NAVY EMERGENCY MEDICAL SERVICES TREATMENT PROTOCOLS

Effective Date: 1 September 2022
version 1.2

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From: BUMED Navy Medicine Medical Directors
CNIC EMS Program Manager

To: Navy EMS Providers

Subj: Navy EMS Medical Treatment Protocols Authorization

Ref: (a) OPNAVINST 11320.27A, Navy Installation Emergency Medical Services Program, 21 February 2019
(b) BUMEDINST 6320.94, Pre-Hospital Emergency Medical Services for Navy Facilities, 8 August 2008

Encl: (1) Navy EMS Medical Treatment Protocols Effective 1 January 2022

1. Navy Medicine has the responsibility for the medical oversight and clinical scope of practice for Navy personnel involved with Emergency Medical Services (EMS) systems aboard Navy installations per references (a) and (b).

2. Commander Navy Installations Command (CNIC) has overall responsibility for the Navy EMS Program as the single responsible office, advocate, and point of contact for the program. CNIC administers the Navy EMS Program for the Chief of Naval Operations N4 and has authority and responsibility to develop and implement detailed policy for Navy wide functions per reference (a).

3. Enclosure (1) includes the Navy EMS Medical Treatment Protocols applicable to all Navy personnel assigned to deliver EMS pre-hospital emergency medical treatment, care and transport on Navy Installations and during the provision of mutual-aid.

4. The Medical Directors assigned to support and provide clinical oversight to the Navy EMS Program have reviewed and officially approved the use of the Navy EMS Treatment Protocols as prescribed in Enclosure (1) for use by Navy EMS Providers.

5. The 2021 Navy EMS Treatment Protocols are implemented under authority granted per references (a) and (b) and replaces all previous editions and versions.

6. Effective Date: 1 January 2022

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Paul J D Roszko, MD FAEMS FACEP
LCDR MC USN
Director for Emergency Medical Services, Naval Medical Forces Atlantic

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Lewis J Moore
CNIC EMS Program Manager

GENERAL INFORMATION

A. Protocol Provisions

The goal of prehospital EMS is to deliver a viable patient to appropriate definitive care as soon as possible (e.g., Right Patient, Right Place, in the Right Time). The protocols contained in this document are a form of standing orders for emergency patient care. Navy EMS personnel shall operate within their CNIC scope of practice and protocols when responding to incidents on and off the Installation.

It remains the responsibility of Navy EMS personnel to obtain online medical control when appropriate. If it is genuinely impossible or inappropriate (e.g., when rendering emergency care to a patient who has a life-threatening injury or medical condition) to obtain online medical control, Navy EMS personnel shall deliver emergency patient care in accordance with these protocols. Whenever emergent, life-saving patient care is rendered outside the scope of standing orders, the treatment provided and the reason online medical control could not be obtained must be documented on the patient care report (PCR).

The Universal Patient Care (UPC) protocol within the document should be followed in the specific sequence presented for each EMS response. The individual (adult and pediatric) treatment protocols are categorized based on the type of emergency and are further divided based on the individual level of care provider. To assist Navy EMS personnel in referencing patient care protocols, the outline format is broken down by the National Registry of Emergency Medical Technicians scope of practice (Emergency Medical Technician (EMT), Advanced-EMT (AEMT) and Paramedic). It is not intended to direct a mandatory sequence for providing patient care.

To improve organization of the protocols, page numbers have been replaced with protocol abbreviations. Each abbreviation is defined in the appendix at the end of the protocols.

Requests for additions, deletions, or exceptions to the Navy EMS Protocols shall be submitted in writing to the CNIC EMS Program Office using the form provided in the Appendix and available on CNIC G2.

B. Important Contact Information

1. CNIC F&ES (N30) HQ

CNIC EMS Program Manager
Mr. Lewis Moore
Phone: (202) 433-7743
E-mail: lewis.moore@navy.mil

CNIC Senior EMS Systems Specialist
Mr. Gary Easley
Phone: (202) 433-6517
E-mail: gary.easley@navy.mil

2. Navy Medicine Medical Directors

Naval Medical Forces Pacific
CAPT Benjamin Walrath
Phone:
E-mail: Benjamin.d.walrath.mil@mail.mil

Naval Medical Forces Atlantic
LCDR Paul Roszko
Phone: (203) 994-8710
E-mail: paul.j.roszko.mil@mail.mil

Table of Contents

Section 1: Universal Patient Care

Scene Safety

- Use appropriate body substance isolation (BSI) and/or personal protective equipment (PPE)
- Consider airborne or droplet precautions, if indicated
- Identify potential hazards to rescuers, patients, and the public
- Await appropriate authorities if the scene is deemed unsafe
- Identify the number of patients
- Mass assembly consider WMD/terrorism Request additional resources, if needed
- Observe the patient's positioning and surroundings

Protective Equipment

Apply a standard set of protections based on the patient's symptoms and the clinical care rather than a specific suspected organism. The goal is to utilize PPE to prevent exposure to potentially infectious bodily fluids, secretions, droplets, or aerosols, as well as environmental exposures. The ASPR/TRACIE EMS Infectious Disease Playbook will be utilized as the gold-standard reference for implementation of PPE in the pre-hospital environment.

Universal patient precautions are to be implemented for every patient encounter. This means that, at a minimum, hand hygiene and gloves will be worn during any patient contact. Eye protection (e.g. goggles or face shield) and a surgical mask will be worn for any airway procedures (e.g. intubation, airway suctioning) or when caring for patients with potential respiratory infections (e.g. fever, cough, shortness of breath). This is also intended to protect mucous membranes from splash/liquid exposures.
Impermeable gowns should be used for any situation likely to generate splash/liquid exposures.

Consider using a checklist to assist with proper donning and doffing. PPE should be removed in an appropriate doffing area to prevent secondary contamination. Meticulous care should be taken to avoid self-contamination. PPE waste should be placed in a labeled leak-proof container.

Equipment

- Disposable exam gloves – standard gloves for standard precautions
- Sterile exam gloves – with elongated cuffs for use with barrier gowns/suits
- Cleanable goggles OR face shield
- Surgical masks for patients and providers
- Disposable fluid-resistant gown OR disposable fluid-resistant coverall
- Disposable National Institute for Occupational Safety and Health (NIOSH)-approved, fit-tested N95 or equivalent/higher level respirator (e.g., reusable half-face elastomeric respirator N95 or higher rating mask or PAPR with full hood and HEPA filter)
- Disposable boot/shoe covers

Special Respiratory Precautions – additional equipment required

- Full face shield (plus consider head cover)
- Respiratory protection options:
  - » NIOSH-approved, fit-tested N95 respirator worn with impermeable hood that covers head and shoulders and full-face shield
  - » PAPR with HEPA filtration and integrated impermeable drape-style hood
- Boots (disposable or reusable)
- Fluid-resistant coverall – if service uses gowns for other contact exposures

Upon Scene Arrival

- Bring all necessary equipment to the patient – jump bag, IV start bag, monitor/AED, O2 bag and extrication equipment (e.g., stair chair, KED, stretcher, scoop, long spine board, etc.)
- Demonstrate professionalism and courtesy
- Determine the mechanism of injury (MOI)/nature of illness (NOI)

Primary Assessment

e**X**sanguination, **A**irway, **B**reathing, **C**irculation is cited below, although there are specific circumstances where **C**irculation, **A**irway, **B**reathing may be indicated (e.g. cardiac arrest). Life threatening conditions identified during primary survey should be immediately addressed.

1. **eXsanguination**
   - Control any life-threatening hemorrhage with direct pressure (utilize one or two fingers directly over the source of bleeding to maximize effectiveness)
   - For extremity bleeding, apply a commercial tourniquet device to the injured extremity – go to the Tourniquet Protocol
   - Pressure dressings are inadequate when used alone to control life-threatening hemorrhage
   - For wounds not amenable to application of a tourniquet, consider packing the wound with a hemostatic gauze – go to the Combat Gauze Wound Packing protocol

2. **Airway** (assess for patency and open the airway as indicated)
   - Patient is unable to maintain airway patency—open airway
     - Head tilt, chin lift – not to be performed on patients with cervical spine precautions
     - Jaw thrust
     - Suction
     - Consider use of the appropriate airway management adjuncts and devices: oral airway, nasal airway, blind insertion, supraglottic airway device, or endotracheal tube
   - For patients with laryngectomies or tracheostomies, remove all objects or clothing that may obstruct the opening of these devices, maintain the flow of prescribed oxygen, and reposition the head and/or neck
   - Utilize continuous End Tidal CO2 monitoring to assess the adequacy of the patient's
   - airway – clear waveforms rising and falling with exhalation and inhalation should be observed if the airway is patent, indicating effective ventilation
   - If the airway remains obstructed - go to the Airway Management/Failed Airway Protocol

3. **Breathing**
    - Evaluate rate, chest wall rise, breath sounds, accessory muscle use, retractions, and patient positioning
    - Obtain a pulse oximeter reading
    - Administer oxygen as appropriate with a target saturation of a minimum of 94% for most acutely ill patients.
        - When explicit oxygen saturation targets are required for a given condition (e.g., neonates, carbon monoxide poisoning), it will be specified in the associated protocol.
    - Excess oxygen is associated with worse patient outcomes in those with ROSC after cardiac arrest, myocardial infarction, and stroke. Oxygen should be withheld in these patients unless the SpO2 is less than 90% or they are in respiratory distress
    - Continuous end-tidal CO2 monitoring can be utilized to monitor the effectiveness of ventilations. It is required for providers to monitor EtCO2 whenever bag-valve-mask ventilations, ventilations through an advanced airway, or CPAP is utilized.
    - Apnea (not breathing) – go to Airway Management/Failed Airway Protocol

4. **Circulation**
    - Assess pulse
        - If none – go to Cardiac Arrest Protocol or Pediatric Cardiac Arrest Protocol
        - Assess rate and quality of carotid and radial pulses
    - Evaluate perfusion by assessing skin color and temperature
        - Evaluate capillary refill
    - Attach the cardiac monitor and leads to obtain an electrocardiogram (EKG), if indicated by the patient's presentation or referenced in a specific protocol
    - Establish IV or IO access as dictated by each specific protocol
        - For conscious patients with IO access, infuse 2% lidocaine over 1-2 minutes followed by a NS flush
        - Adult dose – 40 mg (2 mL of 2% lidocaine)
        - Pediatric dose – 0.5 mg/kg up to 40 mg (2 mL of 2% lidocaine)

5. **Disability**
    - Evaluate patient responsiveness: AVPU scale (Alert, Verbal, Pain, Unresponsive)
    - Consider the need to initiate spinal motion restriction (SMR). Indicators to initiate include: a blunt trauma patient with a high-energy mechanism and one of the following OR inability to respond or communicate to the examiner:
        - Midline spinal tenderness
        - Focal neurologic deficit, including paraplegia or quadriplegia
        - Altered mental status or confusion
        - Intoxication or alcohol use
        - Presence of a distracting injury (any injury that would impair a person's ability to properly notice spinal tenderness or pain)
    - Evaluate gross motor and sensory function in all extremities
    - Check a finger stick blood glucose in patients with altered mental status, active seizures, unconsciousness, stroke-like symptoms, dizziness, or other conditions that could be explained by hypoglycemia – go to Diabetic Emergency Protocol

- If acute stroke suspected – go to Suspected Stroke Protocol

6. **Expose**
   - As appropriate to their chief complaint
   - Be considerate of patient modesty
   - Keep the patient warm

Secondary Survey

The performance of the secondary survey should not delay transport in critical patients. Secondary survey elements specific to individual complaints are detailed further in other protocols. Secondary surveys should be tailored to the patient presentation and chief complaint. The following are suggested considerations for the secondary survey assessment:

1. **Head**
   - Pupils
   - Nasopharynx and oropharynx
   - Mouth opening and dentition
   - Skull and scalp

2. **Neck**
   - Mobility
   - Jugular venous distension
   - Tracheal position
   - Neck masses
   - Spinal tenderness

3. **Chest**
   - Retractions
   - Breath sounds and respiratory rate
   - Chest wall deformities
   - Crepitus
   - Symmetry

4. **Abdomen/Pelvis**
   - Flank/abdominal tenderness
   - Ecchymosis
   - Abdominal distension or rigidity
   - Pelvic tenderness or instability

5. **Extremities/Back**
   - Extremity edema
   - Distal pulses
   - Range of motion (ROM)
   - Deformities
   - Spinal tenderness or deformities

6. **Skin**
   - Color
   - Temperature

- Dry or diaphoretic
- Rashes or bruises

7. **Neurologic**
   - Mental status/orientation
   - Speech
   - Motor/sensory
   - Gait and coordination

8. **Obtain Baseline Vital Signs; an initial full set of vital signs is required (see appendix A-5)**
   - Neurologic status assessment involves establishing a baseline and then trending any change in patient neurologic status
   - Glasgow Coma Score (GCS) – does the patient follow commands?
   - AVPU (Alert, Verbal, Painful, Unresponsive)
   - Stable patients should have at least two sets of pertinent vital signs. Ideally, one set should be taken shortly before arrival at receiving facility

9. **Critical patient should have vital signs continuously monitored and recorded at a minimum of every 5 minutes or with changes in status**

10. **Obtain OPQRST history (see appendix A-5)**

11. **Obtain SAMPLE history (see appendix A-5)**

Transport/Transfer of Care

- Continue on-going patient assessment.
- Repeat initial vital signs; every 5 minutes on unstable patients, every 15 minutes on stable patients. Evaluate effectiveness of interventions and procedures.
- Transfer patient to receiving facility. Hand-off includes patient information, personal property, summary of care, and response to care.

IF NO APPROPRIATE PROTOCOL CAN BE DETERMINED CONTACT MEDICAL CONTROL

Adult Patients

- An adult is considered hypotensive when Systolic Blood Pressure (SBP) is less than 90 mmHg.
- Diabetic patients and women may have atypical presentations (e.g., shortness of breath without chest pain) of cardiac related problems such as myocardial infarction or STEMI.
- Generalized weakness or dizziness can be the symptom of a very serious underlying process, such as sepsis or stroke.
- The presence of normotension in a patient with poorly controlled hypertension may signal the presence of hypotension and shock.

Geriatric Patients

- Altered mental status is not always dementia. Always check a finger stick blood sugar and assess for signs of stroke, poisoning, intoxication, trauma, etc.
- Beta blockers and other hypertensive medications may prevent a reflex tachycardia in shock states, resulting in falsely reassuring low to normal pulse rates.
- Minor or moderate injury in the typical adult may be very serious in the elderly.
- Although seemingly benign, complications from ground level falls are the leading cause of death from injury in patients over age of 65.

Pediatric Patients

- Pediatric patients are defined as age less than 18 years old and/or weight less than 50 kg (110 LBS).
- A weight needs to be obtained and documented on ALL pediatric patients.
- The Broselow-Luten Resuscitation Tape (or equivalent validated tool – e.g. HandTevy) should be utilized for all pediatric patients whose weight is unknown to determine appropriate weight-based medication dosing,
- Pediatric patients with special needs may require continued use of pediatric based protocols regardless of age and weight.

Oxygen Administration

- Oxygen is ubiquitous in prehospital patient care and probably over utilized. Oxygen is a pharmaceutical
- with indications, contraindications, as well as untoward side effects.
- Research demonstrates a clear link with increased mortality when given in overdose (hyperoxia/hyperventilation) in cardiac arrest.
- Supplemental oxygen is not indicated for full-term neonates with uncomplicated vaginal deliveries. If requiring respiratory support, assisted ventilations should be initiated with room air.
- Utilize oxygen when indicated and not because it is available. A reasonable target oxygen saturation, unless otherwise specified in a treatment protocol, is 94% regardless of delivery device.

Patient Refusal of Treatment and/or Transport

- All patients will be encouraged to accept transport to a medical treatment facility (MTF). Encourage the patient to allow an assessment, including vital signs.
- In order to refuse care or transport, the clinician must determine if the patient has capacity. The patient:

    1. Must have sufficient information about their medical condition.

2. Understand the risks and benefits of their available options.
3. Have the ability to make a clear decision with the information they have.
4. Be able to consistently communicate these wishes, and.
5. Have the freedom to act without undue influence.

- Documentation of the event is very important, including the patient's capacity to refuse care. All five parts of the capacity determination must be clearly documented in the patient care report.For patients with high-risk medical conditions who wish to refuse transport, the clinician should contact online medical control and encourage the patient to discuss their care with a physician before accepting the refusal.
- A copy of an approved Patient Refusal Form must be included with the patient care report (PCR) or attached to the electronic PCR. This should be submitted for review as described in the document / quality assurance procedures.

Section 2: Triage

Triage is a method that allows patients to be quickly evaluated and have their condition prioritized based on the urgency of the treatment needed, type and seriousness of injury, and likelihood of survival. Typically, triage is performed when the number of patients exceeds the available resources, as seen in unexpected mass casualty disasters. The goal of triage is to rapidly identify those who need immediate care and those who can have medical assistance delayed. The strategy is designed to provide the greatest good for the greatest number of victims. Triage allows for an efficient use of personnel, equipment, and facilities while promoting organization and order in situations that are often chaotic.

When conducting triage, each casualty is categorized according to a color-coded system: Red denotes immediate attention, yellow denotes delayed, green denotes minor, and black suggests a dead or a patient who conditions will likely lead to death given the currently available resources (e.g., expectant).

Note that triage is a dynamic process and patients should be continually reassessed, as able, to determine if their condition has changed. Patients once designated as Yellow may have decompensated and should be re-categorized as Red. Conversely, if additional resources become available, patients initially tagged Expectant may be able to be properly resuscitated.

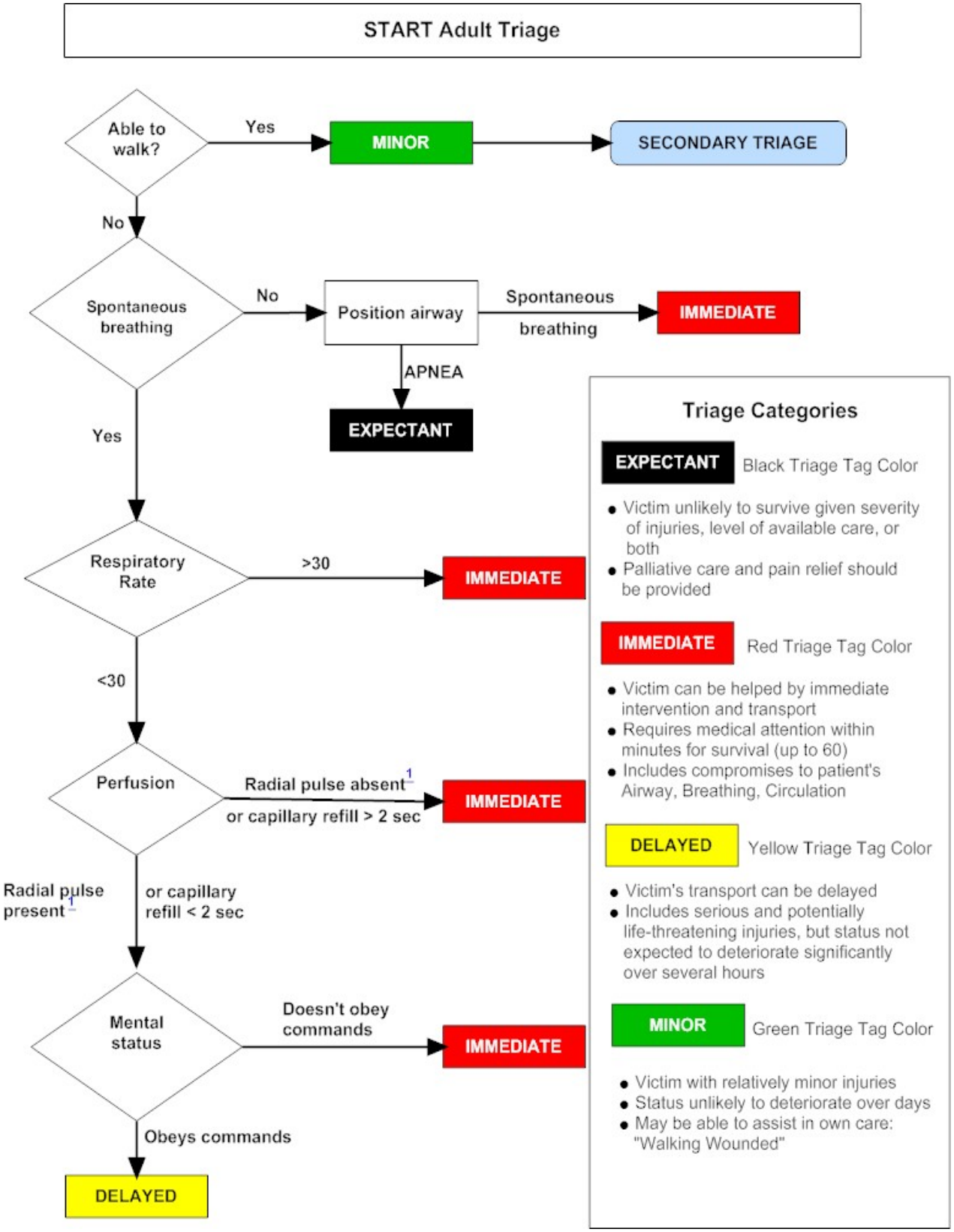
Triage Category	**Color**	**Description**
Immediate	Red	The victim has life-threatening injuries (airway, bleeding or shock) that demand immediate attention to save his or her life; rapid, lifesaving treatment is urgent. These victims are marked with a red tag.
Delayed	Yellow	Injuries do not jeopardize the victim's life. The victim may require professional medical care, but treatment can be delayed. These victims are marked with a yellow tag.
Minor	Green	Minor injuries and generally ambulatory. These victims are marked with a green tag.
Dead or Expectant	Black	No respiration after two attempts to open the airway. Because CPR is one-on-one care and is labor intensive, CPR is not performed when there are more victims than rescuers. These victims are marked with a black tag or labeled "DEAD."

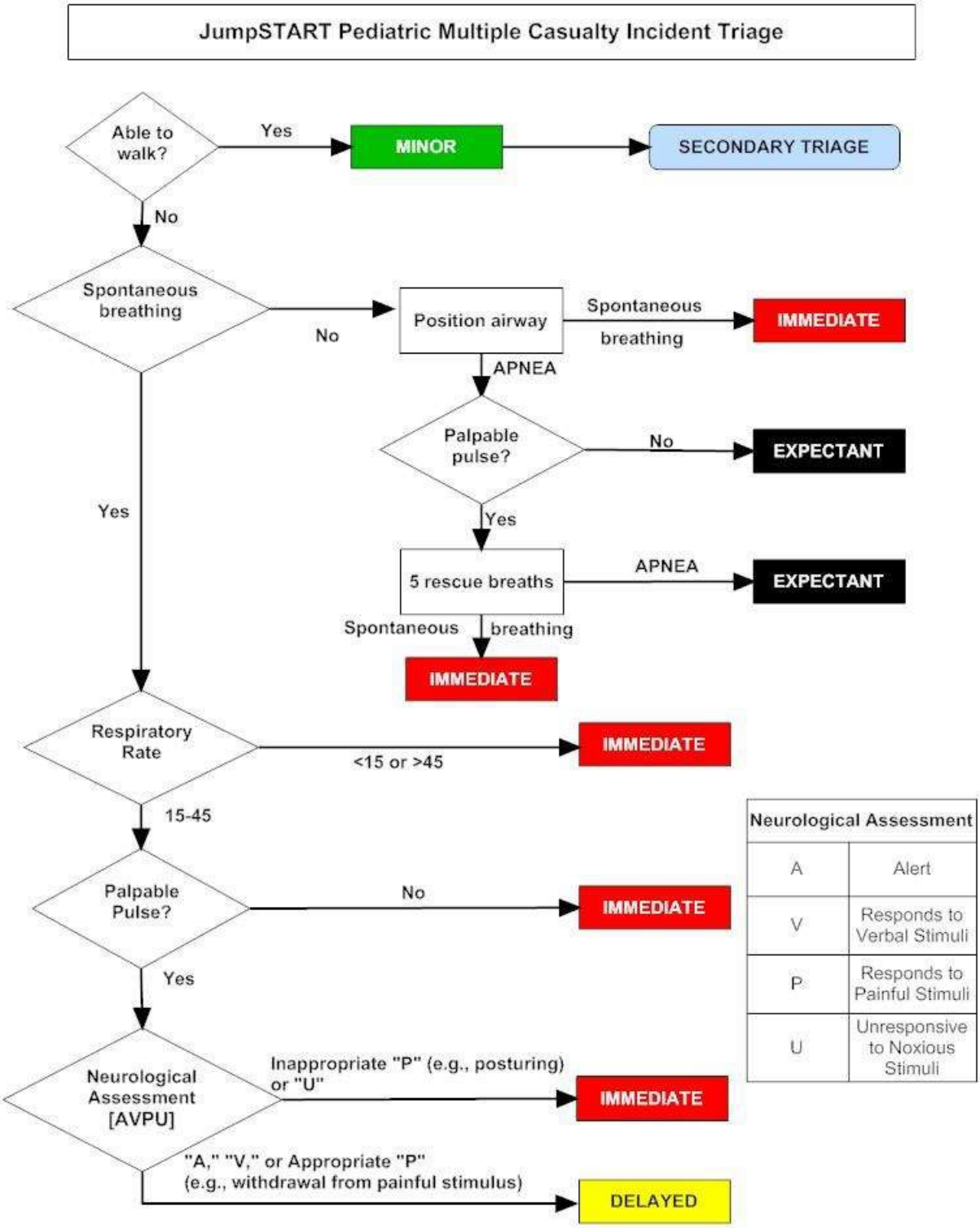
The triage process typically begins with voice triage, whereby the responder calls out to the casualties and asks that person who can walk should move to the sound of the voice and remain in a designated area. These patients are often referred to as the 'walking wounded' and are usually labeled "Green." They are either tagged with paper tags or with green triage tape. Ambulatory patients are sometimes asked to assist rescuers, when appropriate. Conversely, some walking wounded, such as patients with upper extremity tourniquets to control hemorrhage, will require prompt or emergent medical care. Do not assume all walking wounded will be tagged Green.

After the ambulatory patients are tagged, the rescuers begin evaluating the non-ambulatory patients for airway (breathing/respiration), bleeding (circulation/profusion) and mental status. In triage, airway obstruction, bleeding, and shock are the most significant concerns because without treatment they will lead to death.

The Department of Defense is often partnered with civilian medical operations as needed during the management of mass casualty events. The Department of Defense may coordinate with the Department of Health and Human Services, Federal Emergency Management Agency (FEMA), local Emergency Medical Services (EMS), and multijurisdictional public health responders in joint operations. Mass casualty triage can be initiated by military or civilian responders. In both cases general planning considerations are similar in nature. Rehearsing and practice are essential for effective management of mass casualty events.

The Simple Triage and Rapid Treatment (START) and Jump START (for pediatrics) mass casualty triage system will be utilized within U.S. Navy EMS.


START Adult Triage
Able to walk?
Yes
MINOR
SECONDARY TRIAGE
No
Spontaneous breathing
No
Position airway
Spontaneous breathing
IMMEDIATE
APNEA
EXPECTANT
Yes
Respiratory Rate
>30
IMMEDIATE
<30
Perfusion
Radial pulse absent[1]
or capillary refill > 2 sec
IMMEDIATE
Radial pulse present[1]
or capillary refill < 2 sec
Mental status
Doesn't obey commands
IMMEDIATE
Obeys commands
DELAYED
Triage Categories
EXPECTANT
Black Triage Tag Color
Victim unlikely to survive given severity of injuries, level of available care, or both
Palliative care and pain relief should be provided
IMMEDIATE
Red Triage Tag Color
Victim can be helped by immediate intervention and transport
Requires medical attention within minutes for survival (up to 60)
Includes compromises to patient's Airway, Breathing, Circulation
DELAYED
Yellow Triage Tag Color
Victim's transport can be delayed
Includes serious and potentially life-threatening injuries, but status not expected to deteriorate significantly over several hours
MINOR
Green Triage Tag Color
Victim with relatively minor injuries
Status unlikely to deteriorate over days
May be able to assist in own care: "Walking Wounded"


JumpSTART Pediatric Multiple Casualty Incident Triage
Able to walk?
Yes
MINOR
SECONDARY TRIAGE
No
Spontaneous breathing
No
Position airway
Spontaneous breathing
IMMEDIATE
APNEA
Palpable pulse?
No
EXPECTANT
Yes
5 rescue breaths
APNEA
EXPECTANT
Spontaneous breathing
IMMEDIATE
Yes
Respiratory Rate
<15 or >45
IMMEDIATE
15-45
Palpable Pulse?
No
IMMEDIATE
Yes
Neurological Assessment [AVPU]
Inappropriate "P" (e.g., posturing) or "U"
IMMEDIATE
"A," "V," or Appropriate "P" (e.g., withdrawal from painful stimulus)
DELAYED
Neurological Assessment
A
Alert
V
Responds to Verbal Stimuli
P
Responds to Painful Stimuli
U
Unresponsive to Noxious Stimuli

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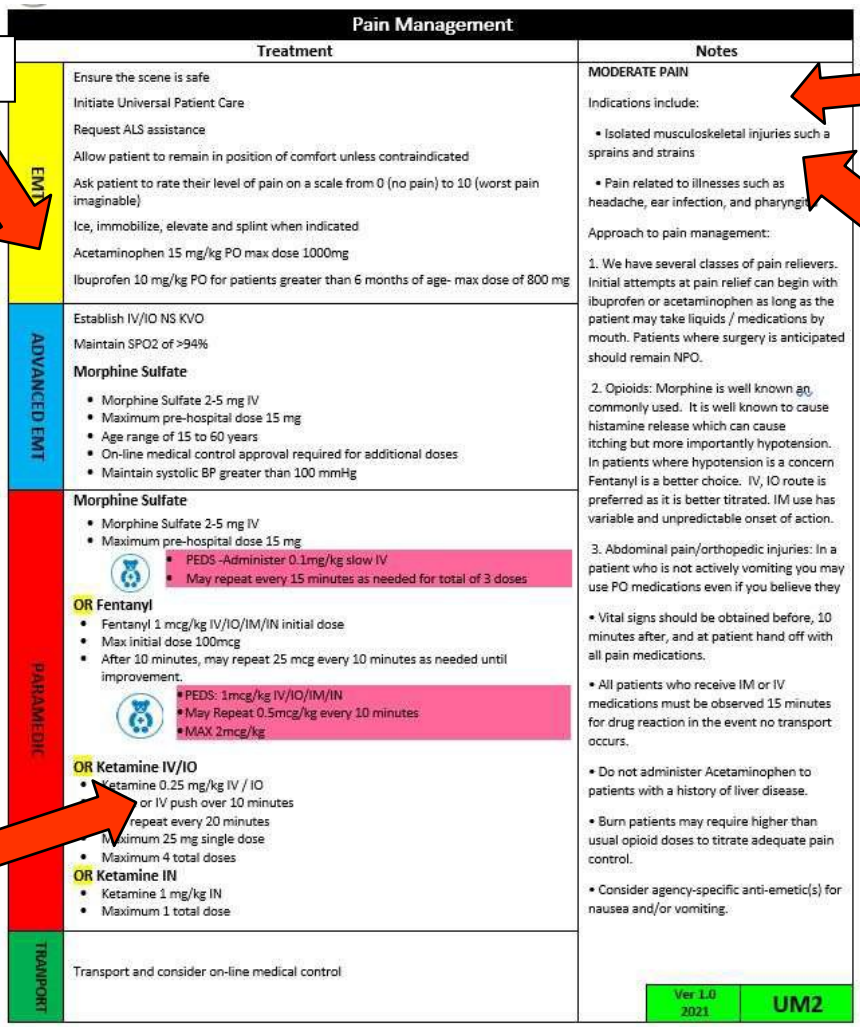
SECTION 3

Treatment Protocols

Section 3: Treatment Protocols

Written procedures for assessment, treatment, patient transportation, or patient transfer between hospitals. The EMS treatment protocols are implemented as standing orders.



Pain Management

	Treatment	Notes
EMT	Ensure the scene is safe Initiate Universal Patient Care Request ALS assistance Allow patient to remain in position of comfort unless contraindicated Ask patient to rate their level of pain on a scale from 0 (no pain) to 10 (worst pain imaginable) Ice, immobilize, elevate and splint when indicated Acetaminophen 15 mg/kg PO max dose 1000mg Ibuprofen 10 mg/kg PO for patients greater than 6 months of age- max dose of 800 mg	**MODERATE PAIN** Indications include: • Isolated musculoskeletal injuries such a sprains and strains • Pain related to illnesses such as headache, ear infection, and pharyngi Approach to pain management: 1. We have several classes of pain relievers. Initial attempts at pain relief can begin with ibuprofen or acetaminophen as long as the patient may take liquids / medications by mouth. Patients where surgery is anticipated should remain NPO. 2. Opioids: Morphine is well known an commonly used. It is well known to cause histamine release which can cause itching but more importantly hypotension. In patients where hypotension is a concern Fentanyl is a better choice. IV, IO route is preferred as it is better titrated. IM use has variable and unpredictable onset of action. 3. Abdominal pain/orthopedic injuries: In a patient who is not actively vomiting you may use PO medications even if you believe they • Vital signs should be obtained before, 10 minutes after, and at patient hand off with all pain medications. • All patients who receive IM or IV medications must be observed 15 minutes for drug reaction in the event no transport occurs. • Do not administer Acetaminophen to patients with a history of liver disease. • Burn patients may require higher than usual opioid doses to titrate adequate pain control. • Consider agency-specific anti-emetic(s) for nausea and/or vomiting.
ADVANCED EMT	Establish IV/IO NS KVO Maintain SPO2 of >94% **Morphine Sulfate** • Morphine Sulfate 2-5 mg IV • Maximum pre-hospital dose 15 mg • Age range of 15 to 60 years • On-line medical control approval required for additional doses • Maintain systolic BP greater than 100 mmHg	
PARAMEDIC	**Morphine Sulfate** • Morphine Sulfate 2-5 mg IV • Maximum pre-hospital dose 15 mg • PEDS -Administer 0.1mg/kg slow IV • May repeat every 15 minutes as needed for total of 3 doses **OR Fentanyl** • Fentanyl 1 mcg/kg IV/IO/IM/IN initial dose • Max initial dose 100mcg • After 10 minutes, may repeat 25 mcg every 10 minutes as needed until improvement. • PEDS: 1mcg/kg IV/IO/IM/IN • May Repeat 0.5mcg/kg every 10 minutes • MAX 2mcg/kg **OR Ketamine IV/IO** • Ketamine 0.25 mg/kg IV / IO • or IV push over 10 minutes • repeat every 20 minutes • Maximum 25 mg single dose • Maximum 4 total doses **OR Ketamine IN** • Ketamine 1 mg/kg IN • Maximum 1 total dose	
TRANSPORT	Transport and consider on-line medical control	Ver 1.0 2021 UM2

Provider level

Title

Added notes and information to aid you in medical treatment

Pediatric symbol and information or medication doses for pediatric patients highlighted in

Protocol number

Protocol version number and date placed in-service

Altered Mental Status

	Treatment	Notes
EMT	Initiate Universal Patient Care Request ALS assistance Maintain SpO_2 of ≥ 94% Check blood glucose level. If < 60 mg/dL, follow Diabetic Emergency Protocol If presents as hypotensive, follow Hypoperfusion/Shock Protocol If suspected overdose/toxic exposure, follow Poisoning Overdose Protocol If suspected hypo/hyperthermia, follow Hypothermia - Cold Exposure Protocol or Hyperthermia - Heat Related Emergencies Protocol If suspected CVA/Stroke, follow Suspected Stroke Protocol If suspected cardiac related illness, follow age-appropriate cardiac protocol If suspected fever/sepsis, follow Sepsis Protocol	**Patient Presentation:** The patient may exhibit confusion, changes in speech, focal motor or sensory deficits, unusual behavior, and unresponsiveness to verbal or painful stimulus. **NOTE:** Alcohol can cause altered mental status but is not commonly a cause of total unresponsiveness to pain. **Differential – AEIOU TIPS** • Abuse (alcohol, drugs), acidosis (DKA, lactate, respiratory), ammonia (liver disease), arrhythmia • Electrolytes (sodium, calcium), endocrine (thyroid, adrenal), encephalopathy • Infection, Intracranial injury • Overdose, oxygen, opiates • Uremia (renal or heart failure) • Trauma, temperature, tumor • Insulin (hypo or hyperglycemia) • Poisoning (carbon monoxide, vapors, ingestions) Stroke, seizures, shock, space occupying lesion (brain)
ADVANCED EMT	Establish IV/IO normal saline KVO, as necessary	
PARAMEDIC	Monitor EKG	
TRANSPORT	Transport and consider on-line medical control	

Pain Management

EMT

- Ensure the scene is safe
- Initiate Universal Patient Care
- Request ALS assistance
- Maintain SpO_2 of ≥ 94%
- Allow patient to remain in position of comfort unless contraindicated
- Ask patient to rate their level of pain on a scale from 0 (no pain) to 10 (worst pain imaginable) - Ice, immobilize, elevate and splint when indicated

Acetaminophen (Tylenol)

- 15 mg/kg PO max dose 1,000 mg (liquid dose for pediatrics)

ADVANCED EMT

Establish IV/IO normal saline KVO, as necessary

Morphine Sulfate

- Morphine Sulfate 2-5 mg IV
- May repeat every 10 minutes as needed for a total of 3 doses
- Maximum pre-hospital dose 15 mg
- Age range of 15 to 60 years
- On-line medical control approval required for additional doses
- Maintain systolic BP greater than 90 mmHg

PARAMEDIC

Ketorolac

- 15 mg IV/IO or 30 mg IM
- Maximum 1 dose

Morphine Sulfate

- Morphine Sulfate 2-5 mg IV
- May administer every 10 minutes
- Maximum pre-hospital dose 15 mg

- **PEDS -Administer 0.1 mg/kg slow IV**
- **May repeat every 15 minutes as needed for total of 3 doses**

OR Fentanyl

- Fentanyl 1 mcg/kg IV/IO/IM/IN initial dose
- Max initial dose 100 mcg
- After 10 minutes, may repeat 25 mcg every 10 minutes as needed until improvement.

- **PEDS: 1 mcg/kg IV/IO/IM/IN**
- **May Repeat 0.5 mcg/kg every 10 minutes**
- **MAX 2 mcg/kg**

OR Ketamine IV/IO

- Ketamine 0.25 mg/kg IV / IO
- Infuse or IV push over 10 minutes
- May repeat every 20 minutes
- Maximum 25 mg per dose for 4 total doses

OR Ketamine IN

- Ketamine 1 mg/kg IN divided equally in both nares (max 1 mL per nares)
- Maximum 1 total dose

TRANPORT

Transport and consider on-line medical control

Notes

MODERATE PAIN

Indications include:

1. Traumatic injuries
2. Pain related to illnesses (e.g. myocardialinfarction)

Approach to pain management:

3. There are several classes of pain relievers.Initial attempts at pain relief can begin with ibuprofen or acetaminophen as long as the patient may take liquids / medications by mouth. Patients where surgery is anticipated should remain NPO.
4. Opioids: Morphine is well known and commonly used. It is well known to causehistamine release which can cause itching but more importantly hypotension. Inpatients where hypotension is a concern Fentanyl is a better choice. IV/IO route is preferred as it is better titrated. IM use has variable and unpredictable onset of action.
5. Abdominal pain/orthopedic injuries: In a patient who is not actively vomiting you may use PO medications
6. Vital signs should be obtained before, 10 minutes after, and at patient hand off with all pain medications.
7. A pain scale should be performed before and after medication administration
8. All patients who receive IM or IV medications must be observed > 15 min for drug reactions in the event of no transport
9. Do not administer Acetaminophen topatients with a history of liver disease.
10. Do not administer ketorolac to patientswith severe renal disease.
11. Burn patients may require higher than usual opioid doses for adequate pain control
12. Consider anti-emetic(s) for nausea and/or vomiting.

Seizures

Treatment

EMT

Initiate Universal Patient Care

Request ALS assistance

Maintain SpO_2 of ≥ 94%

If patient is still seizing do NOT restrain

Consider cause of seizure activity – epilepsy, trauma, pregnancy, hypoglycemia, etc.

If pregnant refer to the Obstetrical Protocol

Obtain blood glucose level. If < 60 mg/dL, refer to Diabetic Emergency Protocol

Protect patient from further injury

When seizure activity has stopped identify and treat injuries

- **Check patient's temperature. If febrile, consider febrile seizure and treat with acetaminophen, if not contraindicated:**
- **Acetaminophen 15 mg/kg PO**

ADVANCED EMT

Establish IV/IO normal saline KVO, as necessary

Manage the airway as needed per the Airway Management/Failed Airway Protocol

PARAMEDIC

For active seizures / status epilepticus

Lorazepam (Ativan) IV/IM/IO

- Lorazepam 4 mg
- May repeat 2 mg dose every 5 minutes
- Maximum total pre-hospital dose is 10 mg

OR Midazolam (Versed) IV/IM

- Midazolam 5 mg
- May repeat every 3- 5 minutes prn
- Max pre-hospital dose 10 mg

- **Midazolam 0.1 mg/kg IV/IM**
- **May repeat 0.1 mg/kg**
- **Max single dose 5 mg**

If unable to obtain IV access administer:

Midazolam (Versed) IN

- Midazolam 10 mg
- Use 5 mg/ml concentration and administer half the dose in each nostril using a mucosal atomizer device
- Maintain systolic greater than 90 mmHg

Midazolam 0.2 mg/kg IN

TRANSPORT

Transport and consider on-line medical control

Notes

Patient Presentation

The patient may present with tonic/clonic activity or altered level of consciousness. Seizures may also be "focal" and only affect a single body part (e.g. repetitive eye movement, hand shaking, or staring). Seizures are a neuromuscular response to an underlying cause such as: epilepsy, hypoxia, hypoglycemia, hypoperfusion, head injury, stroke, and alcohol or drug abuse. Consider recent history of possible illness, infection, fever, or stiff neck.

Differential

- CNS (Head) trauma
- Tumor
- Metabolic, Hepatic, or Renal failure
- Hypoxia, hypoxic brain injury
- Electrolyte abnormality (Na, Ca, Mg)
- Drugs, Medications, Non-compliance
- Infection / Fever
- Alcohol withdrawal
- Eclampsia
- Stroke
- Hyperthermia
- Hypoglycemia

Diabetic Emergency

Treatment

EMT

Initiate Universal Patient Care

Request ALS assistance

Maintain SpO_2 of ≥ 94%

Obtain blood glucose level (BGL)

HYPOGLYCEMIA

(BGL less than 60 mg/dL)

Oral Glucose
Adult/Pediatric

- 10-15 grams
- Ensure patient can swallow and is able to protect airway
- Administer between cheek and gum
- Re-administer after glucose has dissolved, until full dose has been delivered
- Remeasure blood glucose level in 5 minutes increments

ADVANCED EMT

Establish IV/IO normal saline KVO, as necessary

HYPOGLYCEMIA (BGL less than 60 mg/dL)

Dextrose 50%

- 12.5-25 grams IV/IO accompanied by 50-100 mL Normal Saline if administered IV
- Repeat blood glucose check in 5 minutes. Repeat dosing if blood glucose < 60 mg/dL and continued altered level of consciousness (consider alternative causes of AMS if BGL > 80 mg/dL and persistent symptoms)

- **Dextrose 10% IV/IO**
- **0.5 g/kg D10**

Glucagon

- 1 mg IM (if unable to establish IV access)

- **If < 20 kg – 0.5 mg IM**
- **If > 20 kg - 1 mg IM**

HYPERGLYCEMIA (BGL greater than 250 mg/dL)

- Administer 20 mL/kg NS bolus IV/IO
- **10 mL/kg NS bolus IV/IO, max dose 500 mL**

PARAMEDIC

Monitor EKG

TRANSPORT

Transport and consider on-line medical control

Notes

Hypoglycemia with Insulin Agents:

- Many forms of insulin now exist. Longer acting insulin places the patient at risk of recurrent hypoglycemia even after a normal blood glucose is established.
- Not all insulin has prolonged action so contact medical control for advice.
- All patients should be offered and encouraged to accept transport. Criteria that should be met for patients to be considered for refusing transport include: known history of diabetes mellitus on insulin or metformin, pre-treatment hypoglycemia, post-treatment blood sugar > 80 mg/dL, prompt return of normal mental status (< 10 min), no seizure activity, absence of other active medical conditions (e.g. chest pain, intoxication), able to take PO, no social concerns / difficulty contacting EMS if needed, proper decision making capacity determined, and clear cause of hypoglycemia determine (e.g. missed meal, excess insulin administration)
- Patients who meet criteria to refuse care should be instructed to contact their physician immediately and consume a meal.

Diabetic Emergency

Treatment		Notes	
		Effective Date 1 Jan 2022	UM4

Suspected Stroke

Treatment	Notes

EMT

Initiate Universal Patient Care

Request ALS assistance

Determine and document time of signs/symptoms onset = last known normal

Maintain SpO_2 of ≥ 94%

Obtain blood glucose level (BGL). If blood glucose < 60 mg/dL, follow Diabetic Emergency Protocol

Complete **Cincinnati Pre-hospital Stroke Scale**

- If positive, perform **Los Angeles Motor Scale (LAMS)**
- If LAMS ≥ 4, consider transport directly to a thrombectomy capable facility if transport time is < 30 minutes and LKW is < 23 hours

Call receiving hospital to notify of positive stroke scale and document time of notification

Obtain 12-Lead EKG and transmit to receiving hospital

ADVANCED EMT

Establish IV normal saline KVO, as necessary

Manage the airway as needed per the Airway Management/Failed Airway Protocol

PARAMEDIC

Complete secondary Stroke assessment based on receiving hospital / Stroke center

Notify receiving hospital of findings for proper hospital activations

TRANSPORT

Contact on-line medical control.

Transport and contact a Stroke Center, if available

Cincinnati Pre-Hospital Stroke Scale

Facial Droop (Have patient show teeth or smile)

- Normal – Both sides of the face move equally well
- Abnormal – One side does not move as well as the other

Arm Drift (Patient closes eyes and holds both arms out for 10 seconds)

- Normal – Both arms move the same or do not move at all
- Abnormal – One arm does not move or one arm drifts down

Speech ("You can't teach an old dog new tricks")

- Normal – Patient uses correct words with no slurring
- Abnormal – Slurs words (dysarthria), uses inappropriate words or is unable to speak (aphasia)
- Facial Droop (show teeth or smile)
- Visual Fields (four quadrants)
- Horizontal Gaze (side to side)
- Motor—Arm Drift (close eyes and hold out both arms)
- Motor—Leg Drift (open eyes and lift each leg separately
- Sensory—Arm and Leg (close eyes and touch, pinch)
- Coordination—Arm and Leg (finger to nose, heel to shin)

Subarachnoid Hemorrhage?	Level of Consciousness (AVPU)
	Neck Stiffness (cannot touch chin to chest)

Any abnormal finding on examination?
Deficit not likely due to head trauma?
Blood Glucose >80?
Last Time Seen Normal? < 3 > 6.5 hours? – obtain accurate time

Los Angeles Motor Scale

Facial Droop – absent / present (+1)
Arm Drift – absent / drifts down (+1) / falls rapidly (+2)
Grip strength – normal / weak (+1) / absent (+2)

Score ≥ 4 is 89% specific for predicting large vessel occlusion (LVO)

Pediatrics

- **Strokes do occur in children; they are slightly more common in ages < 2.**
- **Newborn and infant symptoms consist of seizures, extreme sleepiness, and using only one side of the body.**
- **Children and teenagers' symptoms may consist of severe headaches, vomiting, sleepiness, dizziness, and/or loss of balance or coordination.**

Abdominal Pain/Nausea/Vomiting

	Treatment	Notes
EMT	Initiate Universal Patient Care Request ALS assistance Maintain SpO_2 of ≥ 94% Give nothing by mouth (NPO) Anticipate vomiting For patients with nausea: • Provide the patient an isopropyl alcohol wipe and instruct them to inhale as needed until nausea subsides • May repeat for a total of three wipes every 15 minutes as needed OR **Ondansetron (Zofran) ODT** • NPO if suspected vomiting • 4 mg x 1, may repeat dose after 15 minutes for persistent nausea • Additional doses require on-line medical control approval Place patient in a position of comfort	**Patient Presentation:** The patient may present with pain (generalized or localized), nausea, vomiting, diarrhea, blood in emesis/stool, poor signs of skin turgor, abdominal tenderness, distension, and/or guarding upon palpation. For suspected intra-abdominal catastrophe or suspected aortic aneurysm, transport to a facility that has surgical resources immediately available. Patients with an acute abdomen can deteriorate rapidly; continuous reassessment and management is important.
ADVANC ED EMT	Establish IV/IO normal saline KVO, as necessary Consider administration of: **Ondansetron (Zofran) 4 mg IV** • Administer IV route slowly (over 2 minutes) • May repeat dose 1 time after 15 minutes for persistent nausea  **• Pediatric (6 months – 14 years old): 0.15 mg/kg IV/PO (maximum dose of 4 mg)** **• Administer IV route slowly (over 2 minutes)** **• May repeat dose 1 time after 15 minutes for persistent nausea** If patient displays signs and symptoms of shock administer: **Normal Saline** • Administer 20 mL/kg bolus • Titrate to a systolic BP of 90 mmHg (adults) or age-appropriate systolic blood pressure (pediatrics) • Particularly in pediatrics, monitor the mental status, capillary refill, and pulse rate to assess response to IV fluid challenge	
PARAMEDIC	Monitor EKG For pain management, refer to Pain Management Protocol	
TRANSPORT	Transport and consider on-line medical control	

Behavioral Emergencies

	Treatment	Notes
EMT	Initiate Universal Patient Care Request ALS assistance Ensure the scene is safe, law enforcement should be available on scene prior to approaching the patient Protect the patient from harming themselves or others During initial assessment and/or treatment rule out the following: • Hypoglycemia • Hyperglycemia • Drug Overdose • Intoxication • Hypoxia • Head Trauma Implement the **SAFER** model Patient refusals cannot be accepted for patients: • Who lacks capacity • Have an organic cause of their symptoms (e.g., stroke, drug abuse) • Have evidence of active suicidal or homicidal behavior • Without prior history of psychiatric disease • Without social support Consider the use of restraints ONLY for patients who are uncooperative, unable to refuse transport but will not go willingly, or present with severe agitation • Implement the least restrictive method of restraint available that protects the EMS crew and patient • Ensure adequate personnel are present to reduce risk to providers and patient • Protect the exit and maintain a safe distance from the patient • EMS and law enforcement must cooperate and coordinate in the initial restraint of a patient • Hobbling, hog-tying, patients in prone position with their hands and feet behind their back, sandwiching between piece of equipment, or placing patients in any position that restricts their neck is strictly forbidden • Patients who are restrained must have vital signs, assessment of the airway, breathing, circulation, and neurovascular status of the extremities documented at least every 10 minutes.	**SAFER model** **S**tabilize the situation by containing and lowering the stimuli **A**ssess and acknowledge the crisis **F**acilitate the identification and activation of resources (chaplain, family, friends, or police) **E**ncourage patient to use resources and take actions in his/her best interest **R**ecovery or referral – leave patient in care of responsible person or professional, or transport to appropriate facility **EXCITED DELIRIUM** • Characterized by tachycardia, hypertension, hyperthermia, dilated pupils, skin changes (may be dry or wet), abnormal behavior, incoherent speech, and aggressive behavior • Usually associated with the ingestion of a stimulant (e.g., cocaine, cathinones, amphetamines) or hallucinogens such as ecstasy or MDMA • Patients are in a state of catecholamine overload and can precipitously go into cardiovascular collapse and cardiac arrest, especially after a prolonged period of struggle or aggression • The goal of medication administration is to abort the catecholamine surge before the patient's cardiovascular system collapses General communications techniques • Ask Open-ended questions (questions that cannot be answered with a yes/no) • "Tell me how we can help you?" "What caused you to call 911 today?" • Active listening (stay engaged, be able to summarize patient's story, use your body language to convey listening) • Eye contact, nodding your head, periodically repeating back part of patient's story
ADVANCED EMT	Establish IV/IO normal saline KVO, as necessary	

Behavioral Emergencies

	Treatment	Notes
PARAMEDIC	Monitor EKG **CHEMICAL RESTRAINT** For physically restrained patients who continue to resist or struggle, consider use of (1) of the following sedation medications for chemical sedation to facilitate transport: **Midazolam (Versed) IV/IO/IM/IN** • Midazolam 5 mg • Max dose 10 mg • IV slow push over 2 minutes • Administer ½ dose for patients > age 65 years • Maintain systolic greater than 100 mmHg  • **Pediatrics: 0.1 mg/kg IV IM OR 0.3 mg/kg IN** • **Max dose 5 mg** **OR Haloperidol IV/IM** • Haloperidol 5mg IV or 10mg IM • If the patient develops dystonia or sudden jerking movements, administer Diphenhydramine 25 mg IV or 50 mg IM  • **Pediatrics (age 5 - 14 years)** • **0.05 mg/kg IM (max dose 2.5 mg)** **OR Ketamine IM – Administered for excited delirium ONLY** • INDICATION – situation where you fear for the safety of yourself and others, where the patient cannot be safely calmed, physically restrained, or sedated by other means • Ketamine 4 mg/kg IM (max dose of 400 mg)  • **Pediatrics (age > 13 years): 4mg/kg IM (max dose 400 mg)** • A pulse oximeter and continuous $EtCO_2$ must be applied • Be prepared to support the patient's airway per the Airway Management Protocol • Medical control must be contacted to approve ANY additional doses of sedation medications once ketamine has been administered	• Encouraging (remain positive, convey interest in patient's crisis) • "Tell me more about that…" • Clarifying questions (ask patient to rephrase or repeat if you don't understand) • "I'm not sure I understand, can you…?" • Emotional labeling (naming emotions patient is demonstrating, validating emotions • "You look upset." "You seem angry." • Conversational pause (okay to allow a period of silence for patient to processinformation)
TRANSPORT	Transport and consider on-line medical control	

Renal Failure/Dialysis

	Treatment	Notes
EMT	Initiate Universal Patient Care Request ALS assistance Maintain SpO_2 of ≥ 94% Place patient in a position of comfort If abnormal heart rhythm, respiratory distress, or chest pain, obtain 12-lead EKG and transmit to receiving hospital **FLUID OVERLOAD** Initiate CPAP/BiPAP to patient acceptance rate and within manufacturer guidelines of device **UNCONTROLLED BLEEDING** • Apply firm pressure to bleeding site • Apply pressure dressing if bleeding controlled after direct pressure • If bleeding does not stop, refer to Hypoperfusion-Shock Protocol	**NOTE:** Calcium (Chloride and Gluconate) may precipitate when mixed with sodium bicarbonate. Flush IV line thoroughly with normal saline. **Key questions to ask dialysis patients**: • What is your dialysis schedule? (e.g. M/W/F, T/R/S, etc.) • Were you able to make your last appointment? If not, why? • At your last appointment, how many liters of fluid were removed? Is this more or less than is normally removed?
ADVANCED EMT	Establish IV/IO normal saline KVO in arm that does not have graft/AV fistula, if necessary	
PARAMEDIC	Monitor EKG Treat patient according to one of the following presentations: **SYMPTOMATIC PATIENT WITH SUSPECTED HYPERKALEMIA** • Findings may include: wide QRS complex (usually very wide), peaked T-waves, loss of P waves, irregular bradycardia or AV blocks • Expedite transport to the closest MTF with renal dialysis capability **Calcium Gluconate IV/IO** • 1 g over 2-3 minutes • Do not administer through the same line concurrently with sodium bicarbonate **Sodium Bicarbonate IV** • 50 mEq over 5 minutes **RESPIRATORY DISTRESS** Manage the airway as needed per the Airway Management/Failed Airway Protocol	
TRANSPORT	Transport and consider on-line medical control	

Airway Management/Failed Airway

	Treatment		Notes
EMT	Initiate Universal Patient Care Request ALS assistance Maintain SpO_2 of ≥ 94%. Monitor pulse oximetry Establish adequate airway patency: • If patient awake but choking due to suspected foreign body, reassure, encourage coughing, perform abdominal thrusts (chest thrusts in obese or pregnant patients) Maintain airway (head tilt chin lift or modified jaw thrust) Suction upper airway as needed Look in mouth clear any foreign objects visualized For conscious patients who can follow commands, consider initiating NIPPV in patients with a history of COPD, asthma, CHF, pneumonia, or near-drowning • Initiate NIPPV to patient acceptance rate and within manufacturer guidelinesof device If patient is unresponsive: • Verify no visible foreign objects are obstructing the airway • Place oral or nasal airway • Ventilate the patient with a bag-valve-mask and oxygen at a rate of 10 breaths per minute		Unable to ventilate or oxygenate consider the following and address appropriately: • **D**isplacement • **O**bstruction • **P**neumothorax • **E**quipment Failure Gastric tube placement should be considered in all intubated patients if available or time allows. Ventilation rate: • 30 for Neonates • 25 for Toddlers • 20 for School Age • Adolescents the normal adult rate of 10 per minute
A-EMT	Establish IV/IO normal saline KVO, as necessary Monitor continuous waveform $EtCO_2$ to goal of 35-45 mmHg For unstable airways not controlled with BLS techniques: • Place a supraglottic airway (e.g., King LT, i-Gel, LMA Supreme)		Maintain an $EtCO_2$ between 35 and 45 and avoid hyperventilation
PARAMEDIC	**CARDIAC ARREST / APNEIC** • Place an endotracheal tube (oral route preferred to nasal) or a supraglottic airway • Utilize a gum-elastic bougie and video laryngoscope on first attempt, if available • Maximum 2 attempts for endotracheal intubation • If unsuccessful in placing an endotracheal tube, immediately place a supraglottic airway • After securing the airway, place a NG/OG tube **FAILED AIRWAY** If unable to place an endotracheal tube or supraglottic airway and unable to ventilate with a Bag-Valve-Mask, perform percutaneous cricothyrotomy **TENSION PNEUMOTHORAX** Consider needle chest decompression per Shock / Hypoperfusion protocol	***For intubated patients who are difficult to ventilate due to inadequate sedation:*** **Midazolam (Versed)** • Midazolam 5 mg IV/IO • Administer IV/IO routes slowly (over 2 minutes) • Systolic BP must be greater than 100 mmHg • May repeat 2.5 mg if resistance continues every 5 minutes • Max prehospital dose: 10 mg IV/IO*  **• Midazolam 0.1 mg/kg IV/IO over 2 minutes, max dose 2.5 mg.** **• Repeat every 5 to 10 min. Maximum dose 5 mg*** *Contact medical control for authorization of additional sedation	Supraglottic / extra-glottic airway devices are preferred in most out-of-hospital cardiac arrest scenarios as success rates are higher and speed of placement allows the paramedic to assume other patient care responsibilities (e.g. IO / IV access, medication administration, scene management). If sufficient personnel are available, endotracheal intubation can be considered if it does not interfere with pit crew CPR concepts and does not prevent the performance of high quality chest compressions

Airway Management/Failed Airway

	Treatment	Notes
TRANSPORT	Transport and consider on-line medical control	Effective Date 1 May 2022 AR1

Allergic Reaction/Anaphylaxis

Treatment

EMT

Initiate Universal Patient Care
Request ALS assistance
Maintain SpO_2 of ≥ 94%
Remove from environment in which allergic reaction began
Monitor airway and localized swelling if present

FOR WHEEZING / DIFFICULTY BREATHING
Ipratropium Bromide / Albuterol Sulfate (DuoNeb)

- Ipratropium bromide 0.5 mg / albuterol sulfate 2.5 mg in 3 ml NS via Nebulizer
- If may administer two additional albuterol only (2.5 mg) doses at 5-minute intervals

- **Age < 1 year - albuterol 1.25 mg + 0.25 mg ipratropium bromide via nebulizer**
- **Age > 1 year - follow adult dosing**

OR

Albuterol - Metered Dose Inhaler (MDI) – *for patient's a self-prescribed inhaler on hand or when infection control precautions limit the use of nebulized medications*

- Administer two puffs (90 mcg each) via metered dose inhaler
- May repeat dosage of two puffs (90 mcg each) two times in ten minutes for a total of three doses

SEVERE OR MILD/MODERATE SYMPTOMS WITH HISTORY OF ANAPHYLAXIS
Epinephrine Auto-Injector - one dose (0.3 mg) IM into the outer mid-thigh

- **Weight < 30kg - administer one dose (0.15 mg) IM into the outer mid-thigh**
- **Weight > 30kg - administer one dose (0.3 mg) IM into the outer mid-thigh**

EMT

Establish IV/IO normal saline KVO, as necessary

- Administer 20 mL/kg bolus, titrate to a systolic BP of 90 mmHg

FOR ITCHING / HIVES

Diphenhydramine (Benadryl) 25-50 mg slow IV/IM

- **Pediatric dose: 1 mg/kg slow IV/IM to max dose of 50 mg**

SEVERE OR MILD/MODERATE SYMPTOMS WITH HISTORY OF ANAPHYLAXIS
Epinephrine 1 mg/mL (1 mg/mL) 0.3 (auto-injector) or 0.5mg IM (manual syringe)

- May repeat every 5 minutes up to 3 doses

- **Weight < 30kg - administer one dose (0.15 mg) IM into the outer mid-thigh**
- **Weight > 30kg - follow adult dosing**
- **May repeat every 5 minutes for up to 3 doses**

PARAMEDIC

Monitor EKG

Manage the airway as needed per the Airway Management/Failed Airway Protocol

MODERATE / SEVERE SYMPTOMS
Methylprednisolone (Solu-Medrol) 125 mg IV/IO

- **Pediatric does: 1 mg/kg IV/IO to max dose 125 mg**

SEVERE OR MILD/MODERATE SYMPTOMS WITH HISTORY OF ANAPHYLAXIS
Epinephrine 1 mg/10 mL (0.1 mg/mL) IV/IO - 0.1 mg over 1-2 minutes, may repeat x 1 in 3 min

IV epinephrine is indicated only for patients with pending cardiovascular collapse or refractory shock unresponsive to IM epinephrine

Notes

Patient Presentation: The patient should have exposure to a known or likely allergen (food, insect sting, chemical, medication, etc.) and may present in one of the three categories:

MILD: Local swelling and itching at the reaction site.

MODERATE: Hives and mild wheezing.

SEVERE/ANAPHYLAXIS: Diffuse wheezing, swollen lips tongue or throat, dyspnea, hypotension, tachycardia, abnormal skin color, generalized hives, low oxygen saturation, stridor, and/or loss of peripheral pulses.

The decision to administer epinephrine should be based on the clinical history (e.g., exposure to an allergen known to previously cause anaphylaxis) and the rapidity or extent of onset of symptoms. Do not wait for severe symptoms to develop to administer epinephrine in these patients.

Utilize the weight-based medication charts to confirm dosage calculations

Allergic Reaction/Anaphylaxis

	Treatment	Notes
TRANSPORT	Transport and consider on-line medical control	Effective Date 1 May 2022 AR2

Asthma/Chronic Obstructive Pulmonary Disease

	Treatment	Notes
EMT	Initiate Universal Patient Care Request ALS assistance Initiate Universal Patient Care Calm and reassure the patient Provide supplemental oxygen in order to maintain SpO_2 of ≥ 94% **FOR PATIENTS WITH MILD SYMPTOMS**: **Albuterol Sulfate - Metered Dose Inhaler (MDI)** • Administer two puffs (90 mcg each) via metered dose inhaler • May repeat dosage of two puffs (90 mcg each) every five minutes for 3 total doses **FOR PATIENTS WITH MODERATE / SEVERE SYMPTOMS:** **Ipratropium Bromide/Albuterol Sulfate (DuoNeb) via Nebulizer** • ipratropium bromide 0.5 mg/albuterol sulfate 5 mg in 3 ml normal saline • Administer one DuoNeb by nebulized aerosol • If no improvement (wheezing persists) after the first dose may administer two additional Nebulizer treatments (total of 3) at 5-minute intervals **FOR PATIENTS WITH SEVERE DISTERSS / DIFFICULTY SPEAKING:** Consider initiating NIPPV (CPAP or BiPAP) in patients with a history of COPD, asthma, CHF, pneumonia, or near-drowning • Initiate CPAP/BiPAP to patient acceptance rate and within manufacturer guidelines of device Suction the nose and/or mouth if excessive secretions are present	Patients with a known history of asthma or COPD (chronic bronchitis or emphysema) and symptoms consistent with an acute exacerbation can be treated presumptively. Ensure there are no other possible etiologies – e.g. pneumonia, anaphylaxis, and pneumothorax – that could be causing the patient's respiratory distress. Clues include: • Trauma • Fever • Purulent sputum • Urticaria • Angioedema • Pleuritic chest pain • Upper airway obstruction SEVERE asthma exacerbations • RR > 30 breaths / min • HR > 120 bpm • Accessory muscle use • Diaphoresis • Inability to speak full sentences • Orthopnea SEVERE COPD exacerbations • RR > 30 breaths / min • Altered mental status • High flow oxygen to maintain SpO_2 88-92% • Elevated $EtCO_2$ (> 55) • Diminished or absent airflow
ADVANCED EMT	Establish IV/IO normal saline KVO, as necessary	
PARAMEDIC	**FOR MODERATE/SEVERE EXACERBATIONS** **Methylprednisolone (Solu-Medrol)** • 125 mg IV/IM **FOR PATIENTS REFRACTORY TO NEBULIZER / IMPENDING RESPIRATORY FAILURE** **Magnesium Sulfate** • 50 mg/kg IV, maximum dose of 2 g • Administer over 10-15 minutes **Epinephrine 1 mg/mL (1 mg/mL)** • 0.01mg/kg IM to maximum dose of 0.5 mg Manage the airway as needed per the Airway Management/Failed Airway Protocol	
TRANSPORT	Transport and consider on-line medical control	

Congestive Heart Failure/Pulmonary Edema

	Treatment	Notes
EMT	Initiate Universal Patient Care Request ALS assistance Calm and reassure the patient Place the patient in a high-fowler's position Provide supplemental oxygen in order to maintain SpO_2 of ≥ 94% Obtain 12-Lead EKG and transmit to receiving hospital **FOR PATIENTS WITH SEVERE DISTERSS / DIFFICULTY SPEAKING:** Consider initiating NIPPV (CPAP or BiPAP) in patients with a history of CHF • Initiate CPAP/BiPAP to patient acceptance rate and within manufacturer guidelines of device Suction the nose and/or mouth if excessive secretions are present	Patient Presentation: The patient may present with shortness of breath and a history of CHF; physical exam may yield jugular vein distension (JVD) and possible atrial fibrillation. Patient's past medical history typically includes cardiac disease (coronary artery disease or MI) and/or hypertension. In addition to the above, dyspnea, rales, chest pain, diaphoresis, edema and anxiety may also be present.
ADVANCED EMT	Establish IV/IO normal saline KVO, as necessary Monitor $EtCO_2$ If systolic BP is greater than 90 mmHg, administer: **Nitroglycerin** • 0.4 mg SL (tablet or spray) • May repeat dose twice every 3-5 minutes as long as systolic BP is greater than 90mmHg. • Maximum three doses or 1.2 mg total	
PARAMEDIC	Manage the airway as needed per the Airway Management/Failed Airway Protocol If severe respiratory failure persists or patient does not tolerate CPAP consider intubation	
TRANSPORT	Transport and consider on-line medical control	

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

	Treatment	Notes
EMT	Initiate Universal Patient Care Request ALS assistance Place patient in a position of comfort Withhold supplemental oxygen unless the patient's SpO_2 is < 90% or severe dyspnea / respiratory distress is present Obtain 12-lead EKG in 10 minutes of patient contact if the patient presents with symptoms suggestive of acute coronary syndrome (see Notes): If appropriate equipment is available, transmit 12-lead EKG within 10 minutes of acquisition for interpretation by a physician For chest pain discomfort thought to be cardiac in nature administer, assist the patient with administration of their own prescribed: **Aspirin** 324 mg or 325 mg chewed **Patient's Nitroglycerin** 0.4 mg SL (tablet or spray) • Systolic BP must be greater than 90 mmHg • May cause hypotension Assess and treat for shock if indicated Constantly monitor airway and reassess vital signs every 5 minutes	Patient Presentation Patient may present with or without typical chest pain/discomfort that may or may not radiate to the arm, shoulders, jaw, or back. Acute Coronary Syndrome (ACS) is defined as patients presenting with angina or angina equivalents due to poor coronary artery perfusion. In persons > 35 years of age, an EKG should be obtained within 10 minutes if symptoms are suggestive of ACS: • Chest pain or discomfort • Chest pressure • Non-traumatic shoulder or neck pain • Heartburn or epigastric / upper abdominal pain • Tachycardia or bradycardia • Syncope • Severe weakness > 45 years of age • New onset stroke symptoms • Difficulty breathing Persons with ACS risk factors (Diabetes mellitus, history of CAD, family history of CAD, severe obesity, and cocaine use) with the above symptoms should also have an EKG performed within 10 minutes of patient contact. Administer nitrates with extreme caution, if at all, to patients with inferior-wall STEMI or suspected right ventricular (RV) involvement • ST elevations in inferior leads, lead III elevations greater than lead II • ST elevation in V1 ± ST depression in V2 • Confirmation with ST elevation in right sided leads V3R – V6R
ADVANCED EMT	Establish IV/IO NS KVO **Nitroglycerin** 0.4 mg SL (tablet or spray) • Systolic BP must be greater than 90 mmHg • May repeat twice at 3-5 minute increments • Maximum three doses or 1.2 mg total (patient administered or EMT assisted) For refractory pain, consider: **Morphine Sulfate** • Morphine Sulfate 2-5 mg IV • May administer every 10 minutes • Maximum pre-hospital dose 15 mg	
PARAMEDIC	Interpret 12-lead EKG, transmit, and Activate STEMI protocol if appropriate Manage the airway as needed per the Airway Management/Failed Airway Protocol	
TRANSPORT	Activate hospital-based STEMI system of care Transport and consider on-line medical control	

Bradycardia

Treatment

EMT

Initiate Universal Patient Care

Maintain Airway as necessary

Provide supplemental oxygen in order to maintain SpO_2 of ≥ 94%

Request ALS assistance

Obtain a 12-lead EKG and transmit to receiving hospital

ADVANCED EMT

Establish IV/IO normal saline KVO, if necessary

Normal Saline Fluid Bolus 20 mL/kg

Manage the airway as needed per the Airway Management/Failed Airway Protocol

PARAMEDIC

SYMPTOMATIC BRADYCARDIA

Atropine IV/IO

- Atropine 0.5 mg
- Repeat every 3-5 min as needed or until maximum dose of 3 mg.
- If rhythm refractory to Atropine, initiate transcutaneous pacing

UNSTABLE BRADYCARDIA

(Systolic BP less than 90 mmHg, chest pain, dyspnea, altered mental status or syncope)

Transcutaneous Pacing Procedure

Transcutaneous pacing should not be delayed if AV 2° Type II or 3° block is identified

If capture occurs and systolic BP is greater than 90 mmHg

For persistent hypotension after initiation of pacing, consider:

Epinephrine drip

- Initiate at 10 mcg/min IV/IO
- Titrate to SBP > 90 mmHg or MAP > 65 mmHg
- Max dose 30 mcg/min
- See Epinephrine Drip Chart (M-EP4) for drip calculation

Consider Midazolam for discomfort related to pacing

Do not delay pacing to administer analgesia in an unstable patient

Midazolam (Versed) 5 mg IV/IM/IO/IN

May repeat 2.5 mg every 5 to 10 minutes

Maximum total dose is 10 mg

Additional doses require on-line medical control approval

* Decrease initial dose in half for patients > 65 years

TRANSPORT

Transport and consider on-line medical control

Notes

Transcutaneous Pacing Procedure (TCP)

- Utilize TCP early if no response to Atropine. If time allows transport to specialty center because transcutaneous pacing is a temporizing measure. Transvenous/permanent pacemaker will probably be needed.
- Immediate TCP with high-degree AV block (2nd or 3rd degree) with no IV/IO access.
- Consider treatable causes for bradycardia (Beta Blocker OD, Calcium Channel Blocker OD, etc.)

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Tachycardia with a Pulse

Treatment

EMT

Initiate Universal Patient Care

Request ALS assistance

Maintain SpO_2 of ≥ 94%

Maintain patent airway; assist breathing as necessary

Obtain 12-lead EKG and transmit to receiving hospital

ADVANCED EMT

Establish IV/IO normal saline KVO, if necessary

PARAMEDIC

Narrow Complex: Stable (if regular rhythm and suspected SVT)

Perform modified Valsalva maneuver (see Notes)

Adenosine IV/IO

- Adenosine **6 mg** rapid push with normal saline 20mL flush
- May repeat after 2 minutes with **12 mg** rapid push with normal saline 20mL flush
- May repeat after 2 minutes with **12 mg** rapid push with normal saline 20mL flush

Wide Complex (≥0.12 second): Stable

Amiodarone IV/IO

- Amiodarone 150 mg in 100 mL of D5W
- Infuse over 10 minutes
- May repeat in 10 minutes if wide complex tachycardia recurs
- If successful, start 1 mg/min infusion

Or Lidocaine 2% IV/IO

- Administer 1 to 1.5mg/kg
- Subsequent dosing 0.5 to 0.75mg/kg
- If successful conversion, consider starting an infusion at 2 to 4mg/min
- Maximum dose of 3 mg/kg

UNSTABLE

Perform immediate synchronized cardioversion, starting at 100J (or 200J for monophasic devices)

Consider sedation prior to cardioversion (if patient condition permits**)

Midazolam (Versed)IV/IM/IO/IN

- Midazolam 5 mg
- May repeat once in 10 minutes
- Maximum total pre-hospital IM dose is 10 mg
- Call online medical direction for additional dosages

TRANSPORT

Consider transportation to specialty cardiac care center, if available and consider on-line medical control

Notes

STABLE PATIENT

Defined as: systolic BP greater than 90 mmHg, evidence of adequate end-organ perfusion, and no altered level of consciousness.

UNSTABLE PATIENT

Defined as: systolic BP less than 90 mmHg, shortness of breath or pulmonary edema, chest pain or discomfort, and altered mental status, or inadequate end-organ perfusion. Unstable condition must be related to tachycardia.

* Verify that "SYNC" mode is utilized before each synchronized cardioversion attempt to prevent accidental defibrillation

**Do not delay cardioversion to administer medication in an unstable patient

Modified Valsalva maneuver – with the patient in a semi-Fowlers position, instruct the patient to breathe into a 10 mL syringe forcefully (hard enough to push the plunger) for 15 seconds. Then immediately lay the patient supine and raise their legs to 45° for 15 seconds

Effective Date 1 May 2022

CA3

Cardiac Arrest (Asystole, PEA, V-Fib, pV-Tach)

	Treatment	Notes
EMT	Initiate Universal Patient Care Request ALS assistance Initiate CPR and defibrillate with AED as soon as available Push hard and fast (100-120/min) and allow complete chest recoil Provide ventilations with BVM at a ratio of compressions to ventilations of 30:2 Minimize interruptions in compressions and avoid excessive ventilation Change compressor every 2 minutes, or sooner if fatigued Apply mechanical compression device, if available If the patient returns to signs of circulation refer to Post Cardiac Arrest Care Protocol	Utilize an OPA to facilitate BVM ventilations for patients in cardiac arrest Follow Pit Crew CPR principles • Prepare prior to scene arrival – identify crew member roles, prepare first 3 doses of medications • Manage the patient on scene • Provide continuous compressions • Rapid supraglottic airway placement • Immediate IO access • First defibrillation < 3 minutes from scene arrival • Transition to mechanical CPR device • First medication < 8 minutes from scene arrival • Monitor CPR effectiveness with continuous $EtCO_2$ Consider Possible Causes • Hypovolemia • Hypoxia • Hydrogen ion (acidosis) • Hypo/hyperkalemia • Hypothermia • Tension pneumothorax • Tamponade, cardiac • Toxins • Thrombosis, pulmonary • Thrombosis, coronary
ADVANCED EMT	Continue ventilations with BVM at a ratio of compressions to ventilations of 30:2 Establish IV/IO Place a supraglottic airway (e.g. King LT, i-Gel, LMA Supreme) Ventilate at a rate of 10 breaths per minute (1 every 6 seconds) Monitor with continuous waveform $EtCO_2$ to goal of > 20 mmHg and SpO_2 of 94% Defibrillate if in a shockable rhythm **Epinephrine 1 mg/10 mL (0.1 mg/mL) IV/IO** • 1 mg, repeat every 4 minutes or every other CPR cycle	
PARAMEDIC	**V- Fib & V- Tach ONLY** **Amiodarone IV/IO** • Initial dose 300 mg IV/IO • Second dose of 150 mg IV/IO may be given in 4 minutes **OR** **Lidocaine 2% IV/IO** • Initial dose: 1-1.5 mg/kg • Second dose: 0.5-0.75 mg/ • If successful conversion, start drip using premixed 2g/250 mL bag at 2-4 mg/min **POLYMORPHIC VT / TORSADES DE POINTES** **Magnesium Sulfate 2 gram IV/IO** • Use premix or dilute in 50 mL D5W, administer over 5 to 10 minutes	
TRANSPORT	Consider underlying causes (H&Ts) Transport and consider on-line medical control	

Post Cardiac Arrest Care (ROSC)

	Treatment	Notes
EMT	Initiate Universal Patient Care Request ALS assistance If Return of Spontaneous Circulation (ROSC) is obtained **Manage Airway:** • Start 10 breaths/min • SpO_2 goal of 94% • $EtCO_2$ 35-45 mmHg **Manage hemodynamic parameters** • Systolic blood pressure >90 mmHg • Mean arterial pressure >65 mmHg Obtain 12-Lead EKG and transmit to the receiving hospital If not already in place, consider applying mechanical CPR device before transport to reinitiate CPR if the patient goes into cardiac arrest	**Continue to treat suspected underlying etiology of arrest** • Hypovolemia • Hypoxia • Hydrogen ion (acidosis) • Hypokalemia/hyperkalemia • Hypothermia • Tension pneumothorax • Tamponade, cardiac • Toxins • Thrombosis, pulmonary • Thrombosis, coronary
ADVANCED EMT	Establish IV/IO normal saline KVO, if necessary Administer IV fluids to achieve SBP or MAP goals • Normal Saline 20 mL/kg IV bolus Provide advanced airway management per the Airway Management / Failed Airway protocol	
PARAMEDIC	Activate a STEMI alert if present and document time of notification Initiate norepinephrine infusion to achieve SBP or MAP goals • Refer to Shock / Hypoperfusion protocol	
TRANSPORT	Transport and consider on-line medical control Consider for Cardiac Specialty center if • STEMI present • Unstable cardiogenic shock • Mechanical circulatory support required	

Pediatric Asthma

Treatment	Notes
EMT Initiate Universal Patient Care Request ALS assistance Maintain SpO_2 of ≥ 94% Calm and reassure the patient **MILD SYMPTOMS** Monitor airway and oxygen saturation **Albuterol Inhaler Metered Dose Inhaler (MDI)** • Administer two puffs (90 mcg each) via metered dose inhaler • Administer with a spacer • May repeat dosage of two puffs (90 mcg each) one time in 3-5 min **MODERATE/SEVERE SYMPTOMS** **Ipratropium Bromide/Albuterol Sulfate (DuoNeb) via Nebulizer** • Age < 1 years – albuterol sulfate 1.25 mg + 0.25 ipratropium bromide • Age > 1 year – albuterol sulfate 2.5 mg + 0.5 ipratropium bromide • Mix in 3 mL NS x 1 • To be used in place of albuterol inhalers (not in conjunction with) • May repeat every 5 minutes for maximum of 2 doses	***Use adult respiratory distress protocol for patients age ≥ 12 years** **Patient Presentation:** The patient may present with wheezing and/or crackles. Abnormal respiratory rate and effort, tachycardia, cyanosis, mottled skin, altered mental status, nasal flaring, retractions, accessory muscle use, dyspnea and/or diminished or absent breath sounds. **MILD symptoms** • Normal alertness, expiratory wheezing only, mildly prolonged expirations, SpO_2 > 95% **MODERATE symptoms** • Normal alertness, elevated respiratory rate, wheezing throughout, prolonged expirations, accessory muscle use, SpO_2 92 – 95% **SEVERE symptoms** • Inability to speak short phrases, wheezing throughout, poor aeration / very diminished breath sounds, significant accessory muscle use, SpO_2 < 92% **Signs of impending respiratory failure** – • Cyanosis, difficulty maintaining respiratory rate (i.e. normal respiratory rate), lethargy, SpO_2 < 90%, elevated $EtCO_2$
ADVANCED EMT Establish IV/IO NS KVO Monitor $EtCO_2$ Manage the airway as needed per the Airway Management/ Failed Airway Protocol	
PARAMEDIC Monitor EKG For **MODERATE or SEVERE** symptoms, administer: **Methylprednisolone (Solu-Medrol) 1 mg/kg IV/IO** • Maximum dose is 125 mg • Administration should not distract from sequential dosing of nebulized albuterol / ipratropium For **SEVERE** symptoms refractory to nebulized medications: **Magnesium Sulfate 50 mg/kg IV** • Give in 100 mL NS over 10-15 min • Max dose of 2 grams For **SEVERE** symptoms and / or impending **respiratory failure** **Epinephrine 1 mg/mL (1 mg/mL) IM** • 0.01 mg/kg to max dose of 0.3 mg. Administer in lateral thigh. • Use weight-based medication charts to confirm dosage calculation	

Pediatric Asthma

	Treatment	Notes
TRANSPORT	Transport and consider on-line medical control	

Effective Date
1 May 2022

P-AR1

Croup

Treatment	Notes
EMT Initiate Universal Patient Care Request ALS assistance Maintain SpO_2 of ≥ 94% Calm and reassure the patient Assess respiratory status looking specifically for nasal flaring, retractions, increased/decreased respirations, skin color and/or change in level of consciousness In patients with drooling, stridor, and tripoding, allow the patient to maintain this position and do not attempt to manipulate the airway or ***If epiglottitis is suspected (i.e., drooling with above signs and symptoms), do not initiate this protocol without on-line medical control approval.***	**Patient Presentation:** The patient will present with respiratory distress and stridor (suspected croup) "Barking Cough and Audible Stridor" **Moderate**: Patient has a barking cough, mild retractions, and audible stridor. No signs of agitation. **Severe**: Stridor present at rest, decreased air entry, severe retraction (suprasternal), anxious, agitated, pale, or cyanosis **Imminent respiratory failure:** fatigue, listlessness, marked retractions, absent breath sounds, decreased level of consciousness, cyanosis or pallor, tachycardia
ADVANCED EMT Establish IV/IO NS KVO **MODERATE/SEVERE RESPIRATORY DISTRESS** **Epinephrine 1 mg/mL (1 mg/mL) via nebulizer** • Dose < 1 year: 2.5 mg / 2.5 mL • Dose > 1 year: 5 mg / 5 mL • Establish IV/IO access after appropriate airway management has been accomplished	
PARAMEDIC Monitor EKG Manage the airway as needed per the Airway Management/Failed Airway Protocol **SEVERE RESPIRATORY DISTRESS** (in danger of imminent respiratory arrest) **Epinephrine 1 mg/mL (1 mg/mL) via IM** • 0.01 mg/kg IM • Maximum single dose of 0.3 mg • On-line medical control approval required if patient is less than 1 year	
TRANSPORT Transport and consider on-line medical control	

Pediatric Cardiac Arrest

Treatment

EMT

Initiate Universal Patient Care

Request ALS assistance

Initiate CPR and defibrillate with AED as soon as available

If under age of 8 years, utilize pediatric pads (if available). If pediatric pads are unavailable, adult pads may be used, as long as the pads do not touch

Push hard and fast (100-120/min) and allow complete chest recoil

Focus on continuous compressions and avoid excessive ventilation

- 2-person CPR rate: 15 compressions to 2 breaths

Change compressor every 2 minutes, or sooner if fatigued or decreasing $EtCO_2$ reading

After 2 minutes, perform a rhythm check
Apply mechanical CPR device, if available

ADVANCED EMT

Establish IO – distal femur preferred site, proximal tibia acceptable

Place a supraglottic airway (e.g., King LT, i-Gel, LMA Supreme)

Ventilate at a rate of 10 to 20 breaths per minute (1 every 3-6 seconds)

Monitor with continuous waveform $EtCO_2$ to goal of >20mmHg and SpO_2 of 94%

Defibrillate:

- First Shock 2 J/kg
- Second Shock 4 J/kg
- Subsequent Shocks >4 J/kg Max 10 J/kg

Epinephrine 1 mg/10 mL (0.1 mg/mL) IO/IV*

- 0.01 mg/kg to max dose 1mg
- Repeat every 5 minutes or every 3rd round of CPR

*Can consider IV placement if sufficient personnel available and three rounds of epinephrine

PARAMEDIC

V FIB or PULSELESS V TACH

Amiodarone IO/IV:

- 5mg/kg mg IO/IV up to max 300 mg
- May repeat up to 3 doses for max total dose of 15 mg/kg or 900 mg

OR

Lidocaine IO/IV

1 mg/kg loading dose

Consider Possible Causes

- Hypovolemia
- Hypoxia
- Hydrogen ion (acidosis)
- Hypo-/hyperkalemia
- Hypothermia
- Tension pneumothorax
- Tamponade, cardiac
- Toxins
- Thrombosis, pulmonary Thrombosis, coronary

TRANSPORT

Transport and consider on-line medical control

Notes

Practice Pit Crew CPR concepts:

- Organize team members and roles prior to arrival
- If available, use an age-based dosing algorithm to facilitate drawing up three epinephrine doses prior to arrival
- Immediate continuous compressions with two-person team
- Immediate airway management – BVM ventilations with an oropharyngeal airway with placement of supraglottic airway once ALS available
- Immediate IO placement – distal femur preferred, proximal tibial accepted
- Defibrillation within 3 minutes of arrival
- Apply mechanical CPR device
- Epinephrine administration within 8 minutes of arrival
- Use continuous $EtCO_2$ to monitor CPR effectiveness.
- Remain on scene to administer the first three epinephrine doses before considering patient transport

Pediatric Bradycardia

	Treatment	Notes
EMT	Initiate Universal Patient Care Maintain Airway as necessary Maintain SpO_2 of ≥ 94% Request ALS assistance Obtain a 12 lead EKG and transmit to the receiving hospital If evidence of: Inadequate perfusion, such as decreased capillary refill, mottled or cool skin, altered mental status, chest pain, dyspnea, or hypotension • Assist breathing with positive pressure ventilation via BVM If signs of shock AND heart rate < 60 bpm • Initiate chest compressions	Transcutaneous Pacing Procedure (TCP) • Utilize TCP early if no response to epinephrine. If time allows transport to specialty center because transcutaneous pacing is a temporizing measure. Transvenous / permanent pacemaker will probably be needed. • Immediate TCP with high-degree AV block (2nd degree Type II or 3rd degree) with no IV / IO access. • Consider treatable causes for bradycardia – hypothermia, hypoxia, head injury, hypoglycemia, or medications such as beta-blockers or calcium channel blockers
ADVANCED EMT	Establish IV/IO normal saline KVO, as necessary **Normal Saline** Fluid Bolus 20 mL/kg Manage the airway as needed per the Airway Management/Failed Airway Protocol Continue CPR for heart rate < 60 bpm **For PERSISTENT BRADYCARDIA** **Epinephrine 1 mg/10 mL (0.1 mg/mL) IV/IO** • 0.01 mg/kg IV to max dose of 1 mg • Repeat every 5 min as needed or until maximum dose of 3 mg	
PARAMEDIC	**For PERSISTENT BRADYCARDIA DUE TO HIGH VAGAL TONE or AV BLOCK** **Atropine 0.02 mg/kg IV/IO** • Min single dose 0.1 mg • Max single dose is 0.5 mg • May repeat dose one time **Transcutaneous Pacing Procedure** If capture occurs and systolic BP is greater than 90 mmHg ***Consider Midazolam for discomfort related to pacing*** Do not delay pacing to administer analgesia in an unstable patient **Midazolam (Versed) IV/IO** • 0.1 mg/kg up to 2.5 mg per dose • May repeat once in 10 min • Maximum total dose is 5 mg	
TRANSPORT	Consider underlying causes (H&Ts) Transport and consider on-line medical control	

Pediatric Tachycardia with a Pulse

	Treatment	Notes
EMT	Initiate Universal Patient Care Request ALS assistance Maintain SpO_2 of ≥ 94% Maintain patent airway; assist breathing as necessary Obtain 12-lead EKG and transmit to receiving hospital	**Typical Pediatric Heart Rates** Age — Rate 0 – 3 mo. 123 – 164 bpm 3 – 6 mo. 120 – 159 bpm 6 – 9 mo. 114 – 154 bpm 9 – 12 mo. 109 – 145 bpm 12 – 18 mo. 103 – 140 bpm 18 – 24 mo. 98 – 135 bpm 2 – 3 yrs. 92 – 128 bpm 3 – 4 yrs. 86 – 123 bpm 4 – 6 yrs. 81 – 117 bpm 6 – 8 yrs. 74 – 111 bpm 8 – 12 yrs. 67 – 103 bpm
ADVANCED EMT	Establish IV/IO normal saline KVO, if necessary	**Typical Sinus Tachycardia findings** • Presence of P waves • Variable R to R intervals • Infant rate (< 12 months) < 220 / min • Child rate (> 1 year) < 180 / min
PARAMEDIC	**STABLE – Narrow (QRS ≤ 9 msec) and wide Complex (QRS > 9 msec):** • If likely SVT, perform vagal (i.e., Valsalva) maneuver • If likely sinus tachycardia, find and treat underlying cause **Adenosine IV/IO** • First dose: 0.1 mg/kg IV (max dose 6 mg) • Rapid push with normal saline 10 mL flush • Second dose: 0.2 mg/kg rapid bolus (max dose 12 mg) • Consider treatment for wide QRS complex tachycardia ONLY if the rhythm is REGULAR and MONOMORPHIC ***Amiodarone IV/IO** • 5 mg/kg (max 150 mg) in 100 mL of NS over 20 minutes *Requires online medical control approval **UNSTABLE – Narrow OR Wide Complex** • Perform immediate synchronized cardioversion • Begin with 0.5-1 J/kg; if not effective, increase to 2 J/kg. Sedate if needed, but don't delay cardioversion. ***If time permits, consider sedation with Midazolam prior to cardioversion*** **Midazolam (Versed) IV/IM** • Midazolam 0.1 mg/kg to max dose 2.5 mg • May repeat once in 10 minutes • Maximum total pre-hospital IM dose is 5 mg	**STABLE PATIENT** • Normal mental status • Strong peripheral pulses • Normal capillary refill and skin color **UNSTABLE PATIENT** • Hypotension – defined as SBP < 60 mmHg (age 0 – 1 mo.), SBP < 70 mmHg (age 1 – 12 mo.), SBP < [70 + (child's age x 2)} mmHg (age 1 – 10 yrs.), or SBP < 90 mmHg (age > 10 yrs.) • Prolonged capillary refill • Respiratory distress • Cyanosis, pallor, cold / mottled extremities • Altered mental status / lethargy * Verify that "SYNC" mode is utilized before each synchronized cardioversion attempt to prevent accidental defibrillation **Do not delay cardioversion to administer medication in an unstable patient
TRANS PORT		

Pediatric Tachycardia with a Pulse

Treatment		Notes		
	Consider transportation to specialty cardiac care center, if available and consider on-line medical control		**Effective Date 1 Jan 2022**	**P-CA3**

Newly Born

Treatment

EMT

Initiate Universal Patient Care
Request ALS assistance

Clamp the cord about 7 and 10 inches from the infant with 2 clamps after 1-3 minutes, cut between the clamps

Wrap in blankets and cover newborn's head

Record APGARs at 1 and 5 minutes
If patient is in respiratory distress (meconium, apnea) and secretions are obstructing the airway

- Suction the mouth first, then suction the nose
- DO NOT routinely suction unless presence of respiratory distress – gasping, labored breathing, or heart rate < 100 bpm

If apnea, or gasping, heart rate less than 100 bpm or central cyanosis is present:

- Ventilate with BVM at the rate of 40-60 breaths per minute
- Utilize a PEEP valve set to 5 cm H_2O, if available
- For infants ≥ 35 weeks start with 21% FiO_2 (room air)
- For infants < 30 weeks start with 30% FiO_2 via a blender
- Be careful with ventilations – give only enough volume to cause chest rise.
- Continue ventilations for heart rate < 100 bpm

If heart rate remains less than 60 bpm after 30 seconds of ventilation:

- Initiate chest compressions (hands encircling chest wall with thumbs over sternum) at 120 events per minute (compression to ventilation ratio is 3:1)
- Reassess every 60 seconds

ADVANCED EMT

Establish IV/IO normal saline KVO, if necessary – umbilical vein catheterization is the preferred method of vascular access

Give 10 mL/kg normal saline bolus over 5 to 10 minutes if hypovolemia suspected

Check blood glucose level, treat per Diabetic Emergency Protocol

PARAMEDIC

Monitor EKG
Manage airway if achieving inadequate ventilations with BVM

Perform endotracheal intubation using a 3.0 cuffed or 3.5 uncuffed tube. If < 28 weeks, use a 2.5 uncuffed tube

If heart rate fails to improve with adequate ventilations / chest compressions:

Epinephrine (1 mg/10 mL) IV/IO

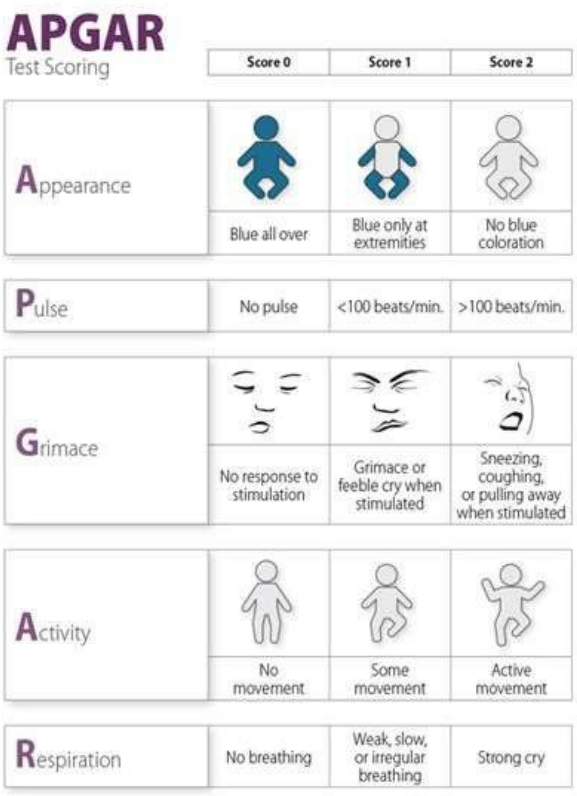
- 0.01 – 0.03 mg/kg

TRANSPORT

If available, transport to a labor and delivery MTF and contact on-line medical control

Notes

Patient Presentation: This protocol applies to an infant that has just been delivered.



Pulse oximetry is not routinely indicated for well appearing, vigorous infants, but could be applied for:

- During resuscitation
- When using positive pressure ventilation
- Persistent cyanosis
- When administering supplemental O_2

Anticipated SpO2 levels after delivery at sea level:

- 1 min – 60 to 65%
- 2 min – 65 to 70%
- 3 min – 70 to 75%
- 4 min – 75 to 80%
- 5 min – 80 to 85%
- 10 min – 85 to 95%

Sudden Infant Death Syndrome (SIDS)

Treatment		Notes
EMT	Initiate Universal Patient Care Request ALS assistance If indicated, initiate CPR and strongly encourage moving patient to the unit. Treat according to Pediatric Cardiac Arrest If rigor mortis is present continue with the Presumed Dead-on Arrival Procedure	**Patient Presentation:** The unexpected arrest of an apparently healthy infant in which resuscitation is unsuccessful and there is no attributable cause of death. The infant is often discovered by a caretaker in the early morning hours after having been uneventfully laid down to sleep the night before. **NOTE**: SIDS is one of the leading causes of death in the 1–12-month age group and seems to peak at 2 to 4 months of age. How you interact with the family may have a significant impact on how they deal with the loss of the infant. Be cautious of statements or actions that may be judgmental. Consider notification of local authorities. Special attention should be paid to the condition of the infant, including the presence of any marks or bruises, and to the preservation of the environment, including any bed clothing and the condition of the room.
ADVANCED EMT	Establish IV/IO normal saline KVO, if necessary	
PARAMEDIC	Monitor EKG	
TRANSPORT	Transport and consider on-line medical control	

Childbirth

Treatment

EMT

Initiate Universal Patient Care

Request ALS assistance

If patient in labor but no signs of impending delivery, transport to appropriate receiving facility

NORMAL DELIVERY

- Delivery should be controlled so as to allow a slow controlled delivery of infant
- Support the infant's head
- Check for cord around the infant's neck and, if present, reduce by slipping over the infant's head
- Clamp the cord about 7 and 10 inches from the infant with 2 clamps after 1-3 minutes, cut between the clamps
- Dry and warm infant
- Position and stimulate infant
- Record APGAR (1 & 5 min)
- Initiate resuscitation, if required
- If evidence of airway obstruction due to secretions, suction the airway (first mouth, then nares) and consider initiating positive pressure ventilation

ABNORMAL DELIVERY

- For all abnormal deliveries, transport immediately.

PROLAPSED CORD

- Place mother in knee-chest position
- Do not attempt to push cord back in vagina
- For cases of umbilical cord prolapse, place gloved fingers under presenting part and lift pressure off the umbilical cord.

BREECH PRESENTATION

- Do not pull on newborn
- Allow delivery to proceed normally while supporting the newborn
- Call on-line medical control for assistance

LIMB PRESENTATION

- Place mother in knee-chest position

POST PARTUM

- If uncontrolled post-partum bleeding perform uterine massage from pubis toward umbilicus
- Do not pack vagina to stop bleeding

ADVANCED EMT

Establish IV/IO normal saline KVO, if necessary

For active vaginal bleeding initiate fluid therapy: Normal Saline

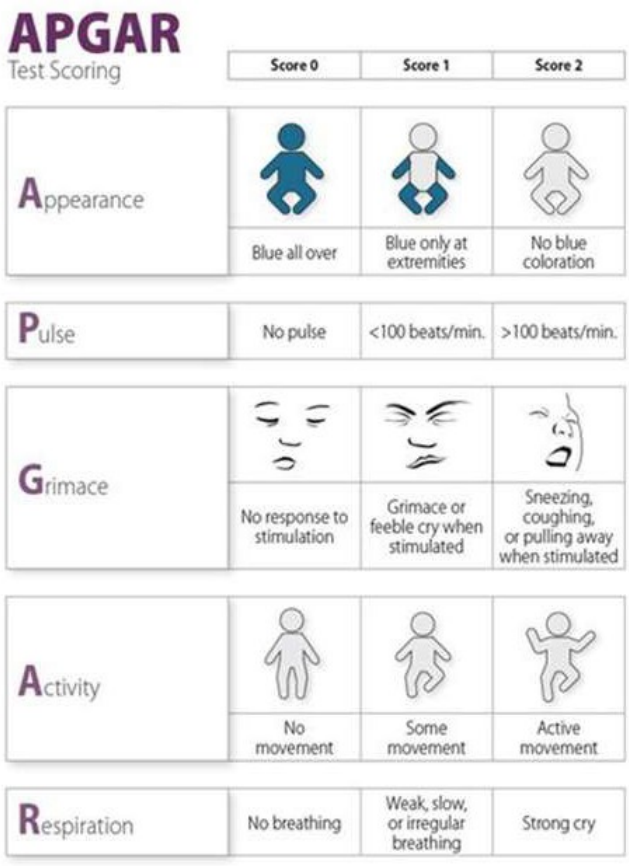
- Administer 20mL/kg bolus NS
- Titrate to a systolic BP of 90 mmHg
- May repeat one time

PARAMEDIC

Monitor EKG

TRANSPORT

If available, transport to a labor and delivery MTF and contact on-line medical control



Obstetrical

	Treatment	Notes
EMT	Initiate Universal Patient Care Request ALS assistance Maintain SpO_2 of > 94% Place patient in a left lateral recumbent position Reduce external stimuli Treat patient according to one of the following presentations: **VAGINAL BLEEDING** • Place absorbent pads underneath patient • If uncontrolled post-partum bleeding perform uterine massage from pubis toward umbilicus **ECLAMPSIA (seizing)** • If patient is still seizing refer to Seizures Protocol • When seizure activity has stopped identify and treat injuries • Check BGL, if less than 60mg/dL, follow Diabetic Emergency Protocol	**Patient Presentation:** The patient may present with unusually heavy vaginal bleeding because of possible pregnancy, miscarriage, postpartum bleeding, or sexual assault. Patient may exhibit the signs and symptoms of hypoperfusion (shock). **Eclampsia**: new onset, generalized, tonic-clonic seizures OR coma in pregnant women with pre-eclampsia or gestational hypertension. Symptoms preceding the onset of seizures may include: • Hypertension • Headache • Visual disturbances • RUQ or epigastric abdominal pain Most post-partum eclamptic seizures occur within 1 week of delivery
ADVANCED EMT	Establish IV/IO normal saline KVO, if necessary Manage the airway as needed per the Airway Management/Failed Airway Protocol **VAGINAL BLEEDING** • Initiate fluid therapy • Normal Saline -Administer 20mL/kg bolus NS • Titrate to a systolic BP of 90 mmHg	
PARAMEDIC	Monitor EKG **ECLAMPSIA** If in late pregnancy or post-partum period, treat with: **Magnesium Sulfate 4g IV/IO** • Dilute in 100mL of D5W and infuse over 15 to 20 minutes	
TRANSPORT	Transport and consider on-line If available, transport to a labor & delivery MTF and consider on-line medical control contact control	

Hypoperfusion/Shock

	Treatment	Notes
EMT	Initiate Universal Patient Care Request ALS assistance Maintain SpO_2 of >94% Remove immediate life threats/control major bleeding following the Tourniquet procedure /discover underlying cause Anticipate vomiting - refer to Abdominal Pain/Nausea/Vomiting Protocol Manage the airway as needed per the Airway Management/Failed Airway Protocol Remove any previously applied dermal medication delivery systems (patches) Warm patient Maintain spinal immobilization if indicated Treat/stabilize any associated injuries according to presentation	**Patient Presentation:** As a result of inadequate blood flow to meet oxygen demands, the patient may present with an altered mental status, cool/clammy skin, diaphoresis, rapid weak pulse, shallow/labored respirations and/or general weakness, decreased distal pulses and internal or external bleeding. **Shock may develop insidiously. Especially in pediatrics and young, healthy adults, tachycardia may be the only manifestation. Consider all possible causes of shock and treat per appropriate protocol.** **Hypovolemic Shock:** Hemorrhage, trauma, GI bleeding, severe dehydration, ruptured aortic aneurysm, or pregnancy-related bleeding. **Distributive Shock:** Includes sepsis, anaphylaxis, and neurogenic shock. Adults with sepsis often present with warm shock (hyperdynamic cardiac activity, bounding pulses, diaphoresis, and rapid capillary refill) whereas pediatrics present more commonly with cold shock (cool, clammy, delayed capillary refill, weak peripheral pulses). **Cardiogenic Shock:** Myocardial infarction, Cardiomyopathy, Myocardial contusion, cardiac toxins (e.g. digitalis toxicity). **Obstructive Shock:** Pericardial tamponade. Pulmonary embolus. Tension pneumothorax. Signs may include hypotension with jugular vein distention, tachycardia, unilateral decreased breath sounds or muffled heart sounds. *Tranexamic acid use limited to patients with significant hemorrhage, risk of significant hemorrhage, or moderately severe TBI (GCS between 8 – 13)
ADVANCED EMT	Establish IV/IO normal saline KVO, if necessary If lungs are clear initiate fluid therapy: **Normal Saline** • Administer 20 mL/kg bolus NS • Titrate to a systolic BP of 90 mmHg • May repeat one additional dose of 20mL/kg bolus NS	
PARAMEDIC	Monitor EKG For cardiogenic or distributive shock (excluding anaphylaxis), if SBP remains < 90 mmHg or MAP < 65 mmHg after > 30 mL/kg of IV fluids, administer: **Norepinephrine (Levophed)** • Initiate 0.05 - 0.3 mcg/kg/minute • Titrate to SBP > 90 mmHg or MAP > 65 mmHg • Max dose 30 mcg/min • See Norepinephrine Drip Chart (M-NE1) **Utilize the weight-based medication charts to confirm dosage calculations** For Tension Pneumothorax • 10 gauge 3.5 in hollow bore needle into 4th or 5th intercostal space, anterior axillary line (preferred) or 2nd intercostal space, midclavicular line (alternative) • May repeat as needed if tension physiology redevelops For hemorrhagic shock: **Tranexamic Acid (TXA)*** • 2 g IV or IO slowly over 10 minutes within 3 hours of injury	
TRANSPORT	Transport and consider on-line medical control	

Burns

	Treatment	Notes
EMT	Initiate Universal Patient Care Request ALS assistance Maintain SpO_2 of > 94% Move patient to a safe environment Treat any associated trauma Remove rings, bracelets and other constricting items- leave blisters intact **THERMAL BURNS** • Burns < 10% Total Body Surface Area (TBSA): stop burning with non-chilled water or saline • Burns greater than 10% body surface area: cover with dry dressing and keep patient warm • Do not allow the patient to become hypothermic **CHEMICAL BURNS** • Brush off dry chemicals • Flush with copious amounts of water **TAR BURNS** • Cool with water, transport. Do not remove tar	**Differential** • Superficial (1st Degree) – red, painful, looks like a sunburn (Do not include in TBSA) • Partial Thickness (2nd Degree) – blistering, red, painful, weeping, blanch with pressure; deep 2nd degree burns may be mottled and have a waxy appearance and do not blanch with pressure • Full Thickness (3rd Degree) - painless/charred or leathery skin, dry, inelastic, does not blanch with pressure • Thermal injury • Chemical – Electrical injury • Radiation injury • Blast injury **Chemical Burns:** • Decontamination Procedure • Normal Saline or Sterile Water is preferred, however if not available, do not delay irrigation and use tap water • Other water sources may be used based on availability • Flush the area as soon as possible with the cleanest readily available water or saline solution using copious amounts of fluids **Electrical Burns:** • DO NOT contact patient until you are certain the source of the electrical shock is disconnected • Attempt to locate contact points (generally there will be two or more) A point where the patient contacted the source and a point(s) where the patient is grounded • Sites will generally be full thickness • Do not refer to as entry and exit sites or wounds **Indications for referral to a Burn Center:** • Second- or third-degree burns • Greater than 10% total body surface area (TBSA) in patient • Burns to the face, hands, feet, or perineum • Electrical burns, including lightening or contact with high voltage (110 volts or greater) • Chemical burns • Suspected inhalation injury when carbon monoxide is not suspected • Circumferential burns **For pediatric patients, a weight-based assessment tool (length-based tape or other system) should be used to provide a more accurate estimate of the patient's weight.**
ADVANCED EMT	Establish IV/IO normal saline KVO, if necessary Manage the airway as needed per Airway Management/Failed Airway Protocol • Consider early airway intervention if burn occurred in an enclosed space with evidence of singed nasal hairs, respiratory distress, or stridor If the patient is in shock, treat according to the Shock / Hypoperfusion Protocol If the patient has a significant burn without signs of shock due to concomitant trauma: • Estimate TBSA using rule of 9's • Consider fluid therapy **Lactated Ringers** • Initiate treatment utilizing the Rule of 10s (weight 40 – 80 kg): TBSA(%) x 10 = initial fluid rate • For every 10 kg > 80 kg, add an additional 100 mL/hr. to the initial rate  **For patients < 40 kg, initiate fluid rate using the modified Parkland formula = 3 x TBSA(%) x weight (kg)**	
PARAMEDIC	Monitor EKG Consider Pain Management Protocol	

Burns

	Treatment	Notes
TRANSPORT	Transport – consider trauma or burn center Consider on-line medical control	Effective Date 1 Jan 2022 TR2

Head and Spinal Cord Trauma

	Treatment	Notes
EMT	Initiate Universal Patient Care Request ALS assistance Maintain SpO2 of > 94% Treat/stabilize any associated injuries according to presentation Follow Spinal Precautions Apply Cervical Immobilization Device **AMBULATORY Patients:** Allow patient to move to stretcher with minimal spinal movement then secure to stretcher **NONAMBULATORY Patients:** Use Long Spine Board (OR any of the multiple equivalent devices) to TRANSFER patient to stretcher with minimal spinal movement, remove the device, then secure to stretcher. May use multiple providers to transfer patient to stretcher using in-line spinal techniques such as log roll / straddle slide to maintain spinal precautions without a device, then secure to stretcher	**Consider spinal protection If:** • Neuro Exam: Any focal deficit (weakness or sensory)? • Significant mechanism of injury? • Alertness: Alteration in mental status? • Intoxication: Any evidence? • Distracting Injury: Any painful injury that might distract the patient from the pain of a c-spine injury? • Spinal Exam: Point tenderness or deformities over the spinous process(es) or • Pain with back range of motion?
ADVANCED EMT	Establish IV/IO normal saline KVO, if necessary Manage the airway as needed per the Airway Management/Failed Airway Protocol If patient is in shock, treat according to the Shock / Hypoperfusion Protocol	
PARAMEDIC		
TRANSPORT	Transport and contact on-line medical control. Consider a specialty center, if available	

Extremity Trauma

	Treatment	Notes
EMT	Initiate Universal Patient Care Request ALS assistance Maintain SpO_2 of > 94% **FRACTURE** • Splint neurologically stable fractures as they are found • For suspected isolated mid-shaft femur fractures without evidence of pelvic fracture: use traction splint as indicated • Grossly angulated long bone fractures with neurovascular compromise may be reduced with gentle unidirectional traction for splinting with on-line medical control **UNCONTROLLED / LIFE THREATENING BLEEDING** • Apply direct pressure over the site of injury, preferably with 1 or 2 fingers • If the wound is amenable to packing, pack tightly with a hemostatic gauze dressing and apply firm pressure continuously for 3 minutes. If bleeding is controlled, secure with a pressure dressing. • If the wound is no amenable to packing, apply an extremity tourniquet using a commercially approved device. Place high on the extremity and tighten until the bleeding has stopped. • If properly tightened and bleeding still not controlled, apply a 2nd tourniquet directly above or below the initial tourniquet. Do not take down or remove the initial tourniquet. **AMPUTATION** • Apply a tourniquet on severely injured extremity when direct pressure or pressure dressing with hemostatic dressing fails to control life-threatening hemorrhage • Place severed extremity in a dry; sterile dressing in a sealed plastic bag and place on top of ice	**Patient Presentation:** The patient may exhibit skeletal or soft tissue injuries to the upper or lower extremities including complete/incomplete amputations, crush or degloving, or other trauma. Clean amputated part, wrap part in sterile dressing soaked in normal saline and place in air tight container. Place container on ice if available Mark the time the tourniquet was applied on the tourniquet and on a visible location on the patient (e.g. forehead). Tourniquets can be left in place upwards of 2 hours without causing long-term complications.
ADVANCED EMT	Establish IV/IO normal saline KVO, if necessary If patient is hypotensive, treat according the Hypoperfusion / Shock Protocol Consider Pain Management Protocol	
PARAMEDIC	Monitor EKG	
TRANSPORT	Transport and consider on-line medical control Consider a specialty center, if available	

Eye Trauma

	Treatment	Notes
EMT	Initiate Universal Patient Care Request ALS assistance Maintain SpO2 of > 94% Treat/stabilize any associated injuries according to patient's presentation **Foreign objects not embedded in the eye(s)** Flush with copious amounts of water (preferably sterile) or normal saline from the bridge of the nose outward **Injury to orbits (area around the eye)** Stabilize and immobilize the patients head and spine; apply cold packs if the eyeball is not injured **Lacerations/injuries to the eyeball or globe** Shield affected eyeball and dress other eye to reduce movement; protect globe to minimize loss of ocular fluids: immobilize the patients head and spine and elevate the head to reduce intraocular pressure **Impaled objects** Stabilize object, shield affected eyeball and dress other eye to reduce movement	**Patient Presentation:** The patient may present with profuse bleeding, avulsions, lacerations, foreign objects, impaled objects, and/or soft tissue damage to the eye(s) and/or surrounding facial areas. NOTE: Never apply pressure to the eyeball or globe. If the patient has other associated trauma or burns, transport the patient to the appropriate trauma or burn center. If no other associated trauma, transport to the nearest specialty eye trauma center, if available.
ADVANCED EMT	Establish IV/IO normal saline KVO, if necessary Consider Pain Management Protocol	
PARAMEDIC	Monitor EKG	
TRANSPORT	Transport and consider on-line medical control	

Multi System/Severe Trauma

Treatment		Notes
EMT	Initiate Universal Patient Care Request ALS assistance Maintain SpO_2 of > 94% Refer to the Trauma Decision Tree Maintain spinal immobilization, if indicated Treat/stabilize any associated injuries according to presentation – refer to the Extremity Trauma Protocol for any amputations or signs of life-threatening bleeding Assess/treat for signs of shock	**Patient Presentation:** The patient may present with hypovolemic or neurogenic shock, hypotension, hypertension, rapid or slow heart rate, unequal pupils, and shallow or absent respirations, decreased distal pulses, decreasing motor and sensory function in extremities, internal or external bleeding, fractures or lacerations. **Trauma in Pregnancy:** Providing optimal care for the mother = optimal care for the fetus. After 20 weeks gestation (fundus at or above umbilicus) transport patient on left side with 10 – 20° of elevation.
ADVANCED EMT	Establish IV/IO normal saline KVO, if necessary Refer to the Hypoperfusion / Shock Protocol for management of hypotension Manage the airway as needed per the Airway Management/Failed Airway Protocol Consider Pain Management Protocol	**Pediatric Trauma:** **Normal age-specific blood pressure** • **0 – 30 days SBP > 60 mmHg** • **1 month - 1 year > 70 mmHg** • **1 - 10 years > 70 + (2 x age) mmHg and** • **11 years and older > 90 mmHg**
PARAMEDIC	Monitor EKG	**Geriatric Trauma:** • Evaluate with a high index of suspicion. • Often occult injuries are more difficult to recognize and patients can decompensate unexpectedly with little warning. • Risk of death with trauma increases after age 65. • SBP < 110mmHg may represent shock / poor perfusion in patients over age 65. • Low impact mechanisms, such as ground level falls might result in severe injury especially in age over 65.
TRANSPORT	Transport, consider a specialty center, and consider on-line medical control **See Regional Trauma Guidelines when declaring Trauma Activation.**	

	Infant <1 yr	Child 1-4yrs	Age 4–Adult
EYES			
4	Open	Open	Open
3	To voice	To voice	To voice
2	To pain	To pain	To pain
1	No response	No response	No response
VERBAL			
5	Coos, babbles	Oriented, speaks, interacts, social	Oriented and alert
4	Irritable cry, consolable	Confused speech, disoriented, consolable	Disoriented
3	Cries persistently to pain	Inappropriate words, inconsolable	Nonsensical speech
2	Moans to pain	Incomprehensible, agitated	Moans, unintelligible
1	No response	No response	No response
MOTOR			
6	Normal, spontaneous movement	Normal, spontaneous movement	Follows commands
5	Withdraws to touch	Localizes pain	Localizes pain
4	Withdraws to pain	Withdraws to pain	Withdraws to pain
3	Decorticate flexion	Decorticate flexion	Decorticate flexion
2	Decerebrate extension	Decerebrate extension	Decerebrate extension
1	No response	No response	No response

Abuse/Neglect/Sexual Assault

	Treatment	Notes
EMT	Initiate Universal Patient Care Request ALS assistance Stabilize and treat injuries according to presentation Dress wounds, but do not attempt to clean The patient may feel more comfortable talking to someone of the same sex Maintain non-judgmental, but caring attitude Preserve crime scene and clothing articles, if practical Consult with law enforcement on scene regarding evidence collection Maintain strict confidentiality Do not perform genital examination Discourage self-treatment (shower, washing, changing clothes etc.) Document the following on PCR: • All verbatim statements made by the patient, parent or caregiver regarding manner of injuries • Be objective with your documentation. Do not make subjective or judgmental statements • Any abnormal behavior of patient, parent, or caregiver • Condition of environment and other residents present • Time the police/welfare agency was contacted and notified • Name of the receiving health care provider and any statements made	**General Information:** Upon entering any scene, EMS providers may suspect or observe evidence supporting abuse, neglect, and an unsafe environment. Such circumstances may be related to geriatrics, adults, children, infants, mentally challenged patients. Regardless of the circumstances, pre-hospital providers must always demonstrate professionalism. The patient may present with no overt evidence of trauma, or may present with bruising, bleeding, or associated physical and/or emotional trauma. • **Geriatric (Elder) Abuse Definition:** Infliction of physical abuse or injury, sexual abuse, pain, mental anguish, confinement or deprivation, or any other circumstances (resource, financial, neglect) that impairs the ability of the elderly to maintain physical or psychological health. Such abuse may occur in a domestic or institutional environment. • **Adult (Spousal) Abuse Definition:** Domestic violence in the form of battering, inflicting injuries, or neglect to a significant other or spouse. Battering includes inflicting control or fear over another by means of violence, intimidation, threatening behavior, psychological abuse, isolation, or other forms of abuse. • **Pediatric (Child and Infant) Abuse Definition:** Physical or emotional impairment as a result of physical injury, emotional negligence, sexual exploitation, or neglect. **In all States, any healthcare professional is a mandatory reporter for suspected pediatric abuse. In most States, the same is true for suspected elder abuse. Be aware of your local reporting requirements and involve law enforcement early if abuse is suspected.** **National Child Abuse Hotline:** • **(800) 422-4453 (800-4-A-CHILD)** • **https://www.childwelfare.gov**
ADVANCED EMT	Establish IV/IO normal saline KVO, if necessary	
PARAMEDIC		
TRANSPORT	Transport and consider on-line medical control	

Sepsis

	Treatment	Notes
EMT	Initiate Universal Patient Care Request ALS assistance Obtain Blood Glucose Level Maintain SpO_2 of > 94%	**Adult Sepsis Alert Criteria: TWO of the following** • Tachycardia (HR >120 bpm) • Systolic BP <90mmHg or MAP <65mmHg • Temperature >100.4°F or <96.8°F • Respiratory Rate >20 RPM or EtCO2 <30mmHg Common presentation of sepsis includes elevated body temperature (>100.4°F), however providers should be aware that sepsis can also present with decreased body temperature (<98.6°F), especially in pediatric patients. Septic shock is severe sepsis accompanied by hypotension Heart failure patients may show signs of fluid overload (pedal edema, pulmonary edema), but still require fluid resuscitation. In these patients, consider CPAP if patient is hypoxic or in respiratory distress. Hypotensive septic patients are primarily hypotensive from relative hypovolemia due to third spacing, not cardiogenic shock. When aggressively treating blood pressures, fluid is the necessity and vasopressors are secondary to adequate fluid therapy. **Mean Arterial Pressure (MAP) Calculation:** SBP x 0.33 + DBP x 0.66 = MAP Round decimal numbers to closest whole number *Ex: Blood Pressure 120/80* *120 x .033 = 39.6, rounded to 40* *80 x 0.66 = 52.8, rounded to 53* *40 + 53 = MAP of 93*
ADVANCED EMT	Establish IV/IO normal saline – Consider 2 large bore IVs if possible Administer **Lactated Ringers** at a 30mL/kg bolus  **Pediatric: (use ideal body weight)** **Administer Normal Saline 20mL/kg bolus – for infants and young children consider administration using a "push-pull" method with a three-way stopcock** **May repeat additional 20 mL/kg bolus if persistent evidence of inadequate perfusion.** **Contact Online Medical Control for additional fluid boluses** Consider CPAP for pulmonary edema/hypoxia Obtain 12-Lead EKG	
PARAMEDIC	****SEPSIS ALERT PATIENT**** *If patient meets local Sepsis Alert Criteria* **Pediatrics –** if persistent evidence of shock in spite of 40 – 60 mL/kg of IV fluid boluses. Titrate rate to clinical evidence of adequate end-organ perfusion (monitor for hepatomegaly and rales / crackles on pulmonary exam)  **Epinephrine (1 mg/10 mL or 0.1 mg/mL) IV/IO (for cold shock)** • **0.1 - 1 mcg/kg/min IV** • See Epinephrine Drip Chart (M-EP4) **OR**  **Norepinephrine IV/IO (for warm shock)** • **0.05 – 0.1 mcg/kg/min up to max of 2 mcg/kg/min** **Adults –** if persistent evidence of shock or MAP < 65 mmHg or SBP < 90 mmHg **Norepinephrine (Levophed)** • Initiate 0.05 - 0.3 mcg/kg/minute (typical dosing 5 – 15 mcg/min for 80 kg person) • Titrate to SBP > 90 mmHg or MAP > 65 mmHg • Max dose 30 mcg/min • See Norepinephrine Drip Chart (M-NE1)	

Sepsis

	Treatment	Notes
TRANSPORT	Transport and consider on-line medical control Notify incoming facility of a **SEPSIS ALERT PATIENT**	**Pediatric Sepsis** May develop insidiously. Patients more commonly have "cold shock" with weak pulses, mottling, and prolonged capillary refill, but may present with "warm shock" with hyperdynamic precordium, bounding pulses, and flash capillary refill. Changes in mental status – irritability, drowsiness, inappropriate crying, lethargy, inappropriate interactions with caregiver, or confusion – are important clues as well. Pediatric patients develop hypotension LATE in the disease process. Hypotension is not required to diagnose shock in pediatrics. Evidence of purpura or petechiae below the nipple line are important clues for invasive bacterial infections Pediatric patients with sepsis are at risk of developing hypoglycemia. Early blood sugar measurement should be performed.

Hazardous Materials Exposure

Treatment		Notes
EMT	Ensure the scene is safe Initiate Universal Patient Care Request ALS assistance Maintain SpO_2 of >94% Triage and decontaminate if indicated Protect the patient from the environment and ensure the patient is not /does not become hypothermic Consider use of **ATNAA/MARK 1** if indicated	**Differential** • Nerve agent exposure (e.g., VX, Sarin, Soman, etc.) • Organophosphate exposure • (pesticide) • Vesicant exposure (e.g., Mustard • Gas, etc.) • Respiratory Irritant Exposure (e.g., • Hydrogen Sulfide, Ammonia, Chlorine, etc.) **Signs and Symptoms** • Salivation • Lacrimation • Urination; increased, loss of control • Defecation / Diarrhea • GI Upset; Abdominal pain / cramping • Emesis • Muscle Twitching • Seizure Activity • Respiratory Arrest **Notes** Patient may present with a wide array of signs and symptoms due to the variables of substance exposure. Any patient who is exposed to a hazardous material is considered contaminated until the patient is decontaminated thoroughly. All emergency response personnel who come into close contact with hazardous materials should receive an appropriate medical examination post-incident.
ADVANCED EMT	Establish IV/IO normal saline KVO, if necessary Manage the airway as needed per the Airway Management/Failed Airway Protocol	
PARAMEDIC	Monitor EKG	
TRANSPORT	Transport and consider on-line medical control Notify MTF of possible exposer to patient	

Nerve Agent Exposure

	Treatment	Notes
EMT	Ensure the scene is safe Initiate Universal Patient Care Request ALS assistance Maintain SpO_2 of >94% Triage and decontaminate if indicated Isolate the area and notify dispatch of possible Mass Casualty Incident (MCI) with possible Nerve Agent involvement. Declare yourself a casualty, if exposed • Blot off agent • Strip off all clothing, avoiding contact with outer surfaces • Flush area(s) with copious amounts of water • Cover affected areas Protect the patient from the environment and ensure the patient is not /does not become hypothermic Consider use of **ATNAA/MARK 1** kit, if indicated	**MILD SYMPTOMS** Runny nose, cough, pinpoint pupils, lacrimation **MODERATE SYMPTOMS** Runny nose, cough, sweating, nausea, abdominal pain, trouble seeing, wheezing, dyspnea **SEVERE SYMPTOMS** Moderate symptoms, PLUS vomiting, diarrhea, drooling, copious secretions, weakness, seizures, altered mental status, apnea **Signs and Symptoms** • Salivation • Lacrimation • Urination; increased, loss of control • Defecation / Diarrhea • GI Upset; Abdominal pain / cramping • Emesis • Muscle Twitching • Seizure Activity • Respiratory Arrest **Differential** • Nerve agent exposure (e.g., VX, Sarin, Soman, etc.) • Organophosphate exposure • (pesticide) • Vesicant exposure (e.g., Mustard • Gas, etc.) • Respiratory Irritant Exposure (e.g., • Hydrogen Sulfide, Ammonia, • Chlorine, etc.)
ADVANCED EMT	Establish IV/IO normal saline KVO, if necessary • Do not initiate IV in injured extremity • Consider Fluid Therapy • **Normal Saline** Administer 20 mL/kg Titrate to a systolic BP of 90 mmHg	
PARAMEDIC	Monitor EKG For continuous symptoms in spite of administration of 3 antidote kits: **Atropine** • Atropine 2-4 mg IV/IO • Repeat every 5 min until secretions are cleared • **Atropine 0.05 mg/kg IV/IM** • **If no response (excess secretions not diminished) repeat Atropine 0.05 mg/kg IV/IM in 20 minutes** Manage the airway as needed per the Airway Management/Failed Airway Protocol if needed Consider Pain Management Protocol if needed Consider Seizures Protocol if needed	
TRANSPORT	Transport and consider on-line medical control Notify MTF of possible Never Agent Exposer	

Specialty Care Patients

	Treatment	Notes
EMT	Initiate Universal Patient Care Request ALS assistance Maintain SpO_2 of >94% **PREVIOUSLY ESTABLISHED ELECTROLYTE AND/OR GLUCOSE CONTAINING PERIPHERAL IV LINES:** • Turn off when directed (either by trained caregiver or on-line medical control) **PREVIOUSLY APPLIED DERMAL MEDICATION DELIVERY SYSTEMS:** • Remove dermal NTG when indicated (CPR, shock) **PREVIOUSLY ESTABLISHED IV MEDICATION DELIVERY SYSTEMS AND/OR OTHER PREEXISTING TREATMENT MODALITIES WITH PRESET RATES:** • If the person responsible for operating the device is unable to continue to provide this function during transport, contact MTF • BLS providers shall only leave the device as found or turn it off • Transport and rendezvous with ALS Transports to another facility or home • No wait period is necessary for routine oral/dermal medications or completed aerosol treatments • Check for prior IV, IM, SQ and nonroutine PO medication delivery to assure minimum wait period of 30 minutes • If there is a central line, the tip of which lies in the central circulation, the catheter MUST be capped with a device that occludes the end.	**Patient Presentation:** The patient may present with pre-existing medical interventions such as IV (may be medicated), monitors, or patient controlled medication pumps. When encountered, the patient and caregiver (person trained to operate/monitor the intervention) shall be transported. Existing settings/rates shall be maintained unless on-line medical control directs changes.
ADVANCED EMT	Establish IV/IO normal saline KVO, if necessary	
PARAMEDIC	Monitor EKG **PREVIOUSLY ESTABLISHED ELECTROLYTE AND/OR GLUCOSE CONTAINING IV SOLUTIONS:** • Adjust rate • Turn off when directed (either by trained caregiver or on-line medical control) **PRE-EXISTING EXTERNAL VASCULAR ACCESS (CONSIDERED TO BE IV KVO):** • To be used for definitive therapy ONLY **PREVIOUSLY ESTABLISHED AND LABELED IV MEDICATION DELIVERY SYSTEMS WITH PRESENT RATES AND/OR OTHER PREEXISTING TREATMENT MODALITIES:** • Maintain at preset rates • Discontinue or take a caregiver with you **IF NO MEDICATION LABELED OR NO IDENTIFICATION OF INFUSING SUBSTANCE:** • Discontinue	
TRANSPORT	Transport and consider on-line medical control	

Poisoning Overdose

EMT

Ensure the scene is safe

Initiate Universal Patient Care

Request ALS assistance

Establish safe perimeter, don personal protective gear as needed or directed

Triage and perform gross decontamination, if indicated

Special attention should be directed at airway protection, place patient in recovery position (lateral recumbent position)

Inhaled toxins should be treated with supplemental oxygen to maintain Sp02 of 94% unless specifically contraindicated

Confirm blood glucose level

If suspected opioid overdose and Sp02 is < 94% administer

Naloxone IN

- Naloxone 2 mg IN (1 mg per nares)
- If no response in 5 minutes, may repeat Naloxone 2 mg IN
- Maximum pre-hospital dose is 4 mg. Call medical control for additional dosing

ADVANCED EMT

Establish IV/IO NS KVO

Obtain a 12-lead EKG for all suspected poisonings

For suspect opioid overdose:

Naloxone IV/IM

- Administer 2 mg slow IV until the patient is breathing spontaneously and can maintain a pulse oximetry reading of 94%. May repeat once in 5 minutes
- Maximum total dose in 4 mg. Call medical control for additional dosing

- **0.1 mg/kg IV/IM/IN (max 1 mL per naris)**
- **Maximum dose of 2 mg IV/IM**
- **Maximum dose of 4 mg IN**

PARAMEDIC

SUSPECTED ORGANOPHOSPHATE POISONING

- Consider Nerve Agent Exposure Protocol

SUSPECTED TRICYCLIC ANTIDEPRESSANT (TCA) OVERDOSE

- Obtain 12-lead EKG. Look for – QRS > 100 msec, R wave in aVR > 3 mm, deep S wave in I or aVL
- Treat hypotension per Shock / Hypoperfusion Protocol
- **Sodium Bicarbonate** 1 mEq/kg IV/IO – check for QRS narrowing

SUSPECTED CALCIUM CHANNEL BLOCKER OVERDOSE

- 20 mL/kg IV bolus of **Normal Saline**
- For hypotension - **Calcium Gluconate 10%** 20 mg/kg IV/IO (max 3 g) over 5 to 10 min
- For bradycardia - **Glucagon** 1 to 5 mg IV push, repeat 10 min to max of 15 mg
- For persistent hypotension – Norepinephrine per Shock / Hypoperfusion protocol

SUSPECTED ASPIRIN OVERDOSE

- Push **Sodium Bicarbonate** 1-2 mEq/kg (max 100 mEq) over 3-5 minutes
- Administer **Dextrose 10%** 250 mL for altered LOC regardless of finger stick blood glucose

Notes

Differential Diagnosis

- **Tricyclic (TCA)**: sedation, confusion or delirium, hallucinations, cardiac conduction delays, arrhythmias, hypotension, hyperthermia, flushing, mydriasis (dilated pupils), dry mouth, urinary retention
- **Acetaminophen**: initially normal or nausea/vomiting. If not detected and treated, causes irreversible liver failure
- **Aspirin**: Tinnitus, hyperpnea (rapid, deep breathing), vertigo, nausea, vomiting, diarrhea, altered mental status, and coma. Early signs consist of abdominal pain and vomiting. Tachypnea and altered mental status may occur later.
- **Anti-depressants**: SSRIs rarely cause significant toxicity in isolated ingestions. May cause serotonin syndrome – hyperthermia, diaphoresis, eye twitching, tremors, hypertonia, hyperreflexia, ankle clonus. Citalopram is associated with seizures – treat with benzodiazepines per Seizure protocol – and QT prolongation, which can lead to Torsades – treat with Magnesium per V Fib / V Tach protocol
- **Opiates:** drowsiness, sedation, decreased respiratory drive, miosis, constipation
- **Stimulants**: tachycardia, hypertension, hyperthermia, diaphoresis, delirium, agitation, mydriasis, seizures
- **Anticholinergic**: tachycardia, hyperthermia, flushing, mydriasis, dilated pupils, altered mental status / hallucinations, dry skin, urinary retention
- **Cardiac Medications**: dysrhythmias, bradycardia, hypotension, and mental status changes
- **Solvents**: nausea, coughing, vomiting, and mental status changes
- **Organophosphate / cholinergic**: increased or decreased HR, increased secretions, nausea, vomiting, diarrhea, pinpoint pupils – treat with atropine per Nerve Agent exposure protocol

Poisoning Overdose

	Treatment	Notes
TRANSPORT	Transport and consider on-line medical control	POISON Help 1-800-222-1222

Effective Date 1 Jan 2022 | TE1

Hyperthermia/Heat Related Emergencies

	Treatment	Notes
EMT	Initiate Universal Patient Care Request ALS assistance Maintain SpO_2 of >94% Remove patient from hot environment Cool patient to room temperature If suspected heat stroke, e.g., seizures, altered mental status, LOC, then aggressively cool patient and place in a semi-fowlers position • Wet patient with water or IV solution (evaporation process) • Ice packs should be applied to axilla, neck, and groin regions If patient is fully conscious and NOT nauseated, allow patient to drink electrolyte rich fluids.	**Patient Presentation:** The patient may exhibit some of the following: 1. Heat Cramps: Moist, cool skin temperature, cramps, normal to slightly elevated temperature. 2. Heat Exhaustion: Moist, cool skin, cramps, weakness, dizziness, normal to elevated temperature, nausea. 3. Heat Stroke: Hot, dry skin (25% of patients will still be moist), seizures, altered mental status, dilated pupils, rapid heart rate or arrhythmia. **NOTE:** Do not give anything by mouth to a patient with altered mental status. Minor heat stress patients require only supportive care, monitoring and movement from the environment.
ADVANCED EMT	Establish IV/IO normal saline KVO, if necessary Consider Fluid Therapy: • **Normal Saline**- Administer 20 mL/kg bolus • Titrate to a systolic BP of 90 mmHg • May repeat one time	
PARAMEDIC	Monitor EKG	
TRANSPORT	Transport and consider on-line medical control	

Hypothermia/Cold Exposure

	Treatment	Notes
EMT	Initiate Universal Patient Care Request ALS assistance Maintain SpO_2 of >94% Remove the patient from the cold environment. Insulate from ground/shield from wind & water Remove wet clothing to prevent further heat loss, replace with dry blankets Use a thermal type blanket with special attention to covering the patient's head Passively re-warm the patient in a warm environment (warm blankets, heat packs to neck, axilla, and inguinal areas). For patients with severe hypothermia, rewarm the trunk prior to rewarming the extremities to minimize temperature after drop Handle potentially frostbitten areas gently Protect from further heat loss Core temperatures can be approximated through measurement of rectal temperatures	Patient Presentation: The patient may exhibit the following: • **Mild hypothermia 90-95° F (32-35°C)**: Patient may present with a history of exposure to cold, is alert but with altered level of consciousness, shivering, loss of gross motor function. • **Moderate hypothermia 82-90° F (28-32°C)**: Has decreased level of consciousness – may be unconscious – and may or may not be shivering • **Severe hypothermia < 82° F (< 28°C)**: Unconscious and not shivering CPR: Severe hypothermia may cause cardiac instability and rough handling of the patient theoretically can cause ventricular fibrillation. This has not been demonstrated or confirmed by current evidence. Intubation and CPR techniques should not be with-held due to this concern. Intubation can cause ventricular fibrillation so it should be done gently by most experienced person. Below 86°F (30° C) antiarrhythmics may not work and if given should be given at increased intervals. Contact medical control for direction. Epinephrine / Vasopressin can be administered. Below 86° F (30°C) pacing should not utilized. Consider withholding CPR if patient has organized rhythm or has other signs of life. Contact Medical Control. If the patient is below 86° F (30° C) then defibrillate 1 time if defibrillation is required. Deferring further attempts until more warming occurs is controversial. Contact medical control for direction. Hypothermia may produce severe bradycardia so take at least 60 seconds to palpate a pulse.
ADVANCED EMT	Establish IV/IO normal saline KVO, if necessary Monitor EKG and oxygen saturation If available administer warmed (40-42°C) crystalloids During re-warming initiate Pain Management Protocol as necessary	
PARAMEDIC	Manage the airway as needed per the Airway Management/Failed Airway Protocol	
TRANSPORT	Transport and consider on-line medical control	

Bites and Envenomation

Treatment

EMT

Initiate Universal Patient Care

Request ALS assistance

Maintain SpO2 of >94%

Identify markings (insects, bites, needle stick, etc.)

Immobilize extremity

Consider the application of cold packs for pain relief – **NOT indicated for pain related to snakebites**

If patient exhibits signs/symptoms of moderate/severe allergic reaction:

Epinephrine Auto-Injector

- Epinephrine Auto-Injector (0.3mg) IM
- May repeat dose (0.3mg) IM once in 10 minutes

- **Weight < 30kg - administer one dose (0.15 mg) IM into the outer mid-thigh**
- **Weight > 30kg - administer one dose (0.3 mg) IM into the outer mid-thigh**

Insect Stings

Remove stinger if visible: See Insect Stinger Removal

Snakebites

- Remove all jewelry/constricting items from affected limb
- Mark area of envenomation to track progression
- Maintain extremity level with heart
- Do not apply tourniquets or constricting bands
- Splint affected area in neutral position
- Opioids preferred for pain management rather than NSAIDs

Jellyfish/Man-o-War

- Remove visible tentacles with forceps
- Avoid self-contamination
- Rinse with salt water
- Rinse with normal saline and scrape with tongue depressor to remove remaining tentacles
- Immerse affected body part in hot water (113°F/45°C)

ADVANCED EMT

Establish IV/IO normal saline KVO, if necessary

- Do not initiate IV in injured extremity
- Consider Fluid Therapy
- **Normal Saline** Administer 20 mL/kg
- Titrate to a systolic BP of 90 mmHg

PARAMEDIC

Monitor EKG

Manage the airway as needed per the Airway Management/Failed Airway Protocol

Consider Pain Management Protocol

TRANPORT

Transport and consider on-line medical control

Notes

Differential

- Animal bite
- Human bite
- Snake bite (venomous)
- Spider bite (venomous)
- Insect sting / bite (bee, wasp, ant, tick)
- Infection risk
- Rabies risk
- Tetanus risk

POISON Help™ 1-800-222-1222

Near Drowning

	Treatment	Notes
EMT	Initiate Universal Patient Care Request ALS assistance Maintain SpO_2 of > 94% Remove wet clothing and wrap patient in blankets Protect from and/or treat hypothermia as per Hypothermia/Cold Exposure protocol Consider Head and Spinal Cord Trauma protocol	**Patient Presentation:** The patient may present with an altered level of consciousness, dyspnea, cyanosis, vomiting, seizures, or cardiopulmonary arrest. **NOTE**: Enter water only if trained and as a last resort (Reach, Throw, Row and Go with assistance). All near-drowning victims should be transported even if they appear uninjured or appear to have recovered.
ADVANCED EMT	Establish IV/IO NS KVO if possible, with warm IV fluids Manage the airway as needed per the Airway Management/Failed Airway Protocol	
PARAMEDIC	Monitor EKG	
TRANSPORT	Transport and consider on-line medical control	

Dive Depressurization Injuries

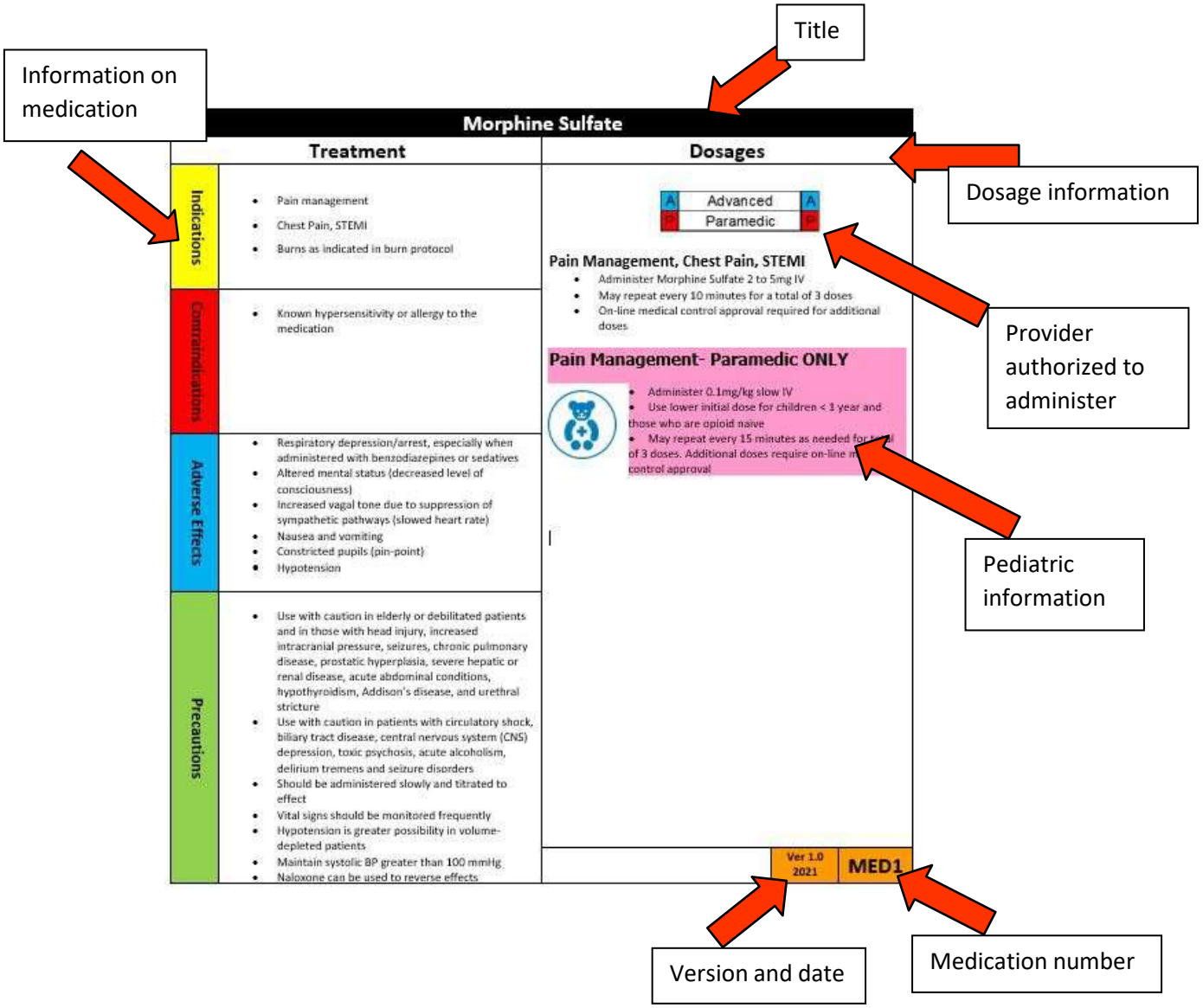
Treatment		Notes
EMT	Initiate Universal Patient Care Request ALS assistance Maintain SpO_2 of > 94% Remove wet clothing and wrap patient in blankets Protect from and/or treat hypothermia per Hypothermia/ Cold Exposure protocol Administer high-flow oxygen at the highest rate available via a non-rebreather Treat associated traumatic injuries Place patient with the head of the bed angled downward, have suction n ready	**Patient Presentation:** The patient may present with a history of Self-Contained Underwater Breathing Apparatus (SCUBA) use, breathing in a pressurized environment, or altitude chamber usage with sudden depressurization. Patients may present with any of the following symptoms: fatigue, itching, pain, vertigo, focal weakness, visual disturbances, speech difficulty, marbled rash, numbness, tingling, confusion, seizure and/or cardiac arrest. **1. Navy Diving Personnel:** For Navy diving personnel, contact on-duty Navy Dive Medical Officer (DMO) at the numbers listed below for consultation and transportation destination determination IAW U.S. Navy Dive Manual, Revision 7. Emergency consultation is available 24 hours a day. **Primary**: Navy Experimental Diving Unit (NEDU) Commercial (850) 230-3100 or (850) 235-1668, DSN 436-4351 **Secondary:** Navy Diving Salvage and Training Center (NDSTC) Commercial (850) 234-4651, DSN 436-4651 **2. Civilian Diving Personnel:** For civilian diving personnel contact the Diver's Alert Network (DAN) at (919) 684-9111 for consultation and transport destination determination. **3. Resuscitation of a Pulseless Diver:** CPR must begin immediately and an AED should be placed on the victim as soon as possible. All efforts should be made to immediately transport the patient to the highest level of medical care available while continuing basic life support (BLS) measures. If the pulseless diver regains vital signs, continue or begin transport to the nearest critical care facility prior to recompression. Effective rescue breathing, chest compressions, and immediate evacuation to a medical facility is the most viable treatment for drowning victims. Delays in access to a critical care facility will most likely result in an unfavorable outcome for the victim. A pulseless diver should not be recompressed unless there is no possibility of evacuation. **4. Medical Treatment During Transport:** Always have the patient breathe 100 percent oxygen during transport if available. If symptoms of decompression sickness or arterial gas embolism are relieved or improve after breathing 100 percent oxygen, the patient should still be recompressed as if the original symptom(s) were still present. Always ensure the patient is adequately hydrated. Give fluids by mouth if the patient is alert and able to tolerate them. Otherwise, an IV should be inserted and intravenous fluids should be started before transport. If the patient must be transported, initial arrangements should have been made well in advance of the actual diving operations. These arrangements, which would include an alert notification to the recompression chamber and determination of the most effective means of transportation, should be posted on the Job Site Emergency Assistant Checklist for instant referral. **5. Transport by Unpressurized Aircraft:** If the patient is moved by helicopter or other unpressurized aircraft, the aircraft should be flown as low as safely possible, preferably less than 1,000 feet. Exposure to altitude results in an additional reduction in external pressure and possible additional symptom
ADVANCED EMT	Establish IV/IO normal saline KVO, if necessary Consider **Normal Saline** 20 mL/kg; May repeat one additional dose	
PARAMEDIC	Monitor EKG For painful injuries, refer to Pain Management Protocol	
TRANSPORT	Contact on-line medical control for transport decisions: ED vs. Hyperbaric Chamber	

SECTION 4

Pharmacology

Section 4: Pharmacology

A pharmaceutical drug, also called a medication or medicine, is a chemical substance used to treat, cure, prevent, or diagnose a disease or to promote well-being. These medications are part of the official policy of the EMS system and are approved by representatives of the medical advisory committee. The EMS treatment medications are implemented as standing orders.



Acetaminophen (Tylenol)

Treatment

Indications

- Antipyretic (Reduce Fever)
- Seizures in Pediatric Patients
- Pain Relief

Contraindications

- Known hypersensitivity
- Severe hepatic disease

Adverse Effects

- Skin rashes

Precautions

- Patients with known liver disease
- History of alcohol use / abuse

Dosages

E	EMT
A	Advanced
P	Paramedic

Adult

- Administer 1 (one) 500 mg tab PO (extra strength) OR 2 (two) 325 mg tabs PO (regular strength)

Pediatric (liquid formulation – 160 mg/5 mL)

- **Administer 15 mg/kg PO for fevers ≥ 100.4°F or for acute pain. Max dose as described for adults**

	Effective Date 1 May 2022	**M-AC1**

Adenosine

Treatment

Indications

- Conversion to sinus rhythm in patients with supraventricular tachycardia (SVT)

Contraindications

- Known hypersensitivity
- 2nd or 3rd degree heart block
- Atrial fibrillation or flutter
- Sick sinus syndrome

Adverse Effects

- Conduction disturbances - 1st, 2nd, or 3rd degree heart block
- Prolonged sinus pause
- Transient arrhythmias - atrial fibrillation, PVCs
- Chest pressure
- Headache
- Dizziness
- Facial Flushing
- Dyspnea
- Nausea
- Hypotension

Precautions

- Effects antagonized by theophylline
- Effects enhanced by dipyridamole (persantine), digitalis, calcium channel blockers, and benzodiazepines such that dose of adenosine must be reduced for patients on these medications
- Be prepared for prolonged period of asystole after administration followed by potential transient arrhythmias
- Use with cause in elderly, who may be more likely to develop hypotension, bradycardia, or AV block after administration

Dosages

P Paramedic ONLY P

Adult

- Administer 6mg rapid IV followed by rapid 20 mL NS flush
- Administer 12mg rapid IV followed by 20 mL NS flush if no response with initial dose within 2 minutes
- Administer second dose of 12mg rapid IV if no response within 2 minutes
- On-line medical control approval required for additional doses

Pediatric

- **On-line medical control approval is required**
- **Administer 0.1 mg/kg rapid IV (maximum dose 6mg) followed by rapid flush with 5 mL NS (infants) to 10 mL NS (children)**
- **If no response within 2 minutes, administer 0.2 mg/kg rapid IV (maximum dose 12mg)**
- **On-line medical control approval required for additional doses**

Albuterol Sulfate (Metered Dose Inhaler)

Treatment

Indications

- Relief of bronchospasm with reversible obstructive airway disease and acute attacks of bronchospasm

Contraindications

- Known hypersensitivity

Adverse Effects

- Tachycardia
- Palpitations
- Peripheral vasodilatation
- Tremors
- Nervousness
- Headache
- Sore throat
- PVCs
- Nausea and vomiting

Precautions

- Bronchospasm may worsen in rare situations due to patient tolerance or hypersensitivity
- If respirations worsen, consider discontinuing use
- Should be used with caution in patients with hyperthyroidism or coronary artery disease
- Use with caution when administering to patients taking MAO inhibitors or tricyclic antidepressants which may be potentiated by albuterol

Dosages

E	EMT	E
A	Advanced	A
P	Paramedic	P

Adult

- Administer two puffs (90 mcg each) via metered dose inhaler
- May repeat dosage of two puffs (90 mcg each) once in 5 minutes

Pediatric

- **Administer two puffs (90 mcg each) via metered dose inhaler**
- **May repeat dosage of two puffs (90 mcg each) in five minutes**
- **On-line medical control approval required for additional doses**

Effective Date	
1 Jan 2022	**M-AS1**

Albuterol Sulfate - Nebulizer

Treatment

Indications

- Acute asthma attack
- Bronchospasm associated with asthma or COPD that does not respond to first dose of MDI albuterol
- Bronchospasm in chronic bronchitis and emphysema

Contraindications

- Known hypersensitivity

Adverse Effects

- Tachycardia
- Palpitations
- Peripheral vasodilatation
- Tremors
- Nervousness
- Headache
- Sore throat
- PVCs
- Nausea and vomiting

Precautions

- Bronchospasm may worsen in rare situations due to patient tolerance or hypersensitivity
- If respirations worsen, consider discontinuing use
- Should be used with caution in patients with hyperthyroidism or coronary artery disease
- Use with caution when administering to patients taking MAO inhibitors or tricyclic antidepressants which may be potentiated by albuterol

Dosages

E	EMT	E
A	Advanced	A
P	Paramedic	P

Adult

- Albuterol Sulfate 2.5 mg to 5 mg
- If no improvement, may administer two (2) additional doses at 5-minute intervals.

Pediatric

- **Albuterol Sulfate 2.5 mg**
- **If no improvement, may administer two (2) additional doses at 5-minute intervals.**

Effective Date 1 Jan 2022	M-AS2

Amiodarone

Treatment

Indications

- Antidysrhythmic for the management of Ventricular Fibrillation / Ventricular Tachycardia without pulse
- Management of regular and irregular wide complex tachycardia in stable patients

Contraindications

- Hypersensitivity
- 2nd or 3rd degree heart block or bradycardia causing syncope
- Cardiogenic shock

Adverse Effects

- Severe hypotension
- Profound bradycardia

Precautions

- Rapid infusion may lead to hypotension
- Sympathomimetic toxidromes (i.e. cocaine or amphetamine overdose)
- NOT to be used to treat ventricular escape beats or accelerated idioventricular rhythms

Dosages

P Paramedic ONLY P

Adult

Ventricular Fibrillation / Ventricular Tachycardia:

- Administer 300 mg IV/IO
- May administer one additional dose 150 mg IV/IO in 4 minutes

Regular and irregular wide complex tachycardia in stable patients:

- Amiodarone 150 mg IV over 10 minutes

Pediatric

Ventricular Fibrillation / Ventricular Tachycardia:

- **Administer 5 mg/kg IV/IO**
- **May repeat up to s doses**
- **MAX 15 mg/kg IV total**

Aspirin

Treatment

Indications

- Suspected cardiac related chest pain
- Acute Coronary Syndrome
- ST Elevated Myocardial Infarction (STEMI)

Contraindications

- Known hypersensitivity, including allergy to aspirin
- Not indicated in children < 18 years of age

Adverse Effects

- Increased risk of bleeding
- Heartburn
- Nausea and vomiting

Precautions

- May cause an increased risk of GI bleeding or hemorrhagic CVA. Is uncommon at low doses and risk depends on individual patient susceptibility
- The use of anticoagulants does not preclude a patient from the administration of aspirin

Dosages

E	EMT	E
A	Advanced	A
P	Paramedic	P

Adult

- Administer 325mg or 324mg (4 chewable oral 81 mg tablets)

Effective Date 1 May 2022

M-ASA

ATNAA/MARK 1

Treatment

Indications

- Nerve agent exposure or organophosphate (pesticide) poisoning
- Use for self-aid or buddy aid for public safety personnel
- Use on exposed patients (public) only if local community EMS ChemPack is available

Contraindications

- None with the presence of life-threatening exposure to nerve agents or organophosphate insecticides

Adverse Effects

- Pain at injection site
- Dryness of mouth
- Dizziness
- Blurred vision

Precautions

- Reassess symptoms after administration
- If symptoms persist or worsen after the administration of three (3) ATNAA/MARK 1 kits, obtain on-line medical control approval before administration of additional doses

Dosages

E	EMT	E
A	Advanced	A
P	Paramedic	P

Adult Mild Exposures

- Administer one (1) ATNAA/Mark 1 kit (2 mg atropine/600 mg pralidoxime)

Adult Severe Exposures

- Administer three (3) ATNAA Mark 1 kits (total of 6 mg atropine/1800 mg pralidoxime)
- On-line medical control approval required for additional doses

Pediatric Mild Exposures

- **Administer one (1) ATNAA/MARK 1 kit (2 mg atropine/600 mg pralidoxime)**

Pediatric Severe Exposures

- **Administer three (3) ATNAA MARK I kits (total of 6 mg atropine/1800 mg pralidoxime)**
- **On-line medical control approval required for additional doses**

Atropine

Treatment

Indications

- Symptomatic bradycardia
- Organophosphate (Nerve Agent) poisoning- extremely large doses may be needed

Contraindications

- Known hypersensitivity
- Dysrhythmias in which enhancement of conduction may accelerate ventricular rate and cause decreased cardiac output (e.g., atrial fibrillation, atrial flutter, or PAT with block)
- Relative contraindications (weigh risk/benefits.):
  - AV block at His- Purkinje level (second-degree Type II AV Block and third-degree AV Block)
  - Suspected acute myocardial infarction or ischemia
  - Glaucoma

Adverse Effects

- Excessive doses of atropine can cause delirium, restlessness, disorientation, tachycardia, coma, flushed and hot skin, ataxia, blurred vision, dry mucous membranes.
- Ventricular fibrillation and tachycardia have occurred following IV administration of atropine

Precautions

- Use with caution in presence of myocardial ischemia and hypoxia

Dosages

P Paramedic ONLY P

Adult

Bradycardia*:*

- Administer 0.5 mg IV
- May repeat every 3 to 5 minutes to a total prehospital dose of 3 mg

Organophosphate *poisoning*:

- Administer 2 - 4 mg IV or IM every 5 minutes until clearing of secretions

Pediatric

Symptomatic Bradycardia:

- **Administer 0.02 mg/kg IV, minimum dose 0.1 mg**
- **May repeat once in 3-5 min**
- **Max pre-hospital dose for child is 1 mg**

Organophosphate poisoning:

- **If <12 years, administer 0.05 mg/kg IV or IM every 10 minutes until excess secretions are diminished**

Effective Date 1 Jan 2022	M-AT1

Calcium Gluconate

Treatment

Indications

- Cardiac arrest with highly suspected hyperkalemia, calcium channel toxicity beta blocker toxicity
- Renal Failure, Dialysis

Contraindications

- Known hypercalcemia
- Suspected digoxin toxicity (i.e. digoxin overdose)

Adverse Effects

- Hypotension
- Bradycardia
- Ventricular Fibrillation
- Cardiac arrest
- Abdominal Pain
- Nausea/vomiting

Precautions

- Use with caution on digitalized patients taking digitalis, may cause serious cardiac arrhythmias
- Will cause precipitate to form if given with sodium bicarbonate

Dosages

P Paramedic ONLY P

Adult

Suspected hyperkalemia with EKG changes:

- Administer 1 to 2 grams IV/IO over 2 to 3 minutes

Cardiac Arrest with suspected hyperkalemia:

- Administer 1 to 2 grams IV/IO over 2 to 3 minutes

Calcium Channel Blocker Overdose:

- Administer 2 to 4 grams IV/IO over 5 minutes
- On-line medical control approval required for additional doses (can be given every 10 – 20 min)

Pediatric

Cardiac Arrest with suspected hyperkalemia:

- **Administer 60 mg/kg in 50 mL NS slow IV over 2 to 3 minutes (max dose 3 g)**

Effective Date 1 Jan 2022

M-CG1

Dextrose

Treatment

Indications

- Adults with symptomatic hypoglycemia (blood glucose level < 60 mg/dL)
- Pediatrics - altered mental status with hypoglycemia (blood glucose < 60 mg/dL)

Contraindications

- Known hyperglycemia

Adverse Effects

- May cause hyperglycemia (high blood sugar)

Precautions

- May worsen pre-existing hyperglycemia
- Tissue necrosis if extravasation occurs

Dosages

A	Advanced	A
P	Paramedic	P

Adult

- Administer D50W 25 grams IV/IO
- May repeat in 10 minutes if repeat blood glucose level is < 60 mg/dL and continued altered level of consciousness

Pediatric

- **Administer D10W 0.5 g/kg IV/IO – 5 mL/kg**
- **Re-check blood glucose in 10 minutes. May repeat if blood glucose < 60 mg/dL with persistent altered level of consciousness**

Diphenhydramine (Benadryl)

Treatment

Indications

- Mild/moderate allergic reactions

Contraindications

- Known allergy to diphenhydramine

Adverse Effects

- Drowsiness
- Dizziness
- Loss of coordination
- Blurred vision
- Headache
- Hypotension
- Tachycardia
- Chest tightness
- Palpitations
- Thickening of bronchial secretions
- Wheezing

Precautions

- Severe vomiting
- Alcohol intoxication
- Asthma patients
- Nursing mothers

Dosages

A	Advanced	A
P	Paramedic	P

Adult

- Administer 25 to 50 mg IV/IM/IO
- IV route slow over two (2) minutes

Pediatric (Not for < 1 year of age)

- **Administer 1 mg/kg IV/IM/IO (maximum single dose 50 mg)**
- **Administer IV route slowly over two (2) minutes**

Effective Date 1 Jan 2022

M-DY1

Epinephrine Auto-Injector

Treatment

Indications

- Moderate to severe allergic reaction with respiratory distress

Contraindications

- None in the presence of anaphylaxis

Adverse Effects

- Tachycardia
- Palpitations
- Angina
- Headache
- Nausea/Vomiting
- Dizziness
- Hypertension
- Nervousness/Anxiety
- Tremors

Precautions

- Unless in severe allergic reaction or severe asthma, on-line medical consultation should be obtained before administering to pregnant or cardiac patients

Dosages

E	EMT	E
A	Advanced	A
P	Paramedic	P

Adult (> 5 years of age or > 30kg)

- Administer one dose (0.3 mg) IM
- May repeat one dose (0.3 mg) IM in 10 minutes
- Preferred site of administration is the lateral thigh

Pediatric (< 5 years of age or < 30kg) – Pediatric Auto-Injector

- **Administer one dose (0.15 mg) IM for**
- **Preferred site of administration is the lateral thigh**

Epinephrine 1 mg/mL

Treatment

Indications

- Severe allergic reaction / anaphylaxis
- Bronchial asthma
- Bronchospasm unresponsive to inhaled beta-agonists

Contraindications

* No absolute contraindications when administered for a life-threatening emergency

- Hypersensitivity / allergy to epinephrine
- Preexisting tachydysrhythmias with a pulse (ventricular and supraventricular)
- Use with pregnant women should be avoided whenever possible

Adverse Effects

- Tachydysrhythmias (supraventricular and ventricular)
- Hypertension
- Chest pain
- Headache
- Anxiety
- Nervousness
- Dizziness
- Diaphoresis
- Nausea & vomiting
- Rebound edema may occur 20 to 30 minutes after administration to croup patients

Precautions

- Give cautiously in patients (especially elderly patients) with hypertension, tachycardia, diabetes, uncontrolled hyperthyroidism or pregnancy
- Do not mix with sodium bicarbonate
- Epinephrine causes dramatic increase in myocardial oxygen consumption
- Keep solution protected from light prior to usage

Dosages

A	Advanced	A
P	Paramedic	P

Allergic Reaction / Anaphylaxis / Asthma

- Administer: 0.3-0.5mg IM
- May repeat once every 5 minutes up to 3 doses

- **Weight < 30 kg: administer 0.15 mg IM to the lateral thigh**
- **Weight > 30 kg: administer 0.3 mg IM to the lateral thigh**
- **May repeat every 5 minutes up to 3 doses for persistent symptoms**

Croup

Administer via nebulizer

- **Dose < 1 year: 2.5 mg / 2.5 mL**
- **Dose > 1 year: 5 mg / 5 mL**

Epinephrine 1 mg/10 mL

Treatment

Indications

- Cardiac arrest / pediatric cardiac arrest
- Moderate to severe allergic reaction/ anaphylaxis
- IV epinephrine should be reserved for cardiac arrest patients and for impending cardiac arrest due to anaphylactic shock

Contraindications

*No absolute contraindications when administered for a life-threatening emergency

- Hypersensitivity / allergy to epinephrine
- Preexisting tachydysrhythmias with a pulse (ventricular and supraventricular)
- Use with pregnant women should be avoided whenever possible

Adverse Effects

- Tachydysrhythmias (supraventricular and ventricular)
- Hypertension
- Chest pain
- Headache
- Anxiety
- Nervousness
- Dizziness
- Diaphoresis
- Nausea and vomiting

Precautions

- Give cautiously in patients (especially elderly patients) with hypertension, tachycardia, diabetes, Parkinson's disease, pheochromocytoma, uncontrolled hyperthyroidism, or pregnancy
- Do not mix with sodium bicarbonate
- Epinephrine causes an increase in myocardial oxygen consumption
- Keep solution protected from light prior to usage

Dosages

A	Advanced	A
P	Paramedic	P

Cardiac Arrest

- Administer 1 mg (1 mg/10 mL) IV/IO every 3 to 5 minutes

Anaphylaxis

- Administer 0.3 mg (1 mg/10 mL) slow IV/IO

Pediatric Cardiac Arrest

- **Administer 0.01 mg/kg (1 mg/10 mL) IV/IO every 3 to 5 minutes**
- **Maximum dose 1 mg**

Pediatric Bradycardia

- **Administer 0.01 mg/kg (1 mg/10 mL) IV/IO every 5 minutes**
- **Maximum dose 1 mg**

Epinephrine

Treatment

Indications

- Unstable bradycardia
- Pediatric sepsis (cold shock)

Contraindications

*No absolute contraindications when administered for a life-threatening emergency

- Hypersensitivity / allergy to epinephrine
- Preexisting tachydysrhythmias with a pulse (ventricular and supraventricular)
- Use with pregnant women should be avoided whenever possible

Adverse Effects

- Tachydysrhythmias (supraventricular and ventricular)
- Hypertension
- Chest pain
- Headache
- Anxiety
- Nervousness
- Dizziness
- Diaphoresis
- Nausea and vomiting

Precautions

- Use in patients with mesenteric or peripheral vascular thrombosis may increase ischemia and extend the area of infarction.
- Gangrene of the extremities has occurred in patients with occlusive or thrombotic vascular disease or who received prolonged or high dose infusions. Monitor for changes to the skin of the extremities in susceptible patients
- Extravasation may cause necrosis and sloughing of surrounding tissue. To reduce the risk of extravasation, infuse into a large vein, check the infusion site frequently for free flow, and monitor for signs of extravasation

Dosages

P Paramedic ONLY P

Adult Bradycardia

- Initiate 10 mcg/min
- Titrate to SBP > 90 mmHg or MAP > 65 mmHg
- Max dose 30 mcg/min

Epinephrine Infusion Preparation

1) Add 1mg (1mg/mL) to a 250mL bag of NS or D5W to make a 4microgram/milliliter solution of epinephrine.

2) Connect and prime a 60 gtts/mL IV set for medication administration.

Mix 1mg of epinephrine 1:1,000 in 250ml = 4 mcg/ml	
1 mcg drip = 15 gtt/min	6 mcg drip = 90 gtt/min
2 mcg drip = 30 gtt/min	7 mcg drip =105 gtt/min
3 mcg drip = 45 gtt/min	8 mcg drip=120 gtt/min
4 mcg drip = 60 gtt/min	9 mcg drip=135 gtt/min
5 mcg drip = 75 gtt/min	10 mcg drip=150 gtt/min

*Based on a micro drip calibration of 60 drops equal to 1.0 milliliter.

Pediatric Sepsis

- **Epinephrine 1 mg/10 mL (0.1 mg/mL) IV at a rate of 0.1 - 1 mcg/kg/min**
- **Titrate to SBP appropriate for age (minimum SBP = 70 + (2*age in years) up to age 10), normal mental status, and normal perfusion / capillary refill**
- **Follow preparation guidelines described for Adult Bradycardia (above)**

Fentanyl

Treatment

Indications

- Injuries requiring pain management
- Burns

Contraindications

- Trauma with hypotension
- COPD with compromised respiratory effort.
- Hypotension
- Known hypersensitivity

Adverse Effects

- Respiratory depression
- Altered mental status
- Constricted pupils

Precautions

- Naloxone (Narcan) reverses effects
- Should be administered slowly and titrated to effect
- Elderly patients and those with impaired renal function may be more sensitive to medication's effects

Dosages

P Paramedic ONLY P

Pain Management:

- 1 mcg/kg IV/IO/IM slow IVP with a maximum initial does of 100 mcg.
- 1 mcg/kg IN to a maximum dose of 100 mcg (administer equally between each nostril) to a maximum of 1ml per nostril.
- After 10 minutes, may repeat 25 mcg every 10 minutes as needed until improvement

- **PEDS: 1 mcg/kg IV/IO/IM/IN**
- **May Repeat 0.5 mcg/kg every 10 minutes**
- **MAX 2 mcg/kg**

Glucagon

Treatment

Indications

- Hypoglycemia – Blood Glucose Level <60mg/dL
- Calcium channel blocker or beta blocker overdose

Contraindications

- Known hypersensitivity
- Known pheochromocytoma - A tumor originating in cells of the adrenal gland that causes overproduction of certain hormones (produces hypertensive reaction)

Adverse Effects

- Nausea and vomiting
- Hypotension
- Bronchospasm
- Respiratory distress

Precautions

- Administer cautiously to patients with cardiovascular disease and patients with kidney or liver dysfunction
- Glucagon only works if liver has significant glycogen stores

Dosages

A	Advanced	A
P	Paramedic	P

Hypoglycemia without IV access:

- Administer 1 mg IM
- Recheck blood glucose in 10 minutes – if continued altered level of consciousness and blood glucose is < 60 mg/dL, may repeat once

Suspected calcium channel blocker or beta-blocker overdose:

- Administer 1 mg IV/IO/IM (slow over 2 minutes)
- May administer up to 5 mg

Hypoglycemia without IV access:

- **If < 20 kg, administer 0.5 mg IM**
- **If > 20 kg administer 1 mg IM**
- **Recheck blood glucose after 10 minutes**

Suspected calcium channel blocker or beta blocker dose:

- **Administer 1 mg IV/IO/IM (slow over 2 minutes)**
- **May require up to 5 mg**

Glucose (Oral)

Treatment

Indications

- Altered mental status with known diabetic history
- Hypoglycemia with BGL less than 60 mg/dL

Contraindications

- Unconscious/Unresponsive
- Inability to swallow
- Inability to maintain own airway

Adverse Effects

- Hyperglycemia

Precautions

- None

Dosages

E	EMT	E
A	Advanced	A
P	Paramedic	P

Hypoglycemia

- Administer 10-15 grams of glucose paste buccally (between gum and cheek). Repeat as needed for persistent or recurrent hypoglycemia.

- **Administer 10-15 grams of glucose paste buccally (between gum and cheek). Repeat as needed for persistent or recurrent hypoglycemia.**

Haloperidol

Treatment

Indications

- For the management of acute psychosis or agitated/violent behavior refractory to non-pharmacologic interventions

Contraindications

- CNS depression
- Coma
- Documented Hypersensitivity

Adverse Effects

- Dose – related extrapyramidal reactions
- Hypotension
- Higher risk of QT-prolongation and Torsades de Pointes

Precautions

- Other CNS depressants may potentiate effects
- Monitor respiratory effort closely
- Elderly and debilitated patients
- Patients with history of seizures or EEG abnormalities
- Severe cardiovascular disorders
- Patients taking anticonvulsants, antiparkinsonian RX or lithium

Dosages

P Paramedic ONLY P

Behavioral Emergencies:

- Haloperidol 5mg IV or 10mg IM
- If the patient develops dystonia or sudden jerking movements, administer Diphenhydramine 25 mg IV or 50 mg IM

- **Pediatrics (age 5 - 14 years)**
- **0.05 mg/kg IM (max dose 2.5 mg)**

Ipratropium Bromide (Atrovent)

Treatment

Indications

- Acute asthma attack
- Bronchospasm associated with asthma or COPD that does not respond to first dose of metered dose inhaler (MDI) albuterol
- Bronchospasm in chronic bronchitis and emphysema

Contraindications

- Known hypersensitivity to the drug
- Hypersensitivity to atropine
- Younger than 1 year of age

Adverse Effects

- Tachycardia
- Palpitations
- Peripheral vasodilatation
- Tremors
- Nervousness
- Headache
- Sore throat
- PVCs
- Nausea and vomiting
- Dry mouth / unpleasant taste
- Vision changes
- Eye pain / burning
- Dizziness

Precautions

- Use with caution in patients with narrow angle glaucoma, prostatic hypertrophy, nursing mothers
- Use with caution in patients with congestive heart failure, heart disease, hypertension and elderly patients
- Use of a nebulizer with a mouthpiece may be preferable to a facemask, to reduce the likelihood of the nebulizer solution coming into direct contact with the eyes. Having patient close their eyes during nebulization may prevent this.
- Bronchospasm may worsen in rare situations due to patient tolerance or hypersensitivity
- Should be used with caution in patients with hyperthyroidism or coronary artery disease
- Use with caution when administering to patients taking MAO inhibitors or tricyclic antidepressants which may be potentiated by albuterol
- Hypersensitivity to soy and peanuts

Dosages

E	EMT	E
A	Advanced	A
P	Paramedic	P

Airway Management, Asthma:

- Ipratropium bromide 0.5 mg with Albuterol Sulfate 2.5 mg combined
- If no improvement, may administer two additional doses at 5-minute intervals.

- **Ipratropium bromide 0.5 mg with Albuterol Sulfate 2.5 mg combined**
- **If no improvement, may administer every 5 minutes for maximum 2 doses**

Ketamine

Treatment

Indications

- Combative / Uncooperative Patients that pose a significant threat of harm to self and others
- Patients exhibiting signs / symptoms of excited delirium
- Pain management

Contraindications

- Known hypersensitivity
- Patients with known history of hypertension

Adverse Effects

- Hypersalivation
- Vomiting with aspiration
- Tachycardia with hypertension
- Bradycardia with hypotension
- Respiratory depression may occur
- Laryngospasm

Precautions

- Vomiting with aspiration
- Incompatible with diazepam in the same syringe

Dosages

P Paramedic ONLY P

Excited Delirium

- Ketamine 4 mg/kg IM
- Max dose of 400 mg

Pediatrics (age > 13 years): 4mg/kg IM
Max dose 400 mg

Pain Management

IV/IO

- Ketamine 0.25 mg/kg IV / IO
- Infuse or IV push over 10 minutes
- May repeat every 20 minutes
- Maximum 25 mg single dose
- Maximum 4 total doses

IN

- Ketamine 1 mg/kg IN
- Maximum 1 total dose

Ketorolac

Treatment

Indications

- Pain management

Contraindications

- Known hypersensitivity to Ketorlac, aspirin, or other NSAIDs.
- Patients with known gastrointestinal hemorrhage/active bleeding
- Active wheezing
- Age <18 years old or >65 years old
- Current anticoagulation therapy
- Current steroid use
- Head or multisystem trauma
- History of upper GI bleeding or peptic ulcer disease
- History of renal disease or kidney transplant
- Known or suspected pregnancy

Adverse Effects

- Bleeding
- The most common ones are abdominal pain, nausea, heart burn, headache, pain at injection site, prolonged bleeding times, and elevated liver enzymes. GI bleeding is more commonly seen in patients over age 65 years.

Precautions

- Do not give if the patient has an allergy to any NSAID (Ibuprofen, naproxen, celecoxib)
- May lead to fluid retention – avoid use in heart failure
- Avoid use in patients with recent myocardial infarction.
- In uncommon cases, can lead to serious skin reactions such as Stevens Johnson Syndrome or hematologic effects leading to anemia and low platelet counts

Dosages

P Paramedic ONLY P

Pain Management

IV/IO

Ketorolac 15 mg

- Slow IV push over 2 minutes
- Maximum 1 dose

IM

Ketorolac 30 mg

- Maximum 1 dose

Effective Date	M-KL1
1 Jan 2022	

Lactated Ringers

Treatment

Indications

- Burn management
- Sepsis

Contraindications

- Fluid overload states

Adverse Effects

- Rare in therapeutic doses

Precautions

- Patients receiving Lactated Ringers should be monitored to prevent circulatory overload.
- Lactated Ringers should be used with caution in patients with congestive heart failure or renal failure.

Dosages

A	Advanced	A
P	Paramedic	P

Burn Management

- Initial Rate (mL/hr.) - Total Body Surface Area (TBSA) x 10
- Increase rate by 100 mL/hr. for every 10 kg > 80 kg

- **Initial Rate: 3 mL x TBSA (%) x body weight (kg)**
- **Give half in first 8 hours, give remaining over subsequent 16 hours**

Sepsis

- 30 mL/kg IV/IO bolus
- **20 mL/kg IV/IO bolus**
- **Repeat 20 mL/kg IV/IO bolus for persistent hypoperfusion. Contact online medical control for additional boluses**

Lidocaine 2%

Treatment

Indications

- Pain management for IO access in conscious patients
- Ventricular tachycardia with a pulse

Contraindications

- Atrioventricular (AV) blocks
- Sensitivity to lidocaine
- Idioventricular escape rhythms
- Accelerated idioventricular rhythm
- Sinus bradycardia or arrest or block
- Hypotension
- Shock
- Ventricular conduction defects

Adverse Effects

- Lidocaine may cause clinical evidence of toxicity usually related to the central nervous system
- Early toxicity: muscle twitching, slurred speech, altered mental status, decreased hearing, paresthesia (pins and needles), anxiety, apprehension, visual disturbances, nausea, numbness, difficulty breathing or swallowing, decreased heart rate
- Late toxicity: convulsions, hypotension, coma, widening of QRS complex, prolongation of the P-R interval, hearing loss, hallucinations

Precautions

- Reduce dosage in patients with decreased cardiac output, liver dysfunction and elderly (age greater than 70)
- Bolus doses should be administered over a 1 minute period, except in ventricular fibrillation/ventricular tachycardia, when they are administered IV

Dosages

P Paramedic ONLY P

Ventricular Tachycardia:

- Administer 1 to 1.5 mg/kg IV or IO
- Subsequent dosing 0.5 to 0.75 mg/kg IV or IO
- If successful conversion, consider starting an infusion at 2 to 4 mg/min using premixed 2 g/250 mL in D5W
- Maximum dose of 3 mg/kg IV

Cardiac Arrest:

- Initial dose: 1-1.5 mg/kg
- Second dose: 0.5-0.75 mg/kg

IO pain management:

- Administer 40 mg IO over 2 minutes prior to saline flush (one dose only)
- On-line medical control approval required for additional doses

IO pain management:

- **Administer 0.5 mg/kg IO (max dose 40 mg) over 2 minutes prior to saline flush (one dose only)**
- **On-line medical control approval required for additional doses**

Lorazepam (Ativan)

Treatment

Indications

- Seizures
- Management of Behavioral Emergencies

Contraindications

- Hypersensitivity
- Acute narrow angle glaucoma
- Severe respiratory depression
- Sleep Apnea

Adverse Effects

- Drowsiness
- Dizziness
- Muscle Weakness
- Blurred Vision
- Headache
- Nausea & Vomiting
- Constipation
- Difficulty concentrating
- Amnesia
- Skin Rash

Precautions

- **REQUIRES REFRIGERATION** MAY ONLY BE STORED AT ROOM TEMPERATURE FOR MAX OF 30 DAYS
- Use with caution in patients with compromised respiratory function (COPD, sleep apnea)
- Do NOT administer to mothers who are breast feeding
- Use with caution in depression patients who do not have adequate antidepressant therapy

Dosages

P Paramedic ONLY P

Seizures:

- Administer 4 mg IV/IM/IO
- May repeat 2 mg dose every 5 minutes
- Maximum total pre-hospital dose is 10 mg

	Effective Date 1 May 2022	**M-LO1**

Magnesium Sulfate

Treatment

Indications

- Eclampsia
- Torsades de Pointes / Polymorphic Ventricular Tachycardia
- Severe asthma attacks

Contraindications

- Renal disease
- Heart block
- Hypermagnesemia

Adverse Effects

- Hypotension
- Respiratory depression
- Bradycardia
- Dysrhythmias
- Cardiac arrest
- CNS depression
- Flushing
- Sweating

Precautions

- Caution should be used in patients receiving digitalis – may cause severe hypotension or cardiac arrest

Dosages

P Paramedic ONLY P

Adult

Polymorphic VT /Torsade's de pointes:

- Administer 2gm IV/IO in 50mL of D5W over 5 to 10 minutes

Eclampsia:

- Administer 4gm IV/IO in 100mL of D5W over 15 to 20 min

Asthma – severe

- Administer 2gm IV/IO in 50mL of D5W over 10 to 15 minutes

Asthma – Severe

- **Administer 50mg/kg IV/IO (maximum dose 2gm) over 10-15 minutes**

Methylprednisolone (Solu-Medrol)

Treatment

Indications

- Refractory bronchospasm and status asthmaticus
- Bronchial asthma
- Other bronchospastic disorders

Contraindications

- Pre-term infants
- Untreated serious Infections
- Known hypersensitivity

Adverse Effects

- Alkalosis
- Congestive heart failure
- Headache
- Hypertension
- Hypokalemia
- Seizures
- Nausea and vomiting

Precautions

- Methylprednisolone (Solu-Medrol) is an adjunct to, not a substitute for bronchodilator therapy in acute asthma exacerbation
- Safety in pregnancy is unclear – administer to gravid females, nursing mothers, and women of childbearing potential only when the anticipated benefits outweigh the known risks

Dosages

P Paramedic ONLY P

Asthma

- Administer 125 mg IV/IO
- **On-line medical control approval required**
- **Administer 2 mg/kg IV/IO**
- **Maximum dose is 125 mg**

Effective Date 1 Jan 2022

M-MT1

Midazolam (Versed)

Treatment

Indications

- Control of active seizure/status epilepticus or seizure related to eclampsia
- Sedation of excited delirium or combative patients
- Post airway management if needed for compliance

Contraindications

- Known hypersensitivity

Adverse Effects

- Cardiorespiratory depression
- CNS depression
- Variations in blood pressure and pulse rate
- Temporary amnesia
- Drowsiness

Precautions

- Rapid administration may cause seizures and/or severe hypotension
- Decreased doses for patients greater than 60
- Decreased doses for patients receiving concomitant medications

Dosages

P Paramedic ONLY P

Behavioral Emergencies

- Midazolam 5 mg IV/IO/IM/IN
- Max dose 10 mg
- IV slow push over 2 minutes
- Administer ½ dose for patients > age 65 years
- Maintain systolic greater than 100 mmHg
- **Pediatrics: 0.1 mg/kg IV IM OR 0.2 mg/kg IN**
- **Max dose 5 mg**

Seizures, Sedation IV/IM

- 5 mg IV
- May repeat every 3- 5 minutes as needed
- Max pre-hospital dose s 10 mg IV

- **0.1 mg/kg IV/IM to max 2.5 mg**
- **May repeat 0.1 mg/kg**
- **Maximum 5 mg**
- **IM Preferred for seizures when IV/IO access not readily available**

Seizures IN

- 10 mg IN
- Use 5 mg/ml concentration and administer half the dose in each nostril using a mucosal atomizer device
- Maintain systolic greater than 90 mmHg
- **0.2 mg/kg IN divided between each nostril**

Airway Management

- 5 mg IV/IM/IO
- Administer IV/IO routes slowly (over 2 minutes)
- Systolic BP must be greater than 100 mmHg
- May repeat 2.5 mg if resistance continues every 5 minutes to max dose 10 mg

- **Pedi Midazolam 0.1 mg/kg IV/IO to max 2.5 mg**
- **Administer over 2 minutes, repeat every 5 to 10 min. Maximum prehospital dose 5 mg**

Morphine Sulfate

Treatment

Indications

- Pain management
- Chest Pain, STEMI
- Burns as indicated in burn protocol

Contraindications

- Known hypersensitivity or allergy to the medication

Adverse Effects

- Respiratory depression/arrest, especially when administered with benzodiazepines or sedatives
- Altered mental status (decreased level of consciousness)
- Increased vagal tone due to suppression of sympathetic pathways (slowed heart rate)
- Nausea and vomiting
- Constricted pupils (pin-point)
- Hypotension

Precautions

- Use with caution in elderly or debilitated patients and in those with head injury, increased intracranial pressure, seizures, chronic pulmonary disease, prostatic hyperplasia, severe hepatic or renal disease, acute abdominal conditions, hypothyroidism, Addison's disease, and urethral stricture
- Use with caution in patients with circulatory shock, biliary tract disease, central nervous system (CNS) depression, toxic psychosis, acute alcoholism, delirium tremens and seizure disorders
- Should be administered slowly and titrated to effect
- Vital signs should be monitored frequently
- Hypotension is greater possibility in volume-depleted patients
- Maintain systolic BP greater than 100 mmHg
- Naloxone can be used to reverse effects

Dosages

A	Advanced	A
P	Paramedic	P

Pain Management, Chest Pain, STEMI

- Administer Morphine Sulfate 2 to 5mg IV
- May repeat every 10 minutes for a total of 3 doses

Pain Management- Paramedic ONLY

- **Administer 0.1 mg/kg slow IV**
- **Use lower initial dose for children < 1 year and those who are opioid naive**
- **May repeat every 15 minutes as needed for total of 3 doses**

	Effective Date 1 Jan 2022	**M-MP1**

Naloxone (Narcan)

Treatment

Indications

- To reverse respiratory and central nervous system depression induced by opioids, including prescribed medications or illicit drugs
- Coma of unknown origin
- Seizure with suspected narcotic overdose etiology

Contraindications

- Known hypersensitivity to the drug

Adverse Effects

Usually associated with high doses, parenteral administration, or rapid administration

- Acute withdrawal syndrome
- Agitation
- Confusion
- Dizziness
- Headaches
- Irritability
- Shivering
- Tonic Seizures
- Flushing
- Hypertension or hypotension
- Tachycardia, including ventricular tachycardia
- Diaphoresis
- Piloerection
- Abdominal cramps
- Nausea, vomiting, and diarrhea
- Tremors or muscle spasms
- Nasal congestion
- Pulmonary edema and respiratory distress

Precautions

- Naloxone may induce opiate withdrawal (e.g. pain, tachycardia, hypertension, fevers, diaphoresis, nausea vomiting and diarrhea, abdominal cramps, agitation) in patients who are physically dependent
- May cause irritability in neonates born to mothers who are opioid dependent. May be life threatening and include excessive crying, failure to feed, seizures, and hyperactive reflexes
- Certain drugs (e.g. fentanyl and its derivatives) may require much higher doses of naloxone for reversal than typically used for heroin or common prescription opioids
- Should be administered and titrated so respiratory efforts return but not intended to restore full consciousness

Dosages

E	EMT	E
A	Advanced	A
P	Paramedic	P

IN- EMT

IV/IO/IM – AEMT/Paramedic

Overdose

- 2 mg IN up to a dose of 4 mg, divided between both nostrils
- 2 mg IM up to a dose of 4 mg
- 0.4 mg - 2 mg IV, titrated to restoration of spontaneous breathing
- If opiate overdose is highly suspected, Paramedic may continue to administer additional doses if necessary

- **0.1 mg/kg IV/IM/IN (max 1 mL per naris)**
- **Maximum dose of 2 mg IV/IM**
- **Maximum dose of 4 mg IN**

Nitroglycerin

Treatment

Indications

- Chest pain or angina
- Congestive heart failure
- Acute pulmonary edema

Contraindications

- Known hypersensitivity
- Pediatric patient less than 12 years old
- Any patient having taken medication for erectile dysfunction (e.g., Viagra, Levitra, Cialis or OTC medications containing tadalafil and sildenafil) within past 48 hours.
- Patients taking medications for pulmonary artery hypertension (e.g. Adcirca or Revatio). On-line medical control approval is required to override this contraindication.
- Asymptomatic hypertension
- Blood pressure less than 90 mmHg systolic
- Heart rate less than 60

Adverse Effects

- Headache
- Hypotension
- Nausea
- Vomiting
- Dizziness
- Decreased level of consciousness

Precautions

- Severe hypotension, particularly with upright posture, may occur even with small doses of nitroglycerin
- Paradoxical bradycardia and increased angina pectoris may accompany nitroglycerin induced hypotension
- Volume depleted patients may experience exaggerated hypotensive response to nitroglycerin; the spray should not be inhaled
- May be beneficial to administer EMS supplied nitroglycerin tablets due to the patient's tablets being expired or degraded from environmental exposure

Dosages

E	EMT	E
A	Advanced	A
P	Paramedic	P

Patient Prescribed Medication ONLY- EMT

Chest Pain

- Administer nitroglycerin: 0.4 mg SL (may repeat dose twice at 3-to-5 minute intervals)
- May be repeated only if SBP is greater than 90 mmHg
- Maximum total pre-hospital dose is 1.2 mg

Norepinephrine (Levophed)

Treatment

Indications

- Hypotension due to shock (Cardiogenic, hypovolemic, septic)
- Pediatric sepsis (warm shock)

Contraindications

- None

Adverse Effects

- Tissue Ischemia
- Cardia Arrythmias
- Hypertension

Precautions

- Avoid Norepinephrine Bitartrate in Dextrose Injection in patients with mesenteric or peripheral vascular thrombosis, as this may increase ischemia and extend the area of infarction.
- Gangrene of the extremities has occurred in patients with occlusive or thrombotic vascular disease or who received prolonged or high dose infusions. Monitor for changes to the skin of the extremities in susceptible patients
- Extravasation of Norepinephrine Bitartrate in Dextrose Injection may cause necrosis and sloughing of surrounding tissue. To reduce the risk of extravasation, infuse into a large vein, check the infusion site frequently for free flow, and monitor for signs of extravasation

Dosages

P Paramedic ONLY P

Hypoperfusion/Shock

- Initiate 0.05 - 0.3 mcg/kg/minute (typical dosing 5 – 15 mcg/min for 80 kg person)
- Titrate to SBP > 90 mmHg or MAP > 65 mmHg
  - Max dose 30 mcg/min
  - **Pediatrics: 0.05-0.1mcg/kg/min**
  - **2 mcg/kg MAX**

Desired Dose (mcg/min)	Drip Rate (drops/min)
1 mcg/min	4 gtt/min
2 mcg/min	8 gtt/min
3 mcg/min	11 gtt/min
4 mcg/min	15 gtt/min
5 mcg/min	19 gtt/min
6 mcg/min	23 gtt/min
7 mcg/min	26 gtt/min
8 mcg/min	30 gtt/min
9 mcg/min	34 gtt/min
10 mcg/min	38 gtt/min
11 mcg/min	41 gtt/min
12 mcg/min	45 gtt/min
13 mcg/min	49 gtt/min
14 mcg/min	53 gtt/min
15 mcg/min	56 gtt/min
16 mcg/min	60 gtt/min
17 mcg/min	64 gtt/min
18 mcg/min	68 gtt/min
19 mcg/min	72 gtt/min
20 mcg/min	75 gtt/min
21 mcg/min	79 gtt/min
22 mcg/min	83 gtt/min
23 mcg/min	86 gtt/min
24 mcg/min	90 gtt/min
25 mcg/min	94 gtt/min
26 mcg/min	98 gtt/min
27 mcg/min	101 gtt/min
28 mcg/min	105 gtt/min
29 mcg/min	109 gtt/min
30 mcg/min	113 gtt/min

Norepinephrine Infusion Preparation

1) Draw 4mL off and discard from a 250 mL bag of NS or D5W

2) Add 4mg (1mg/mL) resulting in 250mL of a 16 microgram/milliliter solution of norepinephrine.

3) Connect and prime a 60 gtts/mL IV set for medication administration.

Normal Saline (0.9% Sodium Chloride)

Treatment

Indications

- Hypovolemia/Shock
- **K**eep **V**ein **O**pen (KVO)
- Burn management

Contraindications

- Fluid overload states

Adverse Effects

- Rare in therapeutic doses

Precautions

- Patients receiving normal saline should be monitored to prevent circulatory overload.
- Normal saline should be used with caution in patients with congestive heart failure or renal failure.

Dosages

A	Advanced	A
P	Paramedic	P

Fluid Resuscitation

- KVO – Keep Vein Open
- Initiate IV fluid therapy 20mL/kg
- Titrate to a SBP of at least 90mmHg
- May repeat once for a total of 40mL/kg

- **KVO – Keep Vein Open**
- **Initiate IV fluid therapy 20mL/kg, (10mL/kg infant)**
- **Titrate to an age specific systolic BP**
- **May repeat once**

Ondansetron (Zofran)

Treatment

Indications

- Nausea
- Vomiting

Contraindications

- Hypersensitivity

Adverse Effects

- May cause QT prolongation leading to Torsade's de Pointes in patients with prolonged QT on certain types of anti-arrhythmic, congenital long QT syndrome
- May cause serotonin syndrome in patients taking certain SSRIs, MAOIs, fentanyl, tramadol, or lithium (less common outside of the operating room setting)
- Limit doses (no more than 8 mg) to persons with severe liver disease
- Headache
- Fatigue
- Constipation
- Dizziness
- Diarrhea
- Urinary retention
- Constipation
- Fever

Precautions

- Refrain from administering with Amiodarone
- Maintain lower dose with known liver disease
- NOT effective for motion sickness/vertigo

Dosages

E	EMT	E
A	Advanced	A
P	Paramedic	P

EMT – Oral Dissolving Tablet ONLY

Advanced/Paramedic – PO, IV/IM

Nausea – Injectable

- Administer 4mg slow IV/IM
- May repeat once after 15 minutes for a total of 8 mg

- **Administer 0.15 mg/kg slow IV/IM (max 4 mg)**
- **May repeat once in 15 minutes**

Nausea -Oral Dissolving Tablet

- Administer 4mg PO, oral dissolving tablet (ODT)
- May repeat once after 15 minutes for a total of 8 mg

- **Administer 4mg PO, oral dissolving tablet (ODT)**
- **Maximum total pre-hospital dose is 4mg**

Oxygen

Treatment

Indications

- Patient complaint of shortness of breath or patients who have labored respirations, dyspnea, wheezing, or rales with a pulse oximetry reading of under 94% on room air
- As indicated by specific protocol

Contraindications

- Newborns at term with hypoxia in the expected range for their age
- Children with congenital heart conditions where the expected oxygen saturation is anticipated to be low and do not exhibit signs or symptoms of respiratory distress

Adverse Effects

- High concentrations of oxygen may reduce respiratory drive in COPD patients who respond to low oxygen levels to maintain their respiratory drive; these patients should be carefully monitored and their target oxygen concentration adjusted accordingly to 90-92%
- Excessive oxygen administration has been associated with worse outcomes in patients with cardiac arrest, STEMI, and Stroke.
- Use of supplemental oxygen in term newborns has been associated with excess mortality. Excessive supplemental oxygen in premature newborns has been associated with retinopathy

Precautions

- Obtain and monitor pulse oximetry readings
- Oxygen should be given with caution to patients with COPD
  - Observe for depressed ventilation
  - If $EtCO_2$ values rise in response to oxygen therapy, consider decreasing the concentration of supplemental oxygen
- Nasal cannula must be supplied with 2 – 6 LPM
- Simple or partial rebreather masks must be supplied with 6 – 10 LPM
- Nonrebreather masks (NRB) must be supplied with 10-15 LPM, increase O_2 flow if bag deflates
- Bag-valve-mask (BVM) must be supplied with 15 LPM

Dosages

E	EMT	E
A	Advanced	A
P	Paramedic	P

Administer oxygen as appropriate

- Administer sufficient oxygen as needed to maintain an SpO2 of at least 94%
- For patients with STEMI or CVA, administer to maintain an SpO_2 between 90 to 92%
- For patients with acute carbon monoxide poisoning, administer oxygen via a non-rebreather at the highest flow rate available
- COPD with chronic hypoxia (home oxygen): administer (titrate) oxygen flow to maintain SpO_2 of 88% - 92% or to the patient's reported baseline

Sodium Bicarbonate

Treatment

Indications

- Used in cardiac arrest only after more definitive treatments with suspected pre-existing acidosis
- Hyperkalemia
- Aspirin or Tricyclic antidepressant overdose

Contraindications

- Preexisting alkalosis
- Documented Hypersensitivity
- Severe Pulmonary Edema
- Hypernatremia or Hypocalcemia

Adverse Effects

- Worsened intracellular acidosis due to carbon dioxide formation
- Hyperosmolality
- May precipitate congestive heart failure
- Metabolic alkalosis
- Acute hypokalemia
- Exacerbation of central venous acidosis
- Shifting the oxyhemoglobin dissociation curve, inhibiting the release of oxygen to the tissues

Precautions

- Inactivates simultaneously administered catecholamines
- Priorities before use:
  - Intubation
  - Hyperventilation
  - Defibrillation
  - Epinephrine
  - Antiarrhythmics

Flush IV line well between all drugs

Dosages

P Paramedic ONLY P

Cardiac Arrest & Hyperkalemia:

- Administer 1 mEq/kg IV/IO

Aspirin or Tricyclic Antidepressant (TCA) Overdose:

- Administer 1 to 2 mEq/kg IV/IO

Cardiac arrest:

- **Administer 1 mEq/kg IV/IO**

Effective Date 1 Jan 2022	M-SB1

Tranexamic Acid (TXA)

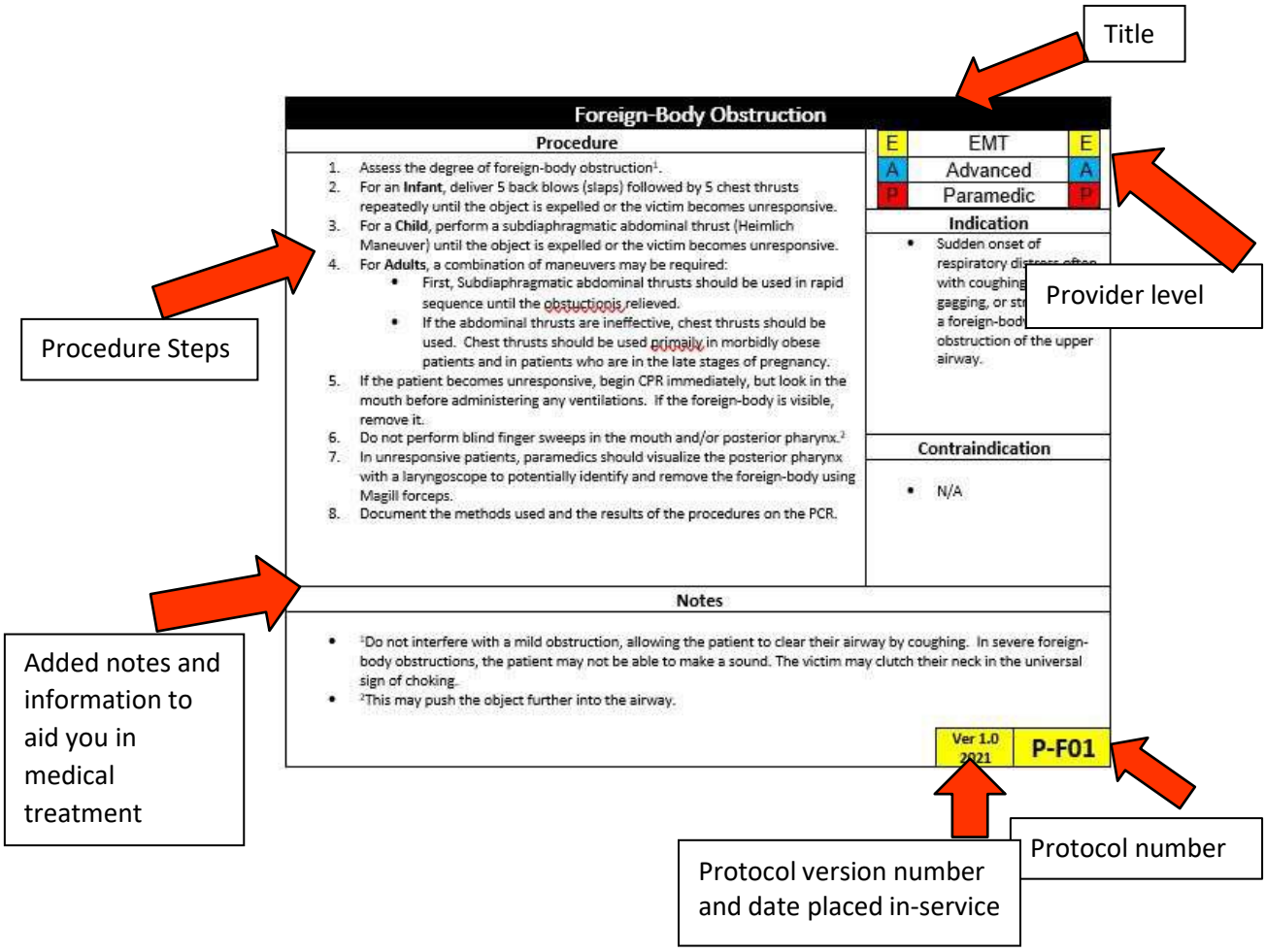
Treatment		Dosages
Indications	• Hemorrhagic Shock • Known or suspected hemorrhage after crush, blunt or penetrating trauma • Sustained hypotension (systolic blood pressure (SBP) < 90mmHg) and sustained tachycardia (>110 beats per minute)	P Paramedic ONLY P **Adult (patient must be ≥ 18 years old)** • IV infusion of 2 gram diluted in 100mL normal saline infused over 10 minutes • On-line medical control required for additional doses
Contraindications	• Time since injury >3 hours • Known pregnancy • Known allergy to TXA • Patients under the age of 18 years old	
Adverse Effects	• If patient is taking beta-blocker medications, reflex tachycardia may not be present. These patients, while in traumatic hemorrhagic shock, may present with hypotension and a normal heart rate.	
Precautions	• Time of injury must be less than 3 hours from initiation of TXA	

	Effective Date 1 May 2022	M-TXA

SECTION 5

Procedures

Section 5: Procedures



Airway Confirmation

Procedure	
1. Complete placement of Endotracheal Tube (ETT), Nasotracheal Tube (NTT), or other Advanced Airway (i.e., King Airway) 2. Follow procedure for specific confirmation device available: **CO_2 Colorimetric Detector[1]** a) Attach the inline $EtCO_2$ detector to the endotracheal tube (ETT) or supraglottic airway device (i.e., King Airway) b) Connect BVM to colorimetric device. c) Note and document the color change of colorimetric device after the initial 6 breaths. d) Continuous waveform capnography shall be used in place of colorimetric device as soon as available e) Document time and results. **Esophageal Bulb** a) Squeeze the bulb to remove air prior to securing the bulb onto the airway device. b) Place the bulb over the proximal end of the airway device. c) Once secured onto the device, release the bulb. d) If the bulb expands evenly and easily; This indicates probable tracheal intubation.[2] e) If the bulb does not expand easily; This indicates possible esophageal intubation and the need to reassess the airway placement. f) Remove the esophageal bulb and begin ventilating the patient as per protocol. g) Continuous waveform capnography shall be placed as soon as available and remain in use with the patient. h) Document time and results **Continuous Waveform Capnography – PREFERRED METHOD** a) Attach the inline capnography sensor to the airway device (ETT, NTT supraglottic airway, etc.) b) Attach a BVM to the inline capnography sensor. c) Connect capnography sensor to the monitor. d) Ventilate the patient. e) If CO_2 level and waveform is noted; This indicates placement of airway device is correct.[2] f) If no $EtCO_2$ level and waveform is noted; This indicates incorrect placement and the need to reassess the airway placement. g) See Continuous Waveform End-Tidal Capnography procedure[3] h) Document time and results. 3. Once the patient is on continuous waveform capnography, continue to monitor $EtCO_2$ levels and waveform frequently to assess patient.	A P Advanced Paramedic A P **Indication** • Assist in determining and documenting placement of Advanced Airway **Contraindication** • Continuous waveform capnography is available.[1]

Notes

- [1]If continuous waveform capnography is available, place the $EtCO_2$ sensor instead of using valuable time attaching/detaching Colorimetric CO_2 detectors or Esophageal Bulbs.
- [2]Auscultation of the patient's breath sounds bilaterally and epigastric should also be performed.
- [3]For further clinical information using capnography in regard to indications other than Airway Confirmation.

Effective Date 1 Jan 2022	S-AC1

Failed Airway/Needle Cricothyrotomy

Procedure

1. Have suction supplies available and ready.
2. Collect supplies including endotracheal adapter from a 3.0mm ET Tube.
3. Place yourself at the head of the patient, so that you are facing toward the patient's feet.
4. If using a commercial cricothyrotomy kit.[3]
5. Use the non-dominant hand to secure the larynx.
6. Prep the area with an antiseptic swab.
7. Using a 5cc syringe with a 10 - 14 gauge catheter-over-needle device. Insert the need through the cricothyroid membrane at a 45° to 60° caudal angle.
8. Aspirate for air with the syringe throughout the procedure.
9. Once air returns easily, stop advancing the needle. Thread the catheter off the needle gently at a 60° caudal angle.
10. Attach the previously sized ET adapter to the end of the catheter, attach continuous waveform end-tidal capnography, and begin ventilation with a BVM connected to high flow oxygen.
11. Assess for bilateral beath sounds. Make certain ample time is used for both inspiration and expiration. A 1:6 ratio is not unreasonable.
12. Secure the needle by best methods available, recognizing that this method may be direct hands-on control of the device throughout the entire transport.
13. If unable to obtain an adequate airway, resume basic airway management and continue transporting the patient to the closest appropriate facility.
14. Regardless of success or failure of needle cricothyrotomy, notify the receiving hospital at the earliest possible time of an airway emergency.
15. Document time, procedure, results/confirmation, and patient response on the PCR.

P Paramedic ONLY P

Indication

- Management of an airway when standard airway procedures cannot be accomplished[1] , or have failed in a patient greater than or equal to 8 years of age.[2]

Contraindication

- Inability to identify landmarks.
- Anatomical abnormalities such as a tumor or goiter.
- Tracheal transection
- Acute laryngeal disease due to infection or trauma.
- Small children.[4]

Notes

- [1]e.g., unable to oxygenate or unable to ventilate the patient.
- [2,3]Follow manufacturer's instruction for specific device.
- [2,3]Follow manufacturers sizing recommendation for age or weight of the patient.
- [4]10 to 14 gauge catheter-over-needle may be used

Foreign-Body Obstruction

E	EMT	E
A	Advanced	A
P	Paramedic	P

Procedure

1. Assess the degree of foreign-body obstruction[1].
2. For an **Infant**, deliver 5 back blows (slaps) followed by 5 chest thrusts repeatedly until the object is expelled or the victim becomes unresponsive.
3. For a **Child**, perform a subdiaphragmatic abdominal thrust (Heimlich Maneuver) until the object is expelled or the victim becomes unresponsive.
4. For **Adults**, a combination of maneuvers may be required:
    - First, subdiaphragmatic abdominal thrusts should be used in rapid sequence until the obstruction is relieved.
    - If the abdominal thrusts are ineffective, chest thrusts should be used. Chest thrusts should be used primarily in morbidly obese patients and in patients who are in the late stages of pregnancy.
5. If the patient becomes unresponsive, begin CPR immediately, but look in the mouth before administering any ventilations. If the foreign-body is visible, remove it.
6. Do not perform blind finger sweeps in the mouth and/or posterior pharynx.[2]
7. In unresponsive patients, paramedics should visualize the posterior pharynx with a laryngoscope to potentially identify and remove the foreign-body using Magill forceps.
8. Document the methods used and the results of the procedures on the PCR.

Indication

- Sudden onset of respiratory distress often with coughing, wheezing, gagging, or stridor due to a foreign-body obstruction of the upper airway.

Contraindication

- N/A

Notes

- [1]Do not interfere with a mild obstruction, allowing the patient to clear their airway by coughing. In severe foreign-body obstructions, the patient may not be able to make a sound. The victim may clutch their neck in the universal sign of choking.
- [2]This may push the object further into the airway.

Effective Date 1 Jan 2022	S-F01

Intubation - Oral

Procedure	P Paramedic ONLY P

1. Gather and prepare equipment.
2. Preoxygenate the patient.
3. Select proper ET Tube (ETT) and stylet.
4. Have suction ready.
5. Have an appropriately sized supraglottic (i.e., King) airway available.[2]
6. Using a laryngoscope, visualize the vocal cords. For anterior airways, BURP maneuver may be helpful.[3]
7. Limit each intubation attempt to 30 seconds with BVM ventilation between attempts.
8. Visualize tube passing through vocal cords.
9. Inflate the cuff with appropriate amount of air.[4]
10. Confirm placement using Airway Confirmation Procedure.[5]
11. Auscultate for bilaterally equal breath sounds and absence of sounds over the epigastrium.
12. Secure ETT with tape or commercial securing device; if available.
13. Attach continuous waveform end-tidal capnography.[6]
14. Consider using a supraglottic airway if intubation efforts are unsuccessful.
15. Consider placing a gastric tube to clear stomach contents after the airway is secured with an ETT.
16. Reassess airway and breath sounds after moving the patient and during transport.
17. Monitor the airway through continuous waveform capnography and pulse oximetry.
18. Document ETT size, time, results, and depth of tube placement using marks at the patient's teeth on the PCR.
19. Document all devices used to confirm tube placement.

Indication

- Unconscious patient without a gag reflex who is apneic.
- Patient demonstrating inadequate respiratory effort.
- Inability to adequately ventilate a patient with a BVM.
- Need for airway protection.
- When longer EMS transport distances require an advanced airway.

Contraindication

- Severe airway trauma or obstruction that does not permit the safe placement of an endotracheal tube.[1]

Notes

- [1]If an endotracheal tube cannot be placed, but an airway needs to be secured, a cricothyrotomy or needle cricothyrotomy is indicated.
- [2]In case of unsuccessful intubation or if unable to ventilate the patient with a BVM.
- [3]BURP maneuver (Backwards, Upwards, and Rightwards Pressure) may assist in bringing the vocal cords in line with the operator's line of sight. This maneuver should be performed by the operator using their dominant hand.
- [4]Appropriate amount of air for specific size tube until pilot balloon is inflated.
- [5]Continuous waveform capnography, Colorimetric device, or Esophageal Detector Device (EDD)
- [6]Look for waveform on the cardiac monitor matching each ventilation. If no wave is visualized, the ETT is likely incorrectly placed.

Intubation - Nasal

Procedure

1. Select the largest and least (usually the right) obstructed nostril and insert a lubricated nasopharyngeal airway (NPA) to help dilate the nasal passage.
2. Preoxygenate the patient. Lubricate the tube.
3. Remove the NPA and gently insert the tube, keeping the bevel of the tube toward the septum.
4. Continue to pass the tube listening for air movement and looking for vapor condensation in the tube. As the tube approaches the larynx, the air movement will get louder.
5. Gently and evenly advance the tube through the glottic opening during inspiration. This facilitates passage of the tube and reduces the incident of trauma to the vocal cords.
6. Upon entering the trachea, the tube may cause the patient to cough, buck, strain, or gag. Do not remove the tube! This is normal but be prepared to control the cervical spine and the patient and be alert for vomiting.
7. Auscultate for bilaterally equal breath sounds and absence of sounds over the epigastrium. Observe for symmetrical chest expansion.
8. Inflate the cuff with appropriate amount of air.
9. Confirm tube placement using Airway Confirmation procedures.[1]
10. Secure the tube.
11. Reassess airway and breath sounds after moving the patient and during transport.[2]
12. Monitor the airway through continuous waveform capnography and pulse oximetry.
13. Document the procedure, time, and results on the PCR

P Paramedic ONLY P

Indication

- Spontaneously breathing patient without evidence of head trauma in need intubation (inadequate respiratory effort)
- Evidence of hypoxia or CO_2 retention.
- Need for airway protection.
- Rigidity or clenched teeth prohibiting other airway procedures.

Contraindication

- Patients under 12 years of age.

Notes

- The use of a Beck Airway Airflow Monitor (BAAM) device is recommended.
- The 15mm adapter usually rest close to the nostril with proper positioning.
- [1]Continuous waveform capnography, Colorimetric device, or Esophageal Detector Device (EDD)
- [2]These tubes are easily dislodged and require close monitoring and frequent reassessment.

Supraglottic Airway

A	Advanced	A
P	Paramedic	P

Procedure

1. Preoxygenate the patient 100% FiO_2 via BVM using an oropharyngeal airway (OPA) and/or nasopharyngeal airway (NPA).
2. Select the appropriate tube size for the patient (King Airway specific sizes)
   - **Size 2** – 12 to 25kg / 35 to 45 inches tall – (Green Connector)
   - **Size 2.5** – 25kg to 35kg / 41 to 51 inches tall (Orange Connector)
   - **Size 3** – 4 foot to 5 foot tall (Yellow Connector)
   - **Size 4** – 5 foot to 6 foot tall (Red Connector)
   - **Size 5** – Greater than 6 foot tall (Purple Connector)
3. Lubricate the tube with water soluble lubricant.
4. Grasp the patient's tongue and jaw with your gloved hand and pull forward.
5. Gently insert the tube, rotated laterally 45°-90° so that the blue orientation line is touching the corner of the mouth.
6. Once the tip is at the base of the tongue, rotate the tube back to midline.
7. Insert the airway until the base of the connector is in line with the teeth and gums.
8. Inflate the pilot balloon with correct amount of air, depending on the size of the device used.
9. If necessary, adjust cuff inflation pressure to maximize seal, each patient is different.
10. Ventilate the patient while gently withdrawing the airway until the patient is easily ventilated.
11. Confirm tube placement using continuous waveform end-tidal capnography.
12. Auscultate for breath sounds and sounds over the epigastrium while also looking for chest rise and fall.
13. Use tape or commercial device to secure tube to the patient's mouth.
14. The airway should be monitored continuously through capnography and pulse oximetry.

Indication

- Inability to adequately ventilate a patient with a bag valve mask (BVM).
- Inability to secure an endotracheal tube in a patient who does not have a gag reflex where at least 1 failed intubation attempt has occurred.
- Patient must be unconscious without gag reflex.

Contraindication

- Responsive patient with intact gag reflex
- Patients with known esophageal disease
- Patients who have ingested caustic substances.
- Device is not proven to protect the airway from the effects of regurgitation and aspiration. The risk of regurgitation and aspiration must be weighed against the potential benefit of establishing an airway.

Notes

Effective Date 1 Jan 2022	S-SA1

Nebulizer Therapy

E	EMT	E
A	Advanced	A
P	Paramedic	P

Procedure

1. Position patient appropriately, allowing optimal ventilation.
2. Gather and prepare equipment.
3. Assemble nebulizer[1].
4. Instill the correct medication/dosage as per protocol (e.g., Albuterol or other approved medication) into the reservoir of the nebulizer.
5. Connect nebulizer to oxygen at 4 – 6 liters per minute[1] or increase flow to produce a steady, visible mist.
6. Instruct the patient to inhale through the mouthpiece of the nebulizer while maintaining a good lip seal around the mouthpiece. If using a nebulizer mask, ensure proper size and fit of the mask. Offer assistance if needed.
7. The treatment should last until the solution is depleted. Tapping the reservoir near the end of the treatment will assist in utilizing all of the solution.
8. Monitor the patient for effects of the medication. This should include the assessment of the patient's response to the treatment and reassessment of vital signs, EKG, and breath sounds.
9. If peak flow meter is available, document reading before and after treatment.
10. Document procedure, treatment, time, dose, and results on PCR.

Indication

- Patient experiencing bronchospasm.

Contraindication

- Unconsciousness
- Sensitivity of medication[2]

Notes

- [1] Follow manufacturers direction for specific nebulizing device.
- [2] See specific medication listing for additional information.

Effective Date
1 Jan 2022

S-NT1

Suctioning

E	EMT	E
A	Advanced	A
P	Paramedic	P

Procedure

Upper Airway[3]

1. Ensure the suction device is in proper working order with appropriate suction tip in place.
2. Provide appropriate supplemental oxygen, if needed.
3. Explain the procedure to the patient if they are coherent.
4. Examine the oropharynx and remove any potential foreign bodies or material which may occlude the airway if dislodged by the suction device.
5. If applicable, remove any ventilation devices from the airway (e.g., oropharyngeal airway)
6. Use the suction device to remove any secretions, blood, or other substances.
7. An alert patient may assist with this procedure.
8. Record the time and result of the suctioning on the PCR.

Advanced Airway

1. Ensure the suction device is in proper working order with appropriate suction tip in place.
2. Provide appropriate supplemental oxygen, if needed.
3. Attach a flexible suction catheter to the suction device, while maintaining the sterile plastic covering over the suction catheter.
4. Using the suprasternal notch and the end of the airway as guides, measure the depth desired for the catheter.[4]
5. With the thumb port of the catheter uncovered, insert the catheter through the airway device.
6. Once the desired depth (measured in step 4) has been reached, occlude the thumb port, and remove the suction catheter slowly.
7. Document the time and result on the PCR.

Indication

- Obstruction of the airway in a patient currently being assisted by an airway adjunct.[1]
- To assist an awake patient with removal of excess secretions to facilitate patient comfort and improve oxygenation and ventilation.[2]

Contraindication

- N/A

Notes

- [1]Such as nasotracheal tube, endotracheal tube, supraglottic (e.g., King LT) airway, tracheostomy tube, or a cricothyrotomy tube.
- [2]e.g. patient with pneumonia in distress due to excessive purulent sputum production.
- [3]EMT limited to suctioning upper airway.
- [4]Judgment must be used regarding the depth of suctioning with cricothyrotomy and tracheostomy tubes.

Tracheostomy Tube Replacement

P Paramedic P

Procedure

1. Gather and prepare all airway equipment for standard airway management, including equipment for tracheal intubation and failed airway.
2. Have airway device (ETT or tracheostomy tube) of the same size as the tracheostomy tube currently in place as well as 0.5mm size smaller available.[1]
3. Lubricate the replacement tube(s) with water-soluble lubricant and check the cuff.
4. Remove the tracheostomy tube from mechanical ventilation devices and use a BVM to pre-oxygenate the patient.
5. Once all equipment is in place, remove any device securing the tracheostomy tube, including sutures and/or supporting bandages.
6. If applicable, deflate the cuff on the tube. If unable to aspirate air with a syringe, cut the pilot balloon off to allow the cuff to lose pressure.
7. Remove the tracheostomy tube.
8. Insert the replacement tube:
    - Insert the obturator airway through the outer cannula of the tube.
    - Gently pass the tracheostomy tube through the stoma, following the natural curvature of the tube so that the tip of the tube is placed caudally.
    - Remove the obturator airway.
    - Place the inner cannula through the out cannula.
    - Inflate the tracheostomy cuff – confirm inflation by checking the pressure of the pilot balloon.
9. Confirm placement using continuous waveform end-tidal capnography. Perform physical exam to check for symmetric breath sounds and chest rise. Document SPO_2 reading.
10. If there is any difficulty placing the tube, re-attempt the procedure with the smaller tube.
11. If difficulty is still encountered, use standard airway procedures such as BVM ventilations with an OPA/NPA, or attempt endotracheal intubation as per protocol.
12. Document procedure, results/confirmation, patient response, and any complications on the PCR.

Indication

- Inability to ventilate with BVM
- Ineffective spontaneous ventilations (poor chest rise, decreased breath sounds bilaterally)
- Hypoxia, cyanosis, or decreased oxygen saturation levels, not relieved by suctioning.
- Increased work of breathing
- Altered mental status, secondary to hypoxia.

Contraindication

- Recently placed tracheostomy – less than 2 weeks old.

Notes

- [1]e.g., If the patient has a size 6.0mm Shiley, then have a 6.0mm and a 5.5mm tube prepared.
- Online medical control must be contacted prior to removal of any tracheostomy device.
- Patients may be very familiar with maintaining the patency of their tracheostomy, patient may just need assistance from EMS.
- Edema at the stoma site may increase the difficulty.
- Once tracheostomy tube is removed, there is potential for inability to reinsert tracheostomy tube.

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Ventilator Operation

A	Advanced	A
P	Paramedic	P

Procedure

1. All ventilator settings, including respiratory rate, FiO_2, mode of ventilation[1], and tidal volumes should be recorded prior to initiating transport. Additionally, the recent trends in oxygen saturation experienced by the patient should be noted.
2. Prior to transport, specific orders regarding any anticipated changes to ventilator settings as well as causes for significant alarms should be reviewed with the referring medical personnel as well as medical control.
3. Once in the transporting unit, and during any patient transfers, confirm adequate oxygen delivery to the ventilator.
4. Frequently assess breath sounds to assess for possible tube dislodgment during transfer.
5. Frequently assess the patient's respiratory status, noting any decreases in oxygen saturation or changes in tidal volumes, peak pressures, etc.
6. Note any changes in ventilator settings or patient condition on the PCR.
7. If not already placed, consider placing a NG or OG tube for gastric pressures.
8. The airway must be monitored with continuous waveform end-tidal capnography and pulse oximetry.
9. If there is any significant change in patient condition, including changes in vital signs or oxygen saturation, or if there is a concern regarding ventilator performance or alarms, disconnect the ventilator from the ET tube and manually ventilate the patient using a bag-valve mask with a PEEP valve, if available. Administer sufficient supplemental oxygen to achieve a pulse oximetry reading >94%. Provide a ventilation rate equivalent to that provided by the ventilator, unless patient conditions mandate brief periods of hyperventilation. Continue to monitor the patient with continuous waveform end-tidal capnography and pulse oximetry. Contact medical control immediately.

Indication

- Management of an intubated patient during a prolonged or interfacility transport.

Contraindication

- N/A

Notes

- Patients should be maintained on the ventilator except for the following:
  - Equipment failure.
  - Patient cannot tolerate the mechanical ventilator.
  - Troubleshooting alarms.
- Document the following:
  - [1]Mode; refers to the method of inspiratory support.
  - Tidal volume, Peak Inspiratory Pressure (PIP), Fraction inspired Oxygen (FiO_2), and Positive End Expiratory Pressure (PEEP).
  - Continuous end-tidal CO_2 readings and pulse oximetry readings in 5 minute intervals.
  - Any adjustment in settings must be made in consultation with online medical control.

Continuous Waveform End-Tidal Capnography ($EtCO_2$)

A	Advanced	A
P	Paramedic	P

Procedure

1. Attach the inline capnography sensor between the airway device (e.g., ETT, supraglottic airway, etc.) and the BVM or ventilator.
2. If patient does not need an advanced airway, place a nasal cannula with capnography capabilities on the patient.
3. Connect the capnography sensor to the capnography monitoring device.
4. Note the CO_2 level and waveform changes. These will be documented on each respiratory failure, cardiac arrest, or respiratory distress patient.
5. The capnography device shall remain in place with the airway being monitored throughout prehospital care and transport.
6. Any loss of $EtCO_2$ detection or waveform indicates an airway or ventilator problem and should be properly addressed and documented.
7. The "DOPES" pneumonic can be helpful in troubleshooting any issues:
8. **D**islodgement of endotracheal tube.
9. **O**bstruction (e.g., secretions, kinked tube or tubing)
10. **P**neumothorax
11. **E**quipment Malfunction
12. **S**tacking (breath stacking, Auto-PEEP)
13. Document any changes of capnography reading as procedures are performed to verify the airway problem has been addressed.
14. Document the procedure and the results on PCR.

Indication

- Respiratory Distress
- Respiratory Failure
- Used with all airway procedures:
  - ETT/NTT insertion
  - Supraglottic airway insertion
  - Cricothyrotomy
  - BVM Ventilation
  - NIPPV (e.g., CPAP)

Contraindication

- N/A

Notes

- In general, $EtCO_2$ of 35-45mmHg is considered the "normal" range. However, a number of factors often cause the $EtCO_2$ to be above or below this value (e.g., if the capnography equipment is not properly calibrated) even though the patient's blood gas would show a pCO_2 reading in the normal range. Less important than the value of the $EtCO_2$ is that it remains consistent during the duration of patient care. For example, if the $EtCO_2$ reading started at 30 mmHg during transport but rose to 60 mmHg, that would indicate hypoventilation or worsening airway obstruction or endotracheal tube dislodgment. Alternatively, if the $EtCO_2$ reading dropped to 15 mmHg, that would indicate hyperventilation and prompt the paramedic to decrease the rate or tidal volume being delivered.
- Hyperventilation can be caused from multiple causes, e.g.: iatrogenic (i.e., receiving manual ventilations too rapidly), anxiety, bronchospasm, pulmonary embolus, cardiac arrest, decreased cardiac output, hypotension, hypothermia, and pulmonary edema.
- Hypoventilation can be caused from a decreased level of consciousness from medical or trauma etiologies, severe COPD / asthma exacerbations, or depressed respirations.
- $EtCO_2$ can monitor effective CPR compressions by monitoring cardiac output. In particular, an $EtCO_2$ < 10 mmHg indicates poor chest compressions. High quality chest compressions often achieve an $EtCO_2$ output of 10-20 mmHg.
- During CPR watch for any sudden increase in the $EtCO_2$ – this may indicate the return of spontaneous circulation (ROSC).
- Patients with suspected brain injury should keep $EtCO_2$ levels within normal ranges (i.e., do not hyperventilate or hypoventilate)
- A "shark fin" pattern waveform indicates bronchoconstriction (e.g.: asthma, COPD, obstructed ETT).

Chest Decompression

Procedure

1. Don PPE
2. Administer high flow oxygen.
3. Identify the site for decompression:
   - Preferred – anterior axillary line in the fourth or fifth intercostal space.
   - Secondary – the 2nd intercostal space in the mid-clavicular line on the same side as the pneumothorax.
4. Prepare the site with an antiseptic solution.
5. Insert the catheter or commercial device (at least a 14ga, 10ga preferred if available, 3.5inch angiocath for adults) into the skin over the fifth or sixth rib and direct it just over the top of the rip (superior border)
6. Advance the catheter until a "pop" is felt and air or blood exits under pressure through the catheter, point catheter towards patient's head, then advance along chest wall.
7. Remove the needle, leaving the plastic catheter in place.
8. Secure the catheter hub to the chest wall with dressings and tape.
9. Repeat needle decompressions may need to be performed if the patient's vital signs deteriorate. Placement should be performed as described in steps 3 – 8, with placement occurring adjacent to previously placed catheters.[2]
10. If time permits and equipment is available, consider attaching IV tubing to the hub of the catheter, and place the other end of the tubing into a bottle of water, placed on the floor below the patient. This functionally creates a one-way valve that allows air to escape the chest cavity but does not allow it to enter.

P Paramedic ONLY P

Indication

- History and exam findings that would suggest pneumothorax is the most likely cause of a patient in shock.[1]
- Patients in traumatic arrest with chest or abdominal trauma for whom resuscitation is indicated.[3]

Contraindication

- N/A

Notes

- [1]e.g., gun shot, or stab wound to the chest, history of COPD, ventilated patient with increased resistance/high pressure alarms, prior history of spontaneous pneumothorax. By definition, a tension pneumothorax is present when it impairs venous return to the heart and causes a drop in blood pressure, usually defined as a SBP < 90 mmHg. Clinical exam findings that may be suggestive of a pneumothorax include:
  - Absent or decreased breath sounds or crepitus on the affected hemithorax.
  - Paradoxical chest wall movement
  - Increased resistance to ventilation
  - Jugular vein distension (JVD)
  - Tracheal deviation (late finding)
- [2]Do Not Remove any previously placed catheters.
- [3]Consider the performance of bilateral needle thoracostomy for these patients.

Non-Invasive Positive Pressure Ventilation (NIPPV)

E	EMT	E
A	Advanced	A
P	Paramedic	P

Procedure

1. Ensure adequate oxygen supply to ventilation device.
2. Explain the procedure to the patient.
3. Place the delivery masks over the mouth and nose[1].
4. Secure the mask with provided straps, starting with the lower straps until minimal air leak occurs.
5. If the PEEP is adjustable on the NIPPV device, adjust the PEEP beginning at 5 cmH_2O of pressure and slowly titrate to achieve a positive pressure as follows:
   - 5-15 cmH_2O for pulmonary edema, near drowning, possible aspiration, or pneumonia
   - 5-10 cmH_2O for COPD
6. Evaluate the response of the patient, assessing breath sounds, oxygen saturation, and general appearance.
7. Titrate oxygen levels to the patient's response.[2]
8. Encourage the patient to allow forced ventilation to occur. Observe closely for signs of complications. Consider administration of an anxiolytic (e.g., midazolam) to assist with compliance with the device.[3]
9. Document the time NIPPV was started, the FiO_2 and PEEP, and the patient's response[4].

Indication

- Patients where inadequate ventilation is suspected:
  - Pulmonary Edema
  - Pneumonia
  - COPD
  - Asthma
  - Etc.

Contraindication

- Patients unable to protect their own airway.
- Respiratory distress due to upper airway obstruction.
- Patients without spontaneous respirations.
- Severe facial trauma that makes placing the NIPPV mask difficult or would cause further harm/trauma to the patient.

Notes

- [1]Ensure correct size of mask for the patient.
- [2]Many patients respond to low FiO_2 (30-50%)
- [3]Medication administration by Paramedic
- [4]Before and after; respiratory rate, subjective symptoms, other vital signs including $EtCO_2$, and pulse oximetry on the PCR.

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Gastric Tube Insertion

Procedure

1. Estimate insertion length by superimposing the tube over the body from the bottom of the ear to the tip of the nose to the bottom of the sternum/xiphoid process.
2. Flex the neck, if not contraindicated, to facilitate esophageal passage.
3. Liberally lubricate the distal end of the tube with water soluble lubricant and pass through the patient's nostril along the floor of the nasal passage. Do not orient the tip superiorly or into the turbinates. This increases the difficulty of the insertion and may cause bleeding. The tip should be parallel to the floor and directed straight backwards.
4. In the setting of an unconscious, intubated patient or a patient with facial trauma, oral insertion of the tube may be preferred.
5. Continue to advance the tube gently until the appropriate distance is reached.
6. Confirm placement by:
    - Injecting 20mL of air and auscultate for the bubbling of the air over the stomach.
    - Aspirate gastric contents to confirm proper placement.
7. Secure the tube using paper tape.
8. Decompress the stomach by connecting the tube to suction or manually aspirating with the large catheter tip syringe.
9. Document the procedure, time, and results on the PCR.

P Paramedic ONLY P

Indication

- Gastric decompression in intubated patients

Contraindication

- Nasogastric tube insertion in patients with suspected nasal bone or skull fractures

Notes

- Some supraglottic airways have means to insert a gastric tube. Check with manufacturers specs.

Effective Date 1 Jan 2022	S-GT1

Termination of Resuscitation

E	EMT	E
A	Advanced	A
P	Paramedic	P

Procedure

1. All patients in cardiac arrest who have cardiopulmonary resuscitation initiated will be treated on scene.
2. All available interventions to address the patient's airway, breathing, and circulation, to include advanced airway, vascular access, electrical therapy, and medication administration, will be implemented.
3. In patients with a medical cause of cardiac arrest and no available ALS resources, all the following termination criteria must be met:
    a. Unwitnessed arrest
    b. Age ≥ 18 years
    c. At least 20 minutes of high-quality CPR
    d. Non-shockable rhythm at all pulse / rhythm checks
    e. Online medical control approval to terminate
4. In patients with a medical cause of cardiac arrest and being worked by an ALS team, the following termination criteria must be met:
    a. Age ≥ 18 years
    b. At least 20 minutes of high-quality CPR with all ALS interventions performed
    c. EtCO2 readings < 10 mmHg regardless of underlying rhythm
    d. For patients with a rhythm other than asystole, online medical control approval is required to terminate
5. In patients with a traumatic cause of cardiac arrest[1,2], the following termination criteria must be met:
    a. ALS crew available on scene
    b. Age ≥ 15 years
    c. Patient's initial rhythm is asystole or turns to asystole during resuscitation
    d. At least 10 minutes of high-quality CPR
    e. All ALS interventions performed, including stopping exsanguination, advanced airway management, intravenous access and medication administration, bilateral needle decompressions (if indicated), chest seals (if indicated), and fluid administration
6. Must document the time of death, name of the physician contacted for online medical control, cardiac rhythm, absence of a central pulse, and indications for termination. Rhythm strips from at least two leads must be attached to the patient care report
7. Leave all medical devices attached to the patient
8. Provide appropriate comfort care to any family members who may be present on scene

Indication

- Patients in cardiac arrest who are being resuscitated on scene

Contraindication

- Patients who are hypothermic or are pregnant are excluded from this protocol

Notes

- [1]In patients with traumatic cardiac arrest due to BLUNT injury, patients who are found apneic, pulseless, and without organized electrocardiographic activity on EMS arrival can have resuscitation efforts terminated without further intervention
- [2]In patients with penetrating trauma, look for evidence of life (e.g. pupillary reflexes, spontaneous movement, or organized EKG activity). If present, initiate resuscitation and begin IMMEDIATE transport to a trauma center (if < 15 minutes away) or local emergency department.

Do Not Resuscitate (DNR)

E	EMT	E
A	Advanced	A
P	Paramedic	P

Procedure

1. Once a patient, caregiver, or family member produces a DNR form, device, or order, the Navy F&ES provider shall initiate this protocol.
2. The following are acceptable for implementing the DNR protocol:
   - Original state DNR or POLST (Physician Orders for Life Sustaining Treatment)
   - Medic Alert DNR bracelet or necklace.
   - Oral DNR order from EMS on-line medical control
   - Oral DNR order from other on-site physician who is responsible for the patient's care
3. The following are not acceptable for implementing the DNR protocol:
   - Advance directives without a DNR order.
   - Facility specific DNR orders.
   - Notes in medical records.
   - Prescription pad orders.
   - DNR stickers
   - An oral request from someone other than a physician.
   - An oral order from an attending physician who is not on-site.
   - Copies of the out of hospital DNR form.
   - Any other device or instrument not listed above as acceptable.
4. To be a valid DNR order, the form must contain:
   - The patient's name and all other appropriate patient identifiers.
   - The date of issuance.
   - The signature of the authorizing independent practitioner.
   - The signature and printed name of the patient, guardian, or health care proxy.
   - A date of expiration (if required by the form). A DNR passed the date of expiration will not be considered valid.
5. If there are any questions regarding a DNR form or order, the provider in charge (PIC) will contact on-line medical control.
6. A DNR order may be revoked at any time by either:
   - Physical cancellation or destruction of all DNR order devices.
   - An oral statement by the patient made directly to F&ES personnel requesting only palliative care or resuscitation.[1]

   If the DNR/POLST is confirmed valid, F&ES shall provide care as instructed on the DNR/POLST form.

Indication

- Patients who have decided not to be resuscitated.

Contraindication

- N/A

Notes

- [1]If the patient revokes a DNR order orally, the DNR order notification devices do not need to be destroyed. F&ES personnel should document thoroughly the circumstances of the revocation. An oral revocation by a patient is good for only the single response or transport for which it was issued.
- If CPR is started on a patient with a valid DNR/POLST form, and the form is presented to Navy F&ES, all resuscitative efforts shall be discontinued.

Effective Date 1 Jan 2022	S-DNR

Presumed Dead on Arrival

E	EMT	E
A	Advanced	A
P	Paramedic	P

Procedure

1. Presumption of death in the field (without initiation of patient care) should be considered only in the following instances:
   - Decapitation.
   - Decomposition.
   - Rigor mortis/dependent lividity with: confirmed absence of a carotid pulse or respirations for 30 seconds, non-reactive pupils, and asystole in ≥ 2 leads.
   - Pulseless, apneic patient in a declared multiple casualty incident (MCI) where system resources are required for stabilization of living patients.
   - Pulseless, apneic patient with injury not compatible with life (with the exception of an obviously pregnant female where resuscitation attempts should be initiated, and the patient transported to the nearest appropriate facility)
   - Burned beyond recognition.
   - Traumatic injuries incompatible with life.
2. Death cannot be judged in the hypothermic patient, who may be asystolic, apneic, and stiff. Transport for rewarming in all instances.
3. Navy F&ES provider in charge (PIC) for patient care shall document the incident and all actions on the PCR prior to the end of shift. (including disposition of deceased)
4. The Regional EMS Chief shall review the incident, and make all finding and/or recommendations for mitigation to the Regional BUMED EMS Medical Director, Regional and Installation F&ES Chiefs.
5. Feedback will be provided to the appropriate personnel involved, including the Regional BUMED EMS Medical Director after the incident has been reviewed.

Indication

- Presumption of death in the prehospital setting.

Contraindication

- N/A

Notes

- If CPR has been initiated but all the components above have been subsequently confirmed, CPR may be discontinued after direct medical control has been contacted to request termination of life-saving efforts.
- Any personnel actions taken as a result of the Presumed Dead on Arrival shall be in accordance with Human Resources.

Effective Date 1 Jan 2022	S-PD1

Synchronized Cardioversion

Procedure

1. Ensure the patient is attached properly to a monitor/defibrillator capable of synchronized cardioversion.
2. Ensure proper placement of the defibrillation pads.
    a. If the patient has an implanted pacemaker or AICD, ensure the pads are at least 10 cm from the generator. Anteroposterior pad placement may be preferred
3. Be prepared for defibrillation if the patient becomes pulseless.
4. If time permits, consider pain management, but do not delay cardioversion.
5. Set energy selection to the appropriate setting – for most arrhythmias, 100j is a reasonable starting dose[1]. Refer to the manufacturer's guidelines for more specific information.
6. Set the monitor/defibrillator to synchronized cardioversion mode. You should note arrows or markers above each QRS complex on the monitor once it is in "sync" mode[2].
7. Make certain all personnel are clear of the patient.
8. Press the charge button. Once fully charged, press the shock button to deliver the specified level of electricity. Stay clear of the patient until you are certain the energy has been delivered.
9. Assess the patient response.
    - Proceed to the appropriate ACLS algorithm if the patient becomes pulseless (pulse VT/VF, PEA/Asystole).
    - If the patient's condition is unchanged, repeat steps 4-7 using escalating energy settings.
10. Repeat until delivering the maximum amount of energy (varies by manufacturer) or until efforts succeed. Discuss further care with online medical control if cardioversion is unsuccessful.
11. Note the procedure, results, and time on the PCR

P Paramedic ONLY P

Indication

- Unstable patient with a tachydysrhythmia, either narrow-complex or wide-complex.

Contraindication

- Patient has a pulse – a pulseless patient requires unsynchronized cardioversion (Defibrillation)

Notes

- [1]General energy guidelines include: Atrial fibrillation – 120 to 200 J biphasic; Atrial Flutter – 50 to 100 J biphasic; V Tach with a pulse – 100 J biphasic; V Fib or pulseless V Tach – 120 to 200 J biphasic
- [2]It may take the monitor/defibrillator several cardiac cycles to "synchronize", so there may be a delay between activating the shock and the actual delivery of energy.

Automated External Defibrillation (AED)

E	EMT	E
A	Advanced	A
P	Paramedic	P

Procedure

1. If multiple rescuers are available, one rescuer should provide uninterrupted chest compressions while the AED is being prepared for use.
2. For witnessed arrests of <2 minutes – recommendations are to attempt defibrillation as soon as possible.
3. For Unwitnessed arrests of > 2 minutes duration – perform 2 minutes or 5 cycles of CPR prior to defibrillation.
4. If sufficient personnel are available, ventilations with a BVM and oropharyngeal airway (OPA) should be provided at a ratio of 30:2[2]. If BVM is not immediately available, an OPA with a non-rebreather face mask giving 100% FiO_2 can be placed until BVM ventilations can be given. At no time should this task compromise or interrupt the delivery of chest compressions or delay the time to defibrillate.
5. Apply the defibrillator pads per manufacturer recommendations.
6. Use alternate placement when implanted devices (pacemakers, automatic implantable cardiac defibrillator [AICD]) occupy the preferred pad positions.[3]
7. Remove any medication patches on the chest and wipe off any residue.
8. If necessary, connect the defibrillator leads: negative to the anterior chest pad and the positive to the posterior pad.
9. Activate the AED for analysis of rhythm.
10. Once prompted to do so, stop CPR and clear the patient for rhythm analysis.
11. Keep CPR interruptions as brief as possible. Defibrillation should be performed as soon as possible after chest compressions are stopped.[4]
12. If a shock is advised, depress the "shock" button. Assertively ask "Are you clear?!?" to other providers, state "I'm clear, we are all clear" while performing a visual confirmation that no one, including yourself, is in contact with the patient prior to defibrillation.
13. Resume CPR (compressions and ventilations) immediately after defibrillation.
14. After 2 minutes of CPR, analyze rhythm and defibrillate if indicated. Repeat this step every 2 minutes or 5 cycles of CPR.
15. If "no shock advised", perform CPR for two minutes and then reanalyze.
16. Transport and continue treatment as indicated.
17. Keep interruption of compressions as brief as possible. Adequate CPR is a key to successful resuscitation.
18. Document the suspected down time, initial rhythm analysis (shockable vs non-shockable), and the response to any interventions on the PCR.

Indication

- Patients in cardiac arrest[1]

Contraindication

- N/A

Notes

- [1]Patients less than 55 pounds, use pediatric pads if available. If adult pads are used, they must not touch each other – consider anterior and posterior placement.
- [2]30 compressions to 2 ventilations.
- [3]Ideally, pads should be placed greater than 10cm away from the AICD.
- [4]Some automatic defibrillators are capable of analysis and energy delivery in less than 10 seconds after chest compressions are held. Other automatic defibrillators, such as those by Physio-Control, allow for chest compressions to be resumed for up to 30 seconds after analysis. This allows the provider to resume chest compressions and increase coronary perfusion pressure immediately prior to shock delivery. This is relevant because the success of defibrillation is related to sufficient coronary perfusion pressure, which drops precipitously following cessation of chest compressions.

Effective Date 1 Jan 2022	**S-AED1**

Manual Defibrillation

P Paramedic ONLY P

Procedure

1. If multiple rescuers are available, one rescuer should provide uninterrupted chest compressions while the AED is being prepared for use.
    - For witnessed/unwitnessed arrests – recommendations are to attempt defibrillation as soon as possible.
    - If sufficient personnel are available, ventilations with a BVM and OPA should be provided at a ratio of 30:2[1] . If this cannot be immediately performed, an OPA with a non-rebreather face mask giving 100% FiO_2 can be placed until BVM ventilations can be given. At no time should this task compromise or interrupt the delivery of chest compressions or delay the time to defibrillation.
2. Clinically confirm the diagnosis of cardiac arrest and identify the need for defibrillation.
3. After application of an appropriate conductive agent (if needed), apply the defibrillation pads or paddles to the patient's chest in the proper position.
    - Paddles – right of the sternum at the 2nd intercostal space and anterior axillary line at the 5th intercostal space.
    - Pads – anterior – posterior position or anterior – apex position. Be sure to avoid placement near any implanted pacemakers or AICDs.
    - Set the appropriate energy level – varies by manufacturers recommendations, but generally, is 200j for a biphasic defibrillator and 360j for a monophasic defibrillator.
    - Charge the defibrillator to the selected energy level. Continue chest compressions while the defibrillator charges.
    - Assertively state, "I'm clear, you're clear, we are all clear" while visualizing that no one, including yourself, is in contact with the patient. At this point, the person delivering chest compressions should hold compressions.
    - Press the SHOCK button.
    - Immediately resume chest compressions for two minutes. After 2 minutes of CPR, analyze the rhythm and check for a pulse.
    - Repeat the defibrillation procedure as described in steps 3-6.
    - Keep CPR interruptions as brief as possible. Defibrillation should be performed as soon as possible after chest compressions are held.[2]
    - $EtCO_2$ can monitor effective CPR compressions by monitoring cardiac output. In particular, an $EtCO_2$<10 mmHg indicates poor chest compression. Hight quality chest compressions often achieve an $EtCO_2$ output of 10-20 mmHg.
4. Document the suspected down time, the initial rhythm analysis (VF, VT, PEA, asystole), $EtCO_2$ readings, and the response of any interventions.

Indication

- Pulseless Ventricular Tachycardia/Ventricular Fibrillation

Contraindication

- Patient presents with a pulse

Notes

- [1]30 compressions to 2 ventilations.
- [2]Coronary perfusion pressure is directly related to the adequacy and consistency of chest compressions and the success of defibrillation is related to sufficient coronary perfusion pressure. Coronary perfusion pressure drops precipitously following the cessation of chest compressions.

	Effective Date 1 Jan 2022	**S-MD1**

Transcutaneous Pacing

Procedure

1. Attach a standard 4 lead EKG to the patient.
2. Apply pacing pads to the patient's chest according to manufacture recommendations.
3. Change selector switch from "Monitor" to "Pacing".
4. Adjust the heart rate to 70bpm for an adult and 100bpm for a child <12 years of age.
5. Note pacer spikes on the cardiac monitor screen.
6. Slowly increase output until capture of electrical rhythm on the monitor, represented by the appearance of a QRS complex after each pacer spike.
7. If unable to capture while at maximum current output, stop pacing immediately.
8. If capture is observed on the monitor, check for a corresponding pulse and re-assess vital signs and mental status.
9. Consider the use of a sedation or analgesia if the patient is uncomfortable, per protocol.
10. Document the dysrhythmia, blood pressure, heart rate, any medications given, and the response to the external pacing with EKG strips on the PCR.

P Paramedic ONLY P

Indication

- Symptomatic bradycardia[1]
- Bradycardia in children with poor perfusion[2]

Contraindication

- Hemodynamically stable bradycardia

Notes

- [1]Less than 60 bpm (in adults) with signs and symptoms of inadequate end organ perfusion such as:
  - Chest pain
  - Hypotension
  - Pulmonary Edema
  - Altered Level of Consciousness
- [2]Follow the symptomatic pediatric bradycardia protocol for care management. For children with a heart rate < 60 bpm and evidence of poor perfusion, initiate ventilations, CPR, and epinephrine administration prior to considering transcutaneous pacing

12 Lead EKG

E	EMT	E
A	Advanced	A
P	Paramedic	P

Procedure

1. Prepare Cardiac Monitor
2. Enter Required Patient Information into Cardiac Monitor. (Age, Sex, Name)
3. Expose the patient's chest. **Modesty of the patient should be respected**
4. Shave, dry, or clean the patient's chest as needed to ensure adequate electrode to skin contact.
5. Apply the electrodes onto the patient in the following locations:
   - RA – Right Arm
   - LA – Left Arm
   - RL – Right Lower[1] (Leg or Lower Torso)
   - LL – Left Lower[1] (leg or Lower Torso)
   - V1 – 4th Intercostal space to the right of the sternum
   - V2 – 4th Intercostal space to the left of the sternum
   - V3 – Directly between V2 and V4
   - V4 – 5th Intercostal space, Midclavicular
   - V5 – Level with V4 at Left Anterior Axillary Line
   - V6 – Level with V5 at Left Midaxillary Line
6. Instruct patient to remain still with legs uncrossed and arms to the side, breathe normal, and do not talk while acquiring EKG.
7. Acquire EKG (follow manufacturers instruction)
8. Notify receiving hospital immediately if EKG is read as "Acute Myocardial Infarction (AMI)"[2]
9. Transmit to EKG to hospital, if capable.
10. Contact hospital to notify that the EKG has been transmitted.
11. Attached copy of EKG to PCR
12. Document procedure, time, and results.

Indication

- In persons > 35 years, an EKG should be obtained within 10 min if Sx. are suggestive of ACS: Chest pain or discomfort, Chest pressure, Non-traumatic shoulder or neck pain, Heartburn or epigastric / upper abdominal pain, Tachycardia or bradycardia, Syncope, Severe weakness > 45 years of age, Difficulty breathing,
- Persons with ACS risk factors (DM, hx of CAD, family hx of CAD, severe obesity, and cocaine use) with the above symptoms
- Suspected Medication Overdose
- Electrical Injuries
- Syncope
- Stroke

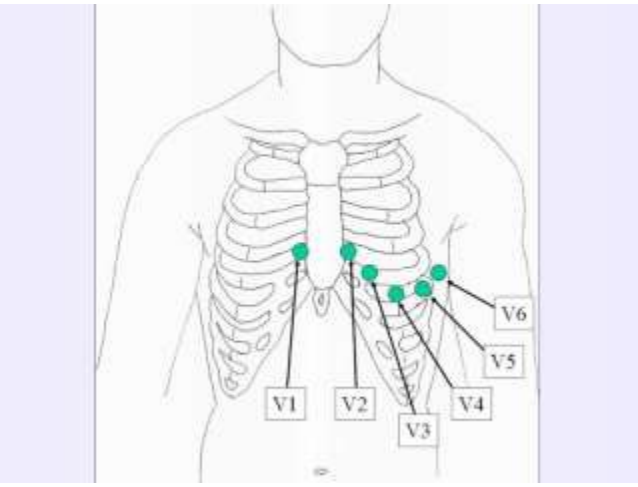
Contraindication

- None

Notes

[1] Follow cardiac monitor directions for placement.

[2] Paramedic acquires, interprets, and transmits the EKG. EMT and AEMT will acquire and transmit EKG when needed



Effective Date 1 Jan 2022	S-EK1

Decontamination

E	EMT	E
A	Advanced	A
P	Paramedic	P

Procedure

1. In coordination with HazMat and other Emergency Management personnel, establish “Hot”, “Warm”, and “Cold” zones
2. Ensure that personnel assigned to operate within each zone have proper PPE.
3. In coordination with other public safety personnel, assure each patient from the “Hot” zone, undergoes appropriate initial decontamination. This is specific to each incident. Such decontamination may include:
    - Evacuating patients from the Hot Zone
    - Removal of clothing
    - Irrigation of eyes
    - Passage through high-volume water bath (e.g., between 2 fire apparatus) for patients contaminated with liquids or certain solids.
    - Patients exposed to gases, vapors, and powders often will not require high-volume water bath[1].
4. Initial triage of patients should occur after Step 3. Immediate life threats should be addressed prior to technical decontamination.
5. Assist patients with technical decontamination (unless contraindicated based on Step 3). This may include removal of all clothing and gentle cleansing with soap and water.[2]
6. Place triage identification on each patient.[3]
7. Monitor all patients for environmental illness.
8. Transport patients per appropriate protocol.

Indication

- Patients who have been exposed to significant hazardous materials including; chemical, biological, or radiological weapons.

Contraindication

- N/A

Notes

- [1]May unnecessarily delay treatment and/or increase dermal absorption of the agent(s)
- [2]All body areas should be thoroughly cleansed, although overly harsh scrubbing, which could break the skin should be avoided.
- [3] Match triage information with each patient’s personal belongings that were removed during technical decontamination. Preserve these personnel affects for Law Enforcement if needed.

ATNAA/MARK 1 Kit (Atropine and 2-PAM Auto Injectors)

E	EMT	E
A	Advanced	A
P	Paramedic	P

Procedure

1. Characteristic signs and symptoms may identify nerve agent poisoning:
   - Vapor exposure – early manifestation of poisoning occurring in the eyes, nose, and airway
   - Liquid/dermal exposure – early manifestations occurring in the skin and the GI tract.
   - Consider the mechanism of release and the associated signs and symptoms. Refer to the chart below with the mnemonic SLUDGE-MSR for signs and symptoms.[1]
2. When providers recognize most or all of the symptoms listed below, they must immediately receive treatment (self-aid or buddy aid):

   MILD Symptoms (Self Aid):
   - Unexplained runny nose
   - Unexplained sudden headache
   - Sudden drooling
   - Difficulty in seeing (dimness of vision, constricted pupil)
   - Tightness in the chest or difficulty in breathing
   - Wheezing and coughing.
   - Localized sweating and muscular twitching in the area of the contaminated skin
   - Stomach cramps
   - Nausea without vomiting

   MODERATE Symptoms (self or buddy air) May experience most or all of the **MILD** symptoms and:
   - Diarrhea
   - Moderate to severe difficulty breathing.
   - Skeletal-muscular twitching/fasciculations.
   - Progression of symptoms from mild to moderate indicates either inadequate treatment or continuing exposure to the nerve agent.

   SEVERE Symptoms (buddy aid). May experience most or all of the **MILD** symptoms and:
   - Impaired thinking.
   - Increasing wheezing and difficulty breathing.
   - Severe pinpoint pupils.
   - Red eyes with tearing.
   - Vomiting.
   - Severe muscular twitching.
   - Involuntary defecation.
   - Convulsions
   - Unconsciousness.
   - Respiratory Failure
   - Bradycardia
3. The ABC priorities of prehospital treatment require modification to A-ABCs - “Antidote then ABCs.” The antidote (MARK I Atropine and 2PAM) should be given as soon as possible, because toxic exposure to the nerve agent will make ventilation difficult. If the antidote is not immediately available, prevent further exposure to the nerve agent, provide Airway-Breathing-Circulatory support, and evacuate the patient to an area where the antidote is available.
4. EMTs, AEMTs, and Paramedics may administer MARK I Kits (up to a total of three kits) as self-aid or buddy aid to public safety personnel.
5. Dosage scheme for MARK I auto injector administration:
   - Vapor (mild exposure)
     - Symptoms may include pinpoint pupils, runny nose, and/or mild shortness of breath

Indication

- Nerve agents
- Organophosphates

Contraindication

- N/A

- Onset of symptoms: within seconds
- Treatment should begin with one dose of the MARK I antidote kit initially. This dosage may be repeated in 10 minutes if the patient remains symptomatic.

- Liquid (mild exposure)
  - Symptoms may include sweating, twitching, vomiting, weakness
  - Onset: minutes to hours.
  - Treatment should begin with one dose of MARK I antidote kit initially.
  - Dosage may be repeated in 10 minutes if the patient remains symptomatic.
- Vapor or Liquid (moderate exposure)
  - Symptoms may include more severe respiratory distress, muscular weakness, and/or vomiting and diarrhea
  - Treatment should begin with two doses of MARK I antidote kit initially.
  - Dose of one MARK I kit may be repeated in 10 minutes if the patient remains symptomatic.
- Vapor or Liquid (severe exposure)
  - Symptoms may include copious secretions, unconsciousness, convulsions, and/or apnea
  - Onset: seconds to hours.
  - Treatment should begin with three doses of MARK I antidote kit initially.

6. For patients exhibiting seizure activity, refer to Seizure Protocol.
7. Monitor the effectiveness of treatment:
   - Positive response to treatment includes improvement in initial symptoms and drying of secretions.
   - If neither occurs after initial MARK I administration, then administer additional atropine per protocol until these end points are reached.
   - In this setting the pulse will generally be greater than 90BPM – an additional sign of vagal inhibition by atropine.
   - Pupillary constriction (pinpoint/miosis) usually occurs from direct exposure, will not respond to systemic atropine, and should not be used as a sign of the effect of treatment.
   - The duration of effect of each MARK I kit auto injector is approximately 5 to 15 minutes.
   - If secretions return and the pulse drops below 90BPM, additional treatment should be given.

Notes

- [1]This mnemonic is used for all organophosphate toxicity. Pupillary response occurs only with vapor exposure and will not be seen unless there is direct liquid contact with the eye. Urinary incontinence is also very rare.

Insect Stinger Removal

E	EMT	E
A	Advanced	A
P	Paramedic	P

Procedure

1. Gently scrape the stinger out using a straight edged object[1]
2. If scraping does not work, try using a piece of tape[2] (medical, scotch-type, or duct), gently apply it to the affected area
3. Slowly pull the tape to remove the stinger(s). This process may be repeated 2-3 times.
4. Use a fresh tape each time.
5. Be sure all stinger(s) were removed.
6. Clean and dress the site.
7. Treat for pain and allergic reaction per appropriate protocol.

Indication

- Any patient presenting with an insect sting where the stinger is still embedded in the patient's skin.

Contraindication

- N/A

Notes

- Patients who were recently stung should have the stinger removed. Most venom is injected during the first few seconds after being stung, but there can be a delay in the release of toxins. Removing the stinger quickly is more important than the method of removal.
- [1]Tongue depressor, edge of plastic card, the dull side/edge of trauma shears.
- [2]Tape also works well to remove the spines of stinging caterpillars.
- Do not try to capture the offending marine or terrestrial animal or insect.

Tourniquet

E	EMT	E
A	Advanced	A
P	Paramedic	P

Procedure

1. Place tourniquet proximal to the wound, avoiding placement over any joints. Preferred placement on scene is generally "high and tight" and can placed over clothing.
2. Tighten per manufacturer instruction until hemorrhage stops and distal pulses in the affected extremity cannot be palpated.
3. If the extremity continues to bleed after the effective application of one tourniquet, leave and place and apply a second tourniquet immediately adjacent (above or below) the initial tourniquet.
4. Secure the tourniquet per manufacturer's instructions.
5. Dress the wound with clean dressing.
6. Note the time the tourniquet was applied and communicate this to the receiving facility. The time and location of the tourniquet should be marked in a conspicuous location on the tourniquet and/or patient.
7. If there is a delayed or prolonged transport time, contact online medical control for further guidance[1].

Indication

- Life threatening extremity hemorrhage that cannot be controlled by other means.
- Serious or life-threatening extremity hemorrhage and tactical considerations prevent the use of standard hemorrhage control techniques

Contraindication

- Non-extremity hemorrhage (e.g., truncal, face, or neck)
- Proximal extremity location where tourniquet application is not practical (e.g., groin or axilla)

Notes

[1]The tourniquet should not be removed once placed, unless approved by medical control.

Combat Gauze (Wound Packing)

E	EMT	E
A	Advanced	A
P	Paramedic	P

Procedure

1. Locate source of life-threatening hemorrhage.
2. Open the package and compress the bleeding vessel against bone with gauze, occluding the vessel.
3. Maintain pressure on the vessel and tightly pack the wound with the combat gauze[1].
4. Continue applying pressure for 3 minutes or until bleeding stops.
5. Reassess the wound to ensure bleeding is controlled.
6. The wound may be repacked, or a second gauze applied if the initial intervention failed to provide adequate hemorrhage control[2].
7. Leave Combat Gauze in place.
8. Wrap the wound with a bandage to effectively secure the dressing into the wound.

Indication

- Life threatening non-compressible hemorrhage that cannot be controlled by other means.

Contraindication

- Non-life-threatening hemorrhage

Notes

- [1]4x4, Kling, or other type of gauze may be used if commercial product is not available.
- [2]Keep track of number/amount of gauze that was placed in wound and relay that amount to receiving facility.

Effective Date 1 Jan 2022	S-CG1

Blood Glucose Level (BGL)

E	EMT	E
A	Advanced	A
P	Paramedic	P

Procedure

1. Gather and prepare equipment.
2. Blood samples for performing glucose analysis can be obtained through a finger-stick or, when possible, simultaneously with intravenous access.
3. Sterilize same site with alcohol prep.
4. Pierce skin on the side of fingertip pad using a lancet.
5. Place correct amount of blood on reagent strip or site on glucometer per the glucometer manufacturer's instructions.
6. Wait the required time as instructed by glucometer manufacturer.
7. Document the glucometer reading and treat the patient as indicated by the analysis and protocol.
8. Bandage the sample site to control bleeding.
9. Repeat glucose analysis as indicated for reassessment after treatment and as per protocol.

Indication

Patients with possible hypoglycemia:

- Diabetic Emergencies
- Change in Mental Status
- Seizure Activity
- Abnormal Behavior
- Suspected Stroke

Contraindication

- N/A

Notes

- Perform quality assurance:
  - At recommended intervals as per manufacturer's direction.
  - If any clinically suspicious readings are noted.

Effective Date 1 Jan 2022	S-BGL

Auto-Injector Epinephrine

E	EMT	E
A	Advanced	A
P	Paramedic	P

Procedure

1. Confirm the patient's allergies, sign & symptoms.
2. Select the appropriate Epinephrine Auto-Injector[1].
3. Inform the patient of the procedure.
4. Prepare the lateral thigh for administration.
5. Press the Auto-Injector firmly against the skin at 90° and hold for 10 seconds and then remove.
6. Apply pressure to the injection site.
7. Dispose of the Auto-Injector in an appropriate sharps/biohazard container.
8. Monitor the patient for the desired effects and possible side effects[2].
9. Record the medication, route, dosage, and time of administration on the PCR.

Indication

- Systemic allergic reaction; patient exhibiting 1 or more of the following:
  - Respiratory distress or wheezing
  - Edema – swelling of face, lips, tongue, or throat
  - Hypotension
  - Abdominal pain
  - Rash – usually urticarial

Contraindication

- N/A

Notes

- [1]Dosage
  - Adult (25kg or more) 0.3mg IM in the anterolateral thigh.
  - Pedi (Less than 25kg) 0.15mg in the anterolateral thigh.
- [2]See Epinephrine for specific medication details.

Effective Date 1 Jan 2022	S-AI1

Intranasal Medication Administration

E	EMT	E
A	Advanced	A
P	Paramedic	P

Procedure

1. Prepare syringe[1,2].
2. Attach the Mucosal Atomization Device (MAD) to the syringe.
3. Place the atomizer approximately 1.5cm into a nostril (nares).
4. Briskly depress the syringe to administer ½ of the medication[3].
5. Remove and repeat into the other nostril until all the medication has been administered.
6. If no appropriate response within 3 minutes, proceed as per appropriate protocol.

Indication

- Pain management
- Agitated/Excited delirium
- AMS/Opiate overdose
- Seizures.

Contraindication

- Nasal Trauma
- Obstruction
  - Excessive mucus
  - Bleeding
  - Foreign body
- Known sensitivity or allergy to medication administered via IN.

Notes

- [1]Prepare prefilled syringe or draw specific medication and dosage according to appropriate protocol.
- [2]EMT limited to Unit-dosed, premeasured administration for opioid antagonist for suspected opioid overdose.
- [3]Volume should not be more than 1mL per nares.

Effective Date 1 Jan 2022	S-NMA

Nitroglycerin Spray Administration

A	Advanced	A
P	Paramedic	P

Procedure

*Before using this product for the first time, the pump must be sprayed 5 times into the air (this is known as priming). The pump should be primed every 6 weeks to remain ready for use. If the product has not been used for 6 weeks, a prime of 1 spray is necessary.

1. Place the patient in an upright position, if possible.
2. Remove plastic cap.
3. Do Not Shake.
4. Hold the container upright with forefinger on top of the grooved button.
5. Instruct patient to open mouth and lift their tongue.
6. Position the container near the patient mouth without touching and press the button firmly to release the spray under the tongue.
7. Advise patient, do not inhale the spray.
8. Instruct patient to close their mouth and avoid swallowing immediately after administering the spray.
9. The medication should not be expectorated, nor the patient's mouth rinsed for 5 to 10 minutes after administration.
10. Replace cap.
11. Document vital signs, time of administration, and results on PCR.

Indication

- Acute Coronary Syndrome (ACS)
- Angina
- Cardiogenic Pulmonary Edema

Contraindication

- Hypotension – SBP<90 mmHg
- Use of PDE Inhibitors within 48hrs, 72 hours with Cialis[1]
- Hypersensitivity
- Right Ventricular Infarction, Inferior MI[2]

Notes

- Medications used for erectile dysfunction and pulmonary hypertension e.g., Sildenafil – Viagra, Revatio; Vardenafil – Levitra; Tadalafil – Cialis, Adcirca
- [2] DO NOT Administer to patients with an Inferior STEMI or suspected STEMI with right ventricular involvement because these patients require adequate RV involvement.

Physical Restraint

E	EMT	E
A	Advanced	A
P	Paramedic	P

Procedure

1. Attempt less restrictive means of managing the patient – attempt verbal reassurance and calm the patient prior to use of physical management devices.
2. Request assistance from law enforcement.
3. Contact medical control
4. For the torso of the patient, restrain in a lateral or supine position[1]. Physical management of the patient should never restrict the neck or chest wall, which can lead to asphyxia.
5. Supplemental straps may be necessary to prevent flexion/extension of the torso.
6. Use soft or leather devices for restraining extremities.[2]
7. Secure all four extremities to maximize safety for the patient.
8. Secure all extremities to the stationary frame of the stretcher.[3]
9. Check circulation to the extremities after the restraints have been applied and again at least every 15 minutes. This must be documented.
10. Concurrent administration of medications (i.e., chemical restraint) to prevent further injury to the patient or crew should be considered and is highly recommended.
11. After restraint, the patient must be always under constant observation by EMS personnel.[3]

Indication

- Provision of emergency medical care to patients of all ages who are a danger to themselves or others that are agitated, violent, or uncooperative.
- Maximizing and maintaining safety for the patient, EMS personnel, and others.

Contraindication

- Patients exhibiting agitated or violent behavior due to medical conditions including, but not limited to: head trauma, metabolic disorders (e.g., Hypoglycemia, Hypoxia)

Notes

- Ensure that there are sufficient personnel available to physically restrain the patient safely.
- [1]Never restrain the patient in a prone position or with backboards, splints, or other devices on top of the patient.
- [2]These devices should not require a key to release them.
- [3]This includes direct visualization of the patient, as well as cardiac and SpO2 monitoring.
- [4]The patient should not be transported with hands behind their back as this can lead to hypoventilation and respiratory arrest.

Effective Date 1 Jan 2022	S-PR1

Taser Dart

E	EMT	E
A	Advanced	A
P	Paramedic	P

Procedure

****This Procedure is not for removal of darts****

1. Make sure patient is appropriately secured with assistance of law enforcement to protect the patient and crew members. Consider psychologic management medication.[2]
2. Perform primary and secondary assessment including, but not limited to EKG, 12-Lead EKG, and pulse oximetry.[3]
3. Evaluate patient for evidence of excited delirium manifested by varied combination of agitation, reduced pain sensitivity, elevated temperate, persistent struggling, or hallucination.
4. Cut the Taser dart wire close to the dart using trauma shears.
5. Protect the dart/site from further injury and to keep site clean.
6. Treat any medical issues or traumatic injuries.

Indication

- Taser dart shall be left for removal by physician.[1]

Contraindication

- Taser dart shall be left for removal by physician.[1]

Notes

- [1]All barbed darts are considered foreign body and shall be left in place for a physician.
- [2]Psychologic or chemical restraint medications for Paramedic only.
- [3]Perform assessments after the patient has been appropriately secured or restrained (physically or chemically) with assistance of law enforcement.

Central Venous Catheter Medications

Procedure

Procedure for Ports (Porta-a-Cath, Mediport, Bard, Infuse-a-Port)

1. Explain the procedure to the patient, whenever possible.
2. Obtain assistance as needed.
3. Position the patient supine.
4. Open the right-angle, non-coring (Huber or Gripper) needle package and flush with normal saline. Be sure there is no air in the tubing.
5. Clean the site at the port with cleaning solution from patient/family, or use alcohol or other approved cleansing solution (e.g., povidone-iodine), using a circular motion.
6. Use sterile gloves. Using the non-dominant hand, palpate the area over the port to stabilize the port and locate the center.
7. With the other hand, insert the non-coring needle into the center of the port with firm, steady pressure until you feel the needle reach the back of the port. Do not rock the non-coring needle back and forth in the port.
8. Aspirate 5mL of blood and/or heparinized solution and discard. If unable to aspirate blood, verify needle position by gently pushing the needle farther against the backstop of the port. If you are still unable to aspirate blood or fluid, contact online medical control.
9. Flush with 10mL NS while assessing for swelling at the site. Be sure there is no air in the syringe or tubing. Do not force the flush if resistance is met. Verify the non-coring needle position by gently pushing the needle further against the backstop of the port and attempt to flush again.
10. After assessing patency, clamp the tubing and remove the syringe.
11. Apply the needleless injection cap, if available, and cleanse with alcohol.
12. IV fluids, tubing, and connectors must be assembled and primed in cleanest area possible with all air eliminated prior to connecting to the patient.
13. Attach the completely flushed IV line, unclamp the needle tubing and begin infusion of fluid/medication. IV fluids may not infuse by gravity.
14. Secure the non-coring needle with sterile gauze and tape or occlusive dressing, being careful not to tape over the insertion site.
15. Tape or loop extension tubing to outside of dressing.

Procedure for Tunneled (e.g., Hickman, Groshong, Broviac, Cook) and **Non-Tunneled Lines** (e.g., PICC, Mid-line Catheters)

1. Explain the procedure to the patient, whenever possible.
2. Obtain assistances as needed.
3. Position the patient supine.
4. Use sterile, latex free gloves.
5. If there are multiple lumens or ports, determine from the patient/family which port is most appropriate for use, if possible, or refer to the patient's emergency information form, if available.
6. Clean the existing cap on the port with an antiseptic for 30 seconds.
7. Clamp all lines with special clamps that do not have teeth that may damage the catheter.
8. Access the appropriate catheter port with a 10mL syringe.
9. Unclamp the catheter line to be accessed and aspirate 5mL of blood/heparinized solution to confirm placement and access patency.
10. Discard the blood/heparinized solution.

P Paramedic ONLY P

Indication

- **Life-threatening emergency** – a pre-existing central venous access catheter or device may be accessed by a Paramedic for resuscitation medication administration or fluid volume administration.
- **Non-life-threatening emergency** – The central venous catheter should not be accessed by the Paramedic; however, any infusions that were running prior to the patient encounter may be continued through the central venous catheter.

Contraindication

- Damaged catheter
- Dislodgment of the catheter.
- Trauma to site

11. Clamp the catheter any time you are changing lines or syringes. 12. Attach a prefilled syringe and unclamp the catheter. 13. Flush with 5 to 10mL NS. Be sure there is no air in the syringe or tubing. 14. Clamp the catheter again with the special clamp	

Notes

- **Port** (reservoir) is a disc about an inch in diameter that is just under the skin, usually on the upper chest, that is connected to a catheter line that lies in a large vein (e.g., subclavian vein), just above the heart.
- **Tunneled central line** is a catheter that is inserted under the skin of the chest, and the tip of the catheter terminates in the distal superior vena cava at the junction near the right atrium, a tunneled catheter has a cuff below the skin that the soft tissue grows into, reducing the risk of dislodgement and infection. These can be single or multiple-lumen catheters.
- **Non-tunneled line**, such as a PICC line, is a thin catheter which is inserted into one of the large vein, usually in the arm near the bend of the elbow, but may be in the neck or a lower extremity. The tip of the catheter terminates in a large vein just above or below the heart. A mid-line and PICC are small diameter catheters and are not considered appropriate for volume resuscitation.

Intraosseous (IO) Infusion

A	Advanced	A
P	Paramedic	P

Procedure

Site Selection:

- Humeral Head – If the patient is greater than 40kg, Identify the greater tuberosity of the humerus by having the patient place their hand on their umbilicus and adduct the arm (hold it against their thorax). Palpate the humerus at the mid-shaft and palpate proximally until you feel a "notch" – this is the surgical neck of the humerus. The IO should be placed approximately 1cm above this in the greater tuberosity. Immobilize the arm in the adducted position after placement.
- Proximal tibia – Identify the anteromedial aspect of the proximal tibia (bony prominence below the patella). The insertion location will be 1-2cm (2 finger widths) below this.
- Distal femur – palpate the superior border of the patella and then slide your finger superiorly until able to palpate the femur. Insert just medial to the midline oriented 15° cephalad.

1. Prep the site with an antiseptic solution.
2. Choose appropriate/available IO Device.
   - For **Manual** pediatric devices – hold the IO needle at a 90° angle, twist the needle handle with a rotating grinding motion applying controlled downward force until a "pop" or "give" is felt, indicating loss of resistance. Do not advance the needle any further.
   - For **EZ-IO** device – hold the IO needle at a 90° angle, power the driver until a "pop" or "give" is felt indicating loss of resistance. Do not advance the needle any further past the desired depth of 5mm. The needle is marked every 5mm with a black line.
   - For the **Bone Injection Gun (BIG)** – Find and mark the site. Position the device and pull out the safety latch. Trigger the BIG device at 90° to the skin and remove the injection device.
3. Remove the stylet (be careful – this is VERY sharp) and place in an approved sharps container.
4. For pain relief brought upon by the IO insertion and fluid/medication administration in the conscious patient; administer 40mg (2mL) of 2% Lidocaine over 2 minutes for adult patients and 0.5 mg/kg (up to a maximum of 40mg) of 2% Lidocaine over 2 minutes in pediatric patients. Allow 30-60 seconds before administering fluid.
5. Attach a syringe filled with at least 5mL NS. Attempt to aspirate bone marrow to verify placement. Inject at least 5mL NS to clear the needle.
6. Connect IV tubing and adjust flow rate. A pressure infuser may assist with achieving the desired flow rate
7. Stabilize and secure the needle with dressings and tape or commercial stabilization device; if available.
8. Following the administration of any IO medications, flush the IO line with 10mL of NS.
9. Document the procedure, time, and results on the PCR

Indication

- Patients where rapid, regular IV access is unavailable with any of the following:
  - Cardiac arrest
  - Resp Failure/Arrest
  - Multisystem trauma with severe hypovolemia
  - Severe dehydration with vascular collapse and/or LOC
  - Necessity to administer medication due to AMS

Contraindication

- Fracture proximal to proposed IO site.
- History of Osteogenesis imperfecta.
- Current or prior infection at proposed IO site.
- Previous IO insertion (within 48hrs) or joint replacement at the selected site.

Notes

- [1]Expiration date, cloudiness, discoloration, leaks, or presence of particles.

Intravenous Infusion (IV)

A	Advanced	A
P	Paramedic	P

Procedure

1. Saline locks may be used as an alternative to IV tubing and IV fluid in every protocol at the discretion of the AEMT/Paramedic.
2. Use the largest catheter bore necessary based upon the patient's condition and size of veins.
3. Fluid and drip set choice is preferably: normal saline with macro drip (10 gtts/mL) for medical conditions, and normal saline with micro drip (60 gtts/mL) for medication infusions.
4. Inspect the IV Solution[1]
5. Connect IV tubing to the solution in a sterile manner. Fill the drip chamber half full and then flush the tubing to expel all air bubbles from the line.
6. Place a tourniquet around the patient's extremity to restrict venous flow only.
7. Select a vein and appropriate gauge catheter for the vein and the patient's condition.
8. Prepare the skin with an antiseptic solution.
9. Insert the needle, bevel up, into the skin in a steady, deliberate motion until the bloody flashback is visualized in the catheter.
10. Advance the catheter into the vein, never reinsert the needle through the catheter. Dispose of the needle into the proper biohazard container without recapping.
11. Draw blood samples if appropriate.
12. Remove the tourniquet and connect the IV tubing or saline lock.
13. Open the IV to assure free flow of the fluid and then adjust the flow rate as per protocol or as clinically indicated:

- Keep Vein Open rates:
    - Adult KVO: 60mL/hr. (1 gtts/6 sec for macro drip set
    - Pedi KVO: 30mL/hr. (1 gtts/12 sec for macro drip set

14. Follow appropriate protocol for specific flow rate.
15. Cover the IV site with sterile dressing and secure the catheter and IV tubing.
16. Label the IV with date and time, catheter gauge, and name/ID of the person starting the IV.
17. Document the procedure, time and result (success or not) on the PCR.

Indication

- Any patient where intravenous access is indicated (significant trauma or mechanism, emergent or potentially emergent medical condition.

Contraindication

- N/A

Notes

- [1]Expiration date, cloudiness, discoloration, leaks, or presence of particles.

Effective Date 1 Jan 2022	S-IV1

Inability to Carry Out Physician Orders

E	EMT	E
A	Advanced	A
P	Paramedic	P

Procedure

1. If physician's order is not carried out, notify the consulting/receiving physician immediately and continue to monitor the patient's condition.
2. Upon return to the station, immediately notify the Installation F&ES Chief and the Installation Medical Director.
3. The Navy F&ES provider responsible for patient care shall document the Inability to Carry Out a Physician's Order and all actions on the PCR prior to the end of shift.
4. The Regional EMS Chief shall Review the incident, and make all findings and/or recommendations for mitigation to the BUMED Medical Director, Regional and Installation F&ES Chiefs of the incident.
5. Feedback will be provided to the appropriate personnel involved after the incident has been reviewed.

Indication

- Situation which a physician's orders cannot be carried out.[1]

Contraindication

- N/A

Notes

- [1]e.g., Navy F&ES personnel believe the administration of an ordered medication would endanger the patient, a medication is not available, or a physician's order is outside the scope of practice.

Effective Date 1 Jan 2022	S-ICP

Physician Orders for Extraordinary Care Not Covered

E	EMT	E
A	Advanced	A
P	Paramedic	P

Procedure

1. If Navy F&ES personnel receive an order for care that is not covered by these protocols and do not feel comfortable with the order, or does not agree that it is absolutely necessary to maintain the life of the patient, he/she shall proceed with the "Inability to Carry Out a Physician's Order" protocol
2. All of the following criteria must be present for F&ES personnel to proceed with an Extraordinary Care order under this section.
3. During medical consultation, both the consulting physician and F&ES personnel must acknowledge and agree that the patient's condition and Extraordinary Care are not addressed elsewhere within these medical protocols, and that the order is absolutely necessary to maintain the life of the patient.
4. F&ES personnel must feel capable, based on the instructions given by the consulting physician, of correctly performing the care directed.
5. When such an order is carried out, the provider must notify the Installation F&ES Chief and the Installation Medical Director of the Extraordinary Care situation upon return to the station.
6. The Navy F&ES provider responsible for patient care shall document the Extraordinary Care and all actions on the PCR prior to the end of shift.
7. The Regional EMS Chief shall review the incident, and make all findings and/or recommendations for mitigations to the Regional BUMED EMS Medical Director, Regional and Installation F&ES Chiefs.
8. Feedback will be provided to the appropriate personnel involved, including the Regional BUMED EMS Medical Director after the incident has been reviewed.

Indication

- Direction from consulting physician to deliver care that is not explicitly listed within the treatment protocols.

Contraindication

- N/A

Notes

- Extraordinary care situations not within these protocols may occur a handful of times over a span of years. This Extraordinary Care Protocol is intended to address the potential moral/ethical dilemma, which may arise in unanticipated or unforeseen situations not specifically addressed within this document.

Effective Date 1 Jan 2022	S-EC1

Protocol Variation

E	EMT	E
A	Advanced	A
P	Paramedic	P

Procedure

1. Notify the consulting physician via radio as soon as the error or variance is discovered, if prior to arrival at the receiving facility.
2. Monitor the patient's condition for any changes.
3. Notify the receiving physician, if different than the consulting physician, upon arrival at the facility.
4. Upon return to the station, immediately notify the Installation F&ES Chief and the Installation Medical Director.
5. The F&ES provider responsible for patient care shall document the Protocol Variation and all actions on the PCR prior to the end of shift.
6. The Regional EMS Chief shall review the incident, and make all findings and/or recommendations for mitigation to the Regional BUMED EMS Medical Director, Regional and Installation F&ES Chiefs.
7. Findings and recommendations will be provided to the appropriate personnel involved, including the Regional BUMED EMS Medical Director after the incident has been reviewed.

Indication

- An error or variance of protocol occurs.[1]

Contraindication

- N/A

Notes

- [1]Any act or failure to act in practice or judgement involving patient care that is not consistent with established protocol, whether or not it results in any change in the patient's status or condition.

Effective Date 1 Jan 2022	S-PV1

Patient Refusals

E	EMT	E
A	Advanced	A
P	Paramedic	P

Procedure

1. It is the position of the BUMED EMS Medical Directors that under **no circumstances** should F&ES personnel initiate a refusal discussion with a patient. The expectation is that if F&ES is activated for a medical emergency the patient will receive a thorough medical evaluation, any indicated treatment, and be transported to an appropriate destination for continued care.
2. There may be times where F&ES personnel may respond to medical emergencies where the patient refuses medical evaluation, treatment, and / or transport. In these situations, it is the responsibility of the F&ES AIC to determine a safe disposition.
3. F&ES must first determine that the patient is legally competent to make medical decisions. If deemed competent, F&ES must then assure the patient has medical decision-making capacity.
    a. Online medical control should be contacted if the F&ES clinician is unsure if the patient has capacity.
4. For minors who are not legally emancipated[2], a responsible adult decision maker should be available. Minors are unable to refuse medical treatment.
    a. Treatment should not be delayed or withheld in life-threatening emergencies to obtain consent from the patient's parent or legal guardian.
    b. Contact online medical control for any cases where refusal of medical evaluation or treatment could affect the patient's health or well-being. Consider contacting law enforcement for assistance.
    c. Minors requesting treatment for drug or alcohol abuse, sexually transmitted infections, or who report injuries from a sexual assault or rape should be treated as independent decision makers. Contact law enforcement for any reported cases of sexual assault, rape, or physical abuse.
5. If the patient has capacity to refuse, F&ES shall then inform the patient about their medical condition, the risks of refusing treatment or transport, and any alternative courses of action the patient could pursue (e.g. transport by personally owned vehicle).
    a. This conversation must occur in the patient's preferred / native language.
6. F&ES must inform the patient of their right to call 911 at any point and time and accept treatment and transport.
7. F&ES personnel must make every effort to obtain a patient signature on the patient refusal form or electronic PCR refusal form. If a patient refuses to sign, contact your supervisor, and contact online medical control on a recorded line to document the incident and attempts to obtain a patient signature.
8. A copy of the refusal form must be included in the PCR. A copy should also be provided to the F&ES supervisor & Quality Assurance officer.
9. In the narrative of the PCR, F&ES should document the conversation they had with the patient. It should include an assessment that the person is fully oriented to person, place, time, and situation, and a set of vital signs should be documented. The information conveyed to the patient should also be documented in the narrative – the primary / secondary impression, risks of refusal, recommended treatment and course of action, and information on how to contact F&ES again should the patient decide to accept treatment.
10. Occasionally, patients with high-risk medical conditions may refuse treatment (e.g. ST-elevation myocardial infarction). F&ES should

Indication

- Patients who refuse medical treatment or transport

Contraindication

- Patients without medical decision making capacity[1]

make every effort to treat and transport these patients while respecting the patient's autonomy. F&ES should offer to discuss the patient's care with a spouse or relative, the patient's primary care physician, and / or online medical control. A refusal should not be accepted until after speaking with a physician.

a. Consultations should be made for any patient with unstable vital signs or if, in the opinion of the F&ES clinician, the patient will have a poor outcome if they refuse transport.
b. Consultations should also be made for any patient meeting trauma center criteria

11. For patients with active psychiatric illnesses who refuse transport (e.g. suicidal ideation), contact the patient's chain of command to receive assistance with transport decisions. When caring for non-active duty members, F&ES should be familiar with and follow their State's rules and regulations on involuntary patient transport and emergency psychiatric holds.

Notes

- [1]To have capacity to refuse medical care, a patient must: be an adult (age > 18 years) or legally emancipated minor; have sufficient information about their medical condition; understand the risks and benefits of the available options; have the ability to make a decision with the information they have (i.e. cannot be altered, have impaired judgment, acting irrationally, or under the influence); be able to communicate these wishes; and have the freedom to act without undue influence.
- [2]Legally emancipated minors are defined by the State but generally include anyone under the age of 18 years who: are married, enlisted in the Armed Forces, live independently of their parents, or are the legal parents or guardians to other children.

US Navy EMS Treatment Protocols

Appendices

Appendix A-1

Protocol Modification Sheet

Name of Submitting Person:	**Date:**
Official Email:	**Phone Number:**
Location/Installation:	**Protocol Number:**

Provide information for the current protocol that the request is being made for:

Provide NEW information to be added if the protocol modification is granted:

Provide references/supporting documents to justify new request for protocol modification:

Provide training and assessment plan if modification is granted:

Requestor Signature:_____ **Date:** _____

Local Medical Director Signature:_____ **Date:** _____

Please have Department EMS Officer or Fire Chief forward the above information to the following:

- **CNIC EMS Program Manager**
- **BUMED Medical Directors**

Appendix A-2

Acronym List

ACS	Acute Coronary Syndrome
AED	Automated External Defibrillator
AEMT	Advanced Emergency Medical Technician
ALS	Advanced Life Support
AMI	Acute Myocardial Infarction
APGAR	A = Appearance
	P = Pulse
	G = Grimace
	A = Activity
	R = Respiratory
AR	Airway / Respiratory protocol
ASAP	As Soon As Possible
AVPU	A = Alert
	V = Verbal Stimuli
	P = Painful Stimuli
	U = Unresponsive
BGL	Blood Glucose Level
BLS	Basic Life Support
BP	Blood Pressure
BPM	Beats Per Minute
BSA	Body Surface Area
BSI	Body Substance Isolation
BUMED	Bureau of Medicine
BVM	Bag-Valve-Mask
C	Celsius
CA	Cardiac Protocol
CHF	Congestive Heart Failure
CISM	Critical Incident Stress Management
CNIC	Commander Navy Installations Command
COPD	Chronic Obstructive Pulmonary Disease
CPAP	Continuous Positive Airway Pressure
CPR	Cardiopulmonary Resuscitation
DAN	Dive Alert Network
DCAP BTLS	D = Deformity
	C = Contusions
	A = Abrasions
	P = Punctures/Penetrations
	B = Burns
	T = Tenderness
	L = Lacerations
	S = Swelling
DNR	Do Not Resuscitate
EKG	Electrocardiogram

EMS	Emergency Medical Services
EMT	Emergency Medical Technician
EMT-P	Emergency Medical Technician - Paramedic
EOC	Emergency Operations Center
ET	Endotracheal Intubation
ETA	Estimated Time of Arrival
EtCO2	End Title Carbon Dioxide
F	Fahrenheit
F&ES	Fire & Emergency Services
GCS	Glasgow Coma Scale
gm	Gram
HTN	Hypertension
IM	Intramuscular Injection
IAW	In Accordance With
IN	Intranasal
IV	Intravenous
J	Joules
JVD	Jugular Venous Distension
kg	Kilogram
KVO	Keep Vein Open
LOC	Level OF Consciousness
LPM	Liters Per Minute
MCI	Mass Casualty Incident
M	Medication Protocol
MD	Medical Doctor
mg	Milligrams
mg/kg	Milligrams Per Kilogram
ml	Milliliter
mmHg	Millimeter Mercury
MOI	Mechanism of Injury
MPH	Miles Per Hour
MTF	Medical Treatment Facility
NDT	Needle Decompression Thoracostomy
NHTSA	National Highway Traffic Safety Administration
NOI	Nature of Illness
NPO	Nothing By Mouth
NRB	Nonrebreather Mask
NS	Normal Saline
NTG	Nitroglycerin
OB	Obstetrics / Gynecology Protocol
ODT	Orally Disintegrating Tablet
OIC	Officer in Charge
OPQRST	O = Onset P = Provocation Q = Quality R = Radiation S = Severity T = Time
P-AR	Pediatric Airway / Respiratory Protocol

P-CA	Pediatric Cardiac Protocol
P-ME	Pediatric Medical Protocol
PA	Physician's Assistant
PCM	Patient Controlled Medications
PCR	Patient Care Report
PDOA	Presumed Dead On Arrival
PIC	Provider in Charge
PO	By Mouth
PPE	Personal Protective Equipment
Pr	Rectal
PVC	Premature Ventricular Contraction
PSLUDGE-MC	P = Pupils Pinpointed
	S = Salivation Excessive
	L = Lacrimation (Excessive Tearing)
	U = Urination
	D = Defecation
	G = Gastrointestinal Upset
	E = Emesis, Watery Discharges/Runny Nose/ Sweating
	M = Muscular Twitching
	C = Convulsions
QI	Quality Improvement
RN	Registered Nurse
S	Supplemental procedure
SAFER	S = Stabilize
	A = Assess and acknowledge
	F = Facilitate
	E = Encourage
	R = Recovery or referral
SAMPLE	S = Symptoms and signs patient is exhibiting
	A = Allergies
	M = Medications (prescription and nonprescription)
	P = Past medical history
	L = Last oral intake
	E = Events prior to arrival, the history of the current emergency
SART	S = Sexual
	A = Assault
	R = Response
	T = Team
SC	Specialty Care Protocol
SCUBA	Self-Contained Underwater Breathing Apparatus
SIDS	Sudden Infant Death Syndrome
SL	Sublingual
SOP	Standard Operational Procedure
SpO2	Blood Oxygen Saturation
SQ	Subcutaneously
START	S = Simple
	T = Triage
	A = And
	R = Rapid

	T = Treatment
STEMI ST	Elevated Myocardial Infarction
TBSA	Total Body Surface Area
TE	Toxic /Environmental Protocol
TOI	Type of Incident
TR	Trauma Protocol
UM	Universal Medical Protocol
VF	Ventricular Fibrillation
VT	Ventricular Tachycardia

Appendix A-3

Definitions

- APGAR score – A method of scoring to determine the condition of a newborn where “A” stands for Appearance; “P” stands for Pulse; “G” stands for Grimace; “A” stands for Activity; and “R” stands for Respiration.
- Apnea – An absence of spontaneous respirations.
- Aspiration – The act of taking fluid (e.g., vomitus, mucus, or blood) from the body via a suction device. The act of inhaling foreign material such as blood/vomit into the lungs.
- Asymptomatic – The lack of any evidence or indication of illness, disease, or physical disturbance of patient’s condition.
- AVPU – A method of determining and recording a patient’s mental status or level of consciousness where “A” stands for alert; “V” stands for responsive to verbal stimuli; “P” stands for responsive to painful stimuli; and “U” stands for unresponsive.
- Baro-trauma – Injury sustained as a result of exposure to excessive environmental pressure changes (e.g., blast injury or underwater pressure injury).
- Critical – Approaching death or having the nature of a crisis (e.g., time-critical, critical injury).
- Cyanotic – Bluish color of the skin or mucus membranes caused by lack of oxygen to the tissue.
- Defibrillation – Administration of electrical current(s) to the heart in an effort to normalize rhythm.
- Dystonic – Any impairment of muscle tone, which may be manifested by prolonged muscle contractions that may cause twisting and repetitive movements or abnormal posture. These movements may be in the form of rhythmic jerks. Symptoms that “appear” to be of a focal seizure-like nature with an awake and alert person and no history of seizures but who probably has a recent history of anticholinergic medication use (e.g., antipsychotic, antivomiting).
- Erythema – Redness or inflammation of the skin or mucous membranes that is the result of dilatation and congestion of superficial capillaries.
- Extrapyramidal – Pertaining to tissues and structures outside of the cerebrospinal pyramidal tracts of the brain that are associated with movement of the body, excluding stimulation from the motor neurons, the motor cortex, and the corticospinal and corticobulbar tracts. Symptoms that “appear” to be of a focal seizure-like nature with an awake and alert person and no history of seizures but who probably has a recent history of anticholinergic medication use (e.g., antipsychotic, antivomiting).
- Fluid bolus – The administration of a fluid dose as rapidly as possible, usually over 5–20 minutes, to a patient with clinical signs of shock.
- Hemodynamically stable – When a patient’s vital signs (including pulse oximetry or EKG if available) are all within normal for the patient’s age range, the patient does not have active bleeding, and there are no signs of distress (skin conditions or capillary refill are normal) as observed over time.
- Hemodynamically unstable – When a patient exhibits any of the following: abnormal vital signs for age range (including pulse oximetry or ECG if available), active bleeding, or there are signs of distress (skin conditions or capillary refill are abnormal).
- Hypoxia – Too little oxygen in the cells.
- Lividity – Venous pooling in dependent body parts.
- Mass casualty incident – Occurs when the number of victims exceeds the number of medical personnel or resources immediately available and is declared by the local jurisdiction.

- Meconium – The first feces of an infant.
- Medical Treatment Facility (MTF) – A fixed, physical structure, approved by regulatory authority staffed and equipped to provide diagnosis and treatment of medical conditions. In general, this term refers to a hospital with an emergency department.
- Near drowning – A short duration of submersion under water with possible short-term loss of consciousness.
- Neonatal (also neonate) – A term that describes an infant from birth through the first 28 days of life.
- Newly born (also called newborn) – A term that describes an infant during the first few hours after birth.
- Notification – Is an "information only call" directly to the receiving hospital through the Installation EOC or EMS communication system not requiring medical consultation and may follow local standing operational procedures.
- On-line medical control – The direct voice/data communication between a provider and an EMS base station physician or a jurisdictionally affiliated physician, or with an "on-scene physician." This communication is bidirectional and provides the provider with medical direction while providing the physician or receiving hospital with valuable information on the patient. This exchange can take place on-scene, over a telecommunications device, or in the hospital setting.
- On-scene physician – May be the patient's identified private physician or a bystander physician who is physically on location. Care rendered or orders given by the on-scene physician should be documented, including the identification of the physician. All on-scene medical direction shall be consistent with the Navy EMS Treatment Protocols. Any medical procedure not consistent with the protocols shall be rendered only by the on-scene physician who shall accompany the patient to the hospital. Any extraordinary care by EMS providers pursuant to the protocols may be approved only by the EMS base station physician or a system medical director.
- Pallor – An unnatural paleness or absence of color in the skin.
- Patient Care Report (PCR) – Document used to record pertinent patient information regarding assessment, treatment, and transport. This is a confidential medical record.
- Pulse oximetry – A noninvasive measurement of arterial oxygen saturation using infrared absorption frequencies.
- Recovery position – The position (patient flat on left lateral side) or placement of patients to reduce risk of aspiration.
- Sign – Any objective evidence or indication of illness, disease, or physical disturbance of patient's condition.
- Standing orders – Orders, rules, regulations, or procedures prepared as guidelines in the preparation and carrying out of medical and surgical procedures.
- Symptom – Any subjective evidence of disease or of a patient's condition (such as evidence perceived by the patient).
- Symptomatic – The subjective evidence or indication of illness, disease, or physical disturbance of patient's condition.
- Syncope – A fainting spell. It usually follows a feeling of lightheadedness and may often be prevented by lying down.
- Vagal – Pertaining to the vagus nerve (the tenth cranial nerve which is essential for speech, swallowing, and slowing of the heart rate.
- Vulnerable adult – An adult who lacks the physical or mental capacity to provide for the adult's daily needs.

Appendix A-4

Scope of Practice				
AIRWAY				
Supplemental Oxygen Therapy				
Oxygen Delivery Devices	E	A	P	*This would include any type of cannula or mask designed for the delivery of oxygen but does not include high flow nasal cannula.*
Humidified Oxygen	E	A	P	
Basic Airway Management				
Manual Maneuvers to Open and Control the Airway	E	A	P	*This would include procedures such as: head-tilt, chin-lift; tongue-jaw lift; jaw thrust; Sellick's maneuver.*
Manual Maneuvers to Remove Obstructions from the Airway	E	A	P	
Insertion of Airway Adjuncts Intended to go into the Oropharynx	E	A	P	
Insertion of Airway Adjuncts Intended to go into the Nasopharynx	E	A	P	
Ventilation Management				
Mouth to Barrier Devices	E	A	P	
Bag Valve Mask	E	A	P	
Manually Triggered Ventilators	E	A	P	
Automatic Transport Ventilators Capable of Rate and Tidal Volume Adjustments Only	E	A	P	*EMTs and AEMTs are limited to the initiation of automatic transport ventilators during resuscitative efforts only.*
Chronic-Use Home Ventilators	E	A	P	
Suctioning				
Upper Airway Suctioning	E	A	P	
Tracheobronchial Suctioning		A	P	*AEMTs are limited to tracheobronchial suctioning of patients with pre-established airways.*
Advanced Airway Management				
CPAP/BiPAP Administration and Management	E	A	P	
Supraglottic Airway Device/BIAD (Blind Insertion Airway Device) Insertion		A	P	*This would also permit the removal of a supraglottic airway under medically appropriate circumstances for the specific levels. AEMTs are limited to the insertion of devices not intended to be placed into trachea.*

Endotracheal Intubation			P	*This includes nasal and oral endotracheal intubation; extubation for medically necessary reasons; initiation of PEEP; and the maintenance and transport of patients who are currently intubated.*
Airway Obstruction Removal by Direct Laryngoscopy			P	
Percutaneous Cricothyrotomy			P	*This would include retrograde intubation techniques and devices that puncture the skin and/or cricothyroid membrane. Paramedics are not permitted to make a surgical incision of the cricothyroid membrane. Paramedics may perform skin incisions with a surgical blade for percutaneous cricothyrotomy.*
Gastric Decompression			P	*Includes NG and OG tubes.*
Pleural Decompression via Needle Thoracostomy			P	
Chest Tube Monitoring and Management			P	
Cardiovascular				
Fundamental Cardiac				
Manual CPR (Cardiopulmonary resuscitation)	E	A	P	
Use of an Automated or Semi – automated External Defibrillator	E	A	P	
Advanced Cardiac				
Use of Mechanical CPR Assist Devices	E	A	P	*e.g., Load-Distributing Band [AutoPulse] or Mechanical Piston [LUCAS] Devices.*
EKG Acquisition and Transmission	E	A	P	*Includes 12-lead EKGs. EMTs and AEMTs may only obtain and transmit a 12-lead EKG for suspected STEMI patients*
EKG Monitoring and Interpretation			P	*Includes 12-lead EKGs*
Manual Cardiac Defibrillation			P	
Emergency Synchronized Cardioversion			P	*Includes Vagal Maneuvers*
Transcutaneous Cardiac Pacing			P	
Transvenous Cardiac Pacing			P	*Monitoring and Maintenance*
Medical				
Child Birth				
Assist in the Normal Delivery of a Newborn	E	A	P	
Assist in the Complicated Delivery of a Newborn	E	A	P	

Behavioral Emergency				
Manual and Mechanical Patient Restraints for Behavioral Emergencies	E	A	P	*Includes soft disposable and leather restraints.*
Chemical Restraints of Combative Patients			P	

Trauma

Spinal/Orthopedic Injuries

Manual Cervical Stabilization	E	A	P	
Cervical Collar Use	E	A	P	
Spinal Motion Restriction (SMR)	E	A	P	Long Spine Boards, Miller Boards, etc.
Seated Spinal Motion Restriction (SMR)	E	A	P	KED, etc.
Pelvic Immobilization	E	A	P	Pelvic Binder, etc.
Extremity Stabilization	E	A	P	Manual
Extremity Splinting	E	A	P	
Traction Splinting	E	A	P	Hare, Sager, etc.

Other Injuries

Fundamental Bleeding Control	E	A	P	
Progressive Bleeding Control	E	A	P	*Includes the use of tourniquets, wound packing and hemostatic agents*
Fundamental Eye Irrigation	E	A	P	
Complex Eye Irrigation			P	*Hands-free irrigation using a sterile eye irrigation device.*
Management of Soft Tissue Injuries	E	A	P	

Moving/Extrication

Emergency Moves for Endangered Patients	E	A	P	
Rapid Extrication of Patients	E	A	P	

Venous Access

Venipuncture/Vascular Access

Peripheral Intravenous (IV) – Initiation		A	P	*This includes an INT/saline lock. Peripheral lines include external jugular veins and placement of umbilical catheters.*
Peripheral Intravenous (IV) – Access		A	P	*Accessing the Venipuncture Site*
Intraosseous (IO)		A	P	*This includes placement in both adult and pediatric patients. This also includes both manual and mechanically assisted devices.*
Access Indwelling Catheters and Implanted Central IV Ports			P	
IV – Maintenance of Non-Medicated IV Fluids		A	P	
IV – Maintenance of Medicated IV Fluids			P	
Obtaining Peripheral Venous Blood Specimens		A	P	*This is either through direct venipuncture or through an existing IV catheter.*
Central Line Monitoring			P	

Pharmacological

Use of Unit Dose Commercial Pre-filled Containers or Auto-Injectors for the Administration of Life Saving Medications for Chemical/Hazardous Material Exposures	E	A	P	
Assist Patient in Taking Their Own Prescribed Medications	E	A	P	
Immunization		A	P	
Medication Administration Routes				
Aerosolized/Nebulized	E	A	P	
Endotracheal Tube			P	
Inhaled	E	A	P	
Intradermal			P	
Intramuscular		A	P	
Intramuscular	E	A	P	*Auto-injector*
Intranasal		A	P	
Intranasal	E	A	P	*Unit-Dosed, Premeasured*
Intraosseous		A	P	
Intravenous		A	P	
Mucosal/Sublingual	E	A	P	
Oral	E	A	P	
Subcutaneous		A	P	
Topical			P	
Transdermal			P	
Medication Formulary				
Acetaminophen	E	A	P	
Adenosine			P	
Albuterol, Proventil, Ventolin Unit Dose Inhaler	E	A	P	*Utilize patient's prescribed, if available*
Albuterol Sulfate	E	A	P	*Nebulized*
Amiodarone			P	
Aspirin	E	A	P	
ATNAA/MARK 1 Kit (Atropine Sulfate/2-Pralidoxime Chloride)	E	A	P	*Auto-injector*
Atropine Sulfate			P	
Calcium Gluconate			P	
Dextrose		A	P	
Diphenhydramine Hydrochloride		A	P	
Epinephrine Auto-injector	E	A	P	
Epinephrine 1 mg/mL		A	P	
Epinephrine 1 mg/10 mL		A	P	
Fentanyl			P	
Glucagon		A	P	
Glucose (Oral)	E	A	P	
Haloperidol (Haldol)			P	

Ipratropium Bromide (Atrovent)	E	A	P	*Nebulized*
Ketamine			P	
Lactated Ringers		A	P	
Lidocaine 2%		A	P	*AEMT - IO Analgesia ONLY*
Lorazepam (Ativan)			P	*Requires refrigeration*
ATNAA/MARK 1 Kit (Atropine Sulfate/2-Pralidoxime Chloride)	E	A	P	*Auto-injector*
Magnesium Sulfate			P	
Methylprednisolone (Solu-Medrol)			P	
Midazolam (Versed)			P	
Morphine Sulfate		A	P	
Naloxone (Narcan)	E	A	P	
Nitroglycerin	E	A	P	*Patients Prescription*
Nitroglycerin		A	P	*Sublingual (tablet or spray)*
Norepinephrine (Levophed)			P	
Normal Saline 0.9% Sodium Chloride	E	A	P	*EMT can only administer nebulized*
Ondansetron	E	A	P	*EMT limited to ODT*
Oxygen	E	A	P	
Sodium Bicarbonate			P	
Tranexamic Acid (TXA)			P	

Patient Assessment/Monitoring

Assessments

Perform Simple Patient Assessments	E	A	P	*Includes Trauma and Medical Assessments*
Perform Comprehensive Patient Assessments	E	A	P	*Includes Trauma and Medical Assessments*
Obtaining Vital Signs	E	A	P	*Manual*
Eye Assessment	E	A	P	

Monitoring Devices

Blood Pressure	E	A	P	
Blood Glucose	E	A	P	
Pulse Oximetry	E	A	P	
CO – Oximetry	E	A	P	
$EtCO_2$ – Colorimetric	E	A	P	
$EtCO_2$ Monitoring and Interpretation of Waveform Capnography		A	P	
Telemetric Monitoring Devices and Transmission of Clinical Data, Including Video Data	E	A	P	*EMT/AEMT obtain and transmit, while Paramedic interpret*

Appendix A-5

CHARTS

Normal Vital Signs

Age	Pulse	Respiratory Rate	Systolic BP
Newborn	120-160	30-60	60-70
Up to 1 year	100-140	30-60	70-80
1-3 years	100-140	20-40	76-90
4-6 years	80-120	20-30	80-100
7-9 years	80-10	16-24	84-110
10-12 years	60-100	16-20	90-120
13-14 years	60-90	16-20	90-120
15 years or older	60-90	14-20	90-130

Trauma Patient	Medical Patient
Evaluate Mechanism of Injury	Evaluate Nature of Illness
Cervical Spine Considerations	Level of Consciousness: AVPU
Control all Life Threats/Bleeding	Chief Complaint
Primary Assessment	Primary Assessment
Obtain Vital Signs	Obtain Vital Signs
Level of Consciousness: AVPU	SAMPLE History
Secondary/Focused Assessment	Secondary/Focused Assessment
Exit to Appropriate Protocol	Exit to Appropriate Protocol

DOCUMENTATION/CHARTS		
Vital Signs If Indicated • Glucose • EKG/12-Lead • Temperature • EtCO2 Monitoring	**Required Vital Signs** • GCS • Blood Pressure • Pulse Rate • Respiratory Rate • SpO2 • Pain Scale • Respiratory Rate • Pulse Oximetry	
SAMPLE History • Signs/Symptoms • Allergies to Medications • Medications Currently Prescribed • Past Medical History • Last Oral Intake • Events Leading to Incident	**DCAPBLSTIC** • Deformities • Contusions • Abrasions • Punctures/Penetrations • Burns • Lacerations • Swelling • Tenderness • Instability • Crepitus	**Focused History** • Onset • Provocation • Quality • Radiation • Severity • Time

Appendix A-6

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)