or for any other worrisome concerns. Patient should be instructed to eat a meal if they are refusing transport because simple sugars are quickly metabolized.

- If the patient's blood glucose level is below 60 mg/dL and the patient is able to self-administer and swallow on command, administer oral glucose or equivalent, rather than establishing vascular access, if practical
- If the patient regains normal responsiveness prior to infusion of the complete dose of Dextrose, stop the infusion and record amount infused
- Diabetic patients may exhibit signs of hypoglycemia with a blood sugar between 60-80 mg/dL. If you suspect the symptoms are hypoglycemia-induced, titrate Dextrose 10% using 5 grams (50 mL) aliquots for treatment.

Hypoglycemia – Pediatric

CRITERIA

- For pediatric patients with known or suspected hypoglycemia

CFR AND ALL PROVIDER LEVELS

- Airway management and appropriate oxygen therapy
- See as necessary:
  - "Extremis: Respiratory Arrest / Failure – Pediatric"
  - "General: Altered Mental Status"
  - "General: Opioid (Narcotic) Overdose"

CFR STOP

EMT

- Check blood glucose level‡
  - If blood glucose is known or suspected to be below 60 mg/dL and patient can self-administer and swallow on command:
    - Give one unit dose (15-30 grams) of oral glucose, or available sugar source (such as maple syrup, fruit juice or non-diet soda)
    - If the patient is unable to swallow on command, do not administer oral glucose and begin transport
  - If mental status remains altered following administration of oral glucose, do not delay transport

EMT STOP

ADVANCED

- Consider Glucagon[1]:
  - If <20 kg, Glucagon 0.5 mg IM
  - If ≥20 kg, Glucagon 1 mg IM

ADVANCED STOP

CC

PARAMEDIC

- Vascular access
- If glucose level is below 60 mg/dL and the patient cannot swallow, Dextrose 10% 5 mL/kg IV up to 25 grams (250 mL) via syringe (***NOT*** via drip)
  - Consider IO access ***only*** if there is no response to Glucagon
- If unable to obtain vascular access, consider Glucagon[1]:
  - If <20 kg, Glucagon 0.5 mg IM
  - If >20 kg, Glucagon 1 mg IM

CC AND PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- Additional Dextrose 10%, if patient remains hypoglycemic

Key Points/Considerations

1 Preschool aged children and infants may have limited response to Glucagon

- If the patient's parent or guardian wishes to refuse medical care for the patient, and you have administered any medications, including oral glucose, regional procedure *may* require consultation with medical control prior to completing the refusal

Nausea and/or Vomiting – Adult

For pediatric see, **"Nausea and/or Vomiting (>2 y/o) – Pediatric"**

CRITERIA

- For the prevention and treatment of nausea and/or vomiting in adults

CFR AND ALL PROVIDER LEVELS

EMT

- ABCs and vital signs
- Airway management and appropriate oxygen therapy

CFR AND EMT STOP

ADVANCED

- Vascular access
- Normal Saline 500 mL IV bolus; may repeat once, if lung sounds remain clear

ADVANCED STOP

CC

PARAMEDIC

- Consider a 12-lead ECG and cardiac monitor
- Ondansetron (Zofran) 4 mg ODT/PO, IV, or IM, may repeat once in 10 minutes
- Diphenhydramine (Benadryl) 25 mg IV or IM for motion sickness

CC AND PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- Midazolam (Versed) IV, IM, or intranasal

Key Points/Considerations

- Patients may be given an isopropyl alcohol pad for self-administered inhalation

Nausea and/or Vomiting – Pediatric (≥ 2 y/o)

CRITERIA

For the prevention and treatment of nausea and/or vomiting in children ≥ 2 years of age

CFR AND ALL PROVIDER LEVELS

EMT

ADVANCED

- ABCs and vital signs
- Airway management and appropriate oxygen therapy

CFR, EMT AND ADVANCED STOP

CC

- Ondansetron (Zofran) 2 mg IM or 4 mg ODT/PO
- Consider use of a cardiac monitor

CC STOP

PARAMEDIC

- Ondansetron (Zofran) 2 mg IM/IV or 4 mg ODT/PO
- Vascular access, if indicated (General: Vascular Access)

PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- CC vascular access

Key Points/Considerations

- There is no protocol nor standing orders for the management of nausea and/or vomiting for patients under the age of two years

Opioid (Narcotic) Overdose

Applies to adult and pediatric patients

CRITERIA

- For the evaluation and management of patients with suspected opiate overdose and respiratory insufficiency (hypoventilation, slow, shallow, or ineffective respirations)

CFR AND ALL PROVIDER LEVELS

- ABCs, vital signs
- Airway management and appropriate oxygen therapy
- Ongoing assessment of the effectiveness of breathing, see as necessary:
  - "Extremis: Respiratory Arrest / Failure – Adult"
  - "Extremis: Respiratory Arrest / Failure – Pediatric"
  - "General: Altered Mental Status"
- For suspected opioid overdose **and** respiratory insufficiency or respiratory arrest:
  - Administer one naloxone (Narcan) prefilled unit dose intranasal‡[1]
    - May repeat once in 5 minutes, if no improvement in respiratory effort

CFR STOP

EMT

- Check blood glucose level‡, if known or suspected to be below 60 mg/dL, see "Hypoglycemia – Adult" or "Hypoglycemia – Pediatric"

EMT STOP

ADVANCED

- Vascular access *ONLY* if necessary
- Titrate Naloxone (Narcan) to max 2 mg per dose IV, IM, or 4 mg intranasal, ONLY if respiratory arrest or insufficiency. If IV, consider administering in ≤0.5 mg increments.

ADVANCED STOP

CC

PARAMEDIC

- Cardiac monitor
- Consider a 12-lead ECG, especially if bradycardic or tachycardic

CC AND PARAMEDIC STOP

Key Points/Considerations

1 Unit dose prefilled Naloxone (Narcan) may not exceed 4 mg unless REMAC and DOH BEMS approved. Prefilled syringe with mucosal atomizer device is considered equivalent.

- Do NOT give Naloxone to any intubated patient without a medical control order unless they are in cardiac arrest

Opioid (Narcotic) Withdrawal‡

(PILOT PROGRAM ONLY)

Applies only to adult patients

CRITERIA

Patients with opioid use disorder who have overdosed and required Naloxone reversal are at increased risk for recurrent overdose and death and also present an opportunity for intervention. Buprenorphine, a partial opioid agonist, provides some relief from opioid withdrawal symptoms. It is safe and effective for paramedic administration.

Inclusion Criteria

- Age 18 years or older
- Confirmed or suspected opioid overdose requiring Naloxone administration
- Acute opioid withdrawal as a chief complaint

Exclusion Criteria

- Age <18 years
- Known pregnancy (relative exclusion criteria – physician discretion)
- Methadone use in the last 48 hours
- Altered mental status (unable to consent)
- Unwilling to provide full name AND date of birth
- Received chest compressions/CPR prior to or after EMS arrival

CFR AND ALL PROVIDER LEVELS

EMT

ADVANCED

CC

CFR, EMT, ADVANCED AND CC STOP

PARAMEDIC

Perform the Clinical Opioid Withdrawal Scale (COWS).[1] If the patient meets inclusion criteria and does not meet any exclusion criteria:

- If COWS ≥7, counsel the patient on Buprenorphine & referral. Assess their desire for Buprenorphine treatment, if agreeable, contact Pilot Program Physician.
- If COWS <7, give a medication-assisted treatment (MAT) brochure and offer transportation to the closest appropriate emergency department

PARAMEDIC STOP

PILOT PROGRAM PHYSICIAN MEDICAL CONTROL ORDERS

- Administer Buprenorphine/Naloxone 16 mg sublingual (SL) film
- Ondansetron 4 mg orally disintegrating tablet (ODT) as needed
- Give a small sip of water to moisten mucous membranes

- Reassess after 10 minutes; if symptoms persist or worsen, administer additional Buprenorphine/Naloxone 8 mg SL
- If symptoms improve after either the first or second dose of Buprenorphine, refer to clinic appointment, or transport to ED

Key Points/Considerations

1 Use Pilot Program resources and training for COWS calculation
- Refusal of transportation must be through Pilot Program Physician for any patient that has received Buprenorphine prior to signing RMA
- Only enrolled and trained agencies may participate and must add Buprenorphine/Naloxone to their controlled substance plan
- All Medical Direction for this program will be through Pilot Program Physician

Organophosphate Exposure

Applies to adult and pediatric patients

If severe symptoms[1], multiple patients, or suspected Nerve Agent, see "Organophosphate – CHEMPACK Program"

CFR AND ALL PROVIDER LEVELS

- Don appropriate PPE and decontaminate as needed
- ABCs and vital signs
- Airway management and appropriate oxygen therapy
- Ongoing assessment of the effectiveness of breathing, see as necessary:
  - "Extremis: Respiratory Arrest / Failure – Adult"
  - "Extremis: Respiratory Arrest / Failure – Pediatric"

CFR STOP

EMT

- Check blood glucose level‡, if known or suspected to be below 60 mg/dL, see "Hypoglycemia – Adult" or "Hypoglycemia – Pediatric"

EMT STOP

ADVANCED

- Vascular access

ADVANCED STOP

CC

- Cardiac monitor
- Consider a 12-lead ECG[2], especially if bradycardic or tachycardic

CC STOP

PARAMEDIC

- For symptomatic **adult** patients with organophosphate poisoning:
  - Atropine 2 mg IV, every 3-5 minutes until secretions dry
  - If seizing, see "General: Seizures – Adult"
- For symptomatic **pediatric** patients with organophosphate poisoning:
  - Atropine 1 mg IV, every 3-5 minutes until secretions dry
  - If seizing, see "General: Seizures – Pediatric"

PARAMEDIC STOP

Key Points/Considerations

1 A single patient with organophosphate toxicity can quickly exhaust the supplies of multiple ALS units, thus early activation of the CHEMPACK program should be considered

2 12-lead ECG is to ascertain evidence for QTc prolongation or QRS widening

Organophosphate – CHEMPACK Program

Applies to adult and SOME pediatric patients

CRITERIA

- This protocol is for delivering medications associated with the CHEMPACK Program
- The CHEMPACK may be requested by any level practitioner for one or more patients with signs or symptoms of organophosphate/nerve agent toxicity
- Signs and symptoms of organophosphate/nerve agent toxicity include any of:
  - SLUDGEM: Salivation-Lacrimation-Urination-Diarrhea-GI Distress-Emesis-Muscle Twitching-Miosis
- Consult medical control before administering medications in this protocol to children younger than 8 years of age

EMT

ADVANCED

CC

PARAMEDIC

- Don appropriate PPE and decontaminate as needed
- Contact dispatch to declare an incident and request appropriate response, including ALS
- Request CHEMPACK Program Antidote Kits
- Consider requesting an EMS physician to scene
- ABCs and vital signs
- Airway management and appropriate oxygen therapy
- Ongoing assessment of the effectiveness of breathing, see as necessary:
  - "Extremis: Respiratory Arrest / Failure – Adult"
  - "Extremis: Respiratory Arrest / Failure – Pediatric"
- Administer antidotes as follows to adults and children 8 years and older[1] based on signs and symptoms and using a route within your scope of practice and training. Atropine MUST be administered first:

Signs and Symptoms	Atropine Dose[2, 3]	Pralidoxime (2-PAM) Dose[2, 3, 4]	Diazepam or Midazolam Dose[2, 5]	Monitoring Frequency
SEVERE + SEIZURES SLUDGEM + Respiratory Distress Agitation/Confusion	6 mg IM/IV	1,800 mg IM/IV	10 mg IM 5 mg IV	Every 5 min
SEVERE SLUDGEM + Respiratory Distress Agitation/Confusion	6 mg IM/IV	1,800 mg IM/IV	None	Every 5 min
MODERATE SLUDGEM	4 mg IM/IV	600 mg IM/IV	None	Every 10 min
ASYMPTOMATIC No symptoms	None	None	None	Every 15 min

STOP EMT, ADVANCED, CC AND PARAMEDIC STOP

Key Points/Considerations

1 Pediatric patients should be decontaminated and have expedited transport off scene, especially if they are demonstrating ANY signs or symptoms. Contact medical control before administering CHEMPACK medications to children younger than 8 years of age.
2 CHEMPACK medications may come in prefilled autoinjectors, however the dose of each autoinjector may vary. Practitioners must sum the dose in each autoinjector and should administer enough autoinjectors and/or vials to achieve the total dose identified in the treatment table.
3 All levels may administer Atropine and Pralidoxime using autoinjector. Combination autoinjectors (such as DuoDote®) that contain both Atropine and Pralidoxime (2-PAM) together may be used in place of the autoinjectors that contain the individual drugs.
4 Only AEMT-CC and Paramedics may reconstitute and administer Pralidoxime in vial form
5 Diazepam or Midazolam may be included in CHEMPACK Medications. Administer only one of the two benzodiazepines as indicated. Only AEMT-CC and Paramedics may administer Diazepam or Midazolam in autoinjector or vial form.

- CHEMPACK medications may be used regardless of the expiration date
- CHEMPACK medications are NOT to be used for prophylaxis

Pain Management – Adult

For pediatric see, **"Pain Management** – Pediatric**"**

CRITERIA

- Contraindications to standing order pain management include altered mental status, hypoventilation, and SBP <100 mmHg
- Consider consultation with medical control prior to pain management in the third trimester pregnant women with pain complaints

CFR AND ALL PROVIDER LEVELS

EMT

- ABCs and vital signs
- Airway management and appropriate oxygen therapy

CFR AND EMT STOP

ADVANCED

- Vascular access
- Nitrous oxide[1] by self-administered inhalation‡
- If able to tolerate oral fluid consider <u>one</u> of the following:‡
  - Acetaminophen[2] up to 1000 mg
  - Ibuprofen[3] up to 400 mg

ADVANCED STOP

CC

PARAMEDIC

- May choose one:‡
  - Ketorolac[4] (Toradol) 15 mg IV/IM
  - Acetaminophen[2] 1000 mg IV over 15 minutes Ⓟ
- May also choose one:[5]
  - Morphine 0.05 mg/kg IV or 0.1 mg/kg IM
    - May be repeated after 10 minutes; maximum total dose of 10 mg
  - Fentanyl 1-1.5 mcg/kg IV, IM, or intranasal
    - May be repeated after 10 minutes; maximum total dose of 200 mcg
  - Ketamine Ⓟ‡ 25 mg IV over 5 minutes or 50 mg IM
    - May consider weight-based dosing of Ketamine 0.1-0.3 mg/kg IV not to exceed 25 mg IV or 50 mg IM

CC AND PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- Additional Morphine IV or IM
- Additional Fentanyl IV, IM, or intranasal
- Additional Acetaminophen or Ibuprofen PO‡
- Midazolam (Versed) IV, IM, or intranasal

Key Points/Considerations

1 Nitrous Oxide contraindications (unless medical control approved):
   - Hypoxia
   - Inability to self-administer
   - Pneumothorax
   - Suspected bowel obstruction

2 Acetaminophen contraindications (unless medical control approved):
   - Hx of liver problems / acute liver failure
   - Acute liver inflammation due to hepatitis C virus
   - In the setting of shock or overdose (especially Acetaminophen overdose)

3 Ibuprofen contraindications (unless medical control approved):
   - Severe renal impairment (dialysis dependent)
   - In the setting of shock or overdose
   - Prescribed "blood thinners" (i.e. Warfarin / Coumadin)
   - Allergy to any NSAID / Aspirin
   - Pregnancy (late)

4 Ketorolac (Toradol) should not be administered in patients with:
   - Renal failure
   - Require dialysis
   - Are >60 years of age
   - Pregnant
   - Are actively bleeding
   - Are presenting with chest pain or a suspected acute coronary syndrome

5 **ONE** non-oral, narcotic pain medication may be given under standing orders. For dosing that exceeds the standing order maximum, or to switch to another agent, you must consult medical control. Additional considerations include:
   - Fentanyl must be pushed *slowly*
   - Fentanyl should be considered if there is an allergy to Morphine or potential hemodynamic instability
   - Morphine or Fentanyl up to the maximum dose may be given via standing orders
   - For ease of administration, if clinically appropriate: consider approximating the dose of Fentanyl to the nearest 50 mcg; consider approximating the dose of Morphine to the nearest 5 mg
   - Morphine often produces a normal localized histamine reaction which manifests as urticaria (hives) immediately surrounding the IV site, and is not considered a sign of allergy. More extensive involvement of urticaria or other signs of allergic reaction should be treated (See "General: Allergic Reaction and Anaphylaxis – Adult")

- For nausea or vomiting see "General: Nausea and/or Vomiting – Adult"
- Nitrous oxide, Ketamine, Ketorolac (Toradol), Acetaminophen (IV or PO – liquid or tablet), or Ibuprofen (PO liquid or tablet) are not required formulary items

Pain Management – Pediatric

CFR AND ALL PROVIDER LEVELS

EMT

- ABCs and vital signs
- Airway management and appropriate oxygen therapy

CFR AND EMT STOP

ADVANCED

- Nitrous oxide[1] by self-administered inhalation‡
- If able to tolerate oral fluid consider <u>one</u> of the following: ‡

Acetaminophen[2] 15 mg / kg PO (325 mg / 10.15 mL concentration):

Weight in Kgs	mL of Acetaminophen
<2.7	Medical Control
2.7 – 5.0	1.25
5.1 – 7.7	2.5
7.8 – 10.9	3.75
11.0 – 22.3	5
≥22.3	10.15

Ibuprofen[3] 10 mg/kg PO (100 mg / 5 mL concentration) if >6 months of age:

Weight in Kgs	mL of Ibuprofen
5.1 – 7.7	2.5
7.8 – 10.9	3.75
11.0 – 22.3	5
≥22.3	10

ADVANCED STOP

CC

- Cardiac monitor
- May choose one:[4]
  - Morphine 0.1 mg/kg IM
    - May be repeated after 10 minutes; maximum total dose of 10 mg
  - Fentanyl 1-1.5 mcg/kg intranasal
    - May be repeated after 10 minutes once; maximum total dose of 100 mcg

CC STOP

PARAMEDIC

- Vascular access, if indicated. See “Resources: Vascular Access”
- May choose one‡
  - Ketorolac[5] (Toradol) 0.5 mg/kg IV/IM if >2 years of age
  - Acetaminophen[2] 12.5 mg/kg IV over 15 minutes℗
- May also choose one:[4]
  - Morphine 0.05 mg/kg IV or 0.1 mg/kg IM

        - May be repeated after 10 minutes; maximum total dose of 10 mg
    - Fentanyl 1-1.5 mcg/kg IV or IM
        - May be repeated after 10 minutes; maximum total dose of 100 mcg

PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- CC vascular access
- Additional Fentanyl IV, IM, or intranasal
- Additional Morphine IV or IM

Key Points/Considerations

1 Nitrous Oxide contraindications (unless medical control approved):
    - Hypoxia
    - Inability to self-administer
    - Pneumothorax
    - Suspected bowel obstruction

2 Acetaminophen contraindications (unless medical control approved):
    - Hx of liver problems / acute liver failure
    - Acute liver inflammation due to hepatitis C virus
    - In the setting of shock or overdose (especially Acetaminophen overdose)

3 Ibuprofen contraindications (unless medical control approved):
    - Severe renal impairment (dialysis dependent)
    - In the setting of shock or overdose
    - Prescribed "blood thinners" (i.e. Warfarin / Coumadin)
    - Allergy to any NSAID / Aspirin
    - Pregnancy (late)

4 **ONE** non-oral, narcotic pain medication may be given under standing orders. For dosing that exceeds the standing order maximum, or to switch to another agent, you must consult medical control. Additional considerations include:
    - Fentanyl must be pushed *slowly*
    - Fentanyl should be considered if there is an allergy to Morphine or potential hemodynamic instability
    - Morphine or Fentanyl up to the maximum dose may be given via standing orders
    - Morphine often produces a localized histamine reaction which manifests as urticaria (hives) immediately surrounding the IV site and is not considered a sign of allergy. More extensive involvement of urticaria or other signs of allergic reaction should be treated (See "General: Allergic Reaction and Anaphylaxis – Pediatric")

5 Ketorolac (Toradol) should not be administered in patients with:
    - Renal failure
    - Require dialysis
    - Pregnant
    - Are actively bleeding
    - Are presenting with chest pain or a suspected acute coronary syndrome

- For nausea or vomiting see "General: Nausea and/or Vomiting (>2 y/o) – Pediatric"
- Nitrous Oxide, Ketamine, Ketorolac (Toradol), Acetaminophen (IV or PO – liquid or tablet) or Ibuprofen (PO liquid or tablet) are not required formulary items

- If no length-based tape available, but weight in pounds available:

Weight in Lbs	Weight in Kgs
<6	<2.7
6 – 11	2.7 – 5.0
12 – 17	5.1 – 7.7
18 – 24	7.8 – 10.9
25 – 49	11.0 – 22.3
≥50	≥22.3

Poisoning / Overdose – Adult: Undifferentiated

For pediatric see, **"Poisoning / Overdose – Pediatric: Undifferentiated"**

CRITERIA

- This protocol is intended for the undifferentiated toxic exposure. See the following as clinically appropriate for specific suspected toxidromes:
  - For altered mental status, see "General: Altered Mental Status"
  - For opioid overdose, see "General: Opioid (Narcotic) Overdose"
  - For carbon monoxide, see "General: Carbon Monoxide Exposure – Suspected"
  - For smoke inhalation, see "General: Smoke Inhalation / Cyanide Poisoning – Symptomatic"
  - For organophosphate, see "General: Organophosphate Exposure"; if multiple patients or suspected nerve agent, see "General: Organophosphate Suspected Nerve Agent"

CFR AND ALL PROVIDER LEVELS

- Decontamination, as needed
- ABCs and vital signs
- Airway management and appropriate oxygen therapy
- Determine what and how much was taken, along with the time, if possible
- For contamination of the skin or eyes, see "Trauma: Burns" or "Trauma: Eye Injuries"

CFR STOP

EMT

- Check blood glucose level‡, if known or suspected to be below 60 mg/dL, see "General: Hypoglycemia – Adult"

EMT STOP

ADVANCED

- Vascular access

ADVANCED STOP

CC

- Cardiac monitor
- Consider a 12-lead ECG, especially if the patient is bradycardic or tachycardic
- If suspected sympathomimetic OD (cocaine/amphetamines), consider:
  - Midazolam (Versed) 2.5 mg IV or 5 mg IM or intranasal; may repeat once

CC STOP

PARAMEDIC

For symptomatic patients with:

- Suspected dystonic reaction[1]:
  - Diphenhydramine (Benadryl) 50 mg IV or IM

- Sodium channel (tricyclic antidepressant) toxicity with tachycardia and QRS >120 milliseconds[2]
    - Sodium Bicarbonate 1 mEq/kg[3] IV every 5 minutes until QRS complex <120 milliseconds)

PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- Suspected calcium channel blocker toxicity:
    - Calcium Chloride 1 gram IV slow push over 10 minutes

Key Points/Considerations

1. Dystonic reaction is a reaction to medication resulting in uncontrolled muscle contractions of the face, neck, or tongue. Extrapyramidal side effects may also include extreme restlessness and may be treated as a dystonic reaction.
2. Wide complex is defined as a QRS complex >0.12 sec / 120 msec / 3 small boxes
3. May approximate Sodium Bicarbonate doses to the nearest 50 mEq

- Take precautions to assure providers do not get exposed
- For inhalation exposures, assure patient is moved to fresh air

Poisoning / Overdose – Pediatric: Undifferentiated

CRITERIA

- This protocol is intended for the undifferentiated toxic exposure. See the following as clinically appropriate for specific suspected toxidromes:
  - For altered mental status, see "General: Altered Mental Status"
  - For opioid overdose, see "General: Opioid (Narcotic) Overdose"
  - For carbon monoxide, see "General: Carbon Monoxide Exposure – Suspected"
  - For smoke inhalation, see "General: Smoke Inhalation / Cyanide Poisoning – Symptomatic"
  - For organophosphate, see "General: Organophosphate Exposure"; if multiple patients or suspected nerve agent, see "General: Organophosphate Suspected Nerve Agent"

CFR AND ALL PROVIDER LEVELS

- Decontamination, as needed
- ABCs and vital signs
- Airway management and appropriate oxygen therapy
- Determine what was taken, when and how much, if possible
- For contamination of the skin or eyes, see "Trauma: Burns" or "Trauma: Eye Injuries"

CFR STOP

EMT

ADVANCED

- Check blood glucose level‡, if known or suspected to be below 60 mg/dL, see "General: Hypoglycemia – Adult"

EMT AND ADVANCED STOP

CC

- Cardiac monitor

CC STOP

PARAMEDIC

- Vascular access, if indicated

PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- CC vascular access

For a symptomatic patient with:

- Dystonic reaction[1]:
  - Diphenhydramine (Benadryl) 1 mg/kg IV or IM (Max 50 mg)
- Suspected sympathomimetic ingestion (cocaine/amphetamine):
  - Midazolam (Versed) 0.1 mg/kg IV, IM, or intranasal (Max 5 mg)
- Suspected calcium channel blocker toxicity:

    - Calcium Chloride 20 mg/kg IV (Max 1 gram)
- Sodium channel (Tricyclic antidepressant) toxicity with tachycardia and QRS >120 milliseconds[2]
    - Sodium Bicarbonate 1 mEq/kg IV every 5 minutes until QRS complex <120 milliseconds) (Max 100 mEq per dose)

Key Points/Considerations

1 Dystonic reaction is a reaction to medication resulting in uncontrolled muscle contractions of the face, neck, or tongue. Extrapyramidal side effects may also include extreme restlessness and may be treated as a dystonic reaction.

2 Wide complex is defined as a QRS complex >0.12 sec / 120 msec / 3 small boxes

- Advise the receiving hospital as soon as possible
- Take precautions to assure providers do not get exposed
- For inhalation exposures, assure patient is moved to fresh air

Post Intubation Management – Adult

No pediatric equivalent, see **"**General: Procedural Sedation – Pediatric**"**

INDICATION

- For use on standing order, unless otherwise specified, by critical care or paramedic providers (regardless of RSI credentialing) in patients who have been intubated

PROCEDURE

- Elevate the head of the bed unless contraindicated by trauma to decrease risk of aspiration
- Continuously monitor ETT placement, including effectiveness of oxygenation and ventilation
- Consider placement of an orogastric (OG) tube‡
- Continuously monitor capnography and ventilate to target $EtCO_2$ of 35-45 mmHg
- Administer continual analgesia and, if necessary, sedation:
    - Fentanyl 100 mcg IV once, and then 50 mcg IV every 5 minutes, as needed
    - Midazolam (Versed) up to 5 mg IV every 10 minutes, as needed
        - May substitute Ketamine℗‡ up to 100 mg every 15 minutes, as needed
- Ongoing neuromuscular blockade is a standing order ***ONLY for air medical services***
    - Consider Vecuronium‡ or Rocuronium‡ up to 10 mg every 30 minutes, as needed, if necessary for patient or crew safety, or ventilator dyssynchrony
    - Use of long-acting neuromuscular blockade ***requires*** ongoing sedation and pain management
- See "Resource: Automatic Transport Ventilator," as appropriate

MEDICAL CONTROL CONSIDERATIONS

- Additional sedation and/or pain management
- Neuromuscular blockade with Rocuronium or Vecuronium, if available, ***ONLY*** if necessary (e.g. for patient/crew safety, or ventilator dyssynchrony unrelieved by analgosedation)
    - Use of neuromuscular blockade ***requires*** ongoing sedation and pain management
    - Inadequate response to sedation and pain management may be secondary to insufficient sedation and/or analgesia

Key Points/Considerations

- In cases of inadequate ventilation or oxygenation of the intubated patient, consider the DOPE mnemonic:
    - Displacement
    - Obstruction
    - Pneumothorax (tension)
    - Equipment failure

Procedural Sedation – Adult

For pediatric see, **"Procedural Sedation – Pediatric"**

CRITERIA

- For patients undergoing anxiety-producing or painful procedures including, but not limited to cardioversion and transcutaneous pacing
- For post-intubation sedation, see "General: Post Intubation Management – Adult"

CFR AND ALL PROVIDER LEVELS

EMT

- ABCs and vital signs
- Airway management and appropriate oxygen therapy

CFR AND EMT STOP

ADVANCED

- Vascular access

ADVANCED STOP

CC

- Cardiac monitor with continuous pulse oximetry and waveform capnography [1]

CC STOP

PARAMEDIC

- Midazolam (Versed) 2.5 mg IV or 5 mg IM
  - May be repeated every 5 minutes, if SBP >100 mmHg or MAP >65 mmHg
- Fentanyl 1-1.5 mcg/kg IV, IM, or intranasal[2]
  - May be repeated after 5 minutes; maximum total dose of 200 mcg

PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- Morphine IV or IM
- Midazolam (Versed) IV, IM, or intranasal
- Ketamine ⓟ‡ 0.5-2 mg/kg IV or 3-5 mg/kg IM (max dose 250 mg)
- Etomidate‡[3] (Amidate) 0.1 mg/kg IV once (no repeat dose)

Key Points/Considerations

1 Waveform capnography is expected on all patients using proper sampling equipment

2 For ease of administration, if clinically appropriate consider approximating the dose of Fentanyl to the nearest 50 mcg

3 If additional sedation is required after giving a dose of Etomidate (Amidate), Midazolam (Versed) may be used on standing order

- This protocol may only be used for intubation upon medical control order

Procedural Sedation – Pediatric

CRITERIA

- For patients undergoing anxiety-producing or painful procedures including, but not limited to cardioversion and transcutaneous pacing

CFR AND ALL PROVIDER LEVELS

EMT

ADVANCED

- ABCs and vital signs
- Airway management and appropriate oxygen therapy

CFR, EMT AND ADVANCED STOP

CC

- Cardiac monitor with continuous pulse oximetry and waveform capnography [1]

CC STOP

PARAMEDIC

- Vascular access, if indicated (Resources: Vascular Access)

PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- CC vascular access
- Morphine 0.1 mg/kg IV or IM (Max dose 5 mg)
- Fentanyl 1-1.5 mcg/kg IV, IM, or intranasal (Max dose 100 mcg)
- Midazolam (Versed) 0.1 mg/kg IV, IM, or intranasal (Max dose 5 mg)
- Ketamine Ⓟ‡ 1 mg/kg IV or IM (Max dose 100 mg)

Key Points/Considerations

1 Waveform capnography is expected on all patients using proper sampling equipment

- Consult medical control as soon as possible

Rapid Sequence Intubation (RSI) – Adult

INDICATIONS

- Regional policy/procedure determines credentialing of paramedics authorized to utilize this protocol, and any additional directives pertaining to rapid sequence intubation
- Rapid Sequence Intubation (RSI) may be utilized on standing orders when definitive airway control is necessary in an adult ***and*** patient's weight is at least 30 kg (66 pounds)
- Above restrictions to standing order do not apply to air medical services

CONTRAINDICATIONS / PRECAUTIONS

- Patients who cannot be ventilated with a bag-valve-mask (BVM) because of anatomy, facial/airway trauma, or other reasons

PROCEDURE

- Position the patient appropriately
- Attach SpO_2, NIBP, and cardiac monitor
- Oxygenate via non-rebreather mask or utilize a bag-valve-mask, as indicated, while preparing for the procedure
- Consider high flow nasal oxygen during intubation (15 LPM via nasal cannula)
- Consider use of a Bougie on the initial attempt
- Prepare a continuous $EtCO_2$ device
- Prepare for post intubation management (See "General: Post Intubation Management")
- Assemble and test all basic and advanced airway equipment, including suction
- Ready backup airway devices
- Draw up appropriate medications
- Have a second rescuer assist with external laryngeal manipulation (ELM), as indicated
- Administer an induction agent: (Select one medication)
    - Etomidate (Amidate) 0.3 mg/kg rapid IV push
        - Etomidate (Amidate) is dosed on the ***total*** body weight
        - May round to the nearest 10 mg for adults (Max 40 mg)
    - Ketamine[Ⓟ‡] 2 mg/kg rapid IV push
        - Ketamine is dosed based on the ***ideal*** body weight
        - May round to the nearest 50 mg for adults (Max 500 mg)
- Administer neuromuscular blockade: (Select one medication)
    - Succinylcholine[1] 1.5 mg/kg rapid IV push
        - Succinylcholine is dosed on the ***total*** body weight
        - May round to the nearest 50 mg for adults (Max 200 mg)
    - Rocuronium 1 mg/kg
        - Rocuronium is dosed based on the ***ideal*** body weight
        - May round to the nearest 20 mg for adults (Max 100 mg)
- If the intubation is missed (3 attempts maximum) manage the airway and ventilate; consider inserting an alternative airway device
- If unable to adequately oxygenate or ventilate the patient with any other method, perform a cricothyroidotomy
- Attach continuous $EtCO_2$ monitor, confirm placement, and secure airway

- See “General: Post Intubation Management – Adult”

MEDICAL CONTROL CONSIDERATIONS

- RSI in patients weighing <30 kg
- RSI when other standing order criteria are not met

Key Points/Considerations

1 Contraindications to Succinylcholine:
  - Known or suspected hyperkalemia (e.g. crush injuries, rhabdomyolysis, dialysis patients, severe burns >24 hours old, pre-existing spinal cord injuries, and neuromuscular disorders, including ALS [amyotrophic lateral sclerosis / Lou Gehrig’s disease] and MS [multiple sclerosis])
  - Known history of malignant hyperthermia

1 Consider hyperkalemia in patients who develop ventricular dysrhythmia after administration of Succinylcholine (General: Hyperkalemia – Adult, Extremis: Ventricular Fibrillation or Pulseless V. Tachycardia – Adult)

- Consider time to definitive care when electing to utilize RSI procedure. In some cases, it may be more beneficial to implement BLS airway interventions and call ahead so the receiving hospital can prepare for RSI upon the patient’s arrival.

Seizures – Adult

For pediatric see, **"Seizures** – Pediatric**"**

CFR AND ALL PROVIDER LEVELS

- Airway management and appropriate oxygen therapy
  - Suction the airway as needed
  - Position the patient on the side if vomiting
  - Do not put anything in the patient's mouth when the patient is actively seizing
    - Utilize an appropriate airway adjunct, if needed, after the seizure has ended
- Protect the patient from harm
  - Remove hazards from the patient's immediate area and avoid unnecessary restraint
- Ongoing assessment of the effectiveness of breathing
  - See "Extremis: Respiratory Arrest / Failure – Adult" if necessary
- Assist patient with their own medications
  - See "Resources: Prescribed Medication Assistance"

CFR STOP

EMT

- Check blood glucose level‡, if known or suspected to be below 60 mg/dL, see "General: Hypoglycemia – Adult"

EMT STOP

ADVANCED

- Vascular access

ADVANCED STOP

CC

PARAMEDIC

- Cardiac monitor
- Midazolam (Versed) 10 mg IM or intranasal, 5 mg IV; may repeat once in 5 minutes
- Magnesium 4 grams IV over 20 minutes, after Midazolam, if patient is pregnant[1]

CC AND PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- Additional Midazolam (Versed) 2.5 – 5 mg IV, IM, or intranasal
- Ketamine 100 mg after two doses of midazolam ⓟ‡

Key Points/Considerations

- Seizures secondary to eclampsia in pregnancy occur because of a different mechanism than typical epileptic seizures. Administer Midazolam (Versed) first, followed by Magnesium. Additional Midazolam (Versed) may be given per protocol if seizures continue.
- Pre-eclampsia is typically described as BP >140/90 mmHg with severe headache, confusion, and/or hyperreflexia in a pregnant patient, or in one who has given birth within the past month. Pre-eclampsia may progress to eclampsia.

- Patients may become confused and combative after a seizure (in the postictal state)
    - Protect yourself and the patient
    - Obtain law enforcement assistance, if needed
- Status epilepticus (continuing seizure) is a critical medical emergency. Anticonvulsant medication should be administered as soon as possible.

Seizures – Pediatric

CFR AND ALL PROVIDER LEVELS

- Airway management and appropriate oxygen therapy
  - Suction the airway as needed
  - Position the patient on the side if vomiting
  - Do not put anything in the patient's mouth when the patient is actively seizing
    - Utilize an appropriate airway adjunct, if needed, after the seizure has ended
- Protect the patient from harm
  - Remove hazards from the patient's immediate area and avoid unnecessary restraint
- Ongoing assessment of the effectiveness of breathing
  - See "Extremis: Respiratory Arrest / Failure – Pediatric" if necessary
- Assist patient with their own medications
  - See "Resources: Prescribed Medication Assistance"

CFR STOP

EMT

ADVANCED

- Check blood glucose level‡, if known or suspected to be below 60 mg/dL, see "General: Hypoglycemia – Adult"

EMT AND ADVANCED STOP

CC

- Cardiac monitor
- Midazolam (Versed) 0.2 mg/kg IM or intranasal (Max dose 10 mg)

CC STOP

PARAMEDIC

- Vascular access, if indicated
- If patient continues to seize, Midazolam (Versed):
  - 0.2 mg/kg IM or intranasal (Max dose 10 mg)
  - 0.1 mg/kg IV (Max dose 5 mg)

PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- CC vascular access
- Additional Midazolam (Versed):
  - 0.2 mg/kg IM or intranasal (Max dose 10 mg)
  - 0.1 mg/kg IV (Max dose 5 mg)
- Ketamine℗‡ 1 mg/kg (Max dose 100 mg) after two doses of Midazolam

Key Points/Considerations

- Midazolam (Verse;:d) should be dosed based on ideal body weight
- Patients may become confused and combative after a seizure (in the postictal state)

    - Protect yourself and the patient
    - Obtain law enforcement assistance, if needed
- Status epilepticus (continuing seizure) is a critical medical emergency. Anticonvulsant medication should be administered as soon as possible. Consult medical control, if seizures persist, as soon as possible

Shock – Adult: Hemorrhagic Shock

For pediatric see, **"**Shock - Pediatric: Sepsis / S**hock / Hypoperfusion"**

CFR AND ALL PROVIDER LEVELS

EMT

- ABCs and vital signs
- Airway management and appropriate oxygen therapy
  - Oxygen administration is encouraged even without hypoxia if a traumatic brain injury is suspected
- Position the patient in a supine position if possible

CFR AND EMT STOP

ADVANCED

CC

- Vascular access
- If SBP <100 mmHg or MAP <65 mmHg, Normal saline 500 mL bolus, may repeat up to a total of 2 liters if lung sounds remain clear to obtain goal SBP ≥100 mmHg or MAP ≥65 mmHg

ADVANCED AND CC STOP

PARAMEDIC

- If signs of shock and systolic BP <100 mmHg, MAP <65 mmHg, consider:
  - Transfuse 1 unit Type O or whole blood‡Ⓟ [1] [2]
  - Tranexamic Acid‡Ⓟ [1] (TXA) 2 gm IV/IO over 10 minutes if traumatic or obstetric hemorrhage

PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- Additional Normal Saline
- Blood‡Ⓟ administration in patients not defined in this protocol, or additional units of blood
- TXA administration in patients not defined in this protocol
- Norepinephrine 2 mcg/min, titrated to 20 mcg/min, if needed after fluid bolus is completed, to maintain Systolic BP ≥100 mmHg, MAP ≥65 mmHg

Key Points/Considerations

1 Administration of blood or TXA should not delay transport

2 Initiation of prehospital blood products subject to REMAC endorsed blood distribution plan and Department of Health approval

Shock – **Adult**: Shock / Hypoperfusion

For pediatric see, **"**Shock – Pediatric: Shock / **Sepsis / Hypoperfusion"**

CRITERIA

- This protocol *excludes* hemorrhagic, septic, and cardiogenic shock
  - For hemorrhagic shock, see "Shock – Adult: Hemorrhagic Shock"
  - For septic shock, see "General: Severe Sepsis / Septic Shock"
  - For cardiogenic shock, see "General: Cardiogenic Shock – Adult"

CFR AND ALL PROVIDER LEVELS

- ABCs and vital signs
- Airway management and appropriate oxygen therapy
- Administer supplemental oxygen; see "Resource: Oxygen Administration and Airway Management"

CFR STOP

EMT

- Check blood glucose level‡, if known or suspected to be below 60 mg/dL, see "General: Hypoglycemia – Adult"

EMT STOP

ADVANCED

- Vascular access
- Normal Saline 500 mL bolus, if SBP <100 mmHg or MAP <65 mmHg; may repeat up to a total of 2 L if lung sounds remain clear to goal SBP >100 mmHg and MAP >65 mmHg

ADVANCED STOP

CC

PARAMEDIC

- Cardiac monitor
- Consider 12-lead ECG
- Normal Saline, to a total of 2 L, if there is no concern for pulmonary edema
- Consider Norepinephrine 2 mcg/min, titrated to 20 mcg/min
  - Goal SBP >100 mmHg and MAP >65 mmHg

CC AND PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- Additional Normal Saline
- Consider Dexamethasone (Decadron) 10 mg PO, IM, or IV

Key Points/Considerations

- Hypoperfusion is defined as SBP <100 mmHg, MAP <65 mmHg with decreased level of consciousness

- Vitals should be frequently assessed during transport to avoid unnecessary prehospital overhydration
- Consider potential causes of hypoperfusion: anaphylaxis, toxic ingestions, cardiac rhythm disturbances, myocardial infarction, sepsis, ectopic pregnancy, ruptured abdominal aortic aneurysm, adrenal crisis, or others

Shock – Adult: Severe Sepsis / Septic Shock

For pediatric see, **"**Shock – Pediatric: Shock / **Sepsis / Hypoperfusion"**

CRITERIA

- For use in an adult patient with ***both*** of the following:
  - Suspected infection
  - Hypotension (systolic BP <100 mmHg) ***OR*** altered mental status

CFR AND ALL PROVIDER LEVELS

- ABCs and vital signs, including blood pressure
- Airway management and high flow oxygen, non-rebreather mask, as tolerated
- If the patient has altered mental status, see "General: Altered Mental Status"
- Attempt to maintain normal body temperature

CFR STOP

EMT

- Advise the destination hospital that the patient has signs of sepsis/septic shock
- Obtain vital signs, including blood pressure, frequently

EMT STOP

ADVANCED

- Large bore vascular access
- Normal Saline 500 mL bolus, if SBP <100 mmHg or MAP <65 mmHg; may repeat up to a total of 2 L if lung sounds remain clear
  - Goal SBP >100 mmHg and MAP >65 mmHg
- Notify the destination hospital of potential septic shock patient prior to arrival

ADVANCED STOP

CC

- Cardiac monitor and continuous pulse oximetry
- Consider a 12-lead ECG

CC STOP

PARAMEDIC

- Consider Norepinephrine 2 mcg/min, titrated to 20 mcg/min after at least one liter has infused to maintain MAP >65 mmHg or SBP >100 mmHg. Continue additional fluids unless otherwise contraindicated.

PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- Additional fluid administration
  - Patients in septic shock may require boluses of up to 3-4 L (or 30 cc/kg) provided there are no contraindications to doing so, such as renal failure or pulmonary edema

Key Points/Considerations

- Concern for any new or worsening infection includes reported fever, shaking chills, diaphoresis, new cough, difficult or less than usual urination, unexplained or newly altered mental status, flushed skin, pallor, new rash, or mottling
- Additional indicators of infection include any two of the following:
    - Heart rate >90
    - Respiratory rate >20 ***or*** $PaCO_2$ <32 mmHg
    - Temperature >100.4°F (38°C), if available
    - White blood count >12,000 cells/mm^3 ***or*** <4,000 cells/mm^3 or >10% bands, if available
- Vitals should be frequently assessed during transport to avoid prehospital over-hydration
- Focus on rapid identification, IV hydration, and early notification of concern for potential septic shock patient to destination facility

Shock – Pediatric: Sepsis / Shock / Hypoperfusion

CRITERIA

- For patients with hypoperfusion[1] because of trauma, bleeding, vomiting, diarrhea, or sepsis
- Septic pediatric patients are those with suspected infection and who are abnormally hot or cold to touch, and/or have a fever over 100.4°F (38°C), or less than 96.8°F (36°C) and high heart rate (age-dependent[2]) and/or high respiratory rate (age-dependent[2]) with:
    - Poor perfusion (capillary refill >3 seconds, decreased peripheral pulses, distal extremity [hands/feet] coolness and dusky color, or age-dependent[2] hypotension) *and/or*
      need for oxygen, *and/or*
      altered mental status (lethargy, irritability)

CFR AND ALL PROVIDER LEVELS

- ABCs and vital signs, including blood pressure
- Airway management and give high flow oxygen, non-rebreather mask, as tolerated
- If the patient has altered mental status, see "General: Altered Mental Status"
- Attempt to maintain normal body temperature

CFR STOP

EMT

ADVANCED

- Advise the destination hospital ASAP that the patient has signs of sepsis/septic shock
- Obtain vital signs, including blood pressure, frequently

EMT AND ADVANCED STOP

CC

- Cardiac monitor

CC STOP

PARAMEDIC

- Vascular access, if indicated (General: Vascular Access)
- Normal Saline 20 mL/kg bolus IV (Use Normal Saline 100 mL bag if patient <20 kg)

PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- Advanced / CC vascular access

Key Points/Considerations

1 Diagnostic indications for hypoperfusion include: cool / clammy or mottled skin, inability to recognize parents, restlessness, listlessness, tachycardia, tachypnea, systolic BP <70 mmHg (2 years and older), or systolic BP <60 mmHg (less than 2 years old)

2 Vital sign criteria for defining sepsis:

	<1 mo.	<1 yr	1 yr-11 yr	>11 yr

Tachycardia	>180	>180	>140	>110
Tachypnea	>60	>40	>30	>20
Hypotension	<60	<70	(<70 + 2 x age)	<90

  - Blood pressures may be very difficult to obtain in infants – assure the respiratory rate and pulse are measured accurately
- Consult medical control if you suspect cardiogenic shock
- Do not use Normal Saline 1000 mL (one liter) bags for pediatric patients unless they weigh ≥20 kg
- Sepsis / septic shock is a life-threatening condition in children and must be recognized and treated as rapidly as possible
- Communication with the destination hospital is critical so that they can prepare to treat the child aggressively

Smoke Inhalation / Cyanide Poisoning – Symptomatic

Applies to adult and pediatric patients

CFR AND ALL PROVIDER LEVELS

- ABCs and vital signs
- Oxygen via non-rebreather mask at 15 LPM

CFR STOP

EMT

- Apply a carbon monoxide monitor,‡ if >5%, see "General: Carbon Monoxide Exposure – Suspected"
- If there is respiratory distress and no soot in the airway, consider CPAP‡ 5-10 cm H_2O (if the device delivers 100% oxygen) for adult patients or older pediatric patients as equipment size allows

EMT STOP

ADVANCED

- Airway management, as appropriate
- Vascular access
- Normal Saline 500 mL bolus

ADVANCED STOP

CC

PARAMEDIC

- Cardiac monitor with 12-lead ECG, when possible
- If in extremis:
  ADULT: If cardiac or respiratory arrest, seizing, or SBP <80 mmHg with signs of hypoperfusion:
  - Hydroxycobalamin‡ (CyanoKit) 5 grams IV over 15 minutes

  PEDIATRIC: If cardiac or respiratory arrest:
  - Hydroxycobalamin‡ (CyanoKit) 70 mg/kg IV over 15 minutes

CC AND PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- Repeat Hydroxycobalamin‡ (CyanoKit) 5 grams IV over 15 minutes to 2 hours (depending on clinical condition)

Key Points/Considerations

- Hydroxycobalamin (CyanoKit) is not available in all ambulances, and may not be available in all regions. It may be available for response to scenes through County Fire, EMS Coordinators, or as otherwise regionally established
- Suspect cyanide toxicity in patients who were in enclosed spaces during a fire, have soot in their nares or oropharynx, and exhibit altered mental status

- Disorientation, confusion, and severe headache are potential indicators of cyanide poisoning IN THE SETTING of smoke inhalation
- Hypotension without other obvious cause IN THE SETTING of smoke inhalation increases the likelihood of cyanide poisoning. Do not delay transport awaiting a Hydroxycobalamin (CyanoKit); it is available in most EDs.
- For IO administration, placing a stopcock on the IV tubing will allow use of a syringe to draw medication from the bottle and inject it into the IO line
- BiPAP may be used in place of CPAP, as training and equipment allow

Stroke

Applies to adult and pediatric patients

CRITERIA

- For patients presenting with acute focal neurologic deficits including, but not limited to, slurred speech, facial droop, and/or unilateral (one-sided) weakness or paralysis

CFR AND ALL PROVIDER LEVELS

- ABCs and vital signs
- Airway management and appropriate oxygen therapy
- Determine the "Last Known Well"; the ***exact time*** the patient was last in his or her usual state of health and/or seen without symptoms by interviewing the patient, family, and bystanders (this may be different than the "Time of Symptom Onset")

CFR STOP

EMT

- Perform a neurological exam, including Cincinnati Stroke Scale[1] and any other regionally approved and indicated stroke scale or stroke severity tool
- Check blood glucose level‡, if known or suspected to be below 60 mg/dL, see "General: Hypoglycemia – Adult" or "General: Hypoglycemia – Pediatric"
- If time from last known well or time of symptom onset to estimated arrival in the ED will be less than 3.5 hours, unless otherwise regionally designated, transport the patient to a NYS DOH Designated Stroke Center, or consult medical control to discuss an appropriate destination facility
- Follow any local or regional guidelines for triage of stroke patients to centers with endovascular capabilities, if available
- Notify the destination hospital ASAP
- Do not delay transport

EMT STOP

ADVANCED

- Vascular access

ADVANCED STOP

CC

PARAMEDIC

- Cardiac monitor
- 12-lead ECG when possible
- Maintain systolic BP >120 mmHg or MAP >90 mmHg
  If systolic BP >220 mmHg or diastolic BP >120 mmHg, contact medical control

CC AND PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- Metoprolol 5 mg slow IV push

Key Points/Considerations

1 Cincinnati Prehospital Stroke Scale:
   - Have the patient repeat, "You can't teach an old dog new tricks"
     - Assess for correct use of words and lack of slurring
   - Have the patient smile
     - Assess for facial droop
   - Have the patient close eyes and hold arms straight out for 10 seconds
     - Assess for arm drift or unequal movement of one side

- Make sure to collect family or witness contact information to assist with hospital care
- Make sure to record Last Known Well and who reported that information as part of your verbal report at the hospital and in your written documentation
- "**Time of Symptom Onset**" is also a key piece of information if available from witnesses
- For pediatric patient with symptoms of acute stroke, contact medical control for transport decision to the most appropriate facility

Technology Assisted Children

CRITERIA

- Children with special health care needs requiring technological assistance for life support including, but not limited to:
  - Tracheostomy - Breathing tube in neck
  - Central venous catheters (tunneled catheter, Broviac catheter, Mediport, PICC) - Catheters that enter a large (central) vein
  - CSF shunt (e.g. ventriculoperitoneal or V-P shunt) - Internal tube that drains spinal fluid from the brain into the abdomen
  - Gastrostomy (PEG tube, MIC-KEY® "button") or J-tube - Feeding tube that goes through the abdominal wall
  - Colostomy or ileostomy - Bowel connected through abdominal wall for collection of waste in a bag
  - Ureterostomy or nephrostomy tube - Connection of the urinary system through the abdominal wall or through the back for collection of urine in a bag
  - Foley catheter - Catheter in urethra to collect urine from the bladder into a bag

CFR AND ALL PROVIDER LEVELS

- ABCs and vital signs including blood pressure
- Basic airway management, give high flow oxygen via non-rebreather mask, if needed
- Supportive measures (device-specific):
  - Tracheostomy:
    - If on ventilator and there are respiratory concerns, disconnect and attempt to ventilate via tracheostomy adapter using a bag-valve-mask
    - If tracheostomy tube is fully or partially dislodged, remove it, cover tracheostomy stoma with an occlusive dressing, and ventilate via mouth and nose using a bag-valve-mask
  - Central venous catheters: if catheter is broken or leaking, clamp (pinch off) catheter between patient and site of breakage or leakage
  - Gastrostomy tube or button, ureterostomy, or nephrostomy tube: if tube or button is fully dislodged, cover the site with an occlusive dressing; if partially dislodged, tape in place
  - Gastrostomy, colostomy, ileostomy, or nephrostomy: if stoma site is bleeding, apply gentle direct pressure with a saline-moistened gauze sponge
  - Foley catheter: if catheter is dislodged, tape in place

CFR STOP

EMT

ADVANCED

CC

PARAMEDIC

- Notify the destination hospital ASAP and state that the patient has special health care needs that requires technological assistance (be specific)

- Obtain frequent vital signs, including blood pressure

EMT, ADVANCED, CC AND PARAMEDIC STOP

Key Points/Considerations

- Listen to the caregivers. They know their child best. Allow them to assist with care.
- Inquire about:
  - Presence of a "Patient Care Plan" (PCP)
  - Syndromes/diseases
  - Devices/medications
  - Child's baseline abilities
  - Usual vital signs
  - Symptoms
  - What is different today
  - Best way to move the child
- Look for MedicAlert® jewelry, "Emergency Information Form" (EIF), "Patient Care Plan" (PCP), or other health care forms, if usual caregiver is not available. Bring any forms to the hospital with the patient.
- Assess and communicate with the child based on developmental, not chronological, age
- Take necessary specialized equipment (e.g. patient trach/ventilator pack, G-tube connectors, etc.) to the hospital with the patient, if possible

(4.0) Trauma

Trauma General

Applies to adult and pediatric patients

Key Points/Considerations

- Traumatic arrest patient: see "Extremis: Obvious Death". If the patient does not meet criteria of obvious death as defined in the protocol, refer to the appropriate cardiac arrest protocol.
- Trauma patients meeting criteria for transport to a trauma center go to closest appropriate trauma center, see "Trauma: Trauma Patient Destination"
- For spinal motion restriction guidelines, see "Trauma: Suspected Spinal Injuries"
- Patients with an ***unmanageable*** airway: go to the closest hospital, or call for air medical or other advanced airway assistance while transporting to the closest hospital
    - An airway does *not* necessarily require the placement of an endotracheal tube to be adequately managed
- **UNSTABLE patients should have transport initiated to the appropriate hospital/landing zone within 10 minutes of disentanglement/extrication**
- Notify the receiving facility as early as possible; give a brief description of the mechanism of injury, status of patient(s), and estimated time of arrival

Amputation

Applies to adult and pediatric patients

CFR AND ALL PROVIDER LEVELS

- See as indicated "Trauma: Bleeding / Hemorrhage Control"
- ABCs and vital signs
- Elevate and wrap the stump with moist sterile dressings and cover with dry bandage
- Consider spinal motion restriction, see "Trauma: Suspected Spinal Injuries"
- Provide or direct care for amputated part:
  - Moisten sterile dressing with sterile saline solution and wrap amputated part
  - Place the severed part in a water-tight container, such as a sealed plastic bag
  - Place this container on ice or cold packs, using caution to avoid freezing the limb

CFR STOP

EMT

ADVANCED

CC

PARAMEDIC

- If delayed extrication or arrival to definitive care:
  - Moxifloxacin 400 mg PO‡ as regionally approved (Adults only)
  - Cefazolin 2 g (Adult) or 20 mg/kg (Pediatric) IV‡Ⓟ as regionally approved

EMT, ADVANCED, CC AND PARAMEDIC STOP

Key Points/Considerations

- Transport the amputated part with the patient, if possible, but do not delay transport to search for amputated part
- Distal amputations (those distal to wrist or ankle) do not typically require a trauma center
- Consider medical control consultation if there is uncertainty regarding appropriate destination facility

Avulsed Tooth

Applies to adult and pediatric patients

CRITERIA

- For ***permanent*** teeth only

CFR AND ALL PROVIDER LEVELS

EMT

ADVANCED

CC

PARAMEDIC

- ABCs and vital signs
- Hold the tooth by the crown (not the root)
- Quickly rinse the tooth with saline before reimplantation, but do not brush off or clean the tooth of tissue
- Remove the clot from the socket; suction the clot, if needed
- Re-implant the tooth firmly into its socket with digital pressure
- Have the patient hold the tooth in place using gauze and bite pressure
- Report to hospital staff that a tooth has been re-implanted

CFR, EMT, ADVANCED, CC AND PARAMEDIC STOP

Key Points/Considerations

- The best *transport medium* for an avulsed tooth is in the socket, in the appropriate situation
  - The best chance for success is when reimplantation occurs within five minutes of the injury
  - **If the patient has altered mental status, do not reimplant**
  - **If the patient must be transported in a supine position, do not reimplant**
  - Do not reimplant if the alveolar bone / gingiva are missing, or if the root is fractured
  - Do not reimplant if the patient is immunosuppressed, or reports having cardiac issues that require antibiotics prior to procedures
- If the patient is not a candidate for reimplantation, place the avulsed tooth in interim storage media (commercial tooth preservation media, lowfat milk, patient's saliva, or saline) and keep cool. Avoid tap water storage, if possible, but do not allow the permanent tooth to dry.

Bleeding / Hemorrhage Control

Applies to adult and pediatric patients

CFR AND ALL PROVIDER LEVELS

EMT

ADVANCED

CC

PARAMEDIC

- Immediate intervention for severe bleeding:
  - Apply pressure directly on the wound with a dressing
    - Consider rolled or hemostatic gauze‡ to pack the wound and hold pressure
  - If bleeding soaks through the dressing, apply additional dressings
  - If bleeding is controlled, apply a pressure dressing to the wound
  - If severe bleeding persists through conventional dressings and hemostatic‡ dressing becomes available, remove all conventional dressings, expose site of bleeding, and apply hemostatic‡ dressing
  - Cover the dressed site with a pressure bandage
- Immediate intervention for uncontrollable bleeding from an extremity:
  - Place tourniquet 2-3 inches proximal to the wound
  - If bleeding continues, place a second tourniquet proximal to the first, or above the knee or elbow if wound is distal to these joints
  - Note the time of tourniquet application and location of tourniquet(s)
- See "Shock – Adult Hemorrhagic Shock," "General: Sepsis / Shock / Hypoperfusion – Pediatric," as indicated

CFR, EMT, ADVANCED, CC AND PARAMEDIC STOP

Key Points/Considerations

- **Do not remove a tourniquet that was placed for life threatening bleeding**
  - If a tourniquet had been placed for apparently non-life-threatening bleeding, the tourniquet may be released while maintaining the ability to immediately reapply and otherwise control the hemorrhage should significant bleeding occur
- Hemodialysis access sites may result in life threatening hemorrhage. Direct digital pressure should be used first followed by tourniquet ONLY in the setting of life-threatening hemorrhage when other means of hemorrhage control have been unsuccessful.
- When extremity bleeding sites cannot be rapidly determined, tourniquets may be placed "high and tight" in accordance with training
- Conventional and pressure splints may also be used to control bleeding
- Hemostatic dressings‡ should be used according to manufacturer's instructions and training and may require removal of coagulated blood to directly access the source of bleeding
- If non-hemostatic dressings are used for wound packing, manual pressure should be maintained for 10 minutes before applying a pressure bandage
- This protocol authorizes the use of hemostatic dressings, compressive devices, and commercially manufactured tourniquets which are not mandatory for any agency

- Junctional tourniquets, wound closure devices, and other hemostatic devices may be used in accordance with manufacturer instructions, if regionally approved
- Tactical application of these devices beyond this protocol may be regionally approved

Burns

Applies to adult and pediatric patients

CFR AND ALL PROVIDER LEVELS

- Stop the burning
- ABCs and vital signs
- Airway management and appropriate oxygen therapy
- Remove smoldering clothing that is not adhering to the patient's skin
- Remove rings, bracelets, and constricting objects at or distal to burned area, if possible
- Cover the burn with dry sterile dressings
- Burns to the eye require copious irrigation with normal saline — do not delay irrigation
    - Other neutral fluid may be used, if needed, such as tap water
- Consider the potential for carbon monoxide poisoning and see as necessary "General: Carbon Monoxide Exposure – Suspected"

CFR STOP

EMT

- Burns should be covered with dry, sterile dressings
    - Moist sterile dressings *may* be used to augment pain management *only* if the burn is ≤10% BSA (body surface area)

EMT STOP

ADVANCED

- Vascular access at 2 sites, if possible (no more than one IO), for severe burns
- Normal Saline 500 mL bolus
- See "General: Pain Management – Adult" or "General: Pain Management – Pediatric"

ADVANCED STOP

CC

PARAMEDIC

- Be prepared to intubate if the patient has signs of airway involvement
- For eye exposures:
    - Tetracaine‡ (0.5%) 2 drops in the affected eye for pain every 5 minutes, as needed
    - For chemical exposure to the eye, you may use a Morgan Lens®‡ for irrigation

CC AND PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- Additional fluid to maintain perfusion while exercising caution against administering excessive volume

Key Points/Considerations

- Assure scene safety and patient decontamination for chemical burns/HAZMAT exposure
    - For liquid chemical burns, flush with copious amount of water or saline, ideally for a minimum of 20 minutes

    - For dry powder burns, brush powder off before flushing
    - Use caution to avoid the spread of the contaminant to unaffected areas
- Consider other injuries, including cardiac dysrhythmias
- Consider smoke inhalation and airway burns
    - Administer high flow oxygen
    - Oxygen saturation readings may be falsely elevated
- If hazardous material involvement is suspected, immediately notify the destination hospital to allow for decontamination
- The whole area of the patient's hand (palm plus digits) is ~1% BSA (body surface area)
    - When considering the total area of a burn, DO NOT count first degree burns
- Burns >10% are *only* to be dressed with *dry* simple sterile dressings once the burning process has stopped as hypothermia is a significant concern in these patients

Transportation Considerations

- Burns associated with trauma should go to the closest appropriate trauma center
- Consider direct transport to a burn center in discussion with medical control

Chest Trauma

Applies to adult and pediatric patients

CFR AND ALL PROVIDER LEVELS

EMT

- ABCs and vital signs
- Airway management and appropriate oxygen therapy
- If there is a sucking chest wound, cover with occlusive dressing; if dyspnea increases, release the dressing, momentarily, during exhalation
    - A sucking chest wound occurs when air passes through a wound in the chest wall when the patient breathes in
- Contact the receiving hospital as soon as possible

CFR AND EMT STOP

ADVANCED

- Vascular access; use the side opposite of the injury if possible
- If SBP <100 mmHg or MAP <65 mmHG, see "Trauma: Trauma Associated Hypoperfusion / Hypovolemia"
- If the patient is in cardiac arrest, proceed with bilateral needle chest decompression ‡[1,2] and refer to appropriate arrest protocol

ADVANCED STOP

CC

- If the patient is not in cardiac arrest, contact medical control for consideration of needle chest decompression[2] if there is concern for a tension pneumothorax[3]

CC STOP

PARAMEDIC

- Needle decompression if signs and symptoms of tension pneumothorax[3], including hemodynamic compromise
    - May repeat once if tension pneumothorax recurs

PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- If patient has signs and symptoms consistent with tension pneumothorax AND hemodynamic compromise, consider needle chest decompression[2] for Advanced‡[1]

Key Points/Considerations

1 Advanced EMTs in tactical EMS may be trained and equipped for decompression, but the agency must be approved by the REMAC

2 Thoracic decompression should only be performed with a ≥3.25", ≥14G IV catheter (size for adults)

3 Signs and symptoms of a tension pneumothorax include absent lung sounds on one side,

extreme dyspnea, AND hemodynamic compromise (hypotension, narrowed pulse pressure, and tachycardia). Signs may also include jugular vein distention, cyanosis, and tracheal deviation.

Crush Injuries – Adult

Standing orders apply to adults only

CFR AND ALL PROVIDER LEVELS

EMT

- ABCs and vital signs every 5 minutes, if practical
- Airway management and appropriate oxygen therapy
- Consider EMS physician response, if available, or early physician consultation for prolonged entrapment

CFR AND EMT STOP

ADVANCED

- Vascular access, ideally at 2 sites (no more than one IO)
- Normal Saline 1 liter bolus then one liter per hour
- See "General: Pain Management – Adult" or "General: Pain Management – Pediatric"

ADVANCED STOP

CC

- Cardiac monitor, if possible, with 12-lead ECG repeated at 30 minute intervals

CC STOP

PARAMEDIC

- If one complete extremity is crushed ≥2 hours, or 2 extremities are crushed ≥1 hour:
  - Sodium Bicarbonate 50 mEq IV slow push every 30 minutes while trapped
  - In addition, one minute prior to extrication: Sodium Bicarbonate 50 mEq IV

PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- If hyperkalemia[1] is suspected with ECG changes, Calcium Chloride 1 gram IV (over 5 minutes)[2]. Repeat in 10 minutes if there is no resolution of the ECG changes.
- Albuterol via nebulizer
- Consider application of a tourniquet for prolonged entrapment placed as close as possible to the crush injury prior to the release of the extremity

Key Points/Considerations

1 Hyperkalemia is indicated by PVCs, peaked T-waves, or widened QRS complexes

2 Flush 50 mL Normal Saline in IV between Calcium Chloride and Sodium Bicarbonate

- After extrication, immobilize the extremity and apply cold therapy; do not elevate the extremity

Eye Injuries

Applies to adult and pediatric patients

CFR AND ALL PROVIDER LEVELS

EMT

- ABCs and vital signs
- Airway management and appropriate oxygen therapy
- Stabilize (or limit movement of) any object lodged in the eye, and cover both eyes to prevent consensual movement
- If the eye is contaminated, see "Trauma: Burns"

CFR AND EMT STOP

ADVANCED

- Vascular access, if needed
- See "General: Pain Management - Adult" or "General: Pain Management - Adult"

ADVANCED STOP

CC

PARAMEDIC

- Tetracaine‡ (0.5%) 2 drops in the affected eye for pain every 5 minutes

CC AND PARAMEDIC STOP

Key Points/Considerations

- Do not put any pressure on the eye when covering with a shield or patch

Musculoskeletal Trauma

Applies to adult and pediatric patients

CFR AND ALL PROVIDER LEVELS

- ABCs and vital signs
- Consider spinal motion restriction, see "Trauma: Suspected Spinal Injuries"
- See as indicated "Trauma: Bleeding / Hemorrhage Control," "Shock – Adult Hemorrhagic Shock," "General: Sepsis / Shock / Hypoperfusion – Pediatric"
- Manually stabilize the extremity above and below the injury
- Evaluate distal pulse, motor, and sensory function
- Expose injured area
- Apply cold packs or ice, as available

CFR STOP

EMT

ADVANCED

CC

PARAMEDIC

- If the distal extremity is cyanotic, ***or*** lacks a pulse, ***or*** if a long bone is severely deformed, align the extremity by applying gentle manual traction prior to splinting
- Apply a splint, and reassess the distal pulse, motor, and sensory function
  - Traction splint may be indicated if there is a mid-thigh injury, and no suspected injury to the pelvis, knee, lower leg, or ankle on the same side
  - Traction splint may be used for suspected proximal femur fracture **only** if manufacturer approved
  - Traction splint may not be applied if the injury is close to the knee, associated with amputation, or near an avulsion with bone separation
- Stabilize the pelvis if the patient has a potential unstable pelvic fracture[1]
- Continue ongoing assessment of vital signs and distal pulse, motor, and sensory function
- See "General: Pain Management – Adult" or "General: Pain Management – Pediatric"
- If open fracture[2] with delayed extrication or arrival to definitive care:
  - Moxifloxacin 400 mg PO‡ as regionally approved (Adults only)
    OR
  - Cefazolin 2 g (Adult) or 20 mg/kg (Pediatric) IV‡℗ as regionally approved

EMT, ADVANCED, CC AND PARAMEDIC STOP

Key Points/Considerations

1 Physical examination for unstable pelvis fractures is unreliable and stabilization of the pelvis is indicated based on the mechanism of injury

2 Consider any open wound near the suspected bone injury site to be the result of bone protrusion

Patella Dislocation

Applies to adult and pediatric patients

CRITERIA

- For isolated, clinically obvious, medial or lateral dislocation of the patella
  - May be described as "knee went out"
  - Intraarticular and superior dislocations are not reducible in the prehospital environment

CFR AND ALL PROVIDER LEVELS

- ABCs and vital signs
- Airway management and appropriate oxygen therapy
- Address hemorrhage and other, more serious injuries first (if present, this protocol does not apply)

CFR STOP

EMT
ADVANCED
CC
PARAMEDIC

- Obvious medial or lateral patella dislocation
  - If unsure or if body habitus (e.g. large body build or obesity) precludes accurate assessment, immobilize in position found
- Gradually extend the knee while, at the same time, a second provider applies pressure on the patella towards the midline of the knee
- When straight, consider placing the entire knee joint in a knee immobilizer or splint
- Consider "General: Pain Management – Adult" or "General: Pain Management – Pediatric" as indicated

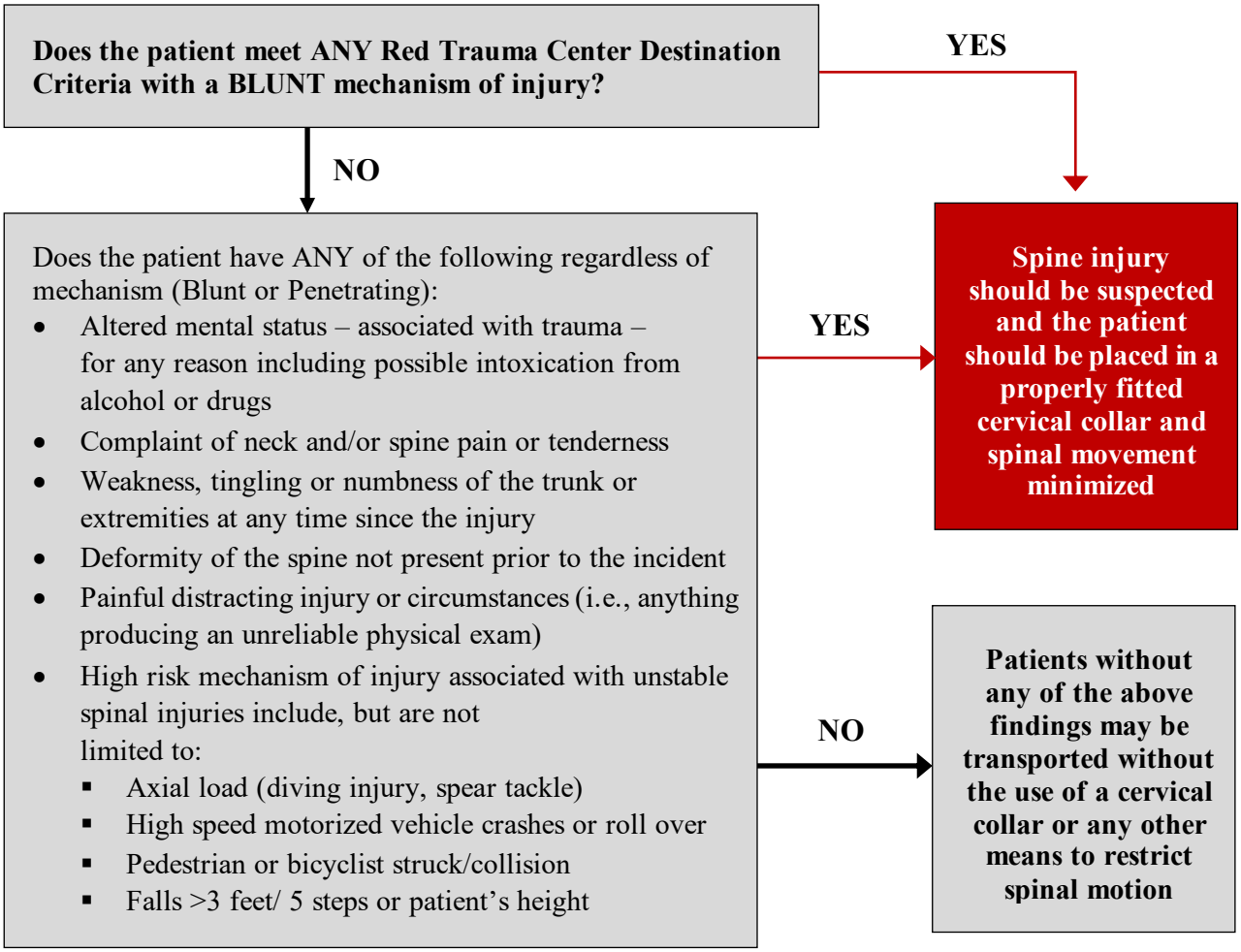
EMT, ADVANCED, CC AND PARAMEDIC STOP

Key Points/Considerations

- Some increased pain may occur during reduction
- If there is severe increased pain or resistance, stop and splint in the position found
- Patients usually feel significantly better after reduction, but they still need transport to a hospital for further evaluation and possible treatment

Suspected Spinal Injuries

Applies to adult and pediatric patients



Key Points/Considerations

- These guidelines should be used with caution in patients over age 65
- Spinal movement can be minimized by application of a properly fitting rigid cervical collar and securing the patient to the EMS stretcher
- Consider elevating the head of the stretcher no more than 30 degrees if concern for head injury
- When spinal motion restriction has been initiated and a higher level of care arrives, patients may be reassessed for spinal injury (per this protocol)
- When possible, the highest level of care on scene will determine if spinal motion restriction is to be used or discontinued (collar removed, etc.)
- A long spine board is one of multiple modalities that can be used to minimize spinal movement. Electing not to use a long spine board will not constitute a deviation from the standard of care.
- Long spine boards do not have a role in transporting patients between facilities

Trauma Patient Destination

Applies to adult and pediatric patients

National Guideline for the Field Triage of Injured Patients

RED CRITERIA

High Risk for Serious Injury

Injury Patterns

- Penetrating injuries to head, neck, torso, and proximal extremities
- Skull deformity, suspected skull fracture
- Suspected spinal injury with new motor or sensory loss
- Chest wall instability, deformity, or suspected flail chest
- Suspected pelvic fracture
- Suspected fracture of two or more proximal long bones
- Crushed, degloved, mangled, or pulseless extremity
- Amputation proximal to wrist or ankle
- Active bleeding requiring a tourniquet or wound packing with continuous pressure

Mental Status & Vital Signs

All Patients
- Unable to follow commands (motor GCS < 6)
- RR < 10 or > 29 breaths/min
- Respiratory distress or need for respiratory support
- Room-air pulse oximetry < 90%

Age 0–9 years
- SBP < 70mm Hg + (2 x age in years)

Age 10–64 years
- SBP < 90 mmHg or
- HR > SBP

Age ≥ 65 years
- SBP < 110 mmHg or
- HR > SBP

Patients meeting any one of the above RED criteria should be transported to the highest-level trauma center available within the geographic constraints of the regional trauma system

YELLOW CRITERIA

Moderate Risk for Serious Injury

Mechanism of Injury

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

EMS Judgment

Consider risk factors, including:

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

If concerned, take to a trauma center

Patients meeting any one of the YELLOW CRITERIA WHO DO NOT MEET RED CRITERIA should be preferentially transported to a trauma center, as available within the geographic constraints of the regional trauma system (need not be the highest-level trauma center)

(5.0) Resources

Advance Directives / DNR / MOLST

Applies to adult and pediatric patients

CRITERIA

- For patients who have expressed their healthcare wishes through a MOLST, eMOLST, or nonhospital Do Not Resuscitate (DNR) Order
- For patients who lack medical decision-making capacity and a Health Care Agent is present

CFR AND ALL PROVIDER LEVELS

EMT

ADVANCED

CC

PARAMEDIC

- For patients with medical decision-making capacity, their wishes are to be followed in accordance with standard consent procedures
- For patients without medical decision-making capacity, including the unconscious, determine the presence of valid MOLST, eMOLST or DNR forms at the scene:
  - Signed "Medical Orders for Life Sustaining Treatment" (MOLST) form
  - Electronically signed eMOLST form
  - Properly documented nursing home or nonhospital DNR form
- If MOLST, eMOLST, or DNR is *not present* – begin standard treatment, per protocol
- If MOLST, eMOLST, or DNR is *present*, and is valid for the patient's clinical state (e.g. cardiac arrest), follow the orders as written, *inclusive of either terminating or not beginning resuscitation*
- If written advanced directives not mentioned above are present (e.g. living will), contact medical control for direction
- If the patient lacks medical decision-making capacity and their Health Care Agent is present, follow the wishes of the Health Care Agent. If there are concerns or conflict, contact medical control for direction.

CFR, EMT, ADVANCED, CC AND PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- Direction regarding wishes expressed via other forms of advanced directives including living wills or concerns or conflict with the Health Care Agent

Key Points/Considerations

- All medical orders indicated on the MOLST or eMOLST should be honored, including the medical order for the patient not to be transported to the hospital
- A MOLST is still valid if properly executed regardless of the date of signature
- A copy of the original MOLST is a valid set of medical orders, similarly the eMOLST form may be printed and contains electronic signatures which are considered valid

- Whenever possible, a copy of the DNR, MOLST, or eMOLST form should be attached to the PCR
- If a patient with a DNR (stand-alone DNR form, or as directed by a MOLST or eMOLST form) is a resident of a nursing home or an interfacility transport and expires during transport, contact the receiving staff to determine if they are willing to accept the patient to that facility. If not, return the patient to the sending facility.
- While this protocol refers to MOLST, Portable Medical Orders (POLST) exist in other states as well. This protocol acknowledges out-of-state POLST forms which, although may vary slightly in format, are to be honored by EMS clinicians as a set of medical orders equivalent to the MOLST.
- Public Health Law PBH §2944-gg: No person shall be subjected to criminal prosecution or civil liability, or be deemed to have engaged in unprofessional conduct, for honoring reasonably and in good faith pursuant to this section a nonhospital order not to resuscitate, for disregarding a nonhospital order pursuant to §2944-ee, or for other actions taken reasonably and in good faith.

APGAR

	0	1	2
Activity	limp	flexion	active
Pulse	0	<100	>100
Grimace (during suctioning)	none	grimace	pulling away
Appearance	blue-gray	gray hands/feet	normal
Respirations	0	weak cry	vigorous cry

Automatic Transport Ventilator‡

Applies to adult and pediatric patients

This is a general resource document on the use of automatic transport ventilators, not a protocol. It is intended only for those who are separately equipped and trained. This does not supersede device-specific practice guidelines provided through agency education.

General Parameters

FiO_2: Maintain SaO_2 ≥92%
PEEP: 5 cm H_2O (increase up to 10 cm H_2O as needed to improve oxygenation)
Mode: A/C or SIMV
Pressure Support: 5 – 10 cm H_2O, if in SIMV (if available)
Volume Control: Tidal volume (Vt) 6 – 8 mL/kg ideal body weight (maintain plateau pressure [Pplat] <30 cm H_2O or PIP <35 cm H_2O)
Rate: Child: 16 – 20 breaths/min; Adult: 12 – 14 breaths/min
I-Time: Child:0.7 – 0.8 seconds; Adult:0.8 – 1.2 seconds

Refer to the manufacturer's ventilator operation manual for specific directions on how to operate your ventilator

Recommended Minimum Requirements for Automated Ventilator

- Pressure limit / safety relief at a maximum of 40 cm H_2O
- Ability to adjust volume to 4-8 mL/kg ideal body weight
- Ability to adjust rate in the minimum range of 10-30 breaths/min
- Ability to add PEEP or PEEP valve in the minimum range of 5 - 10 cm H_2O
- Ability for patient triggered breaths (complete control ventilation is prohibited)

Initiating Mechanical Volume Ventilation

- Use $EtCO_2$ detection and pulse oximetry to evaluate the effectiveness of the ventilation technique and to verify artificial airway patency and position
- Prepare the bag-valve-mask (BVM) for emergent use in case of a ventilator failure
- Assure a secondary oxygen source with a minimum of 1000 psi in a D tank
- Attach a ventilator to appropriate oxygen/air source
- Attach a disposable ventilator circuit to ventilator
- Attach a gas outlet, pressure transducer, and exhalation valve tubes to corresponding connectors
- Select the appropriate mode, if applicable
- Select the appropriate respiratory rate (RR). Titrate to appropriate $EtCO_2$.
    - Adult: 12 – 14 breaths/min
    - Child: 16 – 20 breaths/min
- Select the appropriate tidal volume (Vt) of 6 – 8 mL/kg ideal body weight
- Select the appropriate inspiratory time (It), if applicable
- Select the desired FiO_2 if applicable. An FiO_2 of 1.0 (100% O_2) is a standard start and then should be titrated down to maintain SpO_2≥92%.
- Verify a high pressure alarm no higher than 40 cm H_2O
- Set PEEP to 5 cm H_2O

- Observe the delivery of several breaths
    - Evaluate the patient for adequate chest rise, $ETCO_2$ and SpO_2
    - Adjust the ventilator settings, as necessary, to improve clinical parameters
- Record all set parameters on the patient transport record
- Monitor and record PIP, if applicable

Key Points/Considerations

- If at any time the ventilator should fail, or an alarm is received that cannot be corrected, the patient should be immediately ventilated with a bag-valve-mask (BVM) attached to a 100% oxygen source

Child Abuse Reporting

CRITERIA

- Emergency Medical Technicians (all levels) are *required* to report cases of suspected child abuse they come across while performing their jobs
- Document observations, thoroughly and objectively on the patient care report (PCR)
- Notify the emergency department staff of concerns and your intent to report
- An immediate oral report shall be made to:
    - NYS Child Abuse and Maltreatment Register: 1-800-635-1522
    - This is a hotline number for mandated reporters only, not the public
- All oral reports must be followed up with a written report within 48 hours, using form DSS-2221-A, "Report of Suspected Child Abuse or Maltreatment", and sent to the appropriate agency

Key Points/Considerations

- Notifying hospital staff of concern for child abuse or maltreatment is *not* sufficient to meet the obligation of reporting. *All* of these steps are required:
    - PCR completion
    - Notification of emergency department staff
    - Oral report to NYS Child Abuse and Maltreatment Register
    - Written report submitted within 48 hours
- If multiple EMTs are on scene from the same agency, it is only necessary for one EMT (the EMT of record and in charge of patient care) to complete the reporting process
- If EMTs from multiple agencies are involved in the response, treatment, and transport of the same patient, the EMT of record from each agency must complete the reporting process
- EMTs are not expected to complete form DSS-2221-A in its entirety, although they should fill out as much as possible, in accordance with available information
- Mandated reporters who file a report of suspected child abuse or maltreatment in good faith are immune from liability for reporting such a case (§ 419 of the Social Services Law)

De-Escalation Techniques

CRITERIA

- EMS providers of all levels may be faced with situations that will benefit from these techniques
- Some of these techniques will be more applicable for some situations than others
- Resources and location will determine how these can be employed

Key Points/Considerations

When possible, have the care team develop a plan for interaction with the patient prior to engaging with them

Environmental Interventions

- Move the patient to a safe and comfortable area that can reduce triggers and calm the patient

Rules of Verbal De-escalation

- Respect personal space
- Do not be provocative
- Establish verbal contact (1 communicator)
- Be concise
- Identify wants and feelings
- Listen closely to what the patient is saying
- Agree or agree to disagree
- Set firm safety limits clearly and calmly
- Offer choices and optimism
- Debrief the patient and staff

Behavioral Interventions

- Place limits on unacceptable behaviors and specific praise for adherence to requests
- Use reflective statements and validation
- Allow patient to clarify triggers for agitation and promote problem-solving

Glasgow Coma Score (GCS)

Adult GCS (Score 3-15)

Best Eye Response	Best Verbal Response	Best Motor Response
Spontaneous (+4)	Oriented (+5)	Obeys commands (+6)
To verbal command (+3)	Confused (+4)	Localized pain (+5)
To pain (+2)	Inappropriate words (+3)	Withdrawal from pain (+4)
No eye opening (+1)	Incomprehensible sounds (+2)	Flexion to pain (+3)
	No verbal response (+1)	Extension to pain (+2)
		No response (+1)

Pediatric <~2 y/o GCS (Score 3-15)

Best Eye Response	Best Verbal Response	Best Motor Response
Spontaneous (+4)	Coos, babbles (+5)	Moves spontaneously / purposefully (+6)
To verbal stimuli (+3)	Irritable cries (+4)	Withdraws to touch (+5)
To pain (+2)	Cries in response to pain (+3)	Withdraws to pain (+4)
No response (+1)	Moans in response to pain (+2)	Flexor posturing to pain (+3)
	No response (+1)	Extensor posturing to pain (+2)
		No response (+1)

Ideal Body Weight Reference

Height			Male IBW (kg)	Female IBW (kg)
Feet	Inches	cm		
4' 0"	48	121.9	22.4	17.9
4' 1"	49	124.5	24.7	20.2
4' 2"	50	127.0	27	22.5
4' 3"	51	129.5	29.3	24.8
4' 4"	52	132.1	31.6	27.1
4' 5"	53	134.6	33.9	29.4
4' 6"	54	137.2	36.2	31.7
4' 7"	55	139.7	38.5	34
4' 8"	56	142.2	40.8	36.3
4' 9"	57	144.8	43.1	38.6
4' 10"	58	147.3	45.4	40.9
4' 11"	59	149.9	47.7	43.2
5' 0"	60	152.4	50	45.5
5' 1"	61	154.9	52.3	47.8
5' 2"	62	157.5	54.6	50.1
5' 3"	63	160.0	56.9	52.4
5' 4"	64	162.6	59.2	54.7
5' 5"	65	165.1	61.5	57
5' 6"	66	167.6	63.8	59.3
5' 7"	67	170.2	66.1	61.6
5' 8"	68	172.7	68.4	63.9
5' 9"	69	175.3	70.7	66.2
5' 10"	70	177.8	73	68.5
5' 11"	71	180.3	75.3	70.8
6' 0"	72	182.9	77.6	73.1
6' 1"	73	185.4	79.9	75.4
6' 2"	74	188.0	82.2	77.7
6' 3"	75	190.5	84.5	80
6' 4"	76	193.0	86.8	82.3
6' 5"	77	195.6	89.1	84.6
6' 6"	78	198.1	91.4	86.9
6' 7"	79	200.7	93.7	89.2
6' 8"	80	203.2	96	91.5
6' 9"	81	205.7	98.3	93.8
6' 10"	82	208.3	100.6	96.1
6' 11"	83	210.5	102.9	98.4
7' 0"	84	213.4	105.2	100.7

Interfacility Transport

Applies to adult and pediatric patients

EMT

- An EMT may transport stable patients with a secured saline lock device in place, as long as no fluids or medications are attached

EMT STOP

ADVANCED

- An AEMT may transport stable patients with simple IV fluids, eg: D5W, Normal Saline, or lactated ringers. The solution may not contain potassium or any other medications.

ADVANCED STOP

CC

PARAMEDIC

- Paramedics and critical care technicians may transport a patient between facilities with standard IV infusions flowing, including antibiotics, provided they are ordered and provided by the transferring facility
    - Be certain to clarify orders regarding medication titration prior to departure
- All vasoactive medication drips and all fluids containing potassium must be run on an infusion pump

CC AND PARAMEDIC STOP

Key Points/Considerations

- This protocol may be applied to facilities not covered in Article 28 of the public health law, such as urgent care centers and physician offices, as required
- Orders should be written by the sending physician in case there are directives to implement care not otherwise specified in the protocols
- Ambulances credentialed as "Ambulance Transfusion Services" may transport patients with blood products initiated at the hospital, but must have orders for the blood products and orders for response to complications, written by the sending physician
- If there is an emergent situation where the patient's life depends on blood product administration, and no "Ambulance Transfusion Service" is available to transport the patient, any ambulance may transport a patient with blood products initiated at the hospital, but the department and the region must be notified IMMEDIATELY following the completion of the transport
- After assessing the patient and reviewing the patient's records and transfer orders, the crew must determine if the patient's current condition is appropriate for the provider's level of training, experience, and available equipment
- If there are any changes in the patient's condition that are not covered by the prescribed orders or agency protocols, contact medical control. If a total failure of communications occurs, and the patient is unstable and decompensating, follow these protocols and go to the closest hospital's emergency department.

- An appropriately trained nurse, respiratory therapist, physician assistant, nurse practitioner, or physician from the sending facility must accompany the patient for any prescribed treatments or modalities for which the designated provider is not credentialed by his or her agency, or that is outside of the provider's level of training, experience, and/or available equipment
    - Each region may indicate specific medications or medication types that providers may transport without hospital personnel
- Specialty care transports (SCT) are a subset of inter-hospital transports, and can only be done by paramedics or critical care technicians credentialed by the medical director of the agency performing the transport and in accordance with regional procedure
- Regions may have more extensive procedures governing interfacility transports

Medication Formulary

Minimum quantities of medications shall be determined by the respective REMAC.

Included in this formulary are any optional medications (Signified by ‡) that may be used pursuant to these protocols if equipped and trained, and may be subject to REMAC authorization.

Also included are medications that may be used as an alternative in cases of temporary shortage or unavailability. Any use of a "REMAC Alternative" medication requires REMAC approval and Bureau of EMS notification and is intended to be temporary while awaiting availability.

Any desire to use a "NYS Alternative" requires REMAC approval of the desired medication and written request and approval by the New York State Bureau of EMS and Trauma prior to use. Again, such alternatives are intended to be temporary while awaiting availability.

Any use of an alternative requires the agency to identify the drug, dose, route, replacement indication and contraindications and provide training on the medication to its practitioner's that is approved in advance by the respective REMAC.

Medication	Administration Route(s)	REMAC Alternative(s)	NYS Alternative(s)
Acetaminophen‡	PO, IV		
Adenosine	IV		
Albuterol	Nebulized	Duo-Neb, Levalbuterol	Any inhaled bronchodilator
Amiodarone[1]	IV	Lidocaine	Any injectable antiarrhythmic
Aspirin	PO		
Atropine	IV		
Buprenorphine/Naloxone‡	Sublingual / PO		
Calcium Chloride	IV	Calcium Gluconate	
Cefazolin‡	IV		Any injectable cephalosporin
Dexamethasone (Decadron)	IM, IV	Methylprednisolone	Any injectable corticosteroid
Dexamethasone (Decadron)‡	PO	Prednisone	Any oral corticosteroid
Diltiazem (Cardizem)	IV		Any calcium channel blocker
Diphenhydramine (Benadryl)	IV		Any injectable antihistamine
Epinephrine 1:1,000 (1 mg/mL)	IM, IV, Nebulized		
Epinephrine 1:10,000 (0.1 mg/mL)	IV		

Epinephrine (Racemic) (2.25%) 0.5 mL in 3 mL of Normal Saline	Nebulized		
Etomidate (Amidate)‡	IV		
Glucagon	IM, IV	Glucagon (Baqsimi) formulation	
Glucose, oral	PO		
Haloperidol‡	IM, IV		
Ibuprofen‡	PO		Any oral nonsteroidal anti-inflammatory
Ipratropium (Atrovent)	Nebulized	Duo-Neb	
Ketorolac (Toradol) ‡	IM, IV		Any injectable nonsteroidal anti-inflammatory
Lidocaine 2%‡ [1]	IV		Any local anesthetic
Magnesium	IV		
Metoprolol	IV		Any injectable beta blocker
Moxifloxacin‡	PO		Any oral quinolone
Naloxone (Narcan)	IM, IV, Intranasal	Naloxone (Kloxxado) 8 mg formulation;	Any injectable or intranasal opioid antagonist
Nitroglycerin (PO)	Sublingual		
Nitroglycerin (IV)‡	IV		
Nitrous Oxide‡	Inhaled		
Norepinephrine	IV		
Olanzapine	IM, SL		
Ondansetron (Zofran)	IM, IV	Promethazine (Phenergan), Haloperidol (Haldol)	Any injectable anti-emetic
Ondansetron (Zofran) (ODT)‡	PO		Any oral anti-emetic
Oxymetazoline‡	Intranasal		
Sodium Bicarbonate	IV		
Tetracaine‡	Ophthalmic		
Tranexamic Acid‡®	IV, IO		

1 – One antiarrhythmic, either amiodarone or lidocaine, is required

Intravenous Fluids

Medication	Volume	REMAC Alternative(s)	NYS Alternative(s)
Dextrose 10%	250 mL	D25, D50	Any dextrose containing solution
Normal Saline 0.9%	100 mL 250 mL	D5W	Any crystalloid
Normal Saline 0.9%	1000 mL	Lactated Ringers	Any crystalloid

Controlled Substances*

Medication	Administration Route	REMAC Alternative(s)
Fentanyl‡	IM, IV, Intranasal	Morphine, Hydromorphone
Ketamine‡ Ⓟ	IM, IV, Intranasal	
Midazolam (Versed)	IM, IV, Intranasal	Diazepam (Valium), Lorazepam (Ativan)
Morphine‡	IM, IV	Fentanyl, Hydromorphone

* One form of benzodiazepine and one form of narcotic analgesia is required.

RSI Formulary

Medication	Administration Route	REMAC Alternative(s)
Succinylcholine‡	IV	Rocuronium, Vecuronium
Rocuronium‡	IV	Vecuronium, Succinylcholine

Medication Infusion Reference

Amiodarone: 150 mg in 100 mL Normal Saline = 1.5 mg/mL; administer over 10 minutes

Infusion Rate	10 gtts/mL	15 gtts/mL
10 mL/min	100 gtts/min	150 gtts/min

Epinephrine: 1 mg in 250 mL Normal Saline = 4 mcg/mL

Infusion Rate	10 gtts/mL	15 gtts/mL	60 gtts/mL
2 mcg/min	5 gtts/min	7.5 gtts/min	30 gtts/min
4 mcg/min	10 gtts/min	15 gtts/min	60 gtts/min
6 mcg/min	15 gtts/min	22.5 gtts/min	90 gtts/min
8 mcg/min	20 gtts/min	30 gtts/min	120 gtts/min
10 mcg/min	25 gtts/min	37.5 gtts/min	150 gtts/min
12 mcg/min	30 gtts/min	45 gtts/min	180 gtts/min
14 mcg/min	35 gtts/min	52.5 gtts/min	210 gtts/min
16 mcg/min	40 gtts/min	60 gtts/min	240 gtts/min
18 mcg/min	45 gtts/min	67.5 gtts/min	270 gtts/min
20 mcg/min	50 gtts/min	75 gtts/min	300 gtts/min

Magnesium: 2 grams in 100 mL Normal Saline = 20 mg/mL; administer over 10 minutes
4 grams in 100 mL Normal Saline = 40 mg/mL; administer over 20 minutes

2 g Infusion Rate	10 gtts/mL	15 gtts/mL
10 mL/min	100 gtts/min	150 gtts/min
4 g Infusion Rate	**10 gtts/mL**	**15 gtts/mL**
5 mL/min	50 gtts/min	75 gtts/min

Norepinephrine: 4 mg in in 250 mL Normal Saline = 16 mcg/mL

Infusion Rate	10 gtts/mL	15 gtts/mL	60 gtts/mL
2 mcg/min	1.25 gtts/min	1.75 gtts/min	7.5 gtts/min
4 mcg/min	2.5 gtts/min	3.5 gtts/min	15 gtts/min
6 mcg/min	3.75 gtts/min	5.25 gtts/min	22.5 gtts/min
8 mcg/min	5 gtts/min	7 gtts/min	30 gtts/min
10 mcg/min	6.25 gtts/min	8.75 gtts/min	37.5 gtts/min
12 mcg/min	7.5 gtts/min	10.5 gtts/min	45 gtts/min
14 mcg/min	8.75 gtts/min	12.25 gtts/min	52.5 gtts/min
16 mcg/min	10 gtts/min	14 gtts/min	60 gtts/min
18 mcg/min	11.25 gtts/min	15.75 gtts/min	67.5 gtts/min
20 mcg/min	12.5 gtts/min	17.5 gtts/min	75 gtts/min

Needlestick / Infectious Exposure

Applies to adult and pediatric patients

CRITERIA

- This resource outlines the immediate actions to be taken following any percutaneous, non-intact skin, or mucous membrane contact with blood or body secretions

Cleansing for a Puncture Wound

- Immediately cleanse with Betadine or Chlorhexidine
- Follow-up by soaking the site for five minutes in a solution of Betadine and sterile water

Cleansing for Skin Contact

- Wash the area with soap and water then clean the area with Betadine or Chlorhexidine

Cleansing for Mucous Membranes

- If in the mouth, rinse mouth out with a large volume of tap water
- If in the eyes, flush with water from an eyewash station. If an eyewash station is not available, use tap water.

Key Points/Considerations

- Thoroughly cleanse the area of exposure
- Decontamination may be limited because of the lack of available resources
- Report the exposure to a supervisor, immediately
- Seek immediate medical attention and post-exposure evaluation at the hospital the source patient was transported to, if possible

Normal Vital Signs for Infants / Children

Normal Respiratory Rate:	**Normal Pulse Rate:**	**Lower Limit of Normal Systolic BP:**
Infant (<1 yr): 30-60	Infant: 100-160	Infant: >60 (or strong pulses)
Toddler (1-2yr) 24-40	Toddler: 90-150	Toddler: >70 (or strong pulses)
Preschooler (4-5yr) 22-34	Preschooler: 80-140	Preschooler: >75
School age (6-12yr): 18-30	School age: 70-120	School age: >80
Adolescent (13-18yr): 12-20	Adolescent: 60-100	Adolescent >90
	Pulses slower in sleeping child/athlete	Estimated min SBP >70+(2x age in yr)

Oxygen Administration and Airway Management

Applies to adult and pediatric patients

CRITERIA

- Providers may operate as outlined below. They may not exceed their scope of practice, even with direct online medical control.

CFR AND ALL PROVIDER LEVELS

- Ongoing assessment of the effectiveness of breathing
  - See as necessary "Extremis: Respiratory Arrest / Failure – Adult" or "Extremis: Respiratory Arrest / Failure – Pediatric"
- Oxygen therapy via non-rebreather mask 10-15 LPM, or nasal cannula 2-6 LPM, to maintain oxygen saturation if saturation is <92% or to effectively manage other signs of dyspnea
  - Some children with cardiac conditions may have baseline oxygen saturations between 65 and 85% rather than above 92% (ask care provider about patient's usual oxygen saturation level)
  - Infant oxygen administration, if needed, should be provided at 0.5-2 LPM via appropriately sized nasal cannula
- Any patient with suspected carbon monoxide poisoning should receive high flow oxygen via non-rebreather mask, see "General: Carbon Monoxide Exposure – Suspected"
- Oxygen therapy using bag-valve-mask 15-25 LPM
- Appropriate BLS airway adjuncts
- Bag-valve-mask assisted ventilation

CFR STOP

EMT

- Oxygen powered nebulizer devices for use in accordance with manufacturer specifications (typically ~6-8 LPM)
- Continuous positive airway pressure (CPAP)‡ 5-10 cm H_2O
  - For the adult patient
  - For older pediatric patients consider CPAP‡ as equipment size allows
- Supraglottic airway placement‡ in cardiac arrest patients (as regionally approved)
- Consider PEEP 5 cm H_2O titrated up to 10 cm H_2O
- Portable automated transport ventilators (ATV)‡
  - See "Resource: Automatic Transport Ventilator"

EMT STOP

ADVANCED

- Supraglottic airway placement in unresponsive patients

ADVANCED STOP

CC

- Oral endotracheal intubation in ADULTS

- Age-appropriate laryngoscope and Magill Forceps in cases of obstructed airway

CC STOP

PARAMEDIC

- Nasal endotracheal intubation in ADULTS‡ if regionally credentialed
- Pediatric intubation
  - Consider intubation in pediatric patients *only* if unable to effectively ventilate with bag-valve-mask (BVM) and basic airway adjuncts
- Rapid sequence intubation‡ if regionally credentialed
- Surgical airway‡

PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- Additional PEEP >10 cm H_2O provided MAP maintained >65 mmHg

Key Points/Considerations

- Oxygen should be titrated to maintain saturation at or just above 92% and/or to treat signs of dyspnea. If there is a situation in which the patient may be unstable and hypoxia might be missed (such as major trauma), it is acceptable to place the patient on high flow oxygen.
- Blow-by oxygen administration may be required in some cases
- Providers may only place an endotracheal tube or supraglottic airway if they utilize waveform capnography for initial and ongoing monitoring of airway patency
- Only paramedics may intubate pediatric patients
- Rapid sequence intubation is to be performed only by paramedics who have received specific training and are approved per regional procedure
- Only air medical agencies may perform pediatric rapid sequence intubation on standing orders
- Intubation may be attempted on a patient a maximum of 2 times by one provider, and one more time by a second, if appropriate. If a patient is not intubated for any reason, utilize an alternative airway device and ventilate with a bag-valve-mask (BVM).
- A cervical collar should be considered on all intubated patients to assist the maintenance and secure placement of the airway device, especially when moving the patient
- Approved list of alternative airway devices is available through each Regional Program Agency
- Contraindications for use of alternative airway device:
  - Patients with pharyngeal hemorrhage, tracheostomy, or laryngectomy
  - Patients who have ingested a caustic substance
  - Patients with known obstruction of larynx and/or trachea
- BiPAP may be used in place of CPAP, as training and equipment allow

Pediatric Assessment Triangle

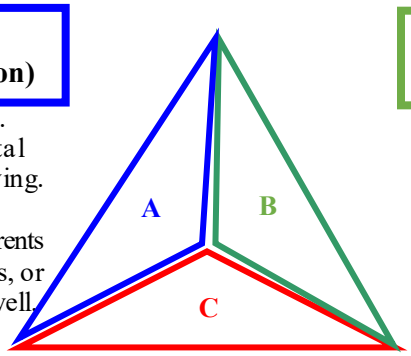
General Impression

(First view of patient)

Airway & Appearance
(Open/Clear – Muscle Tone/Body Position)

Abnormal: Abnormal or absent cry or speech. Decreased response to parents or environmental stimuli. Floppy or rigid muscle done or not moving.

Normal: Normal cry or speech. Responds to parents or to environmental stimuli such as lights, keys, or toys. Good muscle tone. Moves extremities well.



Work of Breathing
(Visible movement / Respiratory Effort)

Abnormal: Increased/excessive (nasal flaring, retractions or abdominal muscle use) or decreased/absent respiratory effort or noisy breathing.

Normal: Breathing appears regular without excessive respiratory muscle effort or audible respiratory sounds.

Circulation to Skin
(Color / Obvious Bleeding)

Abnormal: Cyanosis, mottling, paleness/pallor or obvious significant bleeding.
Normal: Color appears normal for racial group of child. No significant bleeding.

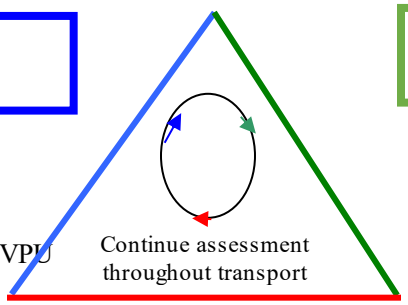
Initial Assessment

(Primary Survey)

Airway & Appearance
(Open/Clear – Mental Status)

Abnormal: Obstruction to airflow. Gurgling, stridor, or noisy breathing. Verbal, Pain, or Unresponsive on AVPU scale.

Normal: Clear and maintainable. Alert on AVPU scale.



Breathing
(Effort / Sounds / Rate / Central Color)

Abnormal: Presence of retractions, nasal flaring, stridor, wheezes, grunting, gasping or gurgling. Respiratory rate outside normal range. Central cyanosis.

Normal: Easy, quiet respirations. Respiratory rate within normal range. No central cyanosis.

Circulation
(Pulse Rate & Strength / Extremity Color & Temperature / Capillary Refill/ Blood Pressure)

Abnormal: Cyanosis, mottling, or pallor. Absent or weak peripheral or central pulses; Pulse or systolic BP outside normal range; Capillary refill >2 sec with other abnormal findings.
Normal: Color normal. Capillary refill at palms, soles, forehead or central body ≤2 sec. Strong peripheral and central pulses with regular rhythm.

APGAR Score			
	0 pt	**1 pt**	**2 pts**
Appearance	Blue	Pink Body Blue Limbs	All Pink
Pulse	Absent	<100	≥100
Grimace/Reflex	None	Grimace	Cough/Sneeze
Activity	Limp	Some flexion	Active motion
Respirations	Absent	Slow/Irregular	Good

Neonatal Resuscitation

Dry, Warm, Position, Tactile Stimulation
Call for ALS back-up if needed
Suction if airway obstruction or BVM needed
Apnea/Gasping, HR <100 or central cyanosis
BVM @40-60/min with room air. O_2 if sat stays <95%
HR<60 after 30 sec, BVM
Chest compressions @ 120/min – 3:1
1/3 to 1/2 chest depth
2 thumbs encircle chest or 2 fingers
ALS available & HR <60
Consider intubation
Epinephrine
0.01-0.03 mg/kg
IV/IO/ET
1:10,000
q 3-5 min

Glasgow Coma Score		
Infants		**Children/Adults**
	Eye Opening	
Spontaneous	4	Spontaneous
To speech/sound	3	To speech
To pain	2	To pain
No response	1	No response
	Verbal Response	
Coos or babbles	5	Oriented
Irritable or crying	4	Confused
Cries to pain	3	Inappropriate words
Moans to pain	2	Incomprehensible
None	1	None
	Motor Response	
Spontaneous	6	Obeys commands
Withdraws touch	5	Localizes pain
Withdraws pain	4	Withdraws pain
Abnormal flexion	3	Abnormal flexion
Abnormal extension	2	Abnormal extension
No response	1	No response

Respiratory or Cardiac Arrest			
VENT RATE **Patient with pulses**	**Infant** **20-30/min**	**Child** **20-30/min**	**Adol/Adult** **10/min**
COMPRESS METHOD	**Encircle or 2 fingers**	**1 or 2 hands**	**2 hands**
DEPTH	**1/3 (1 ½ in)**	**1/3 (2 in)**	**2-2.4 in**
COMPRESS RATE	**100-120 per minute**		
C:V RATIO (2 people)	**15:2**	**15:2**	**30:2**
Push HARD & FAST, allow full chest RECOIL!			

CPR Notes:

- **Start CPR for cardiac arrest or HR <60 with poor perfusion.**
- **Prefer AED with pediatric capabilities if patient <25g/<55lb or <8 yr. May use adult AED if unavailable.**
- **Do not pause CPR for more than 10 sec at any time.**
- **After advanced airway insertion, ventilate continuously: infant/child at 20-30/min; adol/adult 10/min**
- **After defibrillation, immediately resume CPR for 2 full minutes before pulse/rhythm check.**
- **Use Adolescent/Adult protocols for patients with clear signs of puberty (e.g. facial hair, obvious breasts, acne, axillary hair, adult appearance/size, etc.)**

Pediatric ALS Guidelines

Asystole or PEA	**Bradycardia**	VF or Pulseless VT
Start CPR Epinephrine ASAP, then Q3-5 min: 0.01 mg/kg IV/IO* *Use 0.1mg/ml (1:10,000) IV/IO Advanced airway with capnography	Open airway; ventilate with oxygen. Advanced airway if LOC & poor airway Start CPR if HR <60 with **poor perfusion**. Epinephrine 0.01 mg/kg IV/IO* *0.1 mg/ml (1:10,000) Continue Epinephrine q3-5 min, same dose Atropine 0.2 mg/kg IV/IO (if AV block or organophosphate poisoning) Min dose 0.1 mg Max dose 0.5 mg child; 1 mg adol. Consider transcutaneous pacing as needed.	Defibrillate q 2 min as needed 1st shock 2 J-4 J/kg, 2nd shock 4 J/kg, later shocks: 4-10 J/kg (up to adult dose) Continue CPR; ventilate with O_2 Epinephrine Q3-5 min: 0.01 mg/kg IV/IO* *0.1 mg/ml (1:10,000) Advanced airway with capnography Amiodarone 5 mg/kg IV/IO
Consider possibility of hypoxia, hypovolemia, hypothermia, hydrogen ion (acidosis), hyper/hypokalemia, hypoglycemia, tamponade, tension pneumothorax, toxins/poisons/drugs, trauma or thrombosis (coronary or pulmonary) and treat if present.		

Prescribed Medication Assistance

Applies to adult and pediatric patients

CRITERIA

- To provide assistance to patients or caregivers of patients who require help with emergency medication(s) that they, or people in their care, are prescribed

CFR AND ALL PROVIDER LEVELS

EMT

ADVANCED

- Administration of any patient-prescribed medication, for the condition it is prescribed for, using a route of administration within the practitioners scope of practice. Examples include, but are not limited to:
  - Sublingual Nitroglycerin for patients with chest pain
  - Inhalers (Albuterol[1] or other beta-agonists) for patients with asthma or COPD
  - Diazepam (Diastat) for children or adults with seizures or special needs
  - Epinephrine autoinjectors for treatment of anaphylaxis
  - Naloxone (Narcan®) via autoinjector or intranasal device

CFR, EMT, AND ADVANCED STOP

CC

PARAMEDIC

- Vascular access to initiate, resume and or maintain prescribed medications

CC AND PARAMEDIC STOP

Key Points/Considerations

1 Common brand names for Albuterol include Ventolin®, Proventil®, and ProAir®
  - Levalbuterol (Xopenex) is a beta agonist and may be utilized in this protocol
  - A combination inhaler that contains Albuterol & Ipratropium (Atrovent®), such as Combivent®, that is prescribed to the patient may be utilized in this protocol

- This protocol is designed to assure that the EMS provider and medical control provider are best prepared to assist patients with ongoing disease processes that are not covered by these protocols, and who have already been given therapy by their prescribers. Examples include:
  - Pulmonary hypertension – Epoprostenol (Flolan) infusion when PICC line breaks
  - Congenital adrenal hyperplasia – assisting IM Hydrocortisone (Solu-Cortef)
- If a patient is on a continuous drip medication and they lose their access, it is potentially fatal. Obtaining IV access (or an IO, should IV access be unobtainable) and continuing an infusion pump the patient has prescribed may be life-saving.
- Access of ports may not be done unless the provider has additional training and is equipped, or patient has his or her own access device, see "Vascular Devices – Pre-Existing"

Refusal of Medical Attention

Applies to adult and pediatric patients

CRITERIA

- To be utilized when a person with an actual or potential injury or other medical problem is encountered by EMS personnel and wishes to refuse indicated care or transport
- In the absence of a demonstrated and documented impairment, adults and parents of children have a right to refuse treatment for themselves and their minor children
- Providers have the responsibility to provide informed consent for the refusal
- Agency and regional policies and procedures may augment these minimum protocols
- Medical control should be contacted for transport refusals of patients with an Apparent Life Threatening Event (ALTE) / Brief Resolved Unexplained Events (BRUE) – see protocol
- Patients with the following should be considered "high risk" – consider medical control
    - Age greater than 65 years or less than 2 months
    - Pulse >120 or <50
    - Systolic blood pressure >200 or <90
    - Respirations >29 or <10
    - Serious chief complaint (including, but not limited to, chest pain, shortness of breath, syncope, and focal neurologic deficit)
    - Significant mechanism of injury or high index of suspicion
    - Fever in a newborn or infant under 8 weeks old

CFR AND ALL PROVIDER LEVELS

- May cancel an ambulance only when there is no indication of a potential illness or injury
- A CFR may not initiate a refusal of care when there is a person who appears to have an injury or illness

CFR STOP

EMT

ADVANCED

CC

PARAMEDIC

Patients who have the medical decision-making capacity (ability to understand the nature and consequences of their medical care decision) and wish to refuse care/transport may do so after the provider has:

- Determined the patient exhibits the ability to understand the nature and consequences of refusing care/transport (See below)
- Offered transport to a hospital
- Explained the risks of refusing care/transport
- Explained that by refusing care/transport, the possibility of serious illness, permanent disability, and death may increase
- Advised the patient to seek medical attention and gave instructions for follow-up care
- Confirmed that the patient understood these directions

- Left the patient in the care of a responsible adult (when possible)
- Advised the patient to call again with any return of symptoms or if he or she wishes to be transported

EMT, ADVANCED, CC AND PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- Assistance with high risk, difficult, or unclear situations

Key Points/Considerations

The evaluation of any patient refusing medical treatment or transport should include the following:

- Visual assessment – To include responsiveness, level of consciousness, orientation, obvious injuries, respiratory status, and gait
- Initial assessment – Airway, breathing, circulation, and disability
- Vital signs – (If patient allows) pulse, blood pressure, and respiratory rate and effort; pulse oximetry and/or blood glucose, when clinically indicated
- Focused exam – As dictated by the patient's complaint (if any)

Medical decision-making determination is defined as follows:

- Patients at the scene of an emergency who demonstrate the ability to understand the nature and consequences of their medical care decisions shall be allowed to make decisions regarding their medical care, including refusal of evaluation, treatment, or transport
- A patient, who is evaluated and found to have any one of the following conditions shall be considered incapable of making medical decisions regarding care and/or transport and should be transported to the closest appropriate medical facility under implied consent:
    - Altered mental status from any cause
    - Age less than 18 unless an emancipated minor or with legal guardian consent
    - Attempted suicide, danger to self or other, or verbalizing suicidal intent
    - Acting in an irrational manner, to the extent that a reasonable person would believe that the capacity to make medical decisions is impaired
    - Unable to verbalize (or otherwise adequately demonstrate) an understanding of the illness and/or risks of refusing care
    - Unable to verbalize (or otherwise adequately demonstrate) rational reasons for refusing care despite the risks
    - No legal guardian available (in person or by telephone) to determine transport decisions
- Patient consent in these circumstances is implied, meaning that a reasonable and medically capable adult would allow appropriate medical treatment and transport under similar conditions
- Law enforcement should be considered, if needed, to facilitate safe management of patients who lack capacity and require involuntary transport
    - Capacity is a clinical decision, therefore, it is not necessary for law enforcement to place a patient in their "protective custody" in order to safely manage those whom lack capacity and require transportation for further evaluation and treatment

Responsibilities of Patient Care

Applies to adult and pediatric patients

The provision of patient care is a responsibility given to certified individuals who have completed a medical training and evaluation program specified by the NYS Public Health or Education Laws and subject to regional and State regulations or policy. Prehospital providers are required to practice to the standards of the certifying agency (DOH) and the medical protocols authorized by the local REMAC.

Patient care takes place in many settings, some of which are hazardous or dangerous. The equipment and techniques used in these situations are the responsibility of locally designated, specially trained, and qualified personnel. Emergency incident scenes may be under the control of designated incident commanders who are not emergency medical care providers. These individuals are generally responsible for scene administration, safe entry to a scene, or decontamination of patients or responders.

Pursuant to the provisions of Public Health Law, the individual having the highest level of prehospital medical certification, and who is responding with authority (duty to act) is responsible for providing and/or directing the emergency medical care and the transportation of a patient. Such care and direction shall be in accordance with all NYS standards of training, applicable state and regional protocols, and may be provided under medical control.

Transfer of Patient Care

Applies to adult and pediatric patients

CRITERIA

- Providers are responsible for the patient while in their care. Transferring or receiving providers will not be responsible for his or her counterpart's actions
- Patients may be transferred to a provider with the same or higher level of certification
- Patients may be transferred to a provider with a lower level of certification provided the patient is not anticipated to require higher-level care and the lower level provider has formally accepted the transfer of care

CFR AND ALL PROVIDER LEVELS

EMT

ADVANCED

CC

PARAMEDIC

- When transferring patients, both the receiving and transferring providers should:
  - Ensure that all patient information is transferred to the receiving provider, such as chief complaint, past medical history, current history, vital signs, and care given prior to the transfer of care
  - Assist the receiving provider until they are ready to assume patient care
  - Be willing to accompany the receiving provider to the hospital, if the patient's condition warrants or if the receiving provider requests it, as resources allow
- All personnel and agencies must comply with NYSDOH BEMS policy regarding documentation:
  - Both providers will complete a Patient Care Report (PCR), as appropriate, detailing the care given to the patient while in their care
  - The receiving provider must briefly document patient care given prior to receiving the patient
  - Providers within the same agency may utilize the same PCR (as technology and agency/regional/state policy allow)

CFR, EMT, ADVANCED, CC AND PARAMEDIC STOP

MEDICAL CONTROL CONSIDERATIONS

- Resolution of any disagreements between transferring and transporting providers

Key Points/Considerations

- Any disparity between the providers must be resolved by on-line medical control or the provider of higher certification must transport with the patient
- In situations involving multiple patients or mass casualty incidents, EMS providers may field-triage patients to care and transportation by EMS providers of lower level of certification as resources allow
- A standardized process of transfer of care may be implemented by regional systems

Vascular Access

Applies to adult and pediatric patients

EMT

- No options

EMT STOP

ADVANCED

- Adult IV
- Adult IO
- Pediatric IO

ADVANCED STOP

CC

- Critical pediatric IV (cardiac arrest/respiratory arrest/diabetic emergency/or similar situation where intervention is critical ONLY)
- Need to maintain critical IV infusion in pediatric patient (such as Flolan [Epoprostenol]) (See "Resource: Prescribed Medication Assistance")
- If IO access is started in a conscious patient, the IO should be instilled with Lidocaine (2%)‡ 40 mg (2 mL) for adults, or 1 mg/kg (max 40 mg) for pediatric patients in the method described by the manufacturer

CC STOP

PARAMEDIC

- Access to pre-existing vascular devices standing order is for patients in extremis requiring a lifesaving intervention **ONLY** (See "Resource: Vascular Devices – Pre-Existing")
- Pediatric IV
  - There are no prophylactic vascular access procedures performed in children
  - Do not initiate vascular access in children unless:
    - They require IV/IO fluid
    - They require IV/IO medication
    - They meet Red Criteria for Trauma Patient Destination
  - For patient safety, IV fluid bags of no greater than normal saline 100 mL bags may be hung on patients weighing <20 kg

PARAMEDIC STOP

Key Points/Considerations

- Intraosseous infusion may only be used in cases of critical patients where IO access may be lifesaving
- Any IV medication in these protocols may be given IO, if required
- IV sites include peripheral veins, including upper extremities and lower extremities (below the knees) and the external jugular vein. The scalp veins may be used in infants.

- Pediatric vascular access should only be obtained if there is a critical intervention to perform, such as a fluid bolus in patients in decompensated shock, or glucose administration in a hypoglycemic patient with diabetes
- The number of vascular access attempts, the provider making the attempts, the site of the attempts, the catheter sizes, the solution, the infusion rate (e.g. KVO, 250 mL/hr, open) and total fluid infused should be noted on the PCR
- Good clinical judgment will dictate the maximum number of vascular access attempts
- Do not delay transport solely to attempt vascular access

Vascular Devices – Pre-Existing

Applies to adult and pediatric patients

PARAMEDIC ONLY

Procedure

- Identify the device
- If the patient is in EXTREMIS and a lifesaving intervention will be performed, establish access to the device
- If the patient is not in extremis, consult medical control for orders to access the device
    - No prophylactic IV lines / access may be established using pre-existing vascular devices
- Procedure to establish access to Pre-Existing Vascular Access Device:
    - Discontinue any solution flowing into the pre-existing vascular device (providing continuous infusion is not necessary to maintain such as Epoprostenol [Flolan]; contact medical control in these cases prior to initiating access)
    - Put on sterile gloves, if available
    - Clean injection site with iodine solution or chlorhexidine wipe. Do not remove or unscrew the cap, unless no other means of accessing the device is possible.
    - Remove any clamps on the vascular access device, and slowly withdraw 10 mL of fluid from the port
    - Inject 5 mL normal saline. If the bolus does not inject freely, the access must not be used.
    - If the device is patent, inject the remaining 5 mL from the syringe
    - Secure an administration set to the access site
    - Maintain Normal Saline KVO through the device
    - Administer a fluid bolus and/or medications as you would for a peripheral IV
    - If the access device is damaged and begins to leak, clamp it one inch from the skin entry site with a padded, non-serrated hemostat, if available

Key Points/Considerations

- EXTREMIS includes, but is not limited to: cardiac arrest, respiratory arrest, status epilepticus, decompensated shock, and life threatening arrhythmias
- Pre-existing vascular devices include central venous catheters (CVC), peripheral inserted central catheters (PICC), and renal dialysis lines (***NOT*** fistulas)
- Implanted ports and fistulas are ***not*** considered pre-existing vascular devices, and cannot be accessed by the prehospital provider
- Percutaneous catheters below the nipple are not for vascular access and should not be used
- Once the device is accessed, continuous flow of Normal Saline must be maintained