Protocols Approved by Medical Control Board November 16, 2023

Pilot
- New Prerequisite Protocol

Hyperkalemia
- New Protocol

Exception
- No change

Extended Care
- No change

Routine Patient Care
- Updated bag valve mask respiratory rates

Haz Mat
- No change

Mass Multiple Casualty
- No change

Radiation Injuries
- No change

Childbirth
- Rewording placenta delivery section.
- “Placental delivery can take up to 30 minutes” into the PEARLS.

Opioid Overdose
- Incorporated Leave-Behind Naloxone

Advanced Sepsis
- Removed lactate, added of end tidal CO2 and cleaned up.

High Flow Nasal Cannula
- New protocol

Analgesia and Sedation for Invasive Airway
- Dosing aligned with the RSI protocol, clean up some grammar and and adjusted pediatric fentanyl dose.

Musculoskeletal
- Added patella reduction at the Advanced EMT level.

Changed Norepinephrine infusion rate in adults to Norepinephrine Infusion 1 –80 microgram/minute via pump. Starting dose 1 -15 microgram/minute, titrate 2 –5 microgram/minute every 5 minutes, as needed in the following:

- Bradycardia
- Post Resuscitation
- Sepsis
- Non-Traumatic Shock
- Cardiogenic Shock

Pain

- Changed the IV acetaminophen dose from “over 10 minutes” to “over approximately 10 minutes”.

Anaphylaxis -Adult

- For suspected ace inhibitor induced angioedema consider:
  - Tranexamic acid (TXA):
    - Mix 1 gram of TXA in 50 - 100 ml of 0.9% NaCl; infuse over approximately 10 minutes IV or IO.

Pilot Protocol 7.6

This prerequisite protocol is only to be used by EMS Units and their affiliated providers who are authorized by the NH Bureau of EMS.

Introduction

This prerequisite protocol enables an emergency medical services (EMS) organization to operate a pilot program for the purpose delivering a treatment or intervention not otherwise authorized by these protocols.

Under the principles of evidence-based medicine, the practice of emergency medicine is continuously evolving, driven by the publication of new studies, the evolution of EMS providers' scope of practice and the shifting demands of the healthcare system and patient populations.

The primary avenue for incorporating new practices or treatments into EMS care in New Hampshire is the New Hampshire EMS Patient Care Protocols, nonetheless:

- New treatment modalities may emerge between protocol cycles that potentially offer significant benefits for patients.
- It may be valuable to gain practical experience with a new proposed treatment modality prior to state-wide adoption via the general EMS protocols.

Any proposed pilot protocols that are not considered within standard of care or have concern for high risk of patient harm will be considered research, and will necessitate appropriate approval from an Institutional Review Board (IRB) before approval by the Medical Control Board. Agencies are encouraged to consult the Medical Control Board prior to seeking IRB approval.

Proposals for pilot projects shall include:

Proposed Written Protocol

A proposed written protocol to be followed by EMS providers. The protocol should be drafted in the style of the existing New Hampshire protocols.

Literature Supporting Treatment Modality

A brief description and bibliography of the literature supporting the proposed treatment modality, demonstrating the potential benefit and the lack of any significant risk of harm.

Similar EMS Protocols

The organization shall seek to determine if other EMS organizations currently have protocols incorporating the proposed treatment modality and will submit copies of any such protocols.

Medical Director Endorsement

An endorsement from the organization's EMS medical director supporting implementation of the pilot program.

Training Plan

A training plan shall be approved by the organization's training officer and medical director. The organization shall be responsible for delivering the training and for ensuring that only providers who have successfully completed the training are authorized to perform the treatment modality.

Policy Continues

7.6 Pilot Protocol

This prerequisite protocol is only to be used by EMS Units and their affiliated providers who are authorized by the NH Bureau of EMS.

Protocol Continues

Quality Management Program and Data Collection

The EMS Unit shall conduct a quality management (QM) program specifically for the pilot program. The QM program will incorporate all the components of an EMS QM program as specified in Administrative Rules Saf-C 5921.

Describe what data demonstrates the need for this project, if any. Describe the data to be collected to demonstrate the impact of this project on the population served. Describe the data reporting plan and how the Bureau of EMS will be included in it.

A plan for performing quality management (QM) to ensure appropriate oversight and ongoing safety review. At a minimum, the QM plan should include:

- A requirement to document each use of the treatment modality. The documentation must include any deviation from the protocol and any adverse events, regardless of whether the treatment modality is presumed to be the cause of the adverse event.
  - Requiring rapid (e.g. < 24 hours) reporting of any serious adverse events, including any deaths, regardless of whether the treatment modality is presumed to be the cause of the adverse event to:
    - The training officer and medical director, AND
    - The New Hampshire Bureau of EMS
    - Regular reports (monthly or quarterly) generated via NHESR identifying all uses of the treatment modality.
  - QM by the training officer of 100% of the calls involving the treatment modality. Where the QM is proposed to be less than 100%, the proposal should include an explanation of why 100% QM is unnecessary.

Annual Reports

Annual published reports describing the organizations experience with the treatment modality, including number of times it was utilized, any perceived benefit and any adverse consequences. The reports shall be submitted to the New Hampshire Division of Fire Standards and Training and Emergency Medical Services. and the New Hampshire Medical Control Board.

Submission and Renewals Review

Proposals for pilot projects shall be made to the Division of Fire Standards and Training and Emergency Medical Services through the standard prerequisite protocol application process. Submissions and renewals shall be further reviewed by the NH Medical Control Board for endorsement.

Approval

Endorsed proposals for pilot projects shall be approved by the Division of Fire Standards and Training and Emergency Medical Services to include the State EMS Medical Director.

Suspension of Pilot Project

Any pilot project can be suspended or terminated by the Division of Fire Standards and Training and Emergency Medical Services in consultation with the New Hampshire Medical Control Board where:
They have reason to believe that the treatment modality may have resulted in serious harm to a patient.
The organization fails to comply with the requirements of this Pilot Protocol and fails to promptly remedy the failure after being given written notice.
A new study is published that shows the treatment modality has a serious risk of harm or that it is futile.

Hyperkalemia 2.9

History	Signs & Symptoms	Differential
• Renal failure • Dialysis • Prolonged crush injury • Cancer • Diabetes • Addison's disease (adrenal insufficiency) • Hyperkalemic periodic paralysis • Dehydration • Medications	Serious ECG changes consistent with hyperkalemia, eg: • Bradycardia • Tall, peaked T waves • Loss of P waves • QRS widening • Tachycardia May progress to a very wide complex sine wave QRS morphology. PLUS one or more of: • Muscle weakness • Paralysis • Cardiac arrest • Hypotension • Altered mental status	• CHF • Sepsis • Other arrhythmia • Hyper or hypokalemia • Toxins

EMT STANDING ORDERS - ADULT

E

- Routine Patient Care.
- 12 Lead ECG, if available

ADVANCED EMT STANDING ORDERS - ADULT

A

- Establish IV access
- If systolic blood pressure is less than 90 mmHg, administer fluid in 250 mL boluses.
  - Patients should be reassessed frequently, with special attention given to the lung examination to ensure volume overload does not occur.

PARAMEDIC STANDING ORDERS - ADULT

P

- Maintain continuous cardiac monitoring.
- Where ECG interpretation combined with history or clinical presentation suggest hyperkalemia:
  - Calcium gluconate 3 grams IV/IO mixed in 50 -100 mL of 0.9% NaCl over 5 – 10 minutes (preferred for patients with a pulse); if ECG changes persist may repeat in 5 – 10 minutes, **OR**
  - Calcium chloride 1 gram IV/IO mixed in 50 -100 mL of 0.9% NaCl over 5 – 10 minutes; if ECG changes persist may repeat dose in 5 -10 minutes.

For calcium chloride administration, ensure IV patency.

- For patients with suspected metabolic acidosis with QRS widening or bradycardia on ECG despite therapy with calcium, consider:
  - Sodium bicarbonate 1 mEq/kg IV/IO bolus over 5 minutes, may repeat in 5 minutes.
  - Flush line after calcium administration, or administer through second IV site; sodium bicarb administered with calcium can lead to the precipitation of calcium.
  - Albuterol continuous 10 – 20 mg nebulized.

See
- Bradycardia Protocol 3.1
- Cardiac Arrest Protocol 3.2
- Crush Injuries Protocol 4.1

Protocol Continues

2.9 Hyperkalemia

Protocol Continued

PARAMEDIC STANDING ORDERS - PEDIATRIC

P

- Maintain continuous cardiac monitoring.
- If ECG suggestive of hyperkalemia, consider administering the following:
  - Calcium gluconate 100 mg/kg IV/IO mixed in 50 -100 mL of 0.9% NaCl with a maximum of 3 gram/dose over 5 – 10 minutes; if ECG changes persist may repeat dose in 5 - 10 minutes **OR**
  - Calcium chloride 20 mg/kg IV/IO mixed in 50 -100 mL of 0.9% NaCl with a maximum of 1 gram/dose over 5 – 10 minutes; if ECG changes persist may repeat dose in 5 - 10 minutes
- Albuterol per chart:

Weight	Albuterol
< 25 kg	2.5 mg
25 - 50 kg	5 mg
> 50 kg	10 mg

See
- Bradycardia Protocol 3.1
- Cardiac Arrest Protocol 3.2
- Crush Injuries Protocol 4.1

PEARLS

Clinical manifestations of hyperkalemia include muscle weakness or paralysis, ECG changes consistent with hyperkalemia and cardiac arrest.

- Hyperkalemia should be suspected in patients with ECG changes such as tall, peaked T waves, loss of P waves, QRS widening, and bradycardia or tachycardia. Severe hyperkalemia may progress to a very wide complex sine wave QRS morphology that, when fast, is sometimes mistaken for ventricular tachycardia.
- Very wide complex (>200msec) PEA may be due to a metabolic cause such as hyperkalemia, tricyclic anti-depressant overdose or other sodium channel blocker toxicity.
- Medical history suggestive of hyperkalemia includes renal failure, dialysis, prolonged crush injury, cancer, diabetes, Addison's disease (adrenal insufficiency), hyperkalemic periodic paralysis, dehydration and certain medications.
- Calcium is the first line agent for hyperkalemia.
- Calcium chloride is irritating to veins and must not be injected into tissues, since severe necrosis and sloughing may occur. Administer slowly, taking great care to avoid extravasation.

1.2 Exception Protocol

"Exception Principle" of the Protocols

- The Statewide Patient Care Protocols represent the best efforts of the EMS physicians and pre-hospital providers of New Hampshire to reflect the current state of out-of-hospital *emergency medical care*, and as such should serve as the basis for such treatment.
- For situations covered by existing protocols, providers are expected to operate under those protocols. **This exception protocol may not be used to circumvent protocols or directives of the Medical Control Board (e.g., Medication Assisted Intubation).** We recognize, though, that on rare occasion good medical practice and the needs of patient care may require actions not otherwise authorized by these protocols, as no protocol can anticipate every clinical situation. In those circumstances, under this Exception Principle, EMS personnel are authorized to take actions not otherwise explicitly authorized under these protocols provided that:
    1. Such action is within their current EMS certification, licensure level, and scope of practice, **AND**
    2. They have obtained the approval of online medical control.
- This exception is intended only to be used when unanticipated clinical situations arise. This Exception Principle is not intended to cover advancements in medical science or emerging changes or improvements to existing protocols. These advancements should be evaluated based on the best available evidence under our existing process for protocol review. For example, providers who believe that intra-cardiac arrest cooling has beneficial effects may not implement that action under the Exception Principle. They should instead submit their desire to see the existing protocol modified in the next protocol cycle to the protocol subcommittee of the Medical Control Board.
- Where a patient has a medical condition that cannot be appropriately treated under the existing protocols, and has provided the provider with a written treatment plan prepared by the patient's physician and approved by the provider's medical control physician, the provider may perform the treatments prescribed in the treatment plan provided they are within their level and scope of practice. This specific instance would not require online medical control.
- Actions taken under this policy are considered to be appropriate and within the scope of the protocols. The EMS provider shall provide a written notification pertaining to the action taken describing the events including the patient's condition and treatment given, and referencing the EMS Incident Report**. This report must be filed with the Medical Resource Hospital's EMS Medical Director, Hospital EMS Coordinator, and FSTEMS within 48 hours of the event.** Use of this protocol must be documented under "Protocols Used" in the Patient Care Report.

Extended Care Guidelines 1.3

When NH EMS providers treat patients in remote or difficult environments and ambulance transport to hospital care is significantly delayed, it may be necessary to provide extended patient care. Extended care applies to any low resource setting where access to definitive care is delayed or impossible. This may be due to a remote location or infrastructure destruction, (e.g., extreme weather conditions or extended mass casualty with active shooter incidents).

Extended care patients may require repeat administration of medications beyond what is specified in regular protocols or assistance with administration of the patient's prescribed medication. Patients may also require some treatments and procedures that clearly exceed the scope of NH EMS providers licensed at the EMT, Advanced and Paramedic levels.

In an extended care environment, EMS providers will follow the following guidelines:

1. Every effort should be made to contact medical control for guidance.

2. If medical control is unavailable, it is reasonable to administer repeat medication dosing at the same intervals as prescribed in protocol or as prescribed for patient's own medications. Caution must be used due to cumulative effects that may result in over-sedation, hypotension, respiratory depression, etc.

3. If changes to regular protocol are necessary for medication use in extended care situations, these changes appear in the specific protocol under a separate Extended Care Section denoted by an X.

4. Any other treatment or procedure outside the provider's normal scope of practice requires additional levels of training and certification from nationally recognized courses as deemed appropriate per FSTEMS. (An example of a procedure that would require additional training and certification would be the reduction of dislocations).

Special circumstances to consider in an extended care environment:

- Protecting patient from the environment while awaiting extrication and/or transport. This may require an improvised shelter and insulation to protect the patient and providers from rain, snow and wind.
- Requesting additional resources/personnel early if an extended care call is suspected. Resources to consider but are not limited to:
  - NH Fish and Game
  - Rescue organizations
  - Technical Climbers
  - Snowmobile, ATV or boat
  - Helicopters
  - Tracking dogs
  - Swift water technicians
- Oral fluids to maintain a patient's hydration and high energy foods to maintain caloric requirements, if the patient is conscious and able to swallow.
- Limited resources due to difficulty accessing patient and/or transporting equipment to the patient's location. These resources may include:
  - Oxygen
  - Suction
  - Cardiac Monitor/AED
  - Pulse Oximetry
  - Capnography
  - Glucose Meter
  - BP Cuff and Stethoscope
  - Intravenous access
  - Medications
  - Communication with online medical control

Emergency Medical Dispatch

Emergency Medical Care begins when 911 or a dispatch center is called. Telecommunications Specialists that are certified in Emergency Medical Dispatch (EMD) with the New Hampshire Bureau of Emergency Communications serve as the "First, First Responders" and are an integral part of the EMS system. They are the first-activated professional link in the chain of survival for cardiac arrest care and provide vital interim care pending EMS arrival. New Hampshire currently uses the Medical Priority Dispatch System (MPDS). Some of the Telecommunication Specialists' functions include:

- Timely notification to local dispatch centers.
- Systematized caller interrogation and pre-arrival instructions using scripted protocols.
- Triage emergency medical calls by level of medical acuity and provide dispatch centers with standardized dispatch determinants (i.e., Omega, Alpha, Bravo, Charlie, Delta, Echo).
- With local medical director approval, each EMS agency may choose what resources and type of response (i.e., lights and siren versus flow of traffic) for each dispatch determinant.

Respond to Scene in a Safe Manner

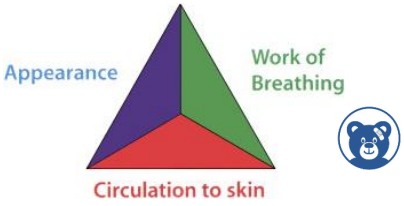
- Review dispatch information.
- Use lights and sirens and/or pre-emptive devices when responding as appropriate per emergency medical dispatch information and local guidelines.
- Use Incident Management/Command System (IM/CS) for all responses and scene management.

Scene Arrival and Size-up

Universal precautions, scene safety, environmental hazards assessment, number of patients, need for additional resources, and bystander safety. Initiate Mass Casualty Incident procedures as necessary.

Patient Approach

- Determine mechanism of injury / nature of illness.
- Determine if pediatric protocols apply. "Pediatric Patient" is defined as a child who fits on a length-based resuscitation tape up to 36 kg (79 lbs) or 145 cm (57 in).
- Establish responsiveness.
- General Impression.



	Appearance	Work of Breathing	Circulation to Skin
Adult	Awake, speaking, eye opening, agitated, limp, unresponsive	Labored, noisy, fast, slow, equal chest rise	Pink, flushed, pale, ashen, cyanosis
Pediatric	Muscle tone, interactiveness, consolability, gaze/look, speech/cry	Airway sounds, body position, head bobbing, chest wall retractions, nasal flaring	Pallor, mottling, cyanosis

- Determine if DNR/Comfort Care protocol applies (DNR Policy).

Airway and Breathing

- Airway
  - Assess the patient for a patent airway.
  - Open the airway using a head-tilt/chin-lift, or a jaw thrust if suspicious of cervical spine injury.
  - Suction the airway as needed.
  - Treat foreign body obstruction in accordance with current guidelines.
  - Consider an oropharyngeal or nasopharyngeal airway.
  - Consider advanced airway interventions as appropriate and as trained and credentialed to perform.
- Assess breathing: rate, effort, tidal volume, and breath sounds.
  - If breathing is ineffective, ventilate with 100% oxygen using Bag-Valve-Mask.
  - If breathing is effective, but patient's oxygen saturation remains ≤ 94% (≤ 90% for COPD patient) or short of breath, administer oxygen.
    - Both skin signs and pulse oximetry are important in assessing potential hypoxia.
  - For patients with an SpO_2 of 100%, consider titrating oxygen lower while maintaining SpO_2 ≥ 94% - 98%.
  - Consider capnography ($EtCO_2$) and/or CO-oximetry, if available.
  - Assess lung sounds and chest.

Protocol Continues

Protocol Continues

Circulation Assessment

- Assess patient's pulse, noting rate, rhythm, and quality.
- Control active bleeding using direct pressure, pressure bandages, tourniquets, or hemostatic bandages. See Hemorrhage Control Protocol 4.4.
- Assess patient's skin color, capillary refill, temperature, and moisture.
- Assess blood pressure.
- Provide IV access and fluid resuscitation as appropriate for the patient's condition.
  - For adult patients, administer fluids to maintain systolic blood pressure per the Shock Protocols 2.21A, 2.22, 4.6.
  - For pediatric patients, administer fluids based on physiological signs and therapeutic end-points per the Shock Protocol 2.21P, 2.22, 4.6.
  - For adult patients with suspected dehydration without shock administer IV fluids as indicated in increments of 250 mL 0.9% NaCl or Lactated Ringers.
  - Consider obtaining a blood sample, per receiving hospital's preference.

NOTE: An IV for the purposes of these protocols is a saline lock or line with 0.9% NaCl (normal saline) or Lactated ringers, unless otherwise specified in an individual protocol.
Routes of medication administration when written as "IV" can also include "IO".

Disability Assessment

- Assess level of consciousness appropriate for age; use Glasgow Coma Scale for trauma.
- Spinal motion restriction by collaring patient, placing flat on cot and securing, if indicated by Spinal Injury Protocol 4.7.
- If a child requires spinal motion restriction, transport in a child safety seat (See Spinal Trauma 4.7 and Pediatric Transportation 8.12).

Transport

- The destination hospital and mode of transport are determined by the prehospital provider with the highest medical level providing patient care; it should not be determined by fire, police or bystanders.
- Refer to the Trauma Triage and Transport Decision 8.17 and Air Medical Transport 8.0 policies as necessary.
- Notify receiving facility as early as possible.
- The majority of patients do not medically require transport with lights and sirens. Lights and sirens should be justified by the need for immediate medical intervention that is beyond the capabilities of the ambulance crew using available supplies and equipment, (e.g. STEMI, acute stroke, multi-system trauma). Use of lights and sirens should be documented in the patient care report.
- Non emergent medical transports from home or a medical facility with self or caretaker managed devices is an EMT level skill. The caretaker must travel with the patient if it is not a self managed device. See Continuity of Care Policy 8.5.

For more information on hospital services click on this LINK

Secondary/Focused Assessment and Treatment

- Obtain chief complaint, history of present illness, and prior medical history.
- Complete a physical assessment as appropriate for the patient's presentation.
- Determine level of pain.
- Consider field diagnostic tests including: cardiac monitoring, blood glucose, temperature, stroke assessment, pulse oximetry, capnography, etc.
- Dress and bandage lacerations and abrasions.
- Cover evisceration with an occlusive dressing and cover to prevent heat loss.
- Stabilize impaled objects. Do not remove an impaled object unless it interferes with CPR or your ability to maintain the patient's airway.
- Monitor vital signs approximately every 15 minutes (more frequently if the patient is unstable).

Protocol Continues

Protocol Continues

Target Ventilation Rates	
Patient	**Bag-Valve Mask**
Adult	10 – 12 breaths per minute
Child	20 - 30 breaths per minute
Infant	20 – 30 breaths per minute

** Ventilation rates should be titrated to goal $EtCO_2$, if available, or patient conditions (e.g., severe asthma, aspirin overdose, traumatic brain injury)*

Note: In children, pulse oximetry may identify clinically significant hypoxia that may be missed through evaluation of skin signs alone.

Percent O2 Saturation	Ranges	General Patient Care
94% – 100 %	Normal	Usually indicate adequate oxygenation; validate with clinical assessment (see below)
90% – 93%	Mild hypoxia	Consider O_2 to maintain saturation ≥ 94 - 98%. Caution in COPD patients
Less than 90%	Moderate to severe hypoxia	Give oxygen to maintain saturation ≥ 94 - 98%, as needed

Notes:

- If pulse oximeter's heart rate is not the same as ECG monitor's heart rate, oxygen saturation reading may not be reliable.
- If patient is profoundly anemic or dehydrated, oxygen saturation may be 100%, but patient may be hypoxemic.
- False pulse oximetry readings may occur in the following: hypothermia, hypoperfusion, carbon monoxide poisoning, hemoglobin abnormality (sickle cell anemia), vasoconstriction, and nail polish.

$EtCO_2$ Reading	Ranges	General Patient Care
35 mmHg – 45 mmHg	Normal	Usually indicate adequate ventilation; validate with clinical assessment (see below)
Greater than 45 mmHg	Hypercarbia	Consider increasing ventilatory rate, assess adjuncts for occlusions
Less than 35 mmHg	Hypocarbia	Consider slowing ventilatory rate

Pediatric Respiratory Distress	Pediatric Respiratory Failure
• Able to maintain adequate oxygenation by using extra effort to move air. • Signs include increased respiratory rate, sniffing position, nasal flaring, abnormal breath sounds, head bobbing, intercostal retractions, mild tachycardia.	• Hallmarks of respiratory failure are respiratory rate less than 20 breaths per minute for children <6 years old; less than 12 breaths per minute for children <16 years old; and >60 breaths per minutes for any child; cyanosis, marked tachycardia or bradycardia, poor peripheral perfusion, decreased muscle tone, and depressed mental status.
Respiratory distress in children and infants must be promptly recognized and aggressively treated as patient may rapidly decompensate.	

When a child tires and is unable to maintain adequate oxygenation, respiratory failure occurs and may lead to cardiac arrest.

Glasgow Coma Scale						
Motor Response	Score	Verbal Response	Verbal - Infants	Score	Eye Response	Score
Obeys commands/spontaneous	6	Oriented and alert	Babbles	5	Open	4
Localizes pain	5	Disoriented	Irritable	4	To voice	3
Withdraws to pain	4	Inappropriate words	Cries to pain	3	To Pain	2
Decorticate flexion	3	Moans, unintelligible	Moans	2	No response	1
Decerebrate extension	2	No response	No response	1		
No response	1					

9.0 Hazardous Material Exposure

Hazardous Material: A hazardous material is any item or agent (biological, chemical, radiological, and/or physical), which has the potential to cause harm to humans, animals, or the environment, either by itself or through interaction with other factors.

Hazardous Material Exposure: Any patient with an illness, injury, or complaint which has been caused by or is suspected of being caused by a hazardous material.

When to use this protocol: During any response to a hazardous material exposure where the public, responders, environment, or valuable property are at risk of continued harm or exposure AND the hazard has not been previously mitigated or contained.

- SAFETY: Your safety is priority #1. DO NOT PROCEED beyond staging or cold zone unless directed by HAZMAT team and Incident Command.
- LOCAL PROTOCOL: Follow your dispatch area's HAZMAT response notification and response plan. This protocol is not a substitute for a comprehensive notification, response, decontamination, treatment and transport plan.

RESPONSE

- Activate ICS and HAZMAT response plan
- Request specific staging instructions
- Position ambulance uphill and upwind >300ft
- Be alert for patients self extricating from scene
- Declare MCI see MCI Protocol

Resources:
NH Fire Marshall: 603-223-4289
NH Bureau of Emergency Mgmt: 603-271-2231
NH National Guard 12th CST: 603-227-1555

HAZARDOUS MATERIAL IDENTIFICATION

- Name and proper spelling of material if known
- SDS sheet, bill of lading, waybill, other documentation
- Emergency Response Guide ID# (4 digits)
- DOT classification on placard
- Bystanders, technicians or employees at location
- Physical description of material (color, odor, etc.)

Resources:
North American Emergency Response Guide (NAERG)
Poison Control: 1-800-222-1222
Chemtrec: 1-800-424-9300
Military Shipments: 1-800-851-8061
Wireless Information System for Emergency Responders (WISER)

Note: Many household chemicals may not require activation of a HAZMAT team. Utilize manufacturer's recommendation for decontamination and treatment, or contact Poison Control

HOSPITAL NOTIFICATION

- Estimate number of patients if possible
- Estimate triage/acuity level of patients
- Determine time frame for transportation
- Determine capacity of receiving hospitals

Resources
Triage Tags with "contaminated" identifier
See Mass Casualty and Triage Protocol

Receiving hospitals should be notified as soon as it is determined you have contaminated patient(s) to ensure the facility is capable and prepared to receive a potentially contaminated patient. Include level of hazardous materials suit, if known.

Protocol Continues

Protocol Continued

TREATMENT DURING DECONTAMINATION

- Limit medication administration route to IM/IN or nebulizer.
- Intravenous therapy and advanced airway interventions should be delayed until after gross decontamination.
- Specific individual treatment should be referenced from Poison Control or SDS sheets.
- Encourage the use of warmed water 100^{o} to prevent hypothermia.

RECORD EXPOSURE AND TREAMENT INFORMATION

- Name of chemical(s).
- Amount, time, and route of exposure.
- Decontamination information.
- Treatment/antidotes administered.

TRANSPORT

- EMS personnel transporting potentially contaminated patients (e.g., patients who have received gross decontamination) should wear personal protective equipment as recommended by Incident Command.
- If an ambulance has transported a contaminated patient, it can only be used to transport similarly contaminated patients until proper decontamination of the vehicle is complete.
- Contaminated patients should not be transported by helicopter.

9.1 Mass/Multiple Casualty Triage

A multiple casualty incident (MCI) is any situation where the number of sick or injured patients exceeds the available local, regional or state EMS system resources to provide adequate care in a timely manner to minimize injury and death. An MCI may be the result of a man made disaster or a natural event.

Purpose

- The goal of the Mass/Multiple Casualty Triage protocol is to prepare for a unified, coordinated, and immediate EMS mutual aid response by prehospital and hospital agencies to effectively expedite the emergency management of the victims of any type of MCI.
- Successful management of any MCI depends upon the effective cooperation, organization, and planning among health care professionals, hospital administrators and out-of-hospital EMS agencies, state and local government representatives, and individuals and/or organizations associated with disaster-related support agencies.
- Adoption of a system that meets the Model Uniform Core Criteria (MUCC) as developed by the CDC.

EMS Provider Role

- All providers must have thorough knowledge of both the Incident Command System (ICS) and the triage system.
- Within the scope of the MCI, the EMS provider may perform procedures within their scope of practice.

Triage Process

Utilize a triage system such as "SALT" (Sort, Assess, Lifesaving Interventions, Treatment/ Transport) to prioritize patients. SALT is part of the CDC - sponsored project based upon best evidence and designed to develop a national standard for mass casualty triage.

- Assess each patient as quickly as possible.
- Conduct rapid assessment.
- Assign patients to broad categories based on need for treatment (Still, Wave, Walk)
- Remember: Triage is not treatment! Stopping to provide care to one patient will only delay care for others. Standard triage care is only to correct airway and severe bleeding problems.

SALT Triage Categories

RED	Immediate: Immediately life-threatening problems, high potential for survival
YELLOW	Delayed: Serious (not minor) injuries requiring care but management can be delayed without increasing morbidity or mortality
GREEN	Minimal: Injuries require minor care or no care
GREY	Expectant: Unlikely to survive given available resources.
BLACK	Dead: Patient is not breathing after opening airway. (In children, if after giving 2 rescue breaths, if appropriate.)

Tagging System

- Use water-repellent triage tags with waterproof markers and attach to the patient.

Indicate patient's triage priority, degree of decontamination performed, treatment and medications received.

Protocol Continues

Protocol Continued

Triage in Hazardous Material Incidents

Decontamination

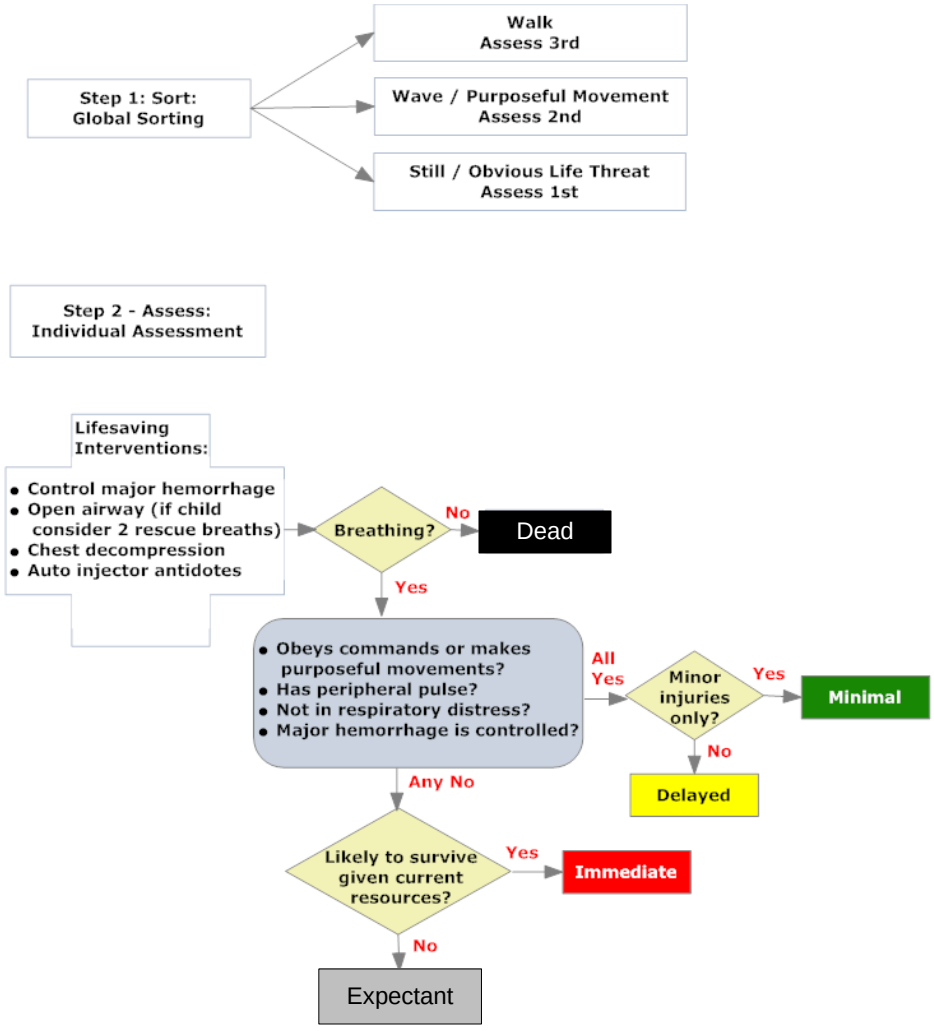
The need for decontamination is the "first triage decision." Since decontamination can be a lengthy process, the "second decision" is which patient(s) are the first to be decontaminated. The "third decision" is based on need for treatment during the decontamination process, since only simple procedures such as antidote administration can be accomplished while wearing PPE.

Identification and Treatment

- Signs and symptoms of exposure will usually dictate the treatment required, however, at the earliest possible time, identification of the specific chemical should be made.
- Reference additional hazardous materials protocols as necessary.
- Request additional resources. Initial antidote and medical supplies may be limited to priority patients.
- Respiratory compromise is a leading factor of fatalities due to hazardous material exposure.
- Symptoms of chemical exposure may be delayed and occur suddenly. Constant reevaluation of respiratory status is necessary.

SALT Mass Casualty Triage Algorithm

(Sort, Assess, Lifesaving Interventions, Treatment/Transport)



9.2 Radiation Injuries Adult & Pediatric

Exposure to radioactive source or radioactive material/debris

EMT/ADVANCED EMT STANDING ORDERS

E

- Remove the patient from scene and decontaminate by appropriately trained personnel.
- Triage tools for mass casualty incident
  - If vomiting starts:
    - Within 1 hour of exposure, survival is unlikely and patient should be tagged “Expectant.”
    - Less than 4 hours after exposure, patient needs immediate decontamination and evaluation and should be tagged “immediate.”
    - 4 hours after exposure, reevaluation can be delayed 24 – 72 hours if no other injury is present and patient should be tagged “Delayed”.
- Routine Patient Care.
- Treat traumatic injuries and underlying medical conditions.
- Patients with residual contamination risk from wounds, shrapnel, or internal contamination should be wrapped in water repellent dressings to reduce cross contamination.
- Consider Air Medical Transport after proven definitive decontamination of patient.

ADVANCED EMT STANDING ORDERS

A

- Consider anti-emetic, see Nausea/Vomiting Protocol 2.13.

PARAMEDIC STANDING ORDERS

P

- Consider pain management, see Pain Management Protocol 2.18.

PEARLS:

- In general, trauma patients who have been exposed to or contaminated by radiation should be triaged and treated on the basis of the severity of their conventional injuries
- A patient who is contaminated with radioactive material (e.g. flecks of radioactive material embedded in their clothing and skin) generally poses a minimal exposure risk to medical personnel.

2.6 Childbirth & Newborn Care

EMR/EMT STANDING ORDERS

- Routine Patient care.
- Obtain obstetrical (OB) history.
- Expose patient and determine if signs of imminent delivery are present.
  - Do not digitally examine or insert anything into the vagina.
  - If obstetrical complication is present, consider contacting **Medical Control** and transport to nearest appropriate hospital per local OB Diversion Protocol. (See Obstetrical Emergencies Protocol 2.16).
- If delivery is not imminent place mother in left-lateral recumbent position and transport to a hospital with OB capability.
- If delivery is imminent, assist in newborn's delivery.
  - With palm of hand, apply gentle perineal pressure for a slow, controlled delivery.
  - As the baby's head begins to emerge support the head as it turns. Do not pull on head.
  - If membranes are intact after head emerges, tear membrane with fingers to permit escape of fluid.
  - If umbilical cord is wrapped around newborn's neck, slip the cord over head prior to delivery. If after multiple attempts you are unable to slip cord off the neck, clamp and cut the cord between the clamps (EMT only).
  - Guide the baby's head downward to allow delivery of the upper shoulder.
  - Then guide the baby's head upward to allow delivery of the lower shoulders.
  - Delivery of trunk and legs occurs quickly; be prepared to support infant as it emerges.
- For newborns requiring resuscitation, see Newborn Resuscitation Protocol 2.15.
- Prevent heat loss by rapidly drying and warming:
  - Remove wet linen.
  - For stable newborn and mother, place newborn skin-to-skin on the mother's chest or abdomen.
    - Cover newborn's head, wrap newborn and mother in blankets, silver swaddler/space blanket or commercially available infant warming device. **Do not** use hot packs.
- Assess airway by positioning and clearing secretions (only if needed):
  - Place the newborn on back or side with head in a neutral or slightly extended position.
  - Routine suctioning is discouraged even in the presence of meconium-stained amniotic fluid. Suction oropharynx then nares only if the patient exhibits respiratory depression and/or obstruction, see Newborn Resuscitation Protocol 2.15.
- Assess breathing by providing tactile stimulation:
  - Flick soles of feet and/or rub the newborn's back.
  - If newborn is apneic or has gasping respirations, nasal flaring, or grunting, proceed to Newborn Resuscitation Protocol 2.15.
- Asses circulation, heart rate, and skin color:
  - Evaluate heart rate by one of several methods:
    - Auscultate apical beat with a stethoscope.
    - Palpate the pulse by lightly grasping the base of the umbilical cord.
  - If the pulse is <100 bpm and not increasing, proceed to Newborn Resuscitation Protocol 2.15.
  - Assess skin color: examine trunk, face and mucous membranes.
  - Assess temperature.
  - Record APGAR score at 1 minute and 5 minutes (see chart).
- See Pediatric Color Coded Appendix A3 for vital signs.

R/E

Protocol Continues

Childbirth & Newborn Care 2.6

Policy Continued

EMR/EMT STANDING ORDERS

R/E

- After one minute, clamp and cut the umbilical cord (EMT only):
  - After initial assessment and after the cord stops pulsating.
  - Leave a minimum of 6 inches of cord.
- Provide gentle downward traction (weight of the hand) on the umbilical cord while performing gentle fundal massage.
  - If patient and neonate are stable, consider staying on scene until the placenta has delivered.
  - If ongoing vaginal bleeding following placental delivery, continue to perform gentle fundal massage.
  - Package placenta for hospital staff.
- Monitor maternal blood loss and perfusion. (See Obstetrical Emergencies Protocol 2.16). Note that normal pregnancy is accompanied by higher heart rate and lower blood pressure.
- Active maternal seizures—see Seizures Protocol 2.20A.
- For transport:
  - Ensure newborn remains warm.
  - Turn heat to maximum in ambulance compartment.
  - Consider commercial warming device (do not put heat packs directly on skin).
  - Transport newborn per Pediatric Transport 8.12.

ADVANCED EMT STANDING ORDERS

A

After the umbilical cord is clamped and cut:

- Administer oxytocin 10 Units IM to the mother.

Note: In multiple pregnancy, do not give until all babies are delivered.

PARAMEDIC STANDING ORDERS

P

Ongoing bleeding after uterine massage and oxytocin administration, consider Tranexamic Acid (TXA):

- Mix 1 gram of TXA in 50 - 100 ml of 0.9% NaCl; infuse over approximately 10 minutes IV or IO.

APGAR Scale

SIGN	0	1	2
Appearance	Blue and pale	Body pink, limbs blue	All pink
Pulse	Absent	Less than <100	More than >100
Grimace	No response	Grimace	Coughing and crying
Activity	Limp	Weak	Strong
Respiration	Absent	Irregular, slow	Good, crying

PEARLS:

OB Assessment:

- Length of pregnancy
- Number of pregnancies
- Number of viable births
- Last menstrual period
- Due date
- Prenatal care
- Number of expected babies
- Drug use

Consider **Medical Control** for:

- Prepartum hemorrhage
- Postpartum hemorrhage
- Breech presentation
- Limb presentation
- Nuchal cord
- Prolapsed cord

Signs of imminent delivery:

- Urge to move bowels
- Urge to push
- Crowning
- Contractions less than 2 minutes apart

- Placental delivery can take up to 30 minutes.
- Newborn infants are prone to hypothermia which may lead to hypoglycemia, hypoxia and lethargy. Aggressive warming techniques should be initiated including drying, swaddling, and warm blankets covering body and head.
- Raise temperature in ambulance patient compartment.

2.17A Opioid Overdose – Adult

EMR & EMT STANDING ORDERS

R/E

- Routine Patient Care.
- Naloxone should be administered to those with signs and symptoms of hypoventilation from opioid intoxication, as follows:
  - Naloxone 1 mg (1 mL) per nostril (IN) via prefilled syringe and atomizer for a total of 2 mg **OR**
  - Naloxone 4 mg (0.5 mL) commercially prepared nasal spray.
  - Repeat every 5 - 10 minutes (maximum 10 mg) until respiratory depression resolves and not necessarily until return of consciousness.
  - Monitor the patient for recurrent respiratory depression and decreased mental status.
- Determine and document if bystander naloxone was given.
- If you suspect a poisoning or overdose by any other substance than an opioid see the Poisoning and Overdose Protocol 2.19.

ADVANCED EMT/PARAMEDIC STANDING ORDERS

A/P

- Naloxone 0.4 – 2.0 mg IV, repeat every 2 - 3 minutes (maximum 10 mg) until respiratory depression resolves and not necessarily until return of consciousness.
- Naloxone 0.4 – 2.0 mg IM, repeat every 5 - 10 minutes (maximum 10 mg) until respiratory depression resolves and not necessarily until return of consciousness.

- Patient may become agitated or violent following naloxone administration due to opioid withdrawal/hypoxia.
- Patient may have used more than one type of substance use and reversal of the opiate may unmask the effects of other substances which could lead to violence or other signs and symptoms.

Naloxone Administration Kits

EMS units may choose to stock their ambulances with naloxone administration kits intended to be left at the scene where a suspected overdose patient was treated.

- Instructions on use as well as direction to area resources, to include the NH Statewide Addiction Crisis Line 211, should also be attempted.
- Leave-behind naloxone administration kits must be separate from the medication used for patient care.
- Naloxone administration kits should not be left at the scene where a patient has a known allergy to naloxone or kit constituents.

PEARLS:

- Signs and symptoms can include respiratory depression, apnea, altered mental status and/or pinpoint pupils.
- Intranasal naloxone may take up to 10 minutes to have effect. Repeat dosing should only be considered after an adequate amount of time has passed for medication effects to be seen.
- Capnography may be helpful for monitoring respiratory status and titrating to lowest effective naloxone dose. See Capnography Procedure 6.3.
- The clinical opioid reversal effect of naloxone is limited and may end within an hour whereas some opioids may have extended release and therefore may have longer durations.

Opioid Overdose – Pediatric 2.17P

EMR/EMT STANDING ORDERS

R/E

- Routine Patient Care.
- Naloxone should be administered to those with signs and symptoms of hypoventilation from opioid intoxication, as follows:
  - **Infant & Toddle**r:
    - Naloxone 0.5 mg (0.5 mL) per nostril for a total of 1 mg.
  - **Small Child** and larger:
    - Naloxone 1 mg (1 mL) per nostril for a total of 2 mg **OR**
    - Naloxone 4 mg (0.5 mL) commercially prepared nasal spray.
  - Monitor the patient for recurrent respiratory depression and decreased mental status.
  - For additional doses call **Medical Control**.
- Determine and document if bystander naloxone was given.
- If you suspect a poisoning or overdose by any other substance than an opioid see the Poisoning and Overdose Protocol 2.19.

ADVANCED EMT/PARAMEDIC STANDING ORDERS

A/P

- Naloxone 0.1 mg/kg IN/IV refer to Pediatric Color Coded Appendix 3, repeat every 2 – 3 minutes (maximum 10 mg) until respiratory depression resolves and not necessarily until return of consciousness.
- Naloxone 0.1 mg/kg IM refer to Pediatric Color Coded Appendix 3, repeat every 5 – 10 minutes (maximum 10 mg) until respiratory depression resolves and not necessarily until return of consciousness.

- Patient may become agitated or violent following naloxone administration due to opioid withdrawal/hypoxia.
- Patient may have used more than one type of substance use and reversal of the opiate may unmask the effects of other substances which could lead to violence or other signs and symptoms.

Naloxone Administration Kits

EMS units may choose to stock their ambulances with naloxone administration kits intended to be left at the scene where a suspected overdose patient was treated.

- Instructions on use as well as direction to area resources, to include the NH Statewide Addiction Crisis Line 211, should also be attempted.
- Leave-behind naloxone administration kits must be separate from the medication used for patient care.
- Naloxone administration kits should not be left at the scene where a patient has a known allergy to naloxone or kit constituents.

PEARLS:

- Signs and symptoms can include respiratory depression, apnea, altered mental status and/or pinpoint pupils.
- Intranasal naloxone may take up to 10 minutes to have effect. Repeat dosing should only be considered after an adequate amount of time has passed for medication effects to be seen.
- Capnography may be helpful for monitoring respiratory status and titrating to lowest effective naloxone dose. See Capnography Procedure 6.1.
- The clinical opioid reversal effect of naloxone is limited and may end within an hour whereas some opioids may have extended release and therefore may have longer durations.

7.0 Sepsis - Advanced Care

This prerequisite protocol is only to be used by EMS Units and their affiliated providers who are authorized by FSTEMS

IDENTIFICATION OF POSSIBLE SEPSIS

- Suspected infection – YES
- Evidence of sepsis criteria – YES (2 or more):
  - Temperature < 96.8 °F or > 101°F.
  - Heart rate > 90 bpm.
  - Respiratory rate > 20 bpm.

Plus one of the following signs of acute organ failure:

- Mean Arterial Pressure (MAP) < 65mmHg (systolic blood pressure < 90 mmHg).
- New onset altered mental status OR increasing mental status change with previously altered mental status.
- $ETCO_2$ < 25 mmHg.

PARAMEDIC - PREREQUISITES REQUIRED - ADULT ONLY

CONTRAINDICATIONS:

- Known allergies to available antibiotics.

PROCEDURE:

1. Draw labs:
   - Rainbow top draw (blue, purple, yellow and green).
   - Blood cultures X 2.
2. Administer fluid and vasopressor per Sepsis Protocol 2.21.
3. Administer appropriate antibiotics per your medical resource hospital .

High Flow Nasal Cannula Adult & Pediatric 5.8

PARAMEDIC STANDING ORDERS

P

INDICATIONS

Severe respiratory distress **AND** persistent Sp02 < 92% on maximum low-flow NC in patient who can maintain their airway (alert and able to swallow). High flow nasal cannula (HFNC) is ideally suited for hypoxic respiratory distress as might be seen in bronchiolitis in infants and children, see Pediatric Respiratory Distress 2.3P.

CONTRAINDICATIONS

Recent GI, airway, or tracheal surgery, tracheotomy, significant neck or facial trauma, foreign body aspiration.

PROCEDURE

- Nasal cannula should occlude 50% of the nares.
- Consider suctioning nares just prior to initiation of treatment.
- Set appropriate mode (pediatric or adult) and temperature (34^{o} C pediatric or 37^{o} C adult).
- Start HFNC at 2 L/kg/min for infants up to 12 kg. Start flow rates for those over 12 kg using weight-based flow rates as per table below.
- Titrate FiO_2 to SpO_2 92% with target of 92 - 96%.

ESTIMATED OXYGEN CYLINDER CAPACITY IN MINUTES FOR AIRVO2 HFNC

This chart lists the estimated time in minutes an M or H oxygen cylinder can flow at, when the starting pressure is 2,000 psi, and the FiO2 is set to 50%:

M Tank Oxygen flow rate	Flow time	H Tank Oxygen flow rate	Flow time
60 LPM.....	102 min	60 LPM.....	210 min
50 LPM.....	120 min	50 LPM.....	240 min
40 LPM.....	150 min	40 LPM.....	300 min
30 LPM.....	187 min	30 LPM.....	420 min
25 LPM.....	240 min	25 LPM.....	510 min
20 LPM.....	300 min	20 LPM.....	640 min
15 LPM.....	390 min	15 LPM.....	850 min
10 LPM.....	600 min	10 LPM.....	1200 min

This chart is for reference only. The paramedic should complete their own calculations based on your patient's needs, the oxygen cylinder pressure at time of transport, and your expected transport time.

WEIGHT BASED FLOW RATE

Weight	Flow Rate
Up to 12 kg	2 L/kg/min
13–15 kg	30 L/min
16–30 kg	35 L/min
31–50 kg	40 L/min
>50 kg	50 L/min

5.2 Analgesia and Sedation for Invasive Airway Device

P

After placement of an advanced airway device analgesia and sedation should generally be administered. NOTE: This protocol is to be used exclusively for analgesia post-intubation; it may NOT be used to facilitate intubation.

PARAMEDIC STANDING ORDERS – ADULT

Option 1:

- Ketamine 1 mg/kg IV bolus (max 100 mg) followed by infusion via pump 2 – 5 mg/kg/hr.
  - Initial bolus after intubation not needed if ketamine was used for induction.
  - If infusion not used: 1 mg/kg IV (max 100 mg) every 5 - 15 minutes as needed.

Option 2:

- Fentanyl 0.5 - 1 mcg/kg IV every 5-10 minutes as needed,

AND

- Midazolam 2 - 5 mg IV bolus followed by infusion via pump 1 – 10 mg/hour.
  - If infusion not used or if additional sedation is required: 2 - 5 mg IV every 5 -10 minutes as needed **OR**
- Lorazepam 1 - 2 mg every 15 minutes as needed (maximum total 10 mg).

PARAMEDIC STANDING ORDERS – PEDIATRIC

Option 1:

- Ketamine 1 mg/kg IV every 5 - 15 minutes, as needed.

Option 2:

- Fentanyl 1 – 2 mcg/kg IV every 5 - 10 minutes as needed,

AND

- Midazolam 0.1 mg/kg IV (single maximum dose 5 mg) every 5 minutes as needed, **OR**
- Lorazepam 0.1 mg/kg IV (single maximum dose 4 mg) every 5 minutes as needed.

Richmond Agitation Sedation Scale (RASS)

Target RASS	RASS Description
+ 4	Combative, violent, danger to staff
+ 3	Pulls or removes tube(s) or catheters; aggressive
+ 2	Frequent nonpurposeful movement, fights ventilator
+ 1	Anxious, apprehensive , but not aggressive
0	Alert and calm
- 1	awakens to voice (eye opening/contact) >10 sec
- 2	light sedation, briefly awakens to voice (eye opening/contact) <10 sec
- 3	moderate sedation, movement or eye opening. No eye contact
- 4	deep sedation, no response to voice, but movement or eye opening to physical stimulation
- 5	Unarousable, no response to voice or physical stimulation

PEARLS

- Analgesia and sedation should be considered in all patients with advanced airways in place, especially any time a patient shows signs of distress or there is difficulty providing appropriate ventilation due to patient resistance.
- Administering analgesia prior to anxiolysis has been shown to decrease the amount of benzodiazepine needed.
- Ketamine has analgesic properties and therefore does not require fentanyl to be co-administered.
- Ketamine IV boluses should be pushed slowly, over at least 30-60 seconds.
- Sedation can be guided by the RASS scale shown above.
- Patients usually require more sedation in the prehospital environment than in-hospital due to increased external stimuli.
- Lower doses of the medication listed should be considered in the setting of hemodynamic compromise.

Musculoskeletal Injuries Adult & Pediatric

4.5

EMR/EMT STANDING ORDERS - ADULT & PEDIATRIC

R/E

- Routine Patient Care.
- Manually stabilize the injury.
- Control bleeding, see Hemorrhage Control Protocol 4.4.
- Remove obvious debris, irrigate open wounds with saline solution, and cover with moist sterile dressing.
- Assess CSMs distal to injury before and frequently after immobilization.
  - Splint extremity as required.
  - Consider traction splinting for isolated adult and pediatric mid-shaft femur fractures, do not delay transport unnecessarily. (EMT only)
  - For pain relief apply ice and elevate.
- In a patient with a high risk mechanism of injury see Spinal Injury Protocol 4.7.
- Stabilize suspected pelvic fractures with commercial device (preferred) or bed sheet. (EMT only)

ADVANCED EMT AND PARAMEDIC STANDING ORDERS – ADULT & PEDIATRIC

A/P:

- Assess pain level and consider pain control measures, see Pain Management Protocol 2.18.
- Administer fluids per Shock – Traumatic Protocol 4.6.
- For patellar dislocation, consider reduction by exerting medially – directed pressure on lateral patella while extending knee*.
- *Paramedic must have completed the patella dislocation training found at: https://www.nhfaemslearning.org.

EMT/ADVANCED EMT/PARAMEDIC STANDING ORDERS- ADULT & PEDIATRIC

X

- For impaled objects in the extremities, consider removal of the object unless removal will cause significant damage and/or uncontrolled hemorrhage.
- For dislocated patella, shoulder, or digits from indirect force:
  - Attempt to reduce if evacuation will be prolonged, dangerous, or painful. (Training approved by EMS's Medical Director)
- For open/compound fractures consider:
  - Adult: Ceftriaxone 1 gram IV/IM, if available. (Advanced EMT/Paramedic only)
  - Pediatric: Ceftriaxone 50 mg/kg IV (maximum dose 1 gram) over 30 minutes, if available. (Paramedic only)
    - See reconstitution reference in the Medication Formulary
- For musculoskeletal pain consider:
  - Adult: Ibuprofen 400 – 600 mg or acetaminophen 325 – 650 mg by mouth; repeat every 6 hours as needed, not to exceed 3000 mg in 24 hours.
  - Pediatric: Ibuprofen or acetaminophen per Pediatric Color Coded Appendix 3.

NEVER MIX ceftriaxone with lactated ringers or plasmalyte, calcium in these solutions can cause precipitation and crystallization.

For dislocations due to direct impact, such as falls, the injury is more likely to be complicated by a fracture. Reducing these involves more risk. Splinting in place and urgent evacuation is ideal.

PEARLS:

- Use ample padding when splinting possible fractures, dislocations, sprains, and strains. Elevate injured extremities, if possible. Consider the application of a cold pack for 30 minutes.
- Musculoskeletal injuries can occur from blunt and penetrating trauma. Fractures of the humerus, pelvis and femur, as well as fractures or dislocations involving circulatory or neurological deficits, take priority over other musculoskeletal injuries.
- Hip dislocations, pelvic, knee, and elbow fracture / dislocations have a high incidence of vascular compromise.
- Lacerations should be evaluated for repair within 6 - 12 hours.
- Blood loss may be concealed or not apparent with extremity injuries.

Bradycardia – Adult 3.1A

EMT/ADVANCED EMT STANDING ORDERS

E/A

- Routine Patient Care.
- Consider the underlying causes of bradycardia (e.g., acute coronary syndrome, hyperkalemia, hypoxia, hypothermia).
- 12-lead ECG if available.

PARAMEDIC STANDING ORDERS

P

For symptomatic bradycardia:
If hemodynamically unstable:

- Consider atropine 1 mg IV every 3 – 5 minutes to a maximum of 3 mg.
- Consider transcutaneous pacing.
- Administer procedural sedation prior to or during transcutaneous pacing, if feasible:
  - Midazolam 2.5 mg IV, may repeat once in 5 minutes, OR
  - *Midazolam 5 mg IM/IN, may repeat once in 5 minutes, OR
  - Lorazepam 1 mg IV, may repeat once in 5 minutes OR
  - Diazepam 5 mg IV, may repeat once in 5 minutes
  - Ketamine:
    - 10-20 mg IV diluted in 50 – 100 mL 0.9% NaCl or D5W over 10 minutes (no IV pump needed) may repeat every 5 minutes to a total of 40 mg, as tolerated OR
    - 25 – 50 mg IM may repeat every 30 minutes, as tolerated
- Consider vasopressor:
  - Epinephrine 2 –10 micrograms/minute via pump **OR**
  - Norepinephrine Infusion 1 – 80 microgram/minute via pump. Starting dose 1 – 15 microgram/minute, titrate 2 – 5 microgram/minute every 5 minutes, as needed.
  - Consider push dose epinephrine if infusion is not immediately available:
  - Epinephrine by push dose (dilute boluses – see Push Dose Epi Chart) prepare 10 mcg/mL then administer 10 - 20 mcg boluses (1 – 2 mL) every 2 minutes (where feasible, switch to infusion as soon as practical)
- **Contact Medical Control** for expert consultation.

Other Causes:

- For symptomatic beta blocker overdose, consider glucagon, as much as is available, up to 5 mg IV over 3 – 5 minutes
- For suspected hyperkalemia with ECG changes or symptomatic calcium channel blocker/beta blocker overdose see Hyperkalemia Protocol 2.9

***For IN administration of midazolam use a 5 mg/mL concentration.**

For calcium chloride administration, ensure IV patency and do not exceed 1 mL per minute.

PEARLS:

- Hyperkalemia should be suspected in dialysis or renal failure patients with ECG changes such as tall peaked T waves, loss of P waves, QRS widening and bradycardia.
- When pushed too quickly, glucagon can cause nausea and vomiting.

Post Resuscitative Care Adult & Pediatric

3.4

EMT/ADVANCED EMT STANDING ORDERS – ADULT & PEDIATRIC

E

- If feasible, acquire and transmit a 12-lead EKG at least 8 minutes post ROSC.
- Initial ventilation rate of 10 - 12 BPM for adults and 20 bpm for pediatric, then titrate to capnography of 35 to 40 mm Hg, if available.
- Titrate oxygen levels to between 94 – 98 % SpO_2

ADVANCED EMT STANDING ORDERS – ADULT & PEDIATRIC

A

- For post resuscitation hypotension:
- **Adult:** Maintain systolic blood pressure of >90 mmHg OR MAP ≥ 65 mmHg.
  - Administer IV fluid in 250 mL boluses not to exceed 2000 mL.
- **Pediatric:** 1 – 10 years of age: Maintain systolic blood pressure 70 mmHg + (2 x age)
  - Administer fluid bolus of 10 - 20 mL/kg by syringe push method (may repeat to a maximum 60 mL/kg)

PARAMEDIC STANDING ORDERS - ADULT

P

- Consider vasopressor:
- Consider push dose epinephrine if infusion is not immediately available:
  - Epinephrine by push dose (dilute boluses – see Push Dose Epi Chart prepare 10 mcg/mL, then administer 10 - 20 mcg boluses (1 – 2 mL) every 2 minutes (switch to infusion as soon as possible), **AND/OR**
  - Norepinephrine infusion Infusion 1 – 80 microgram/minute via pump. Starting dose 1 - 15 microgram/minute, titrate 2 – 5 microgram/minute every 5 minutes, as needed **OR**
  - Epinephrine infusion 2 – 10 micrograms/minute, via pump, titrated to effect.
- Consider nasogastric or orogastric tube for the intubated patient.

PARAMEDIC STANDING ORDERS - PEDIATRIC

For Post-Resuscitation Hypotension:

Consider: (An infusion pump is required for the use of these vasopressors)

- Epinephrine 0.05 – 1.0 mcg/kg/min, via pump, titrated to effect **OR**
- Norepinephrine 0.05 mcg/kg/min, titrated to effect to a maximum dose 2 mcg/kg/min, via pump.

- For patients with return of spontaneous circulation after cardiac arrest not related to trauma or hemorrhage who are comatose without purposeful movement, consider transporting to a receiving facility capable of starting induced therapeutic hypothermia.
- If patient meets STEMI criteria transport per your STEMI guidelines/agreements. Notify receiving facility of a “STEMI Alert”.

PEARLS:

- Avoid hyperventilation as it increases intrathoracic pressures, potentially worsening hemodynamic instability.

Seizures – Adult 2.20A

EMT/ADVANCED EMT STANDING ORDERS

E/A

- Routine Patient Care.
- If the blood glucose reading is <60 mg/dL, see Hypoglycemia Protocol 2.11A.
- If a benzodiazepine has been prescribed by the patient's physician (e.g., midazolam intranasal (Nayzilam) or diazepam rectal gel (Diastat)), assist the patient or care giver with the administration in accordance with the physician's instructions.
- If the patient has an implanted vagus nerve stimulator (VNS), suggest that family use the VNS magnet to activate the VNS and assist if required.
  - Swipe the VNS magnet over the stimulator, located in the left chest area, for one second, counting one-one thousand while it's swiped over the chest.
  - Note: do not delay medication administration.

PARAMEDIC STANDING ORDERS

P

While seizure activity is present, consider:

- Midazolam 5 mg IV, repeat every 5 minutes as needed, **OR**
- *Midazolam 10 mg IM/IN, repeat every 5 minutes as needed, **OR**
- Lorazepam 2 - 4 mg IV, repeat every 5 minutes as needed, **OR**
- Diazepam 10 mg IV, repeat every 5 minutes as needed.

For patients in the third trimester of pregnancy or post-partum who are seizing or who are post-ictal:

- Magnesium sulfate, 4 grams IV (mix in 100 mL 0.9% NaCl) bolus over 10 minutes, then consider 1 gram/hr continuous infusion.

***For IN administration of midazolam use a 5 mg/mL concentration.

Do NOT routinely place an IV/IO for the actively seizing patient (unless needed for other reasons).

PEARLS:

- Do not attempt to restrain the patient; protect them from injury.
- History preceding a seizure is very important. Find out what precipitated the seizure (e.g., medication non-compliance, active infection, trauma, hypoglycemia, poisoning).
- **Status epilepticus** is defined as any generalized seizures lasting more than 5 minutes. This is a true emergency requiring rapid airway control, treatment (including benzodiazepines), and transport.
- IM/IN is the preferred route for midazolam where an IV has not been previously established.
- IM midazolam should be administered to the lateral thigh.
- Diazepam and lorazepam are not well absorbed IM and should be given IV.
- There is an increased risk of apnea with >2 doses of benzodiazepines.

Non-Traumatic Shock Adult & Pediatric

2.22

Recognize Compensated Shock- Adult
- Anxiety
- Tachycardia
- Tachypnea
- Diaphoresis

SHOCK

Inadequate tissue perfusion that impairs cellular metabolism

Recognize Compensated Shock - Pediatric:
- Delayed capillary refill
- Decreased or bounding peripheral pulses
- Palpable central pulse, decreased distal pulse
- Cool extremities
- Altered mental status
- Mild tachypnea

Trauma Involved?

NO

YES ▶ ***See Shock – Traumatic Protocol 4.6***

EMT STANDING ORDERS - ADULT & PEDIATRIC:

E

- $ETCO_2$ < 25 mmHg may indicate poor perfusion/shock

ADVANCED EMT STANDING ORDERS – ADULT & PEDIATRIC

Consider ▶

A

- **ADULT:** Administer IV fluid in 250 mL boluses to return the patient to a coherent mental status or palpable radial pulse, not to exceed 2000 mL without consultation with **Medical Control**.
- **PEDIATRIC:** Administer fluid bolus of 10 - 20 mL/kg of IV fluid by syringe push method (may repeat to a maximum 60 mL/kg) to improve clinical condition (capillary refill time ≤ 2 seconds, equal peripheral and distal pulses, improved mental status, normal breathing.

PARAMEDIC STANDING ORDERS – ADULT & PEDIATRIC

P

ADULT consider:
- Norepinephrine Infusion 1 – 80 microgram/minute via pump. Starting dose 1 - 15 microgram/minute, titrate 2 – 5 microgram/minute every 5 minutes, as needed OR
- Epinephrine 2 -10 micrograms/minute via pump

Consider push dose epinephrine if infusion is not immediately available:
- Epinephrine by push dose (dilute boluses – see Push Dose Epi Chart) prepare 10 mcg/mL then administer 10 - 20 mcg boluses (1 – 2 mL) every 2 minutes (where feasible, switch to infusion as soon as practical)

PEDIATRIC: If there is no adequate hemodynamic response after 60 mL/kg IV fluid infused contact **Medical Control**

Consider ▶ **CARDIOGENIC SHOCK**

Primary pump failure Decreased cardiac output

- Norepinephrine infusion Infusion 1 – 80 microgram/minute via pump. Starting dose 1 - 15 microgram/minute, titrate 2 – 5 microgram/minute every 5 minutes, as needed. **OR**
- Epinephrine infusion 2 – 10 micrograms/minute, via pump

*For pediatric cardiogenic shock administer fluid bolus of 10mL/kg of 0.9% saline by syringe push method. Repeat bolus per **Medical Control**.

Consider ▶ **DISTRIBUTIVE SHOCK**

Inadequate blood volume distribution.

Known history of adrenal insufficiency or recent illness, see Adrenal Insufficiency Protocol 2.1
Systemic response to an allergen, see Anaphylaxis/Allergic Reaction Protocol 2.2A&P
Overwhelming response to an infection, see Sepsis Protocol 2.21 A&P

Consider ▶ **HYPOVOLEMIC SHOCK**

Insufficient circulating volume.

Abdominal pain with vaginal bleeding see Obstetric Protocol 2.16.
Nausea and vomiting see Nausea Vomiting Protocol 2.13.
For GI bleeding see Abdominal Pain Protocol 2.0.
Heat exposure, see Hyperthermia Protocol 2.9.

Consider ▶ **OBSTRUCTIVE SHOCK**

Obstruction of blood flow outside the heart

For cardiac tamponade, rapid transport, treat arrhythmias per Cardiac Protocols 3.0 – 3.6.
For spontaneous pneumothorax: consider needle decompression per Thoracic Injury Protocol 4.8.
For pulmonary embolism: rapid transport

Medical Protocols 2.22

2.18A Pain Management – Adult

EMT STANDING ORDERS

E

- Routine Patient Care.
- Use ample padding when splinting musculoskeletal injuries.
- Consider the application of a cold pack.
- Have the patient rate his/her pain from 0 to 10, or use another appropriate pain scale. If there is a language barrier, use self report scale, see Pain – Pediatric Protocol 2.18P.
- If not contraindicated, consider :
  - Acetaminophen 325 – 1000 mg PO, no repeat **OR**
  - Ibuprofen 400 mg PO, no repeat.
- For moderate to severe pain consider paramedic intercept.

Contraindications of acetaminophen:

- Hypersensitivity to acetaminophen or any component of the formulation; severe hepatic impairment or severe active liver disease. Use with caution if history of alcohol abuse. Do not use with other drug products containing acetaminophen within last four hours.

Contraindications of ibuprofen:

- Hypersensitivity to ibuprofen; cerebrovasular bleeding or other bleeding disorders, active gastric bleeding, administration of a medication containing ibuprofen within last six hours.

AEMT STANDING ORDERS

A

- Nitrous oxide: The patient must be able to self-administer this medication.
- Nitrous oxide is contraindicated in patients with abdominal pain, blunt chest trauma, head-injury, or diving-emergency patients.
- Note: Nitrous oxide may only be used if patient has not received an EMS-administered opiate or ketamine. A ventilation fan should be used while administering nitrous oxide.
- Acetaminophen, if not already administered PO:
  - 1000 mg IV, over approximately 10 minutes.

PARAMEDIC STANDING ORDERS

P

- Ketorolac 15 mg IV/IM.
  - Consider as first line in renal colic.
- For severe pain or pain refractory to above, consider one of the following opiates:
- Fentanyl:
  - 25 – 100 micrograms IV, every 2 – 5 minutes to a total of 300 micrograms titrated to pain relief;
  - 50 – 100 micrograms IM/IN, every 5 minutes to a total of 300 micrograms titrated to pain relief, **OR**
- Hydromorphone:
  - 0.5 – 1 mg IV, every 10 minutes to a total of 4 mg titrated to pain relief and if systolic BP is >100 mmHg,
  - 1 – 2 mg IM every 20 minutes to a total of 4 mg titrated to pain relief and if systolic BP is greater than 100 mmHg**, OR**
- Morphine:
  - 2 – 10 mg IV/IM every 10 minutes to a total of 20 mg titrated to pain relief and if systolic BP is >100 mmHg.
- **Antidote:** For hypoventilation from opiate administration by EMS personnel, assist ventilations and administer naloxone as directed in the Opioid Overdose Protocol 2.17A.

AND/OR

- Ketamine:
  - 10 – 20 mg IV diluted in 50 – 100 mL 0.9% NaCl or D5W over 10 minutes (no IV pump needed) may repeat every 5 minutes to a total of 40 mg, as tolerated, **OR**
  - 25 – 50 mg IM/IN may repeat every 30 minutes, as tolerated.

Protocol Continues

2.2A Anaphylaxis/Allergic Reaction Adult

EMT STANDING ORDERS

E

- Routine Patient Care.
- For anaphylaxis, administer: (anterolateral thigh preferred administration site)
  - Adult epinephrine autoinjector 0.3 mg IM, **OR**
  - Epinephrine 1mg/1mL: Administer 0.3 mg (0.3 mL) IM*.
  - If signs and symptoms do not resolve may repeat in 5 minutes.
    - For additional dosing, contact **Medical Control**.

***EMTs must have completed the Ready, Check & Inject training, found at: https://ola.nhfa-ems.com/enrol/index.php?id=277*

- For respiratory symptoms / wheezing consider albuterol 2.5mg via nebulizer. Repeat albuterol 2.5 mg, every 5 minutes (4 doses total) via nebulizer.

ADVANCED EMT STANDING ORDERS

A

- For anaphylaxis:
  - Repeat epinephrine every 5 minutes until signs and symptoms resolve
  - For signs of shock consider fluid per Shock – Non-Traumatic Protocol 2.22.

PARAMEDIC STANDING ORDERS

P

- After epinephrine has been administered or for isolated skin symptoms of allergic reaction consider:
  - Diphenhydramine 25 – 50 mg IV/IM/PO.
- For anaphylaxis refractory to 3 or more doses of IM epinephrine, (e.g., persistent hemodynamic compromise, bronchospasm), consider:
  - Epinephrine by push dose (dilute boluses) prepare 10 mcg/mL by adding 1 mL 0.1 mg/mL epinephrine to 9 mL normal saline, then administer 10 – 20 mcg boluses (1 – 2 mL) every 2 minutes. Switch to infusion as soon as practical. **AND/OR**
  - Epinephrine infusion 2 - 10 micrograms/minute until symptoms resolve, pump required, see Drip Rate Reference Appendix 5
- For suspected ace inhibitor induced angioedema consider:
  - Tranexamic acid (TXA):
    - Mix 1 gram of TXA in 50 - 100 ml of 0.9% NaCl; infuse over approximately 10 minutes IV or IO.

EMT/ADVANCED EMT EXTENDED CARE ORDERS

- Diphenhydramine 25 – 50 mg PO. May repeat every 4-6 hours as needed; maximum dose of 300 mg in 24 hours.

PARAMEDIC EXTENDED CARE ORDERS

X

- Dexamethasone 10 mg IV/IM/PO **OR**
- Methylprednisolone 125 mg IV/IM **OR**
- Prednisone 60 mg by mouth.
- Famotidine 20 mg IV/IM/PO

CAUTION: Epinephrine is available in different routes and concentrations. Providers are advised to re-check the dosing and concentration prior to administration.

In anaphylaxis, do not delay epinephrine administer for second-line medications such as diphenhydramine.

PEARLS:
Anaphylaxis: Potential allergen exposure AND any two of the following:

- Angioedema: facial/lip/tongue swelling, throat tightening, voice change.
- Breathing: shortness of breath, wheeze, stridor, cyanosis.
- Poor perfusion: hypotension, altered mental status, syncope, delayed capillary refill
- Skin: Hives, itching, extremity swelling, erythema.
- Gastrointestinal: vomiting, abdominal pain, diarrhea.

Protocol Continued

PARAMEDIC STANDING ORDERS

For nausea: see Nausea/Vomiting 2.13 Protocol.

Contact Medical Control for guidance in patients with:

- Altered mental status **OR**
- Additional doses of a medication, **OR**
- Benzodiazepine administration in conjunction with narcotic administration for patients with musculoskeletal spasms.

Avoid ketorolac in patients with NSAID allergy, aspirin-sensitive asthma, renal insufficiency, pregnancy, or known peptic ulcer disease.

Ketamine is contraindicated in patients unable to tolerate hyperdynamic states such as those with known or suspected aortic dissection, myocardial infarction, and aortic aneurysm.

PEARLS:

- Ketamine should be considered in patients with severe pain, hemodynamic compromise, pain refractory to opiates, patients on chronic opiate treatment (e.g., Methadone, Buprenophine), and patients with history of substance use disorder.
- Ketamine may cause appearance of intoxication at higher doses. Dysphoria (emergence reaction) may occur as the medication effects wear off.
- Place the patient in a position of comfort, if possible.
- Avoid coaching the patient; simply ask them to rate his/her pain on a scale from 0 – 10, where 0 is no pain at all and 10 is the worst pain they have ever experienced.
- Reassess the patient's pain level and vital signs every 5 minutes.
- Narcotics are not recommended for first line treatment of headache and should be reserved for severe headaches only.