



# State of New Hampshire



# Emergency Medical Services Provider Manual

# EMS Provider Manual

Welcome to the 2015 New Hampshire Emergency Medical Services (EMS) Manual. Within this document you will find the following:

- [2015 NH Patient Care Protocols](#)
- [EMS Approved Medication](#)
- [EMS Scope of Practice](#)
- [EMS RSA's & Rules](#)
- [EMS Best Practices](#)
- [NH Trauma Plan](#)
- [EMS Bulletins](#)
- [Paramedic Interfacility \(PIFT\) Clinical Advisories](#)

This document is a “living document” developed by the NH Bureau of EMS, EMS Medical Control Board, EMS Coordinating Board, Protocol Committee, Best Practice Committee, and Trauma Medical Review Committee and will be updated as needed. It is the intent of this document to be a one-stop-shop for the most current EMS documents.

Questions and comments should be directed to:

Bureau of Emergency Medical Services  
33 Hazen Drive  
Concord, NH 03305  
603-223-4200

**DISCLAIMER:** Although the authors of this document have made great efforts to ensure that all the information is accurate, there may be errors. The authors cannot be held responsible for any such errors. For the latest corrections to this manual see the New Hampshire EMS website at:

<http://www.nh.gov/safety/divisions/fstems/ems/advlifesusup/patientcare.html>



# State of New Hampshire

## Patient Care Protocols



New Hampshire Department of Safety

Division of Fire Standards and Training and Emergency Medical Services

Patient Care Protocols – 2015 – Version 1.1

Legend	Definition
	Emergency Medical Responder (EMR)
	Emergency Medical Technician (EMT)
	Advanced Emergency Medical Technician (AEMT)
	Paramedic
	Extended Care Protocol
	CAUTION – Red Flag topic
	Telephone Medical Control
	Pediatric

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This document is the Patient Care Protocols for New Hampshire Prehospital Medical Providers – 2015.

These protocols are a “living document” developed and drafted by the Protocol Committee of the New Hampshire Emergency Medical Services Medical Control Board. At the option of the Bureau of EMS and the Medical Control Board, they can be edited and updated at any time. However, they are formally reviewed, edited, and released every two years.

These 2015 NH EMS Patient Care Protocols were reviewed, edited, and unanimously approved of by the NH EMS Medical Control Board.

These are New Hampshire State Patient Care Protocols; they have been written and approved of by the NH EMS Medical Control Board to establish the standard of EMS patient care. Any deviation from these protocols must be approved in writing by the NH EMS Medical Control Board and the NH Bureau of EMS.

Please Note: For visual clarity, trademark and registered symbols have not been included with drug, product, or equipment names.

**Questions and comments should be directed to:**

**Bureau of Emergency Medical Services  
33 Hazen Drive  
Concord, NH 03305  
603-223-4200**

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John J. Barthelmes  
*Commissioner*

# State of New Hampshire

## Department of Safety

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Deborah A. Pendergast  
*Director*

## 2015 NH Patient Care Protocol Updates and Corrections

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September 2015:

- Various formatting errors and typos
- Pediatric Color Coded Appendix Gray: corrected pralidoxime IV from 300 mg to 200mg
- Pediatric Color Coded Appendix Red: corrected epinephrine dose from 0.85mg to 0.085 mg
- Pediatric Color Coded Appendix Purple: corrected diazepam dose from 0.2.1mg to 2.1mg
- Pediatric Color Coded Appendix Purple: corrected fentanyl dose from 52.5mcg to 10.5mcg
- Pediatric Color Coded Appendix Yellow: corrected odansetron from 1.4 mg to 1.3 mg.

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# New Hampshire Patient Care Protocols 2015 – Table of Contents

(Alphabetical order by section)	Page
Dedication.....	<u>vi</u>
Preface.....	<u>vii</u>
<b>SECTION 1 – General Patient Care</b>	
Routine Patient Care.....	<u>1.0</u>
Exception Protocol.....	<u>1.1</u>
Extended Care Guidelines.....	<u>1.2</u>
<b>SECTION 2 – Medical Protocols</b>	
Abdominal Pain – Adult/Pediatric.....	<u>2.0A</u>
Adrenal Insufficiency - Adult/Pediatric.....	<u>2.1</u>
Allergic Reaction/Anaphylaxis – Adult.....	<u>2.2A</u>
Allergic Reaction/Anaphylaxis – Pediatric.....	<u>2.2P</u>
Apparent Life-Threatening Event (ALTE).....	<u>2.3</u>
Asthma/COPD/RAD – Adult.....	<u>2.4A</u>
Asthma/Bronchiolitis/Croup – Pediatric.....	<u>2.4P</u>
Behavioral Emergencies – Adult/Pediatric.....	<u>2.5</u>
Childbirth.....	<u>2.6</u>
Fever (> 101.5°F/38.5°C) – Adult.....	<u>2.7A</u>
Fever (> 101.5°F/38.5°C) – Pediatric.....	<u>2.7P</u>
Hyperglycemia – Adult & Pediatric.....	<u>2.8</u>
Hyperthermia (Environmental) – Adult & Pediatric.....	<u>2.9</u>
Hypoglycemia – Adult.....	<u>2.10A</u>
Hypoglycemia – Pediatric.....	<u>2.10P</u>
Hypothermia (Environmental) – Adult & Pediatric.....	<u>2.11</u>
Nausea/Vomiting – Adult & Pediatric.....	<u>2.12</u>
Nerve Agent/Organophosphate Poisoning – Adult.....	<u>2.13A</u>
Nerve Agent/Organophosphate Poisoning – Pediatric.....	<u>2.13P</u>
Newborn Care.....	<u>2.14</u>
Newborn Resuscitation.....	<u>2.15</u>
Obstetrical/Gynecological Emergencies.....	<u>2.16</u>
Pain Management – Adult.....	<u>2.17A</u>
Pain Management – Pediatric.....	<u>2.17P</u>
Poisoning/Substance Abuse/Overdose – Adult.....	<u>2.18A</u>
Poisoning/Substance Abuse/Overdose – Pediatric.....	<u>2.18P</u>
Seizures – Adult.....	<u>2.19A</u>
Seizures – Pediatric.....	<u>2.19P</u>
Septic Shock – Adult.....	<u>2.20A</u>
Septic Shock – Pediatric.....	<u>2.20P</u>
Shock – Non-traumatic – Adult/Pediatric.....	<u>2.21</u>
Smoke Inhalation – Adult.....	<u>2.22A</u>
Smoke Inhalation – Pediatric.....	<u>2.22P</u>
Stroke – Adult & Pediatric.....	<u>2.23</u>
Syncope.....	<u>2.24</u>

## New Hampshire Patient Care Protocols 2015 – Table of Contents

(Alphabetical order by section)	Page
<b>Section 3 – Cardiac Emergencies</b>	
Acute Coronary Syndrome – Adult.....	<u><a href="#">3.0</a></u>
Bradycardia – Adult .....	<u><a href="#">3.1A</a></u>
Bradycardia – Pediatric.....	<u><a href="#">3.1P</a></u>
Cardiac Arrest – Adult.....	<u><a href="#">3.2A</a></u>
Cardiac Arrest – Pediatric.....	<u><a href="#">3.2P</a></u>
Congestive Heart Failure (Pulmonary Edema).....	<u><a href="#">3.3</a></u>
Induced Therapeutic Hypothermia.....	<u><a href="#">3.4</a></u>
Post Resuscitative Care.....	<u><a href="#">3.5</a></u>
Tachycardia – Adult .....	<u><a href="#">3.6A</a></u>
Tachycardia – Pediatric.....	<u><a href="#">3.6P</a></u>
<b>Section 4 – Traumatic Emergencies</b>	
Burns (Thermal) – Adult.....	<u><a href="#">4.0A</a></u>
Burns (Thermal) – Pediatric.....	<u><a href="#">4.0P</a></u>
Drowning/Submersion Injuries – Adult & Pediatric.....	<u><a href="#">4.1</a></u>
Eye & Dental Injuries – Adult & Pediatric.....	<u><a href="#">4.2</a></u>
Musculoskeletal Injuries – Adult & Pediatric.....	<u><a href="#">4.3</a></u>
Shock – Traumatic Adult & Pediatric.....	<u><a href="#">4.4</a></u>
Spinal Injury – Adult & Pediatric.....	<u><a href="#">4.5</a></u>
Thoracic Injuries – Adult & Pediatric.....	<u><a href="#">4.6</a></u>
Traumatic Brain Injury – Adult & Pediatric.....	<u><a href="#">4.7</a></u>
<b>Section 5 – Airway Protocols &amp; Procedures</b>	
Airway Management Procedure.....	<u><a href="#">5.0</a></u>
Airway Management Protocol – Adult.....	<u><a href="#">5.1A</a></u>
Airway Management Protocol – Pediatric.....	<u><a href="#">5.1P</a></u>
Cricothyrotomy – Percutaneous.....	<u><a href="#">5.2</a></u>
Continuous Positive Airway Pressure (CPAP).....	<u><a href="#">5.3</a></u>
Gum Elastic Bougie/Flexguide.....	<u><a href="#">5.4</a></u>
Nasotracheal Intubation.....	<u><a href="#">5.5</a></u>
Orotracheal Intubation.....	<u><a href="#">5.6</a></u>
Suction (Advanced).....	<u><a href="#">5.7</a></u>
Supraglottic Airways.....	<u><a href="#">5.8</a></u>
Tracheostomy Care.....	<u><a href="#">5.9</a></u>
Ventilators.....	<u><a href="#">5.10</a></u>
<b>Section 6 – Other Medical Procedures</b>	
12 Lead Acquisition.....	<u><a href="#">6.0</a></u>
Intraosseous Access.....	<u><a href="#">6.1</a></u>
Quantitative Waveform Capnography.....	<u><a href="#">6.2</a></u>
Restraints.....	<u><a href="#">6.3</a></u>
Tasers.....	<u><a href="#">6.4</a></u>
Tourniquets.....	<u><a href="#">6.5</a></u>
Vascular Access via Central Catheter – Adult & Pediatric.....	<u><a href="#">6.6</a></u>

## New Hampshire Patient Care Protocols 2015 – Table of Contents

(Alphabetical order by section)

Page

### **Section 7 – Prerequisite Protocols**

Immunizations.....	<a href="#"><u>7.0</u></a>
Interfacility Transfer.....	<a href="#"><u>7.1</u></a>
Mobile Integrated Healthcare.....	<a href="#"><u>7.2</u></a>
Rapid Sequence Intubations.....	<a href="#"><u>7.3</u></a>
Surgical Cricothyrotomy – Bougie Assisted.....	<a href="#"><u>7.4</u></a>

### **Section 8 – Medical Policies**

Abuse and Neglect – Child, Elder, Incapacitated Adults.....	<a href="#"><u>8.0</u></a>
Air Medical Transport.....	<a href="#"><u>8.1</u></a>
Bariatric Triage, Care, and Transport.....	<a href="#"><u>8.2</u></a>
Bloodborne/Airborne Pathogens.....	<a href="#"><u>8.3</u></a>
Communications.....	<a href="#"><u>8.4</u></a>
Communications Failure.....	<a href="#"><u>8.5</u></a>
Consent for Treatment of a Minor.....	<a href="#"><u>8.6</u></a>
Crime Scene/Preservation of Evidence.....	<a href="#"><u>8.7</u></a>
DNR, POLST and Advanced Directive.....	<a href="#"><u>8.8</u></a>
Left Ventricular Assist Device (LVAD).....	<a href="#"><u>8.9</u></a>
On-Scene Medical Personnel.....	<a href="#"><u>8.10</u></a>
Patient Status Determination.....	<a href="#"><u>8.11</u></a>
Pediatric Transportation.....	<a href="#"><u>8.12</u></a>
Police Custody.....	<a href="#"><u>8.13</u></a>
Refusal of Care.....	<a href="#"><u>8.14</u></a>
Response to Domestic Violence.....	<a href="#"><u>8.15</u></a>
Resuscitation Initiation and Termination.....	<a href="#"><u>8.16</u></a>
Trauma Triage and Transport Decision.....	<a href="#"><u>8.17</u></a>

### **Section 9 – Hazmat & MCI**

Hazardous Material Exposure.....	<a href="#"><u>9.0</u></a>
Mass/Multiple Casualty Triage.....	<a href="#"><u>9.1</u></a>
Radiation Injuries – MCI.....	<a href="#"><u>9.2</u></a>

### **Appendices**

2015 Approved Medication by Provider Level.....	<a href="#"><u>A1</u></a>
2015 EMS Adult Formulary.....	<a href="#"><u>A2</u></a>
2015 Pediatric Color Coded Appendix.....	<a href="#"><u>A3</u></a>
Pediatric Drip Rate Reference.....	<a href="#"><u>A4</u></a>
Adult Drip Rate Reference.....	<a href="#"><u>A5</u></a>
Scope of Practice.....	<a href="#"><u>A6</u></a>
POLST.....	<a href="#"><u>A7</u></a>

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## Dedication: Two Lions of the Protocols

### Tom D'Aprix, MD

Thanks, Tom, for a great decade, first as Protocols Committee Chair and then as Chairman of the Medical Control Board. As Tom's predecessor at the MCB, I know what tough duty it can be, struggling to align all our disparate constituencies: not really herding cats – much more like trying to herd eagles. But Tom proved to be a master, a fearless diplomat always making the effort to blend seemingly incompatible interests. Tom particularly impressed me with way he worked the philosophical dilemma at the heart of the Medical Control Board: it exists to make progress – but not all change is progress, new is not always better than old – yet staying put is the one thing that guarantees there can be no progress. . . . Tom's training as an engineer must have helped; after all, engineers are not just wizards of the unfathomable – in Tom's case a wizard savvy enough to build his own data center – but quintessentially problem solvers. Tom is also an inventor (with both electronic and gunsmithing devices to his credit!). That probably helped too, since an inventor is someone who seeks a novel solution to a problem that as yet has no fully satisfactory answer – just like practically every problem in the vast and evolving field of EMS today.



### Jim Martin, MD

Jim joined the Medical Control Board with the new millennium, served tirelessly for a decade and a half, and taught us all a clearer way of speaking the language of protocol. Jim loved to polish our grammar until it shined, but his greater mission was always to build a clear and open path from words to action. Jim took hold of meaning like a rock climber grasps a handhold – powerfully, yet with precision. As an EMS medical director and teacher, Jim is known for his hands-on style. In the deliberations of the MCB he was so often the one who spoke up for the provider on the street. Over the years, I have noticed that in meetings people tend to lean in just a bit and listen a little more carefully when Jim starts to speak. In part this may just be because we all know that he is perennially elected one of New Hampshire's best emergency physicians, and that he is boss of his Emergency Department – and sometimes of the whole St Joseph medical staff. But there's a more important reason: it's that Jim thinks carefully before he speaks, rides no bandwagons, and feels a deep respect for EMS and EMS providers.



*- Doug McVicar*

# Preface

Welcome to the 2015 edition of the NH EMS Protocols. Change has become the norm in EMS as prehospital research is now abundant and the profession has become more evidenced-based. Some of us remember when MAST pants were routine in trauma care, now we are witnessing use of the backboard for spinal immobilization become part of history as well. Using the best available data, we continue to improve and refine each edition of the protocols to drive great patient care in the Granite State.

New Hampshire is continuing to work collaboratively with the New England states to explore the concept of standardizing our EMS protocols. In addition to providing a potential for workload reduction in protocol development, this project may help standardize practice across state lines. States could potentially share resources more efficiently including training, quality improvement and evaluate patient outcome data. In this edition, you will see several new protocols that attempt to address some of the “gaps” with our neighboring states’ protocols.

Another exciting addition to our protocols is our participation in the Pediatric Evidence-Based Guidelines Assessment of EMS System Utilization in States (PEGASUS) project. For this grant-funded project, the New England states are working in collaboration with Baylor College of Medicine / Texas Children’s Hospital to implement evidenced-based pediatric guidelines. The goal is to implement pediatric guidelines for the management of spinal injuries, airway management, shock, and anaphylaxis.

You will also notice that as of the protocol release (July 2015) we have not updated our cardiac arrest protocols. NH EMS is planning on hosting a “Cardiac Arrest Summit” with the goal of improving system-wide cardiac arrest care. In addition to a new cardiac arrest protocol, we will be implementing a “Team-Focused CPR” guideline with education to assist services in developing ways to standardize their approach to cardiac arrest patients.

While our protocols continue to evolve, we have also kept many concepts from the past – some bear repeating: All licensed providers functioning within the New Hampshire EMS system are required to be familiar with the contents of this document pertinent to their level of training.

- It is understood that emergency medical care begins when a patient accesses the system. Telecommunications Specialists at the Bureau of Emergency Communications are integral to delivering effective care by notifying, in a timely manner, the appropriate local dispatcher, as well as by initial instructions offered via Emergency Medical Dispatch (EMD) algorithms. Information will be offered via the Medical Priority Dispatch System including dispatch determinant descriptors (i.e., Omega, Alpha, Bravo, Charlie, Delta, Echo) to local dispatchers. 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.

Preface Continues 

# Preface

Preface Continued

- Law Enforcement Providers will function under the EMT standing orders up to their level of training.
- Emergency Medical Responders will function under the EMT standing orders up to the training outlined by the National Highway Traffic Safety Administration's Emergency Medical Responder Education Standards.
- It is assumed that the Paramedic standing orders include those of the EMT and AEMT, likewise AEMT standing orders include all of those orders listed under EMT. The sequence of orders in these protocols is not necessarily the order in which they might be executed.
- Standing orders listed in this document are not orders that must be carried out. They are orders that may be carried out at the discretion of the EMS provider without the need for on-line medical control. EMS providers at any level of training are encouraged to contact on-line medical control in cases where they feel that additional treatment is warranted beyond standing orders, cases where there is uncertainty regarding treatment (e.g., age or size appropriateness for a pediatric patient procedure), or in cases involving medico-legal or jurisdictional issues.
- Emergency Medical Responders and EMT's are encouraged to consider timely ALS involvement.
- When transferring care from one provider to another, the transfer must be to a provider of equal or higher level unless the patient's condition and reasonably anticipated complications can be effectively managed by a lower level provider's scope of practice. For example, a paramedic who is a member of a non-transporting agency may transfer care of a patient with an uncomplicated ankle injury to an EMT for transport
- While medical control may have some variation from facility to facility, on-line medical control should not direct providers to practice outside their usual scope of practice, and likewise, providers should not ask to perform procedures or administer medications outside their scope of practice as defined within these protocols.
- Multiple medications are sometimes listed to provide options for treatment. While the first medication listed is considered the "preferred agent", the list is intended to provide latitude to medical directors and medical resource hospitals to choose which medications an EMS agency under its direction may carry. It will also help us deal with ongoing medication shortages. There is no intent that all listed medications should be carried.

Preface Continues

# Preface

Preface Continued

We continue to transition to new levels of licensure with new national scope of practice models. This is most relevant for the transition from EMT-I to AEMT. Please note that having completed protocol rollout education does not change your level of licensure and therefore does not modify your scope of practice. If you are transitioning, you must complete the process of upgrading your license through the NREMT before you can modify your practice.

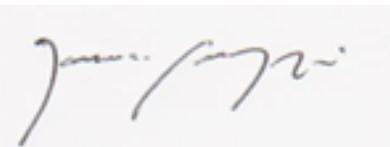
AEMT protocols are for providers licensed as AEMT's or EMT-I's. EMT-I's must be cautioned, however that some procedures or medications within the AEMT level are not authorized for their level of licensure. This particularly applies to pediatric patients. These are noted in the appendix under "Scope of Practice."

We will be using the New Hampshire EMS and Fire Distance Learning Environment (NHOODLE) for the protocol rollout again this year. Providers can complete this at a time and place that's convenient for them. The rollout module must be completed prior to utilizing the new protocols.

I would like to thank the members of the Protocol Subcommittee, The Medical Control Board and Bureau of EMS staff for their amazing dedication and countless hours spent developing and revising these protocols.

Finally, I would like to thank our EMS providers across the state. Your work is physically strenuous, stressful, and involves human suffering and at times life-or-death crises. You provide care with pride, skill and compassion, at home, work, indoors and out, in all types of weather, 24 hours a day, 365 days a year. Please remember, what you do matters!

Sincerely:



Jim Suozzi, DO, NRP, FACEP  
Medical Director  
NH Bureau EMS

## Emergency Medical Dispatch:

In most cases Emergency Medical Care begins when 911 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:

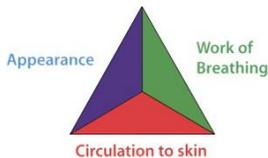
- Review dispatch information.
- Use lights and sirens and/or pre-emptive devices when responding as appropriate per emergency medical dispatch information and local guidelines.
- Use Incident Management/Command System (IM/CS) for all responses and scene management.

**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.
- If patient is in cardiac arrest refer to the [Cardiac Arrest Protocol](#).
- Determine if pediatric protocols apply. “Pediatric Patient” is defined as a child who fits on a length-based resuscitation tape up to 36kg (79 lbs) or 145cm (57 in).
- Establish responsiveness.
- General Impression.

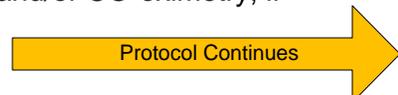


	Appearance	Work of Breathing	Circulation to Skin
Adult	Awake, speaking, eye opening, agitated, limp, unresponsive	Labored, noisy, fast, slow, equal chest rise	Pink, flushed, pale, ashen, cyanosis
Pediatric	Muscle tone, interactiveness, consolability, gaze/look, speech/cry	Airway sounds, body position, 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 inadequate, ventilate with 100% oxygen using Bag-Valve-Mask.
  - If breathing is adequate, but patient’s oxygen saturation is  $\leq 94\%$  ( $\leq 90\%$  for COPD patient) or short of breath, administer oxygen.
    - Both skin signs and pulse oximetry are important in assessing potential hypoxia.
  - Consider quantitative waveform capnography (aka: EtCO<sub>2</sub>) and/or CO-oximetry, if available.
  - Assess lung sounds and chest.




 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.
  - Hemostatic bandages must be of a non-exothermic type that can be washed off with 0.9% NaCl (normal saline).
  - Assess patient's skin color, capillary refill, temperature, and moisture.
- 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 2.20A, 2.21, 4.4](#).
  - For pediatric patients, administer fluids based on physiological signs and therapeutic end-points per the [Shock Protocol 2.20P, 2.21, 4.4](#).
  - For adult patients with suspected dehydration without shock administer IV fluids as indicated in increments of 250 mL 0.9% NaCl.
  - 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), 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 4.5](#).
- In general, pediatric patients should not be transported in a passenger safety seat if a cervical/spinal injury is suspected. (See [Pediatric Transport 8.12](#)).

### **Transport Decision**

- 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 8.1](#) policies as necessary.
- Notify receiving facility as early as possible.
- 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. Use of lights and sirens should be documented on the patient care report. Exceptions can be made under extraordinary circumstances.
- Non emergent medical transports from home or a medical facility with self or caretaker managed devices is an EMT-B level skill. The caretaker must travel with the patient if it is not a self managed device.

### **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.
- Refer to appropriate protocol(s) for further treatment options.
- Determine level of pain.
- Consider field diagnostic tests including: cardiac monitoring, blood glucose, temperature, stroke assessment, pulse oximetry, quantitative waveform 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



Ventilation Rates		
Patient	Basic Airway	Supraglottic/ETT*
Adult	12 – 20 breaths per minute	8 – 10 breaths per minute
Child	12 – 20 breaths per minute	8 – 10 breaths per minute
Infant	20 – 30 breaths per minute	8 – 10 breaths per minute



\* Ventilation rates should be titrated to goal EtCO<sub>2</sub>, 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 O <sub>2</sub> Saturation	Ranges	General Patient Care
94% – 100 %	Normal	Usually indicate adequate oxygenation; validate with clinical assessment (see below)
90% – 93%	Mild hypoxia	Consider O <sub>2</sub> to maintain saturation ≥ 94%. Caution in COPD patients
Less than 90%	Moderate to severe hypoxia	Give oxygen to maintain saturation ≥ 94%, 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 <sub>2</sub> 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
<ul style="list-style-type: none"> <li>• Able to maintain adequate oxygenation by using extra effort to move air.</li> <li>• Signs include increased respiratory rate, sniffing position, nasal flaring, abnormal breath sounds, head bobbing, intercostal retractions, mild tachycardia.</li> </ul>	<ul style="list-style-type: none"> <li>• Hallmarks of respiratory failure are respiratory rate less than 20 breaths per minute for children &lt;6 years old; less than 12 breaths per minute for children &lt;16 years old; and &gt;60 breaths per minutes for any child; cyanosis, marked tachycardia or bradycardia, poor peripheral perfusion, decreased muscle tone, and depressed mental status.</li> </ul>
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					

## “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 Bureau of EMS within 48 hours of the event.** Use of this protocol must be documented under “Protocols Used” in the Patient Care Report.

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.

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 the NH Bureau of EMS. (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

# 2.0A Abdominal Pain (Non Traumatic) Adult

## EMT STANDING ORDERS

# E

- Routine Patient Care.
- Consider acquiring and transmitting a 12-Lead EKG for upper abdominal or epigastric pain, see [12-Lead Acquisition Protocol 6.0](#).
- Vaginal bleeding or suspected pregnancy see, [Obstetrical/Gynecological Emergencies Protocol 2.16](#).

## ADVANCED EMT STANDING ORDERS

# A

- If patient is hypotensive, consider fluid per [Shock – Non-traumatic Protocol 2.21](#).

## PARAMEDIC STANDING ORDERS

# P

- See [Pain Management Protocol 2.17A](#).
- See [Nausea/Vomiting Protocol 2.12](#).
- Assess and monitor cardiac rhythm.

### Abdominal Physical Assessment

- Gently palpate for tenderness, rebound tenderness, distention, rigidity, guarding and/or masses.
- Palpate flank for CVA (costovertebral angle) tenderness.
- An acute abdomen is rigid with guarding, distention, and diffuse tenderness and may indicate a surgical emergency.
- Common causes of acute abdominal pain may be appendicitis, cholecystitis, bowel perforation, diverticulitis, abdominal aortic aneurysm, ectopic pregnancy, pelvic inflammatory disease or pancreatitis.

### PEARLS:

- It is important to remember that abdominal pain can be caused by a number of different disease processes. Pain may originate from the esophagus, stomach, intestinal tract, liver, pancreas, spleen, kidneys, male or female reproductive organs or bladder. Referred pain from the chest may involve the heart, lungs and pleura.
- Patients with abdominal pain and signs and symptoms of shock may have severe electrolyte abnormalities. This may result in cardiac arrhythmias which can be life threatening.
- Abdominal pain in women of child bearing age (12-50 years old) should be treated as an ectopic pregnancy until proven otherwise.
- Myocardial infarction can present with abdominal pain especially in the diabetic and elderly.
- DKA may present with abdominal pain, nausea and vomiting. Check blood sugar.
- The diagnosis of abdominal aneurysm should be considered with abdominal pain in patients over 50 years old.

# Adrenal Insufficiency

## Adult & Pediatric

2.1

### EMT STANDING ORDERS – ADULT & PEDIATRIC

**E**

- Routine Patient Care.
- Identify and treat the underlying condition.
- Consider paramedic intercept.

### ADVANCED EMT STANDING ORDERS - ADULT & PEDIATRIC

**A**

- Assist the patient/caregiver in giving the patient his or her own medications, as prescribed.

### PARAMEDIC STANDING ORDER – ADULT & PEDIATRIC

**P**

Stress Dose:

- Adult: History of adrenal insufficiency; administer hydrocortisone 100mg IV/IM.
- Pediatric: History of adrenal insufficiency; administer hydrocortisone 2mg/kg, to a maximum of 100mg IV/IM.

### PARAMEDIC EXTENDED CARE ORDERS- ADULT & PEDIATRIC

**X**

- After the stress dose continue to administer hydrocortisone every 6 hours:
  - Adult: 100mg IV/IM every 6 hours.
  - Pediatric: 2mg/kg IV/IM every 6 hours to a maximum single dose of 100mg.
- In patients with the following signs and symptoms consider the need for repeat stress dosing:
  - Nausea, vomiting, weakness, dizziness, abdominal pain, muscle pain, dehydration, hypotension, tachycardia, fever, mental status changes.
- Additional Considerations:
  - Aggressive volume replacement therapy.
  - Vasopressors may be needed to treat refractory hypotension, see [Shock – Non-Traumatic Protocol 2.21](#).
  - Treat for hypoglycemia, see [Hypoglycemia Protocol 2.10A or 2.10P](#).
  - Normalize body temperature.

#### PEARLS:

Adrenal insufficiency results when the body does not produce the essential life-sustaining hormones cortisol and aldosterone, which are vital to maintaining blood pressure, cardiac contractility, water, and salt balance.

Chronic adrenal insufficiency can be caused by a number of conditions:

- Congenital or acquired disorders of the adrenal gland
- Congenital or acquired disorders of the pituitary gland
- Long-term use of steroids (COPD, asthma, rheumatoid arthritis, and transplant patients)

Acute adrenal insufficiency can result in refractory shock or death in patients on a maintenance dose of hydrocortisone (SoluCortef)/prednisone who experience illness or trauma and are not given a stress dose and, as necessary, supplemental doses of hydrocortisone.

#### PEARLS:

A "stress dose" of hydrocortisone should be given to patients with known chronic adrenal insufficiency who have the following illnesses/injuries:

- Shock (any cause)
- Fever >100.4°F and ill-appearing
- Multi-system trauma
- Drowning
- Environmental hyperthermia or hypothermia
- Multiple long-bone fractures
- Vomiting/diarrhea accompanied by dehydration
- Respiratory distress
- 2nd or 3rd degree burns >5% BSA
- RSI (Etomidate may precipitate adrenal crisis)

## 2.2A

# Anaphylaxis/Allergic Reaction

## Adult

### EMT STANDING ORDERS

# E



- Routine Patient Care.
- For anaphylaxis, administer adult epinephrine autoinjector (EpiPen) 0.3mg IM in the lateral thigh.
- For patient who has a history of anaphylactic reaction and prescribed EpiPen, consider immediate administration of an EpiPen.
- For additional dosing, contact **Medical Control**.
- For nausea or vomiting see [Nausea/Vomiting Protocol 2.12](#).
- Do not delay transport.

### ADVANCED EMT STANDING ORDERS

# A

- For anaphylaxis:
  - Administer adult epinephrine autoinjector (preferred) **OR**
  - Epinephrine (**1:1,000**) 0.3mg (0.3ml) IM. May repeat epinephrine 0.3mg IM, every 5 minutes (3 doses total).
  - Consider the administration of albuterol 2.5mg via nebulizer. Repeat albuterol 2.5mg, every 5 minutes (4 doses total) via nebulizer.
- For signs of shock consider fluid per [Shock – Non-Traumatic Protocol 2.21](#).

### PARAMEDIC STANDING ORDERS

# P

- Continue epinephrine (**1:1,000**) 0.3mg (0.3ml) IM every 5 minutes until signs/symptoms resolve.
- After epinephrine has been administered or for isolated skin symptoms of allergic reaction consider:
  - Diphenhydramine 25 – 50mg IM/IV or by mouth.
- For anaphylaxis refractory, after 3 or more doses of IM epinephrine, (e.g., persistent hemodynamic compromise, bronchospasm), consider:
  - Epinephrine infusion 2-10 micrograms/minute until symptoms resolve (Place 1mg epinephrine in 1000 mL 0.9% NaCl for 1 microgram/mL).

### EMT/ADVANCED EMT EXTENDED CARE ORDERS

# X

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

### PARAMEDIC EXTENDED CARE ORDERS

- Dexamethasone 10mg IV or by mouth **OR**
- Methylprednisolone 125 mg IV **OR**
- Prednisone 60mg by mouth.



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



In anaphylaxis, epinephrine should not be delayed by taking the time to administer second-line medications such as diphenhydramine.

### PEARLS:

Allergic reactions are commonly a responses to an allergen involving the skin.  
 Anaphylaxis: known/likely allergen exposure AND hypotension or respiratory compromise.  
 Signs of anaphylaxis also include:

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

# Anaphylaxis/Allergic Reaction Pediatric

2.2P

Medical Protocol 2.2P

## EMT STANDING ORDERS

E



- Routine Patient Care.
- For anaphylaxis administer:
  - Pediatric epinephrine autoinjector (EpiPen Jr) 0.15mg IM in lateral thigh for < 25kg.
  - Adult epinephrine autoinjector (EpiPen) 0.3mg IM in lateral thigh if >25kg.
- For patient who has a history of anaphylactic reaction and prescribed EpiPen, consider immediate administration of an EpiPen.
- For additional dosing, contact **Medical Control**.
- For nausea or vomiting see [Nausea/Vomiting Protocol 2.12](#)
- Do not delay transport.

## ADVANCED EMT STANDING ORDERS

A

- For anaphylaxis: epinephrine autoinjector, (preferred) **OR**
- Epinephrine (**1:1,000**) 0.01mg/kg (0.01ml/kg) IM, lateral thigh preferred. (Maximum single dose 0.3mg.). Repeat epinephrine 0.01mg/kg IM every 5 minutes until signs and symptoms resolve.
- Consider administration of albuterol 2.5mg via nebulizer. Repeat albuterol 2.5mg, every 5 minutes (4 doses total) via nebulizer.
- For signs of shock consider fluid per [Shock – Non-Traumatic Protocol 2.21](#).

## PARAMEDIC STANDING ORDERS

P

- After epinephrine has been administered or for isolated skin symptoms of allergic reaction consider:
  - Diphenhydramine 1.25mg/kg by mouth **OR**
  - Diphenhydramine 1mg/kg IV/IM (maximum dose 50mg).
- For anaphylaxis refractory, after 3 or more doses of IM epinephrine, (e.g., persistent hemodynamic compromise, bronchospasm) consider:
  - Epinephrine Infusion 0.1 - 2 micrograms/kg/minute (maximum 10 micrograms/min) via pump until symptoms resolve. (Place 1mg epinephrine in 1000 mL 0.9% NaCl for 1 microgram/mL).

## EMT/ADVANCED EMT EXTENDED CARE ORDERS

X

- Diphenhydramine:
  - Ages 6 to 11 years: 12.5 – 25mg by mouth. May repeat every 4-6 hours as needed; maximum dose of 150mg in 24 hours.
  - Ages 2 to 5 years: 6.25mg by mouth. May repeat every 4-6 hours as needed; maximum dose of 37.5mg in 24 hours.

## PARAMEDIC EXTENDED CARE ORDERS

- Dexamethasone 0.6mg/kg PO/IM/IV (PO preferred) maximum 10mg **OR**
- Methylprednisolone 1mg/kg IV (maximum dose 125mg).



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



In anaphylaxis, epinephrine should not be delayed by taking the time to administer second-line medications such as diphenhydramine.

## PEARLS:

Allergic reactions are commonly a responses to an allergen involving the skin. Anaphylaxis: known/likely allergen exposure AND hypotension or respiratory compromise. Signs of anaphylaxis also include:

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

## 2.3 Apparent Life-Threatening Event (ALTE)

### EMT/ADVANCED/PARAMEDIC STANDING ORDERS

E/  
A/  
P



- Obtain history of present illness.
  - Who observed the event?
  - Determine the severity, nature, and duration of the episode.
  - Was the patient awake or sleeping at the time of the episode?
  - Include details of the resuscitation, if applicable.
- Obtain a past history of prior similar event; chronic disease (including seizures), current or recent infection, gastroesophageal reflux, recent trauma, medications, new or different mixture of formula.
  - Was child born pre-term or near-term?
- Perform a comprehensive physical exam including neurological assessment.
- Keep the child warm and transport to hospital.
- **Contact Medical Control for assistance if the parent/guardian refuses medical care and/or transport.**

#### PEARLS:

- An ALTE involves a frightening episode in a child less than 2 years old and involves some combination of apnea, color change to cyanosis, limpness, or choking.
- Non-accidental trauma should always be considered in an infant who presents with ALTE.
- Note: Although children who experience ALTE may have a normal physical exam upon assessment by prehospital personnel, they should be transported to the emergency department for further assessment and treatment as they often have a serious underlying condition. Assume history provided by the family/witness is accurate.

# Asthma, COPD, RAD – Adult 2.4A

## EMT STANDING ORDERS

E



- Routine Patient Care.
- Attempt to keep oxygen saturation  $\geq 94\%$  (90% in COPD); increase the oxygen rate with caution and observe for fatigue, decreased mentation, and respiratory failure.
- Assist the patient with his/her metered dose inhaler (MDI): 4-6 puffs.
  - May repeat every 5 minutes, as needed.
  - MDI containing either albuterol, levalbuterol, or a combination of albuterol/ ipratropium bromide.

## ADVANCED EMT STANDING ORDERS

A

- Consider DuoNeb unit dose **OR** albuterol 2.5mg and ipratropium bromide 0.5mg via nebulizer.
  - Consider additional DuoNeb, may repeat every 5 minutes (3 doses total).
- Consider albuterol 2.5mg via nebulizer every 5 minutes, as needed
- For patients who do not respond to treatments, or for impending respiratory failure, consider:
  - CPAP up to a maximum of 10cm H<sub>2</sub>O pressure support.

## PARAMEDIC STANDING ORDERS

P

Consider:

- Levalbuterol 1.25mg via nebulizer, repeat every 20 minutes (4 doses total).

Consider:

- Dexamethasone 10mg IV or by mouth **OR**
- Methylprednisolone 125 mg IV.

For patients who do not respond to treatments, or for impending respiratory failure, consider:

- Epinephrine (**1:1,000**) 0.3mg (0.3ml) IM, lateral thigh preferred.
- Magnesium sulfate 2 grams in 100ml NS given IV over 10 minutes.

## PEARLS:

- Chronic obstructive pulmonary disease (COPD) refers to a group of lung diseases that block airflow and make breathing difficult. Emphysema and chronic bronchitis are the two most common conditions that make up COPD.
- Reactive Airway Disease (RAD) refers to a group of conditions that include reversible airway narrowing due to external stimulation.
- Beware of patients with a “silent chest” as this may indicate severe bronchospasm and impending respiratory failure

# 2.4P Asthma, Bronchiolitis, Croup

Medical Protocol 2.4P

## E

### ASTHMA, BRONCHIOLITIS, CROUP - EMT STANDING ORDERS

- Routine Patient Care.
- Attempt to keep oxygen saturation  $\geq 94\%$ ; increase oxygen rate with caution and observe for fatigue, decreased mentation, and respiratory failure.
- Assist the patient with his/her metered dose inhaler (MDI): 4-6 puffs.
  - May repeat every 5 minutes, as needed.
  - MDI containing either albuterol, levalbuterol, or a combination of albuterol/ipratropium bromide.
- For patients  $\leq 2$  who present with increased work of breathing and rhinorrhea, provide nasal suctioning with saline drops and bulb syringe.

### ASTHMA - ADVANCED EMT STANDING ORDERS

## A

- Consider Unit dose DuoNeb **OR** albuterol 2.5mg and ipratropium bromide 0.5mg via nebulizer.
  - Consider additional DuoNeb, may repeat every 5 minutes (3 doses total).
- Consider albuterol 2.5 mg via nebulizer every 5 minutes, as needed.
- For patients who do not respond to treatments, or for impending respiratory failure, consider CPAP, [See CPAP 5.3 Procedure.](#)

Wheezing  $\geq 2$  years or history of asthma

YES

NO

Wheezing  $< 2$  years old

YES

NO

History of stridor or barking cough

YES

### ASTHMA - PARAMEDIC STANDING ORDERS

## P

Consider:

- Dexamethasone 0.6mg/kg PO/IM/IV (PO preferred), maximum 10 mg **OR**
  - Methylprednisolone 2 mg/kg IV/IM, maximum 125 mg.
- For patients who do not respond to treatment or for impending respiratory failure consider:
- Magnesium sulfate 40 mg/kg in 100ml 0.9% NaCl IV over 20 minutes.
  - Epinephrine (1:1000) 0.01 mg/kg (0.01mL/kg) IM. (maximum dose less than 25kg is 0.15mg or greater than 25kg is 0.3mg)

### BRONCHIOLITIS - PARAMEDIC STANDING ORDERS

## P

For patients who do not respond to suctioning or for impending respiratory failure consider:

- Nebulized epinephrine (1:1000) 3mg (3mL) in 3mL normal saline .

### CROUP - PARAMEDIC STANDING ORDERS

## P

Consider:

- Dexamethasone 0.6mg/kg by mouth or IM/IV (by mouth preferred) maximum 10mg.

Croup with stridor at rest:

- Nebulized epinephrine (1:1000) 3mg (3mL) in 3mL normal saline.



Child with a "silent chest" may have severe bronchospasm with impending respiratory failure.

#### PEARLS:

- For suspected epiglottitis, transport the patient in an upright position and limit your assessment and interventions
- Bronchiolitis
  - Incidence peaks in 2-6 month old infants.
  - Frequent history of low-grade fever, runny nose, and sneezing.
  - Signs and symptoms include: tachypnea, rhinorrhea, wheezes and / or crackles.
- Croup
  - Incidence peaks in children over age 6 months.
  - Signs and symptoms include: hoarseness, barking cough, inspiratory stridor, signs of respiratory distress.
  - Avoid procedures that will distress child with severe croup and stridor at rest.

# Behavioral Emergencies Adult & Pediatric

2.5

## EMT/ADVANCED STANDING ORDERS- ADULT & PEDIATRIC

**E/A**

- Routine Patient Care.
  - Approach patient using the SAFER Model.
  - Observe and record the patient's behavior.
  - Consider associated domestic violence or child abuse, see [Response to Domestic Violence Policy 8.15](#).
  - Determine if patient is under the care of mental health professionals and record contact information.
  - Assess for risk to self and others. Ask patient directly if they are thinking about hurting self or others.
  - A patient who is a danger to self or others may not refuse care. If patient refuses care, contact police if unable to convince patient to be transported. (Refer to [Police Custody Policy 8.13](#), [Refusal of Care Policy 8.14](#), and/or [Restraints Procedure 6.3](#)).
  - If the patient does not appear to be an immediate threat to self or others and refuses transport:
    - Encourage patient to seek mental health evaluation.
    - Provide the mental health center emergency services number 1-800-273-TALK (8255).
    - Avoid leaving the patient alone, if possible. Assist in contacting responsible family/friend.
- For patient with suspected Excited/Agitated Delirium:
- Treat hyperthermia, see [Hyperthermia Protocol 2.9](#).
  - Monitor cardiac activity and oxygen levels.

## PARAMEDIC STANDING ORDERS - ADULT

**P**

See [Restraints Procedure 6.3](#)

### SAFER Model

- S** Stabilize the situation by lowering stimuli, including voice.
- A** Assess and acknowledge crisis by validating patient's feelings and not minimizing them.
- F** Facilitate identification and activation of resources (clergy, family, friends, or police).
- E** Encourage patient to use resources and take actions in his/her best interest.
- R** Recovery/referral - leave patient in the care of a responsible person, professional or transport to appropriate medical facility. Do not leave the patient alone when EMS clears the scene.

### PEARLS:

Consider all possible medical / trauma causes for behavior and treat appropriately:

- Hypoglycemia
- Head Injury, stroke, seizure (post-ictal)
- Poisoning, substance abuse, drug, alcohol

## EMR/EMT/ADVANCED EMT STANDING ORDERS

- Routine Patient Care.
- Determine if signs of imminent delivery are present.
- Expose as necessary to assess for bleeding/discharge, crowning, prolapsed cord, breech, limb presentation.
- Do not digitally examine or insert anything into the vagina.
  - Exceptions: fingers may be inserted to manage baby's airway in breech presentation or to treat prolapsed or nuchal cord.
- Place mother in left-lateral recumbent position except as noted:
  - Prolapsed cord:
    - Knee-chest position or Trendelenberg position.
    - Support infant head or body to permit blood flow through cord.
- If presenting part is not baby's head, cord is prolapsed or unable to unwrap nuchal cord, contact **Medical Control** and immediately transport to nearest appropriate hospital per local OB Diversion Protocol.



**E/A**

## Delivery:

- Slow, controlled delivery of head; apply gentle perineal pressure.
- If umbilical cord is wrapped around child's neck, gently unwrap prior to delivery.
- Following delivery, follow [Newborn Care Protocol 2.14](#)
- After cord stops pulsating, double clamp cord 10-12 inches from abdomen and cut between clamps.
- Allow spontaneous delivery of placenta; do not apply traction to umbilical cord.
- Do not delay transport for delivery of placenta. Massage uterus in transit to encourage placenta delivery.
- If placenta delivers, package for hospital staff.

## Post Partum Care:

- Assess for hemorrhage. See [Shock - Non-traumatic Protocol 2.21](#)
- Massage abdominal wall overlying uterine fundus until firm.

## PARAMEDIC STANDING ORDERS

**P**

- Active seizures—see [Seizures Protocol 2.19A](#).
- After placental delivery, administer:
  - Oxytocin 10 Units IM. Note: In multiple pregnancy, do not give until all placentas are delivered.

## 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

Notify **Medical Control** if:

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



## Signs of imminent delivery:

- Urge to move bowels
- Urge to push
- Crowning

# Fever (101.5°F/38.5°C) – Adult 2.7A

## EMT/ADVANCED EMT/PARAMEDIC STANDING ORDERS

E/  
A/  
P

- Routine Patient Care.
- Obtain temperature.
- Passive cooling; remove excessive clothing.
- For temperature >101.5°F (38.5°C):
  - If no acetaminophen was taken in last 4 hours:
    - Consider administering acetaminophen 500 – 1,000mg oral or rectal. (Rectal administration Paramedic only)
  - If acetaminophen was taken within last 4 hours and temperature is still >101.5°F (38.5°C):
    - Consider administering ibuprofen 400 – 800mg oral or rectal. (Rectal administration Paramedic only)
  - If ibuprofen was taken within the last 6 hours:
    - Consider acetaminophen 500 – 1,000mg oral or rectal. (Rectal administration Paramedic only)

## EMT/ADVANCED EMT/PARAMEDIC STANDING ORDERS

X

- May repeat acetaminophen dose 650 mg oral or rectal every 4 hours or 1,000 mg every 6 hr. Maximum of 3,000 mg in 24 hours.
- May repeat ibuprofen dose 400-600 mg oral or rectal every 6 hours or 800 mg every 8 hours. Maximum of 2,400 mg in 24 hours.



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

### History

The following symptoms, when associated with a fever, suggest a more serious illness:

- Persistent vomiting
- Difficulty breathing
- Chest pain
- Extreme listlessness or irritability
- Abdominal pain
- Pain when urinating
- Severe headache
- Unusual sensitivity to bright light
- Severe swelling of the throat
- Stiff neck and pain when the head is bent forward
- Unusual skin rash
- Confusion

If patient refuses transport, encourage patient to maintain appropriate fluid intake and to seek medical care if signs of serious illness occur.

### PEARLS:

- Avoid inducing shivering.
- The primary goal of treating fever is increasing comfort rather than normalization of body temperature. Fever is a physiologic mechanism that helps fight infection. There is no evidence that fever worsens illness or causes long-term neurologic complications.
- Infrared temporal thermometers are more accurate than tympanic thermometers.

## 2.7P Fever (>101.5°F/38.5°C) Pediatric

### EMT/ADVANCED-EMT/PARAMEDIC STANDING ORDERS

E/  
A/  
P

- Routine Patient Care.
- Obtain temperature—rectal temperature preferred in infants < 3 months.
- Passive cooling; remove excessive clothing/bundling.
- For temperatures >101.5°F (38.5°C):
  - If acetaminophen was taken more than 4 hours ago:
    - Consider administering acetaminophen per [Pediatric Color Coded Appendix A3](#) oral (Rectal administration is Paramedic only).
  - If acetaminophen was taken within the last 4 hours:
    - Consider ibuprofen per [Pediatric Color Coded Appendix A3](#) oral (contraindicated in infants under 6 months of age).

### EMT/ADVANCED-EMT/PARAMEDIC EXTENDED CARE ORDERS

X

- May repeat acetaminophen dose every 4 hours (not to exceed 6 doses in 24 hours).
- May repeat ibuprofen dose every 6 hours (not to exceed 4 doses in 24 hours).



Avoid Ibuprofen in patients with NSAID allergy, aspirin-sensitive asthma, or renal insufficiency

#### History:

The following symptoms, when associated with a fever, suggest a more serious illness:

- Persistent vomiting
- Difficulty breathing
- Chest pain
- Extreme listlessness or irritability
- Abdominal pain
- Pain when urinating
- Severe headache
- Unusual sensitivity to bright light
- Severe swelling of the throat
- Stiff neck and pain when the head is bent forward
- Unusual skin rash
- Confusion

For patients who refuse transport, urge caregivers to observe for signs of serious illness, encourage appropriate fluid intake, and safely store antipyretics.

#### PEARLS:

- Avoid inducing shivering.
- The primary goal of treating fever is increased comfort rather than normalization of body temperature. Fever is a physiologic mechanism that helps fight infection. There is no evidence that fever worsens illness or causes long-term neurologic complications.
- Children should never take aspirin.
- Infrared temporal thermometers are more accurate than tympanic thermometers.

# Hyperglycemia – Adult & Pediatric 2.8

Hyperglycemia is defined as blood glucose greater than or equal to 250 mg/dL with associated signs and symptoms.

## EMT STANDING ORDERS – ADULT & PEDIATRIC

**E**

- Routine Patient Care.
- Obtain glucose reading.
- For nausea/vomiting see [Nausea Protocol 2.12](#).

## ADVANCED EMT/PARAMEDIC STANDING ORDERS – ADULT & PEDIATRIC

**A/P**

- ADULT: Administer 500ml bolus of 0.9% NaCl, then 250ml/hr.
- PEDIATRIC: Administer 10 mL/kg bolus of 0.9%NaCl.
  - May repeat fluid bolus two times for a total of 3 fluid boluses, not to exceed adult volume.

## EMT/ADVANCED EMT/PARAMEDIC EXTENDED CARE ORDERS

**X**

- Oral fluids: if the patient is not vomiting, provide oral hydration with water.
  - Patient must be alert enough to swallow and protect airway.

### PEARLS:

- Diabetic Ketoacidosis is a life threatening emergency defined as uncontrolled hyperglycemia with the signs and symptoms of ketoacidosis.
- Signs and symptoms of Diabetic Ketoacidosis include uncontrolled blood glucose greater than or equal to 250 mg/dL, weakness, altered mental status, abdominal pain, nausea, and vomiting, polyuria (excessive urination), polydipsia (excessive thirst), a fruity odor on the breath (from ketones), and tachypnea.
- Common causes of Diabetic Ketoacidosis include infection, acute coronary syndrome, and medication non-compliance.
- Hyperglycemic Hyperosmolar Nonketotic Syndrome (HHNS) is characterized by blood glucose levels greater than 600 mg/dL and profound dehydration without significant ketoacidosis. Most patients present with severe dehydration and focal or global neurologic deficits e.g. coma, altered mental status.
- Hyperglycemia may be detrimental to patients at risk for cerebral ischemia such as victims of stroke, cardiac arrest, and head trauma.

## 2.9 Hyperthermia – Adult & Pediatric

### EMT STANDING ORDERS- ADULT & PEDIATRIC

# E

- Routine Patient Care.
- Move victim to a cool area and shield from the sun or any external heat source.
- Remove as much clothing as is practical and loosen any restrictive garments.
- If alert and oriented, give small sips of cool liquids.
- Monitor and record vital signs and level of consciousness.
- Obtain temperature – rectal temperature preferred as appropriate.
- If temperature is 40°C (>104°F) or if altered mental status is present, begin active cooling by:
  - Continually misting the exposed skin with tepid water while fanning the patient (most effective).
  - Truncal ice packs and wet towels/sheets may be used, but are less effective than evaporation.
  - Discontinue active cooling when the patient reaches 38.5°C (101.5°F), or if shivering occurs and cannot be managed by paramedics (see below).

### ADVANCED EMT STANDING ORDERS – ADULT & PEDIATRIC

# A

- ADULT: Consider 500ml 0.9% NaCl IV fluid bolus for dehydration even if vital signs are normal.
- PEDIATRIC: Consider 10 – 20ml/kg 0.9% NaCl IV fluid bolus for dehydration even if vital signs are normal.

### PARAMEDIC STANDING ORDERS- ADULT

# P

- If uncontrolled shivering occurs during cooling:
  - Midazolam 2.5mg IV/IN, may repeat once in 5 minutes or; 5mg IM may repeat once in 10 minutes **OR**
  - Lorazepam 1mg IV, may repeat once in 5 minutes or; 2mg IM, may repeat once in 10 minutes **OR**
  - Diazepam 2mg IV, may repeat once in 5 minutes

### PARAMEDIC STANDING ORDERS- PEDIATRIC



- If uncontrolled shivering occurs during cooling:
  - Midazolam 0.1mg/kg IV/IM or 0.2mg/kg IN (single maximum dose 1mg); Note: a 5mg/ml concentration is recommended for IN administration), **OR**
  - Lorazepam 0.1mg/kg IV/IM (single maximum dose 1mg), **OR**
  - Diazepam 0.2mg/kg IV or 0.5mg/kg rectal (single maximum dose 2mg IV or 4mg rectal)

#### PEARLS:

- Exertional hyperthermic patients may be significantly dehydrated, and may require repeat fluid boluses.
- Immersion cooling is the most effective method to lower core body temperature if proper resources are available.

#### Hyperthermia:

Elevated temperature may be due to environmental exposure, pharmacologic agents, or excited/agitated delirium (see [Behavioral Emergencies 2.5](#)). Mortality and morbidity are directly related to the length of time the victim is subject to the heat stress.

## EMT STANDING ORDERS

# E

- Routine Patient Care.
- Obtain glucose reading.
- Oral glucose: administer commercially prepared glucose gel or equivalent.
  - Hypoglycemic patients must be alert enough to swallow and protect airway.
- For patients with an insulin pump who are hypoglycemic with associated altered mental status (GCS<15):
  - Stop the pump or remove catheter at insertion site if patient cannot ingest oral glucose or ALS is not available.
  - Leave the pump connected and running if able to ingest oral glucose or receive ALS interventions.

## ADVANCED EMT/PARAMEDIC STANDING ORDERS

# A/P

- Administer dextrose 10% IV via premixed infusion bag (preferred) or prefilled syringe until mental status returns to baseline and glucose level is greater than 70mg/dL or to a maximum of 25 grams (250mL). IV pump not required. If unable to establish IV access, administer glucagon 1mg IM or Glucapen 1mg IM.
  - Recheck glucose 15 minutes after administration of glucagon.
  - May repeat glucagon 1mg IM if glucose level is <70mg/dl with continued altered mental status.



Intraosseous (IO) administration of dextrose should be reserved for hypoglycemic patients with severe altered mental status or active seizures and IV access cannot be obtained.

## PEARLS:

- Hypoglycemic emergency is defined as glucose <70mg/dl with associated altered mental status, GCS <15.
- There are no statistically significant differences in the median recovery time to a GCS score of 15 following administration of D10% versus D50%. D10% may benefit patients by decreasing the likelihood of post-treatment hyperglycemia and reducing the likelihood of extravasation injury.
- Causes of hypoglycemia include medication misuse or overdose, missed meal, infection, cardiovascular insults (e.g., myocardial infarction, arrhythmia), or changes in activity (e.g., exercise).
- Sulfonylureas (e.g., glyburide, glipizide) have long half-lives ranging from 12-60 hours. Patients with corrected hypoglycemia who are taking these agents are at particular risk for recurrent symptoms and frequently require hospital admission.
- Oral glucose equivalents include 3-4 glucose tablets, 4 oz. fruit juice (e.g. orange juice), non-diet soda, 1 tablespoon of pure NH maple syrup, sugar, or honey.
- Encourage patients who refuse transport after improvement of GCS and are back to baseline to consume complex carbohydrates (15 grams) and protein (12 – 15 grams) such as peanut butter toast, mixed nuts, milk or cheese to stabilize blood sugar.
- Hypoglycemia may be detrimental to patients at risk for cerebral ischemia, such as victims of stroke, cardiac arrest, and head trauma.

## 2.10P Hypoglycemia – Pediatric

### EMT STANDING ORDERS

# E

- Routine Patient Care.
- Obtain glucose reading.
- Oral glucose: administer commercially prepared glucose gel or equivalent.
  - Hypoglycemic patients must be alert enough to swallow and protect airway.
- For patients with an insulin pump who are hypoglycemic with associated altered mental status (GCS<15):
  - Stop the pump or disconnect catheter at insertion site if patient cannot ingest oral glucose or ALS is not available.
  - Leave the pump connected and running if able to ingest oral glucose or receive ALS interventions.

### ADVANCED EMT/PARAMEDIC STANDING ORDERS

# A/P

- Administer dextrose 10% IV via premixed infusion bag (preferred) or prefilled syringe until mental status returns to baseline and glucose level is greater than 60mg/dL or per [Pediatric Color Coded Appendix 3](#). IV pump not required.
- If unable to obtain IV access:
- Patients < 20 kg, give glucagon 0.5 mg IM or Glucapen Jr 0.5 mg IM.
  - Patients > 20 kg, give glucagon 1 mg IM or Glucapen 1.0 mg IM.



Intraosseous (IO) administration of dextrose should be reserved for hypoglycemic patients with severe altered mental status or active seizures and IV access cannot be obtained.

### PEARLS:

- Hypoglycemic emergency in pediatrics is defined as glucose <60mg/dl with associated altered mental status, GCS <15.
- There are no statistically significant differences in the median recovery time to a GCS score of 15 following administration of D10% versus D50%. D10% may benefit patients by decreasing the likelihood of post-treatment hyperglycemia and reducing the likelihood of extravasation injury.
- Causes of hypoglycemia include medication misuse or overdose, missed meal, infection, cardiovascular insults (e.g., myocardial infarction, arrhythmia), or changes in activity (e.g., exercise).
- Sulfonylureas (e.g., glyburide, glipizide) have long half-lives ranging from 12-60 hours. Patients with corrected hypoglycemia who are taking these agents are at particular risk for recurrent symptoms and frequently require hospital admission.
- Oral glucose equivalents include 3-4 glucose tablets, 4 oz. fruit juice (e.g. orange juice), non-diet soda, 1 tablespoon of pure NH maple syrup, sugar, or honey.
- Encourage patients who refuse transport after improvement in GCS and are back to baseline to consume complex carbohydrates (15 grams) and protein (12 – 15 grams) such as peanut butter toast, mixed nuts, milk or cheese to stabilize blood sugar.
- Hypoglycemia may be detrimental to patients at risk for cerebral ischemia, such as victims of stroke, cardiac arrest, and head trauma.

# Hypothermia – Adult & Pediatric 2.11

## EMT STANDING ORDERS - ADULT & PEDIATRIC

E

- Routine Patient Care.
- Avoid rough movement and excess activity.
- Prevent further heat loss:
  - Insulate from the ground and shield from wind/water.
  - Move to a warm environment.
  - Gently remove any wet clothing and dry patient.
  - Cover with warm blankets including the head and neck.
- If unresponsive, obtain esophageal or rectal temperature, if feasible.
- Obtain blood glucose.
- Maintain horizontal position.
- Apply truncal warm packs.
- Consider covering the patient's mouth and nose with a surgical mask to prevent respiratory heat loss.
- A minimum of 45 – 60 second assessment of respirations and pulse is necessary to confirm respiratory arrest or cardiac arrest.
- If pulse and breathing are present, continue rewarming techniques.
- If pulse and breathing are absent, start CPR see [Cardiac Arrest Protocols 3.2](#).

## ADVANCED EMT - ADULT ONLY

### PARAMEDIC STANDING ORDERS – ADULT & PEDIATRIC

A/P

- Warm IV 0.9% NaCl 38°C - 42°C (101.4°F – 107.6°F) should be used.
- If pulse and breathing are absent and esophageal or rectal temperature is <32°C (89.6°F):
  - Continue CPR.
  - Give IV medications based on dysrhythmia (consider increasing the dosing time to allow drugs to circulate).
  - Defibrillation as indicated.

STAGE: I Core Temp Treatment:	Conscious, shivering 35 to 32°C Warm environment and clothing, warm sweet drinks, and active movement (if possible).
STAGE: II Core Temp Treatment:	Impaired consciousness, not shivering <32 to 28°C Cardiac monitoring, minimal and cautious movements to avoid arrhythmias, horizontal position and immobilization, full-body insulation, active external and minimally invasive rewarming techniques (warm environment; chemical, electrical, or forced- air heating packs or blankets; warm parenteral fluids).
STAGE: III Core Temp Treatment:	Unconscious, not shivering, vital signs present <28 to 24°C HT II management plus airway management as required; ECMO or CPB in cases with cardiac instability that is refractory to medical management.
STAGE: IV Core Temp Treatment:	No vital signs <24°C HT II and III management plus CPR and up to three doses of epinephrine (at an intravenous or intraosseous dose of 1 mg) and defibrillation, with further dosing guided by clinical response; rewarming with ECMO or CPB (if available) or CPR with active external and alternative internal rewarming.

### PEARLS:

- Patients with severe frost bite injury may benefit from urgent treatment with IV TPA at a burn center.
- Most digital thermometers will not read below 35°C (95°F).
- Hypothermic patients are often significantly dehydrated, and may require repeat fluid boluses.
- Transportation with continuing CPR may be justified if hypothermia is present or suspected.
- Patients with Stage III or IV hypothermia may benefit from treatment at a facility capable of ExtraCorporeal Membrane Oxygenation (ECMO) or CardioPulmonary Bypass (CPB).

## 2.12 Nausea/Vomiting - Adult & Pediatric

### EMT STANDING ORDERS- ADULT & PEDIATRIC

# E

- Routine Patient Care.

### ADVANCED EMT STANDING ORDERS- ADULT

# A

- Consider 500ml IV fluid bolus for dehydration even if vital signs are normal.
  - May repeat 250ml IV bolus if transport exceeds 15 minutes and patient's condition has not improved.
- Ondansetron 4mg by mouth (PO).

### PARAMEDIC STANDING ORDERS- ADULT

# P

- Ondansetron 4mg IV/PO **OR**
- Prochlorperazine 5 – 10mg IV, or 5mg IM, **OR**
- Metoclopramide 5mg IV **OR**
  - May repeat any of the above medications once after 10 minutes if nausea/vomiting persists.
- Granisetron 0.1 – 1mg IV over 5 minutes (one-time dose) **OR**
- Dolasetron 12.5mg IV (one-time dose).

Antidote: For dystonic reactions caused by EMS administration of prochlorperazine or metoclopramide:

- Administer diphenhydramine 25 – 50mg IV/IM.

### PARAMEDIC STANDING ORDERS- PEDIATRIC



- Consider 10 – 20ml/kg IV fluid bolus for dehydration even if vital signs are normal.
- Ondansetron 0.1mg/kg IV (maximum single dose 4mg), **OR**
- Ondansetron PO 4mg **OR**
- Granisetron 10 micrograms/kg IV over 5 minutes (one-time dose).

### ADVANCED EMT/PARAMEDIC EXTENDED CARE ORDERS

# X

- For motion sickness: administer diphenhydramine:
  - Adult: 25 mg by mouth
  - Ages 2 – 5 years: 6.25 mg by mouth
  - Ages 6 – 11 years: 12.5 - 25 mg by mouth
- May repeat IM prochlorperazine or metoclopramide every 4 - 6 hours as needed. (Paramedic only).

#### PEARLS:

- To reduce incidence of dystonic reactions, administer prochlorperazine and metoclopramide slowly over 1-2 minutes.
- Use prochlorperazine with caution in women of child bearing ages.

# Nerve Agents

## Organophosphate Poisoning - Adult 2.13A

### EMERGENCY MEDICAL RESPONDER/EMT/ADVANCED EMT STANDING ORDERS

E/A

- Routine Patient Care.
- Assess for SLUDGEM [Salivation, Lacrimation, Urination, Defecation, Gastric upset, Emesis, Muscle twitching/miosis (constricted pupils) and KILLER Bs (Bradycardia, Bronchorrhea, Bronchospasm)].
- Remove to cold zone after decontamination and monitor for symptoms.
- Antidotal therapy should be started as soon as symptoms appear.
- All antidote auto-injections must be administered IM.

Determine dosing according to the following symptom assessment and guidelines.

Tag Color	Signs & Symptoms of SLUDGEM	Autoinjector Dose and Monitoring Interval	Maintenance Dose
<b>RED</b>	Apnea Convulsions Unconsciousness Flaccid paralysis	3 DuoDotes <b>AND</b> 1 diazapam (10mg) auto-injector	1 DuoDote every hour for 3 hours
<b>YELLOW</b>	Dyspnea Twitching Nausea, vomiting Sweating, anxiety Confusion Constricted pupils, Restlessness, weakness	1 DuoDote <b>AND</b> Monitor every 10 minutes	
<b>GREEN</b>	Asymptomatic None	Monitor every 10 – 15 minutes for evidence of exposure.	

### PARAMEDIC STANDING ORDERS

P

- If field conditions permit, initiate cardiac monitoring and consider the administration of IV medications.
- If symptoms persist after the administration of 3 DuoDote kits:
  - Atropine 2mg IV; repeat every 5 minutes until secretions clear.
  - Pralidoxime 1 – 2 gram IV over 30 – 60 minutes.
  - Diazepam 5mg IV every 5 minutes; or 10mg IM or diazepam auto-injector (10mg) every 10 minutes, as needed.

**Instead of diazepam, may use either:**

  - Lorazepam 1mg IV; may repeat once in 5 minutes, or 2mg IM, may repeat once in 10 minutes, **OR**
  - Midazolam 2.5mg IV/IN every 5 minutes; or 5mg IM every 10 minutes as needed.

### PARAMEDIC MEDICAL CONTROL – MAY CONSIDER:



- Pralidoxime maintenance infusion: up to 500mg per hour (maximum of 12 grams in 24 hours).

# 2.13P

## Nerve Agents Organophosphate Poisoning – Pediatric

### EMT/ADVANCED EMT STANDING ORDERS

**E/A**

- Routine Patient Care.
- Assess for SLUDGEM [Salivation, Lacrimation, Urination, Defecation, Gastric upset, Emesis, Muscle twitching/miosis (constricted pupils) and KILLER Bs (Bradycardia, Bronchorrhea, Bronchospasm)].
- Remove to cold zone after decontamination and monitor for symptoms.
- Antidotal therapy should be started as soon as symptoms appear.
- All antidote auto-injections must be administered IM.

Determine dosing according to the following symptom assessment and guidelines.

Tag Color	Signs & Symptoms of SLUDGEM	Autoinjector Dose and Monitoring Interval		Maintenance Dose
<b>RED</b> (Pediatric)	Yes	Age < 1 year	1 Peds Atropine Auto-Injector (0.5mg) * Monitor every 3 minutes	1 Atropine Auto-Injector (0.5mg) every 3 – 5 minutes, as needed.
	Yes	Age > 1 year	1 Adult DuoDote Monitor every 3 minutes	
<b>GREEN</b> (Pediatric)	No	None Monitor every 10 minutes for evidence of exposure.		

\*DuoDote may be used for pediatric patients < 1 year old in a life-threatening situation with exposure symptoms when no pediatric doses of atropine or pralidoxime chloride are available.

### PARAMEDIC STANDING ORDERS

**P**

- In the unlikely event that field conditions permit, follow weight-based dosing and treatment guidelines:
  - Initiate cardiac monitoring.
  - Establish IV access.
  - Atropine 0.05 – 0.1mg/kg IV or IM (minimum dose of 0.1mg, maximum single dose 5mg); repeat every 2 – 5 minutes as needed.
  - Pralidoxime 25 – 50mg/kg/doses IV (maximum dose 1 gram) or IM (maximum dose of 2 grams), may repeat within 30 – 60 minutes as needed, then again every hour for 1 – 2 doses as needed.
  - Diazepam 0.3mg/kg IV (0.5mg/kg per rectum) (maximum dose 10mg), repeat every 5 – 10 minutes as needed.

#### Instead of diazepam, may use either:

- Lorazepam 0.1mg/kg IV/IM (maximum dose 4mg), repeat every 5 – 10 minutes as needed, **OR**
- Midazolam 0.2mg/kg IM/IN/IV, repeat every 5 – 10 minutes as needed.

### PARAMEDIC MEDICAL CONTROL – MAY CONSIDER:



- Pralidoxime maintenance infusion: 10 – 20mg/kg/hr.

## EMT/ADVANCED EMT/PARAMEDIC STANDING ORDERS

E/  
A/  
P

- For newborns requiring resuscitation, see [Newborn Resuscitation Protocol 2.15](#).
- Routine Patient Care—dry, warm, position, stimulate.
- 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](#)
- Clamp and cut the umbilical cord:
  - After initial assessment and after the cord stops pulsating.
  - Leave a minimum of 6 inches of cord.
- Prevent heat loss by rapidly drying and warming:
  - Remove wet linen, wrap newborn in blankets or silver swaddler/space blanket (preferred) and cover newborn's head.
  - Consider placing newborn skin-to-skin on the mother's chest or abdomen.
- 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 mucus membranes.
  - Assess temperature
- Record APGAR score at 1 minute and 5 minutes (see chart).
- See [Pediatric Color Coded Appendix A3](#) for vital signs.
- When possible, transport newborn in child safety seat.

APGAR Scale

Feature Evaluated	2 Points	1 Point	0 Points
Activity (Muscle Tone)	Active Movement	Arms and legs flexed (Weak, some movement)	Limp or flaccid
Pulse	Over 100 bpm	Below 100 bpm	Absent
Grimace (Irritability/reflexes)	Cry, sneeze, cough, active movement	Grimace (some flexion of extremities)	No reflexes
Appearance (Skin Color)	Completely pink	Body pink, Extremities blue	Blue, pale
Respiration	Vigorous cry Full breaths	Slow, irregular, or gasping breaths, weak cry	Absent

### PEARLS:

- 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.

## EMT/ADVANCED EMT STANDING ORDERS

E/A

- Routine Patient Care—initial steps identified in [Newborn Care Protocol 2.14](#).
- For premature infants, consider additional warming techniques, including wrapping the baby in food or medical-grade plastic wrap, silver swaddler/space blanket (preferred).
- If the mouth or nose is obstructed or heavy secretions are present, suction oropharynx then nares using a bulb syringe or mechanical suction using the lowest pressure that effectively removes the secretions, not to exceed 100 mm Hg.
- If ventilations are inadequate, or if the chest fails to rise, or the heart rate is less than 100, initiate positive pressure (bag-valve-mask) ventilations at 40 – 60 breaths per minute.
  - Note: resuscitation should be initiated with room air.
  - Inflation pressures should be individualized to achieve an increase in heart rate or movement of the chest with each breath. Be aware that bag-valve-mask pop-off valves may deliver inconsistent results.
- After 30 seconds of ventilations, assess heart rate:
  - Auscultate apical beat with a stethoscope or palpate the pulse by lightly grasping the base of the umbilical cord.
- For heart rate <100, reassess ventilatory technique and continue ventilations.
- For heart rate <60 after attempts to correct ventilations:
  - Initiate CPR at a 3:1 ratio (for a range of 90 compression/minute and 30 ventilations/minute). Minimize interruptions. Reassess every 60 seconds; if not improving, continue CPR with 100% oxygen until recovery of a normal heart rate, then resume room air.
  - When newborn is stabilized see [Newborn Care Protocol 2.14](#).

## PARAMEDIC STANDING ORDERS

P

- If meconium is present and the newborn is not vigorous (poor muscle tone, weak respiratory effort, or heart rate <100 bpm), perform direct endotracheal suctioning via meconium aspirator.
- If bag valve mask ventilation is inadequate or chest compressions are indicated, consider intubating the baby using a 3.0mm or 4.0mm endotracheal tube. (For an infant born before 28 weeks gestation, a 2.5mm endotracheal tube should be used.)
  - Heart rate and EtCO<sub>2</sub> are the best indicators of whether the tube is properly placed in the trachea.
- Establish IV/IO. Obtain blood sample if possible.
  - If hypovolemia is suspected, administer 10ml/kg bolus over 5 – 10 minutes.
  - If the heart rate fails to improve with chest compressions, administer epinephrine (1:10,000) 0.01 – 0.03mg/kg IV (0.1 – 0.3ml/kg).
  - IV is preferred route for epinephrine—if there is a delay in establishing access, may administer via ETT 0.05 to 0.1 mg/kg (1:10,000).
  - If glucose level is <60mg/dl:
    - Administer dextrose per [Pediatric Color Coded Appendix A3](#).

## PEARLS:

- ALS NOTES: Flush all meds with 0.5 to 1.0ml 0.9% NaCl and follow all ETT meds with positive-pressure ventilation.

# Obstetrical/Gynecological Emergencies

2.16

Medical Protocol 2.16

## EMT/ADVANCED EMT STANDING ORDERS

- Routine Patient Care.
- Obtain history.
  - Abdominal pain with associated symptoms (syncope, lightheadedness, nausea, vomiting, fever).
  - Vaginal bleeding (onset, duration, quantity, syncope, lightheadedness).
- If the patient is hypotensive, consider fluids per [Shock – Non-traumatic Protocol 2.21](#). (AEMT/Paramedics only)

E/  
A/  
P

### For obstetrical patients:

- 1<sup>st</sup> or 2<sup>nd</sup> trimester or unknown pregnancy status: place patient in position of comfort.
- 3<sup>rd</sup> trimester pregnancy (>28 weeks, if gestational age is known) place patient left lateral recumbent position.
- Visually inspect for crowning/presenting parts, see [Childbirth Protocol 2.6](#). Do not put fingers or hand inside vagina during assessment.
- If gestational age known to be < 20 weeks, transport to closest hospital.
- For imminent delivery (patient has strong urge to push) or medically unstable mother, transport to closest hospital.
- If gestational age is > 20 weeks, contact **Medical Control** and follow local OB Diversion Protocol, if available.
- Consider ALS intercept.



### PEARL:

The amount of bleeding is difficult to estimate. Menstrual pad holds between 5-15 mL depending on type of pad. Maternity pad holds 100 mL when completely saturated. Chux pad holds 500mL. Estimate the amount of bleeding by number of saturated pads in last 6 hours.

## Pre-Eclampsia / Eclampsia

Pre-eclampsia/Eclampsia is most commonly seen in the last 10 weeks of gestation, during labor, or up to 48 hours post-partum. It also may occur up to several weeks post-partum.

## EMT/ADVANCED EMT STANDING ORDERS

E

- Routine Patient Care.
- Ensure quiet environment / dim lights / limited use of siren.
- If pregnant, place patient in left lateral recumbent position.

## ADVANCED EMT STANDING ORDERS

A

- Establish vascular access.

## PARAMEDIC STANDING ORDERS

P

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 see [Seizure Protocol 2.19A](#).
- Contact Medical Control and follow local OB Diversion Protocol.



PEARLS: Moderate / Severe symptoms of pre-eclampsia include:

- BP  $\geq$  160/100
- Severe headache
- Visual disturbances
- Confusion
- RUQ Abd pain
- Epigastric pain
- Nausea
- Shortness of breath

# 2.17A Pain Management – Adult

## EMT STANDING ORDERS

# E

- Routine Patient Care.
- Use ample padding when splinting musculoskeletal injuries.
- Consider the application of a cold pack for 30 minutes.
- 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 2.17P](#).

## ADVANCED EMT STANDING ORDERS

# A

- Nitronox: The patient must be able to self-administer this medication.
- Nitronox is contraindicated in patients with abdominal pain, pneumothorax, head-injured, or diving-emergency patients.
  - Note: Nitronox may only be used if patient has not received an opiate.

## PARAMEDIC STANDING ORDERS

# P

Unless the patient has altered mental status, consider **one** of the following for pain control:

- Ketorolac 15 – 30mg IV or 30 – 60mg IM (no repeat).
  - Consider as first line in renal colic.
- **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 - 1mg IV, every 10 minutes to a total of 4 mg titrated to pain relief, **OR**
  - Morphine 2 – 5mg IV/IM every 10 minutes to a total of 20mg 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 0.4 mg IV/IM or 2mg IN. If no response, may repeat initial dose every 5 minutes to a total of 10mg.
- For nausea: see [Nausea/Vomiting 2.12 Protocol](#).
- **Contact Medical Control for guidance in patients with:**
  - Altered mental status or
  - Additional doses of a medication, or
  - Benzodiazepines 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.
- Medications should be administered cautiously in frail, debilitated, or patients over 65 years of age; lower doses should be considered.
- Use caution for altered mental status, hypoventilation, hypotension, or allergy.
- A scavenger and ventilation fan should be used while administering Nitronox.

## PEARLS:

- Place the patient in a position of comfort, if possible.
- Give reassurance, psychological support, and distraction.
- 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.

# Pain Management - Pediatric 2.17P

## EMT STANDING ORDERS

E

- Routine Patient Care.
- Use ample padding when splinting musculoskeletal injuries.
- Consider the application of a cold pack for 30 minutes.
- Rate the patient's pain:
  - Children greater than 8 years of age:
    - Ask the patient to rate pain on a scale from 0 – 10, where 0 is no pain and 10 is the worst pain ever experienced by the patient.
  - Children 3 – 8 years of age:
    - Use the Wong-Bakers FACES Scale (see [Pain Management - Pediatric Protocol 2.17P Page 2](#)).
  - Children less than 3 years of age or non-verbal:
    - Use the r-FLACC Pain Scale, see [Pain Management - Pediatric Protocol 2.17P Page 2](#).
- Consider sucrose for infants for minor procedural pain or when used with other pharmacologic agents.
  - Full term infants up to 60 days of age:
    - Slowly administer 1.5 to 2 ml of a 24% solution directly onto infant's anterior tongue over a period of 2 minutes, repeat once.
    - Provide a pacifier for non-nutritive sucking and wait two minutes for onset.
    - Pain control effects should persist for up to 8 minutes.
  - Preterm infants:
    - Follow same administration procedure using 0.1 –1.0 ml.
  - Dose may be repeated once for full term and preterm infants.

## ADVANCED EMT STANDING ORDERS

A

- Nitronox: Patient must be able to self-administer this medication. Nitronox is contraindicated in patients with abdominal pain, pneumothorax, head injury, or diving-emergency patients.  
Note: Nitronox may only be used if the patient has not received an opiate.

## PARAMEDIC STANDING ORDERS

P

- Unless the patient has altered mental status consider **one** of the following for pain control:
- Fentanyl 1.0 micrograms/kg IV/IM/IN (maximum dose 100 micrograms) may repeat 0.5 micrograms/kg (Maximum dose 50 micrograms) every 5 minutes. May be repeated to a total of 3 doses, **OR**
  - Morphine 0.1mg/kg IV (maximum dose 5mg) may repeat 0.05mg/kg (maximum dose 2.5mg) every 5 minutes May be repeated to a total of 3 doses.
    - **Antidote:** For hypoventilation from opiate administration by EMS personnel, assist ventilations and administer naloxone per [Pediatric Color Coded Appendix 3](#).
  - Contact **Medical Control** for guidance regarding:
    - Altered mental status or
    - Requests to provide additional doses of a medication.

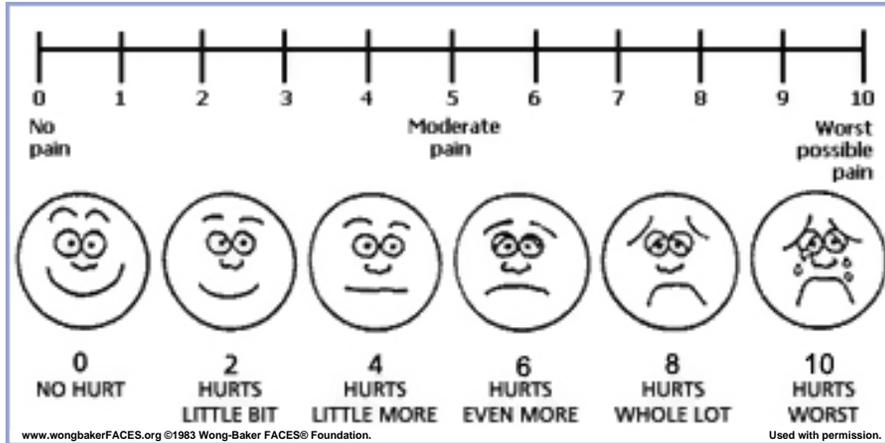


- Medications should be administered cautiously in frail or debilitated patients; lower doses should be considered.
- Narcotics should be administered with caution for patients with altered mental status, hypoventilation, hypotension and / or history of allergies to similar class of medications.
- A scavenger and ventilation fan should be used while administering Nitronox.

### PEARLS:

- Avoid coaching the patient; simply ask him/her to rate his/her pain on a scale from 0 – 10, where 0 is no pain at all and 10 is the worst pain the patient has ever experienced. Place the patient in a position of comfort, if possible.
- Give reassurance, psychological support, and distraction.
- Reassess the patient's pain level and vital signs every 5 minutes.

Policy Continues 



**Wong-Baker FACES Scale**  
For patients 3 – 8 years of age

The faces correspond to numeric values from 0 – 10. The scale can be documented with the numeric value or the textual pain description

Medical Protocol 2.14P

r-FLACC Pain Scale			
For patients less than 3 years of age or non-verbal patients			
Categories	0	Scoring	
		1	2
F Face	No particular expression or smile	Occasional grimace or frown, withdrawn, disinterested <b>appears sad or worried</b>	Frequent to constant frown, clenched jaw, quivering chin <b>distress-looking face: expression of fright or panic</b>
L Legs	Normal position or relaxed	Uneasy, restless, tense <b>occasional tremors</b>	Kicking, or legs drawn up <b>marked increase in spasticity, constant tremors or jerking</b>
A Activity	Lying quietly, normal position, moves easily	Squirming, shifting back and forth, tense <b>mildly agitated (eg. head back and forth, aggression); shallow, splinting respirations intermittent sighs</b>	Arched, rigid, or jerking <b>severe agitation, head banging, shivering (not rigors); breath-holding, gasping or sharp intake of breath; severe splinting</b>
C Cry	No cry (awake or asleep)	Moans or whimpers, occasional complaint <b>occasional verbal outburst or grunt</b>	Crying steadily, screams or sobs, frequent complaints <b>repeated outbursts, constant grunting</b>
C Consolability	Content, relaxed	Reassured by occasional touching, hugging, or being talked to, distractable	Difficult to console or comfort <b>pushing away caregiver, resisting care or comfort measures</b>

Each of the five categories (F) Face; (L) Legs; (A) Activity; (C) Cry; (C) Consolability is scored from 0-2, which results in a total score between zero and ten.

**Patients who are awake:** Observe for at least 1-2 minutes. Observe legs and body uncovered. Reposition patient or observe activity, assess body for tenseness and tone. Initiate consoling interventions if needed

**Patients who are asleep:** Observe for at least 2 minutes or longer. Observe body and legs uncovered. If possible reposition the patient. Touch the body and assess for tenseness and tone.

**The revised-FLACC** can be used for all non-verbal children. The additional descriptors (in bold) are descriptors validated in children with cognitive impairment. The nurse can review with parents the descriptors within each category. Ask them if there are additional behaviors that are better indicators of pain in their child. Add these behaviors to the tool in the appropriate category.

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### EMR & EMT STANDING ORDERS

# E



- Routine Patient Care.
  - Prior to calling Poison Control attempt to identify substance, quantity, time/route of exposure and patient information (weight, medications, history, intentional, accidental).
  - Contact Poison Control at (800) 222-1222 as soon as practical.
  - Ingested Poison:
    - Consider activated charcoal 25 – 50 grams by mouth if advised by Poison Control or **Medical Control**.
  - For suspected opiate overdose with severe respiratory depression consider:
    - Naloxone 1mg (1mL) per nostril (IN) via prefilled syringe and atomizer for a total of 2mg.
    - If no response repeat in 3 - 5 minutes.
    - For additional doses call **Medical Control**.
- NOTE:** Must complete First Responder Narcan Rollout before using naloxone, see: <http://nhoodle.nh.gov/ola/>
- For suspected isolated cyanide poisoning, see [Smoke Inhalation Protocol 2.22A](#).
  - For decontamination/hazardous materials exposure, see [Hazardous Materials 9.0](#).
  - For hypoglycemia, see [Hypoglycemia Emergencies Protocol 2.10A](#).
  - For seizures, see [Seizure Protocol 2.19A](#).

### ADVANCED EMT STANDING ORDERS

# A

- For suspected opiate overdose with severe respiratory depression consider:
- Naloxone 0.4 – 2.0 mg IV/IM or 2mg IN.
  - If no response, may repeat every 3 - 5 minutes to a total of 10mg.

### PARAMEDIC STANDING ORDERS

# P

#### Suggested Treatments

- Beta Blocker and Calcium Channel Blocker refer to [Bradycardia Protocol 3.1A](#) .
- Dystonic Reaction:
  - Diphenhydramine 25 – 50mg IV/IM
- Organophosphates, see [Nerve Agent/Organophosphate Protocol 2.13A](#).
- Suspected Sympathomimetic/Stimulant:
  - Midazolam 2.5mg IV/IN, may repeat once in 5 minutes; or 5mg IM, may repeat once in 20 minutes, **OR**
  - Lorazepam 1mg IV, may repeat once in 5 minutes; or 2mg IM may repeat once in 20 minutes, **OR**
  - Diazepam 2mg IV, may repeat once in 5 minutes; or 5mg IM, may repeat once in 20 minutes,
- Tricyclic with symptomatic dysrhythmias, (e.g., tachycardia and wide QRS > 100 milliseconds):
  - Sodium bicarbonate 2mEq/kg IV.



This protocol is designed to provide general guidelines for treatment. Specific treatments or antidotes may be appropriate as directed by on-line medical control or in consultation with Poison Control.

#### PEARLS:

- If possible, bring container/bottles and/or contents.
- Pulse oximetry may NOT be accurate for toxic inhalational patients.
- Capnography may be helpful for monitoring respiratory status and titrating to lowest effective naloxone dose. See [Quantitative Waveform Capnography Procedure 6.2](#).

Protocol Continues

 Protocol Continued**Signs & Symptoms**, which may or may not be present:

- **Acetaminophen:** initially no sign/symptoms or nausea/vomiting. If not detected and treated, may cause irreversible liver failure.
- **Akathisia:** May consist of feelings of anxiety, agitation, and jitteriness, as well as inability to sit still / pacing. This may be induced by antipsychotics, such as haloperidol, or anti-emetics such as prochlorperazine or metoclopramide.
- **Anticholinergic:** tachycardia, fever, dilated pupils, mental status changes. Blind as a bat (blurred vision). Dry as a bone (dry mouth). Red as a beet (flushing). Mad as a hatter (confusion). Hot as a hare (hyperthermia).
- **Aspirin:** abdominal pain, vomiting, tachypnea, fever and/or altered mental status. Renal dysfunction, liver failure, and or cerebral edema among other things can take place later.
- **Cardiac Medications:** dysrhythmias, altered mental status, hypotension, hypoglycemia.
- **Depressants:** bradycardia, hypotension, decreased temperature, decreased respirations, non-specific pupils.
- **Dystonic Reaction:** Neurological movement disorder, in which sustained muscle contractions cause twisting and repetitive movements or abnormal postures. This may be induced by antipsychotics, such as haloperidol, or anti-emetics such as prochlorperazine or metoclopramide.
- **Opiate:** Respiratory depression or arrest, pinpoint pupils, decreased mental states. Prolonged overdoses may result in compartment syndrome and/or hypothermia.
- **Organophosphates:** bradycardia, increased secretions, nausea, vomiting, diarrhea, pinpoint pupils.
- **Solvents:** nausea, coughing, vomiting, mental status change and arrhythmias. Patient with significant solvent exposure, must be handled gently to reduce the incident of arrhythmia and/or subsequent cardiac arrest.
- **Sympathomimetic/Stimulants:** tachycardia, hypertension, seizures, agitation, increased temperature, dilated pupils, anxiety, paranoia, diaphoresis. Examples are bath salts, cocaine, methamphetamine, ecstasy, ADHD drugs, thyroid meds (rarely), salbutamol.
- **Tricyclic:** seizures, dysrhythmias, hypotension, decreased mental status or coma.

### EMT/AEMT STANDING ORDERS

# E

- Routine Patient Care.
- Prior to calling Poison Control attempt to identify substance, quantity, time/route of exposure and patient information (weight, medications, history, intentional, accidental).
- Contact Poison Control at (800) 222-1222 as soon as practical.
- Ingested Poison:
  - Consider activated charcoal per length-based resuscitation tape if advised by Poison Control or **Medical Control**.
- For suspected isolated cyanide poisoning, see [Smoke Inhalation Protocol 2.22P](#).
- For decontamination/hazardous materials exposure: refer to [Hazardous Materials 9.0](#).
- For hypoglycemia, see [Hypoglycemia Emergencies 2.10P](#).
- For seizures, see [Seizures Protocol 2.19P](#).



### ADVANCED EMT STANDING ORDERS

# A

- For suspected opiate overdose with severe respiratory depression consider: Naloxone refer to [Pediatric Color Coded Appendix 3](#), repeat every 5 minutes as needed.
- If no response, may repeat initial dose every 5 minutes to a total of 10mg.

### PARAMEDIC STANDING ORDERS

# P

#### Suggested Treatments

- Beta Blocker and Calcium Channel Blocker, see [Bradycardia Protocol 3.1P](#).
- Dystonic Reaction:
  - Diphenhydramine 1mg/kg IV/IM up to 50 mg
- Organophosphates, see [Nerve Agent/Organophosphate Protocol 2.13P](#).
- Tricyclic with symptomatic dysrhythmias, (e.g., tachycardia and wide QRS > 100 milliseconds):
  - Sodium bicarbonate 2mEq/kg IV.



This protocol is designed to provide general guidelines for treatment. Specific treatments or antidotes may be appropriate as directed by on-line medical control or in consultation with Poison Control.

#### PEARLS:

- If possible, bring container/bottles, and/or contents.
- Pulse oximetry may NOT be accurate for toxic inhalational patients.
- Capnography may be helpful for monitoring respiratory status and titrating to lowest effective naloxone dose. See [Quantitative Waveform Capnography Procedure 6.2](#).

Protocol Continues 

 Protocol Continued**Signs & Symptoms**, which may or may not be present:

- **Acetaminophen:** initially no signs/symptoms or nausea/vomiting. If not detected and treated, may cause irreversible liver failure.
- **Akathisia:** May consist of feelings of anxiety, agitation, and jitteriness, as well as inability to sit still / pacing. This may be induced by antipsychotics, such as haloperidol, or anti-emetics such as prochlorperazine or metoclopramide.
- **Anticholinergic:** tachycardia, fever, dilated pupils, mental status changes. Blind as a bat (blurred vision). Dry as a bone (dry mouth). Red as a beet (flushing). Mad as a hatter (confusion). Hot as a hare (hyperthermia).
- **Aspirin:** abdominal pain, vomiting, tachypnea, fever and/or altered mental status. Renal dysfunction, liver failure, and or cerebral edema among other things can take place later.
- **Cardiac Medications:** dysrhythmias, altered mental status, hypotension, hypoglycemia.
- **Depressants:** bradycardia, hypotension, decreased temperature, decreased respirations, non-specific pupils.
- **Dystonic Reaction:** Neurological movement disorder, in which sustained muscle contractions cause twisting and repetitive movements or abnormal postures. This may be induced by antipsychotics, such as haloperidol, or anti-emetics such as prochlorperazine or metoclopramide.
- **Opiate:** Respiratory depression or arrest, pinpoint pupils, decreased mental states. Prolonged overdoses may result in compartment syndrome and/or hypothermia.
- **Organophosphates:** bradycardia, increased secretions, nausea, vomiting, diarrhea, pinpoint pupils.
- **Solvents:** nausea, coughing, vomiting, mental status change and arrhythmias. Patient with significant solvent exposure, must be handled gently to reduce the incident of arrhythmia and/or subsequent cardiac arrest.
- **Sympathomimetic/Stimulants:** tachycardia, hypertension, seizures, agitation, increased temperature, dilated pupils, anxiety, paranoia, diaphoresis. Examples are bath salts, cocaine, methamphetamine, ecstasy, ADHD drugs, thyroid meds (rarely), salbutamol.
- **Tricyclic:** seizures, dysrhythmias, hypotension, decreased mental status or coma.

## EMT/ADVANCED EMT STANDING ORDERS

E/A

- Routine Patient Care.
- If the blood glucose reading is <70mg/dl, see [Hypoglycemia Protocol 2.10A](#).
- If diazepam rectal gel (Diastat) has been prescribed by the patient's physician, assist the patient or caregiver with administration in accordance with 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.
  - To use the VNS magnet, pass the magnet closely over the VNS device; if unsuccessful, repeat every 3 – 5 minutes for a total of 3 times.
  - Note: do not delay medication administration.

## PARAMEDIC STANDING ORDERS

P

While seizure activity is present, consider:

- \*Midazolam 10 mg IM (preferred route) every 10 minutes or 5 – 10 mg IV/IN every 5 minutes, **OR**
- Lorazepam 2 – 4 mg IV every 5 minutes to a total of 8mg, **OR**
- Diazepam 5 – 10mg IV (then 2.5mg every 5 minutes to total of 20mg).

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 5mg/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 patient 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 increase risk of apnea with >2 doses of benzodiazepines.

## EMT/ADVANCED EMT STANDING ORDERS

E/A

- Routine Patient Care.
- If the blood glucose reading is <60mg/dl, see [Hypoglycemia Protocol 2.10P](#).
- Obtain the patient's temperature for suspected febrile seizure (rectal route preferred, as appropriate). Treat fever per [Pediatric Color Coded Appendix A3](#).
- If diazepam rectal gel (Diastat) has been prescribed by the patient's physician, assist the patient or caregiver with administration in accordance with 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.
  - To use the VNS magnet, pass the magnet closely over the VNS device; if unsuccessful, repeat every 3 – 5 minutes for a total of 3 times.
  - Note: do not delay medication administration.

## PARAMEDIC STANDING ORDERS

P

- While seizure activity is present, consider:
  - \*Midazolam 5mg/mL concentration (IM or IN preferred):
    - 0.2mg/kg IM/IN (single maximum dose 8mg) repeat every 5 minutes; or
    - 0.1mg/kg IV (single maximum dose 4 mg) repeat every 5 minutes, **OR**
  - Lorazepam 0.1mg/kg IV (single maximum dose 4mg) repeat every 5 minutes, **OR**
  - Diazepam 0.1mg/kg IV (single maximum dose 10mg IV) repeat every 5 minutes.



\*For IN administration of midazolam use a 5mg/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 patient 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 increase risk of apnea with >2 doses of benzodiazepines.

## IDENTIFICATION OF POSSIBLE SEPTIC SHOCK

- Suspected infection – YES
- Evidence of sepsis criteria – YES (2 or more):
  - Temperature < 96.8 °F or > 100.4 °F
  - Heart rate > 90 bpm
  - Respiratory rate > 20 bpm
  - Systolic blood pressure < 90 mmHg OR Mean Arterial Pressure (MAP) <65mmHg.
  - New onset altered mental status OR increasing mental status change with previously altered mental status
  - Serum lactate level >4 mmol/L

## EMT STANDING ORDERS - ADULT

# E

- Routine Patient Care.
- Administer oxygen at a rate to keep oxygen saturation ≥94%.
- Do not delay transport.
- If positive sepsis screen, notify receiving facility of a “Sepsis Alert”.

## ADVANCED EMT STANDING ORDERS - ADULT

# A

- Initiate up to two (2) large-bore IVs. Do not delay transport to start IV.
- Rapidly administer 0.9% NaCl to maintain systolic blood pressure >90mmHg OR MAP >65mmHg in 500ml boluses every 20 minutes. Total volume should not exceed 4,000ml.
- 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

- Obtain serum lactate level (if available and trained)
- If there is no response after 2,000 ml IV fluid infused, continue up to 4,000 mL IV fluid and consider:
  - Norepinephrine infusion 1 – 30 microgram/minute (preferred) (Dilute 4mg in 1000 mL 0.9% normal saline for 4 microgram/mL) via pump, **OR**
  - Epinephrine infusion 2 – 10 micrograms/minute (Dilute epinephrine 1mg in 1000 mL 0.9% normal saline for 1 microgram/mL) via pump.

## PEARLS:

- Sepsis is a systemic inflammatory response due to infection, often resulting in significant morbidity and mortality.
- Severe septic shock has a 50% mortality rate and must be treated aggressively.
- Early goal directed therapy consisting of IV fluid administration and early antibiotics reduces mortality in septic patients.

## IDENTIFICATION OF POSSIBLE SEPTIC SHOCK:

- Suspected Infection – YES
- Temperature > 100.4° F or < 96.8
- Heart rate greater than normal limit for age (heart rate may not be elevated in septic hypothermic patients) **AND** at least one of the following indications of altered organ function:
  - Altered mental status
  - Capillary refill time <1 second (flash) or > 3 seconds
  - Mottled cool extremities
  - Finger stick lactate level >4 mmol/L

Note: Consider early consultation with medical control for suspected pediatric septic shock patients.

## EMT STANDING ORDERS - PEDIATRIC

E

- Routine Patient Care.
- Monitor and maintain airway and breathing as these may change precipitously.
- Administer oxygen and continue regardless of oxygen saturation levels.
- Obtain blood glucose reading.
- Do not delay transport.

## ADVANCED EMT STANDING ORDERS - PEDIATRIC

A

IV fluids should be titrated to attain normal capillary refill, peripheral pulses, and level of consciousness.

- Administer fluid bolus of 20mL/kg of 0.9% saline by syringe push method; reassess patient immediately after completion of bolus and repeat 2 times (max 60mL/kg, if inadequate response to boluses).

Note: Reassess patient between each bolus for improving clinical signs and signs of fluid overload (rales, increased work of breathing, or increased oxygen requirements).

## PARAMEDIC STANDING ORDERS - PEDIATRIC



P

- Obtain finger stick lactate level (if available and trained).
- If there is no response after 3 fluid boluses, contact **Medical Control** to consider:
  - Additional fluids,
  - Norepinephrine (preferred) 0.05 – 0.1 mcg/kg/min, titrated to effect to a maximum dose 2 mcg/kg/min, via pump **OR**
  - Epinephrine 0.1 – 1.0 mcg/kg/min, via pump, titrated to effect.

## PEARLS:

- Sepsis is a systemic inflammatory response due to infection. Frequent causes of septic shock include urinary, respiratory, or gastrointestinal infections and complications from catheters and feeding tubes. Patients who are immuno-compromised are also susceptible to sepsis.
- Septic shock has a high mortality and is one of the leading causes of pediatric deaths.
- Aggressive IV fluid therapy and early antibiotics significantly reduces death.

# Non-Traumatic Shock Adult & Pediatric

2.21

Medical Protocol 2.21

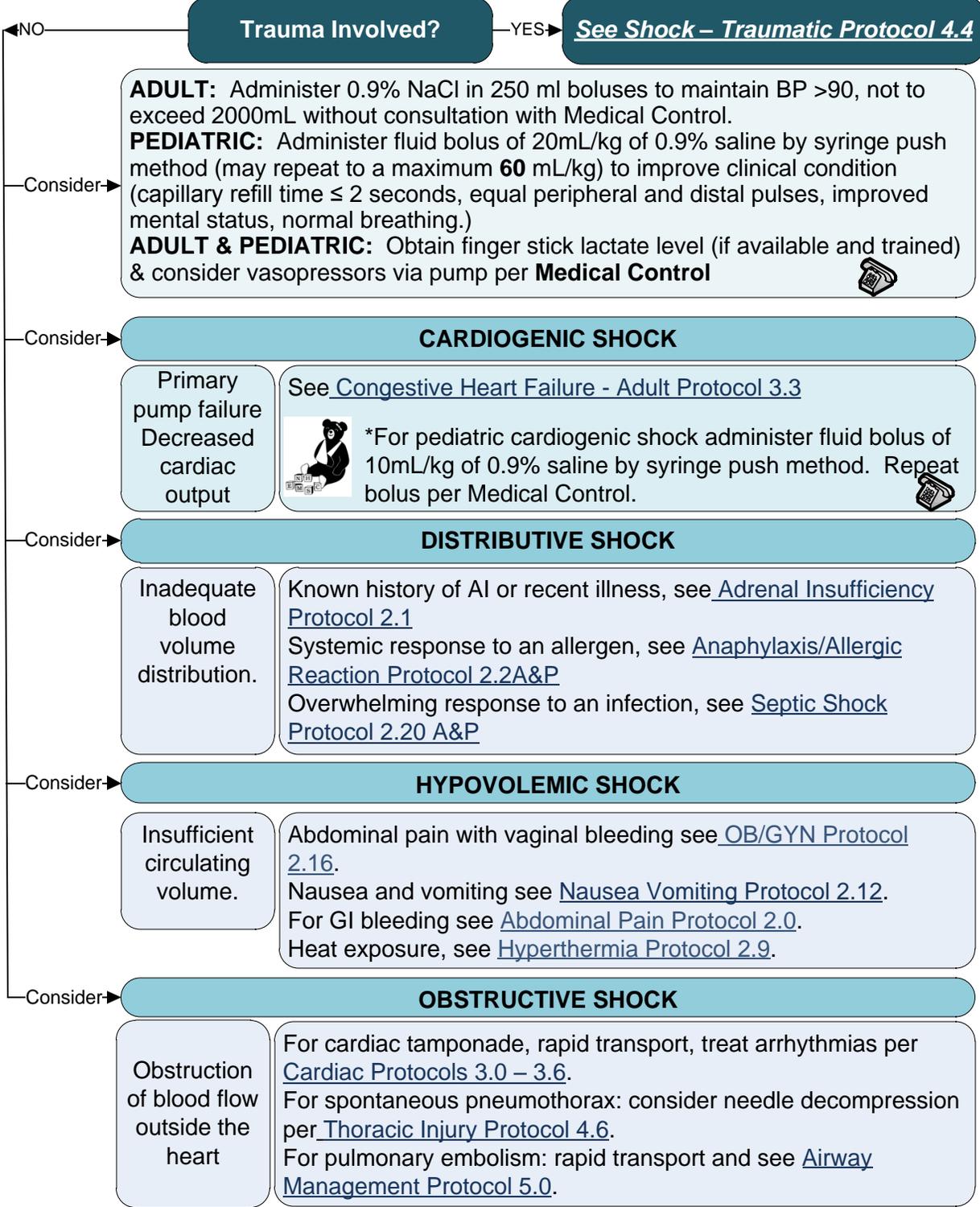
Recognize Compensated Shock-Adult

- 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

## 2.22A Smoke Inhalation – Adult

### EMT STANDING ORDERS

# E

- Routine Patient Care.
- Oxygen 100% via non-rebreather mask or BVM.
- Decontamination concurrent with initial resuscitation.
- If a carbon monoxide (CO) oximeter (e.g., Rad-57) is available, obtain carbon monoxide levels.
- If a measuring device is available, obtain atmospheric levels of carbon monoxide (CO) and cyanide (CN).

### ADVANCED EMT/PARAMEDIC STANDING ORDERS

# A/P

For a history of smoke exposure with an altered level of consciousness and/or hemodynamic or respiratory compromise, administer, if available:

- Hydroxocobalamin via use of Cyanokit:
  - Reconstitute: Place the vial of hydroxocobalamin in an upright position; add 0.9% NaCl to the vial (200 mL for 5 grams vial using the transfer spike. Fill to the line.
  - Rock vial for at least 60 seconds (do not shake).
    - Using vented intravenous tubing, infuse as directed.
    - Depending on clinical response, a second dose may be required.



- Oxygen saturation may be inaccurate in patients exposed to carbon monoxide or cyanide.
- CO oximeter devices may yield inaccurate low/normal results for patients with CO poisoning. All patients with probable or suspected CO poisoning should be transported to the nearest appropriate hospital, based on their presenting signs and symptoms.
- Do not administer other drugs concurrently in same IV as hydroxocobalamin.

**Symptoms:** headache, confusion, dyspnea, chest tightness, nausea.

**Signs:** soot in the nose or mouth, change in level of consciousness, seizure, dilated pupils, coughing, tachypnea and hypertension (early), bradypnea and hypotension (late), shock, vomiting.

### PEARLS:

- Smoke is a dangerous mixture of toxic gases and suspended chemicals consequential to combustion. While it may be impossible to predict exactly what components of combustion are inhaled, cyanide (CN) and carbon monoxide (CO) are common elements found in smoke and should be suspected in all smoke inhalation victims.

# Smoke Inhalation – Pediatric 2.22P

## EMT STANDING ORDERS

E

- Routine Patient Care.
- Oxygen 100% via non-rebreather mask or BVM.
- Decontamination concurrent with initial resuscitation.
- If a carbon monoxide (CO) oximeter (e.g., Rad-57) is available, obtain carbon monoxide levels.
- If a measuring device is available, obtain atmospheric levels of carbon monoxide (CO) and cyanide (CN).

## ADVANCED EMT/PARAMEDIC STANDING ORDERS

A/P

For a history of smoke exposure with an altered level of consciousness and/or hemodynamic or respiratory compromise, administer, if available:

- Hydroxocobalamin via use of Cyanokit:
  - Reconstitute: Place the vial of hydroxocobalamin in an upright position; add 0.9% NaCl to the vial (200 mL for 5 grams vial using the transfer spike. Fill to the line.
  - Rock vial for at least 60 seconds (do not shake).
  - Using vented intravenous tubing, infuse per [Pediatric Color Coded Appendix 3](#) over 7.5 minutes for 100 mL vial set or 15 minutes for 200 mL vial set.
  - Depending on clinical response, a second dose may be required.



- Oxygen saturation may be inaccurate in patients exposed to carbon monoxide or cyanide.
- CO oximeter devices may yield inaccurate low/normal results for patients with CO poisoning. All patients with probable or suspected CO poisoning should be transported to the nearest appropriate hospital, based on their presenting signs and symptoms.
- Do not administer other drugs concurrently in same IV as hydroxocobalamin.

**Symptoms:** headache, confusion, dyspnea, chest tightness, nausea.

**Signs:** soot in the nose or mouth, change in level of consciousness, seizure, dilated pupils, coughing, tachypnea and hypertension (early), bradypnea and hypotension (late), shock, vomiting.

### PEARLS:

- Smoke is a dangerous mixture of toxic gases and suspended chemicals consequential to combustion. While it may be impossible to predict exactly what components of combustion are inhaled, cyanide (CN) and carbon monoxide (CO) are common elements found in smoke and should be suspected in all smoke inhalation victims.

## EMT/ADVANCED EMT/PARAMEDIC STANDING ORDERS

E/A/P

- Routine Patient Care.
- Perform Cincinnati Pre-hospital Stroke Scale, or equivalent nationally recognized stroke scale.
- Clearly determine time of onset of the symptoms or the last time seen well.
  - If the patient wakes from sleep or is found with symptoms of stroke, the time of onset of first symptoms is defined as the last time the patient was observed to be normal.
- If any 1 of the signs of the stroke scale is abnormal notify the emergency department of a “Stroke Alert” as soon as possible, per local stroke plan, and ensure to provide the last time seen well and onset of symptoms.
- Obtain glucose reading via glucometer.
- Elevate the head of the stretcher 30 degrees.
- Do not delay for ALS intercept.
- On scene goal should be ≤ 15 minutes.
- Consider air medical transport per local stroke plan.
- Acquire 12-lead ECG, if available.
- Consider transporting a witness, family member, or caregiver with the patient to verify the time of the onset of stroke symptoms.

## Prehospital Stroke Scale

**Facial Droop:** *Have the patient smile and show teeth.*

Normal: Both sides of the face move equally well..

Abnormal: One side of the face does not move as well as the other.

**Arm Drift:** *Have the patient close their eyes and hold arms extended.*

Normal: Both arms move the same, or both arms don't move at all.

Abnormal: One arm doesn't move, or one arm drifts down compared to the other.

**Speech:** *Ask the patient to repeat a phrase such as, “You can't teach an old dog new tricks”.*

Normal: Patient says the correct words without slurring.

Abnormal: Patient slurs words, says the wrong word, or is unable to speak.

If 1 or more of the above 3 signs are abnormal, then your patient has an abnormal stroke scale finding. An abnormal stroke scale finding has a high probability of having a stroke.

## PEARLS:

The “D's of Stroke Care” “Improve Door to Needle Time”

- Detection: Rapid recognition of stroke symptoms.
- Dispatch: Early activation and dispatch of emergency medical services (EMS) system by calling 911.
- Delivery: Rapid EMS identification, management, and transport.
- Door: Appropriate triage to stroke center.
- Data: Rapid triage, evaluation, and management within the emergency department (ED).
- Decision: Stroke expertise and therapy selection.
- Drug: Fibrinolytic therapy, intra-arterial strategies.
- Disposition: Rapid admission to stroke unit, critical-care unit.

This page left blank to insert your local Stroke agreement plan.

## 2.24

# Syncope Adult & Pediatric

### EMT STANDING ORDERS

# E

- Routine Patient Care.
- Maintain oxygen saturation  $\geq 94\%$ .
- Attempt to determine the cause of syncope.
- Perform cardiac monitoring; obtain 12-Lead EKG. If acute coronary syndrome is suspected, refer to [Acute Coronary Syndrome Protocol 3.0](#).
- Obtain blood glucose analysis; refer to [Hyperglycemia 2.8 A&P](#) or [Hypoglycemia 2.10 A&P Protocols](#), if indicated.
- Assess for signs/symptoms of trauma if related or from fall associated with syncope; refer to [Spinal Injury Protocol 4.5](#) if indicated.
- Prevent and treat for shock; see [Shock- Non-traumatic 2.21](#) or [Shock - Traumatic Protocol 4.4](#).
- Consider ALS intercept.

### ADVANCED EMT STANDING ORDERS

# A

- Consider fluids per [Shock – Non-traumatic Protocol 2.21](#).

### PARAMEDIC STANDING ORDERS

# P

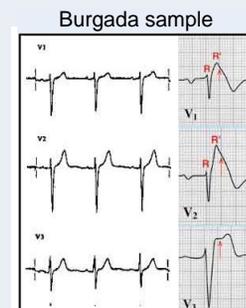
- Observe for and treat dysrhythmias as indicated.

Medical Protocol 2.24

### PEARLS:

- Syncope is defined as a loss of consciousness accompanied by a loss of postural tone with spontaneous recovery.
- Consider all syncope to be of cardiac origin until proven otherwise.
- While often thought as benign, syncope can be the sign of more serious medical emergency.
- Syncope that occurs during exercise often indicates an ominous cardiac cause. Patients should be evaluated at the ED. Syncope that occurs following exercise is almost always vasovagal and benign.
- Prolonged QTc (generally  $>500\text{ms}$ ) and Brugada Syndrome (incomplete RBBB pattern in V1/V2 with ST segment elevation) should be considered in all patients.

- There is no evidence that supports acquiring orthostatic vital signs.
- Syncope can be indicative of many medical emergencies including:
  - Myocardial infarction
  - Pulmonary embolism
  - Cardiac arrhythmias,
  - Vaso-vagal reflexes
  - Diabetic emergencies
  - Poisoning/drug effects
  - Dehydration
  - Hypovolemia
  - Seizures
  - Ectopic pregnancy



# Acute Coronary Syndrome - Adult 3.0

All patients with complaints of chest pain should not automatically be treated with aspirin and nitrates. Consider the likelihood of ACS based on the nature of the symptoms, the patient's age, cardiac risk factors, past medical history, etc.

## EMT STANDING ORDERS - ADULT

# E

- Routine Patient Care.
- Obtain 12-lead ECG with baseline vitals within 10 minutes if available and practical; and transmit per local guidelines.
  - If 12-lead ECG indicates a STEMI transport patient to the most appropriate facility in accordance with local STEMI guidelines/agreements. Notify receiving facility of a "STEMI Alert".
- Administer oxygen only to patients with dyspnea, hypoxia ( $O_2$  sat  $<94\%$ ), or signs of heart failure at a rate to keep  $O_2$  saturation  $\geq 94\%$ .
- Administer aspirin 324mg by mouth (chewable).
- Facilitate administration of the patient's own nitroglycerin every 3 – 5 minutes while symptoms persist and systolic BP remains  $>100$  mmHg, to a total of 3 doses.
- If STEMI is identified, complete the fibrinolytic questionnaire at the end of this protocol.

## ADVANCED EMT STANDING ORDERS - ADULT

# A

- IV must be established before administration of nitroglycerin.
- Nitroglycerin 0.4mg SL every 3 – 5 minutes while symptoms persist and if systolic BP remains  $>100$  mmHg.

## PARAMEDIC STANDING ORDERS - ADULT

# P

- Consider IV nitroglycerin at 10 micrograms/minute if symptoms persist after 3rd SL nitroglycerin (it is recommended two (2) IV lines or a Twin Cath<sup>®</sup> in place and the IV nitroglycerin must be on an infusion pump).
- Increase IV nitroglycerin by 10 micrograms/minute every 5 minutes while symptoms persist and systolic BP remains  $>100$  mmHg.
- If IV nitroglycerin is not available, consider the application of nitroglycerin paste 1 – 2 inches transdermally.
- Consider fentanyl 25 – 100 micrograms slow IV push every five minutes up to 300 micrograms and systolic BP remains  $>100$  mmHg **OR**
- Consider morphine 2 – 5 mg IV/IM every 5 minutes to a maximum of 15mg titrated to pain and systolic BP remains  $>100$  mmHg.
- Treat dysrhythmias as needed; refer to the appropriate protocol.

## PARAMEDIC MEDICAL CONTROL – MAY CONSIDER



- If STEMI and no affirmative finding from fibrinolytic questionnaire, consider
- Heparin 5000 u IV bolus.

Protocol Continues

# 3.0 Acute Coronary Syndrome - Adult

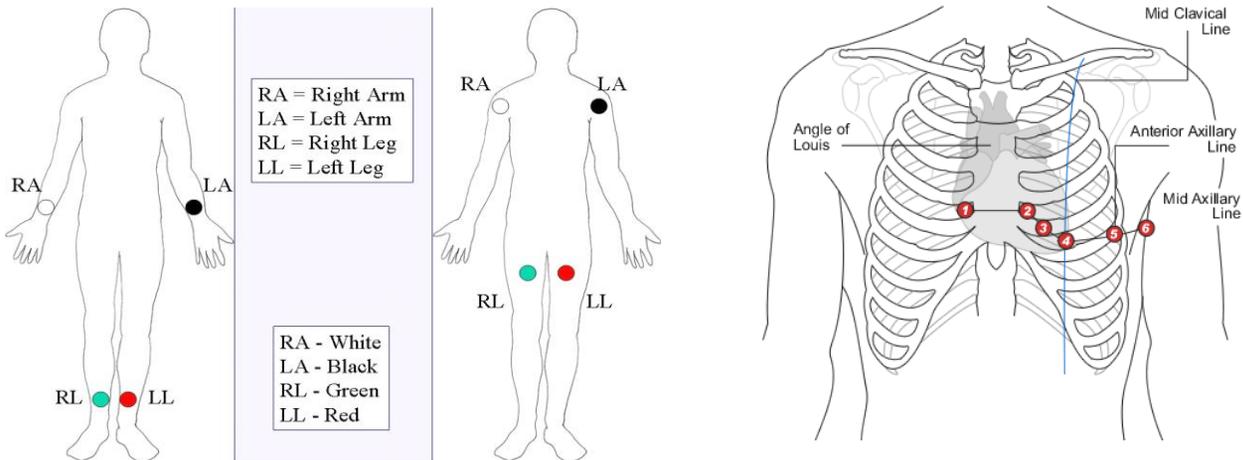
Protocol Continued



- Avoid nitroglycerin in any patient who has used a phosphodiesterase inhibitor such as: sildenafil (Viagra, Revatio), vardenafil (Levitra, Staxyn), tadalafil (Cialis, Adcirca) which are used for erectile dysfunction and pulmonary hypertension. Also avoid use in patients receiving intravenous epoprostenol (Flolan) which is also used for pulmonary hypertension.
- Administer nitrates with extreme caution, if at all, to patients with inferior-wall STEMI or suspected right ventricular (RV) involvement because these patients require adequate RV preload.

## Fibrinolytic Questionnaire:

- Any trauma, surgery, or head injury within the last month?
- Any current or recent active bleeding within the last month?
- Any lumbar punctures, spinal anesthesia, or stroke within last month?
- Any known bleeding disorder?
- Do you have a clinical suspicion of aortic dissection?
- Is the systolic BP >180 at baseline or after treatment with NTG?



## PEARLS:

- Transmission of 12-lead ECG is critical to the activation of a STEMI system. Transmit any 12-lead ECG that states “Acute MI”, “Meets ST Elevation MI Criteria” or anything similar, or where the interpretation is unclear.
- Early administration of Aspirin has been shown to decrease mortality in Acute Coronary Syndrome.
- Administer Aspirin to every patient with suspected acute coronary syndrome unless they have:
  - History of anaphylaxis to aspirin, NSAIDs, or
  - Evidence of active gastrointestinal bleeding
- Patients with acute coronary syndrome (especially women and the elderly) may present with signs and symptoms other than chest pain including shortness of breath, weakness, syncope and nausea.

This page left blank to insert your local STEMI agreement plan.

## 3.1A

# Bradycardia – Adult

### 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



#### If symptomatic and hemodynamically unstable:

- Consider atropine 0.5mg IV every 3 – 5 minutes to a total of 3mg.
- If atropine is ineffective:
  - Consider transcutaneous pacing.
  - Administer procedural sedation prior to or during transcutaneous pacing, if feasible:
    - Midazolam 2.5mg IV/IN, may repeat once in 5 minutes; or 5 mg IM, may repeat once in 10 minutes, **OR**
    - Lorazepam 1 mg IV, may repeat once in 5 minutes; or 2mg IM, may repeat once in 10 minutes, **OR**
    - Diazepam 2mg IV; may repeat once in 5 minutes.
- Epinephrine infusion (Dilute epinephrine 1mg in 1000 mL 0.9% normal saline for 1 microgram/mL) 2 -10 micrograms/minute via pump, **OR**
- Norepinephrine (4mg in 1000 mL 0.9% normal saline for 4 microgram/mL) 1 - 30 micrograms/minute via pump, **OR**
- Dopamine infusion 2 – 10 micrograms/kg/minute, **OR**
- **Contact Medical Control** for expert consultation.

#### Other Causes:

- For symptomatic beta blocker or calcium channel blocker overdose, consider glucagon 5mg IV over 3 – 5 minutes.
- For suspected hyperkalemia with ECG changes or symptomatic calcium channel blocker overdose consider:
  - Calcium gluconate 2 grams IV over 5 minutes, with continuous cardiac monitoring **OR**
  - Calcium chloride (10% solution) 1 gram IV over 5 minutes, with continuous cardiac monitoring.



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.

## EMT/ADVANCED EMT STANDING ORDERS

**E/A**

- Routine Patient Care.
- Consider the underlying causes of bradycardia (e.g., hypoxia, hypoglycemia, hypovolemia, and hypothermia).
- Begin/continue CPR if heart rate is <60 bpm with hypoperfusion despite adequate ventilation and oxygenation.
- 12-lead ECG if available.

## PARAMEDIC STANDING ORDERS

**P**

- Epinephrine 1:10,000 0.01mg/kg IV (0.1ml/kg of 1:10,000) every 3 – 5 minutes.
- Consider atropine 0.02mg/kg IV for increase vagal tone or AV blocks, may repeat once (minimum single dose: 0.1mg; maximum single dose 0.5 mg.)
- Consider transcutaneous pacing.
- Administer procedural sedation prior to/during pacing, if feasible:
  - Midazolam 0.05mg/kg IV/IN, **OR**
  - Diazepam 0.05mg/kg IV.

### Other Causes:

- For hypoglycemia see [Hyperglycemia 2.8A&P](#) or [Hypoglycemia 2.10A&P Protocols](#).
- For symptomatic beta blocker or calcium channel blocker overdose, consider glucagon 0.025 – 0.05mg/kg.
- For symptomatic calcium channel blocker overdose consider:
  - Calcium gluconate (10% solution) 100mg/kg IV with a maximum 2 gm/dose over 5 minutes; may repeat in 10 minutes, **OR**
  - Calcium chloride (10% solution) 20mg/kg IV (0.2 ml/kg) with a maximum 1 gm/dose over 5 minute; not to exceed 1 ml per minute. May repeat if clinical indication persists.



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

### PEARLS:

- Combine age specific heart rates with signs of respiratory failure and shock while assessing. If child is asymptomatic, consider no treatment.

## 3.2A

# Cardiac Arrest – Adult

### EMT STANDING ORDERS - ADULT

# E

- Routine patient Care—with focus on CPR
- Immediate chest compressions.
- Apply AED and use as soon as possible (with minimum interruption of chest compressions).
- If ventilation is adequate with BVM, routine placement of advanced airway can be delayed and should not interrupt chest compressions.
- Monitor quantitative waveform capnography throughout resuscitation, if available, to assess and monitor airway placement CPR quality, and to monitor for signs of Return of Spontaneous Circulation.
- Consider treatable causes: hypoxia, overdose/poisoning, hypothermia, hypoglycemia, and hypovolemia—treat as per specific protocol.
- If Return of Spontaneous Circulation occurs see [Post Resuscitative Care Protocol 3.5](#).
- Consider termination of efforts or not attempting resuscitation (see [DNR, POLST & Advanced Directives Policy 8.8](#) and/or [Resuscitation Initiation & Termination 8.16](#)).

### ADVANCED EMT STANDING ORDERS - ADULT

# A

- Minimize interruptions of chest compressions for IV/IO placement.
- Document presenting cardiac rhythm in two separate leads, if possible.

#### **For ventricular fibrillation (VF)/pulseless Ventricular tachycardia (VT):**

- Defibrillation when available, with minimum interruption in chest compressions (use 360 joules for monophasic and 120 – 200 joules for biphasic defibrillators); then CPR for 5 cycles/2 minutes; then rhythm check; then:
- Consider epinephrine (1:10,000) 1mg IV; repeat every 3 – 5 minutes.

#### **For asystole or pulseless electrical activity (PEA):**

- Continue CPR for 2 minutes.
- Consider: epinephrine (1:10,000) 1mg IV; repeat every 3 – 5 minutes.
- Continue CPR for 2 minutes between interventions; stop only for rhythm check or Return of Spontaneous Circulation.

### PARAMEDIC STANDING ORDERS - ADULT

# P

- Follow ACLS guidelines as trained and credentialed.
- If ventilation is adequate with BVM, routine placement of advanced airway can be deferred.
- Placement of an advanced airway during cardiac arrest should not interrupt chest compressions. In this setting, supraglottic airways and ETTs can be considered equivalent.
- Consider tension pneumothorax and treat with needle decompression.
- For suspected metabolic acidosis, suspected or known hyperkalemia (dialysis patient), known tricyclic antidepressant overdose, or suspected excited/agitated delirium consider sodium bicarbonate 2mEq/kg IV.

#### PEARLS:

- Early CPR and early defibrillation are the most effective therapies for cardiac arrest care.
- Minimize interruptions in chest compression, as pauses rapidly return the blood pressure to zero and stop perfusion to the heart and brain.
- Switch compressors at least every two minutes to minimize fatigue.
- Perform “hands on defibrillation.”
  - Compress when charging and resume compressions immediately after the shock is delivered.
- Do not hyperventilate as it increases intrathoracic pressure and decreases blood return to the heart. Ventilate at a rate of 8 – 10 breaths per minutes, with enough volume to produce adequate chest rise.

**EMT/ADVANCED EMT STANDING ORDERS****E/A**

- Routine patient Care—with focus on CPR.
- Immediate chest compressions.
- Apply AED and use as soon as possible (with minimum interruption of chest compressions). From birth to age 8 years use pediatric AED pads.
  - If pediatric AED pads are unavailable, providers may use adult AED pads, provided the pads do not overlap.
- Monitor quantitative waveform capnography, if available, throughout resuscitation to assess and monitor airway placement CPR quality, and to monitor for signs of Return of Spontaneous Circulation.
- Consider termination of efforts or not attempting resuscitation, see [DNR, POLST & Advanced Directives Policy 8.8](#) and/or [Resuscitation Initiation & Termination 8.16](#).
- Consider treatable causes: hypoxia, overdose/poisoning, hypoglycemia, hypothermia, and hypovolemia (treat as per specific protocol).

**PARAMEDIC STANDING ORDERS****P**

- If Return of Spontaneous Circulation occurs see [Post Resuscitative Care Protocol 3.5](#).
- If ventilation is adequate with BVM, routine placement of advanced airway can be deferred.
- Placement of an advanced airway during cardiac arrest should not interrupt chest compressions. In this setting, supraglottic airways and ETTs can be considered equivalent.
- For suspected metabolic acidosis, suspected or known hyperkalemia (dialysis patient), or known tricyclic antidepressant overdose, consider sodium bicarbonate 2mEq/kg IV.

**For Ventricular Fibrillation (VF)/Pulseless Ventricular Tachycardia (VT):**

- Defibrillate at 2J/kg; perform CPR for 2 minutes and recheck rhythm; if still a shockable rhythm, defibrillate at 4J/kg; perform CPR for 2 minutes; reassess every 2 minutes and continue to defibrillate at 4J/kg.
- If no response after first defibrillation, administer epinephrine (1:10,000) 0.01mg/kg (0.1ml/kg) IV **OR** 0.1mg/kg (1:1,000; 0.1ml/kg) via ETT.
  - Repeat every 3 – 5 minutes.
- If no response after second defibrillation, consider:
  - Amiodarone 5mg/kg (maximum 300mg) IV, **OR**
  - Lidocaine 1mg/kg (maximum 100mg).
  - For Torsades de Pointes: Magnesium sulfate 25 – 50mg/kg (maximum 2 grams) IV over 1 – 2 minutes .

**For Asystole or Pulseless Electrical Activity (PEA):**

- Administer Epinephrine (1:10,000) 0.01mg/kg (0.1ml/kg) IV **OR** 0.1mg/kg (1:1,000; 0.1ml/kg) via ETT; repeat every 3 – 5 minutes.
- Give 2 minutes of CPR, then check rhythm:
  - If asystole or PEA, continue epinephrine and 2 minutes of CPR until:
  - Pulse obtained, **OR**
  - Shockable rhythm obtained, **OR**
  - Decision made to discontinue further efforts.

# Congestive Heart Failure (Pulmonary Edema)

## EMT STANDING ORDERS - ADULT

### E

- Routine Patient Care.
- Place the patient in a semi-sitting or full sitting position.
- Facilitate administration of the patient's own nitroglycerin every 5 minutes while symptoms persist and systolic BP is >140 mmHg.
- 12-lead ECG, if available.

## ADVANCED EMT STANDING ORDERS - ADULT

### A

- For patient's with known history of congestive heart failure, consider nitroglycerin 0.4mg SL every 5 minutes while symptoms persist and if the systolic BP is >140 mmHg.
- Consider Continuous Positive Airway Pressure (CPAP) with maximum 10cm H<sub>2</sub>O pressure support.
- Establish IV access.

## PARAMEDIC STANDING ORDERS - ADULT

### P

While symptoms persist and systolic BP remains >140 mmHg, consider:

- IV nitroglycerin 20 micrograms/minute, increase by 10 - 20 micrograms/minute every 3 – 5 minutes (it is recommended two (2) IV lines or a Twin Cath<sup>®</sup> in place and the IV nitroglycerin must be on an infusion pump.) (Generally, accepted maximum dose: 400 micrograms/minute.), **OR**
- Nitroglycerin paste 1" – 2" transdermally.



- Avoid nitroglycerin in any patient who has used a phosphodiesterase inhibitor such as: sildenafil (Viagra, Revatio), vardenafil (Levitra, Staxyn), tadalafil (Cialis, Adcirca) which are used for erectile dysfunction and pulmonary hypertension. Also avoid use in patients receiving intravenous epoprostenol (Flolan) which is also used for pulmonary hypertension.
- Administer nitrates with extreme caution, if at all, to patients with inferior-wall STEMI or suspected right ventricular (RV) involvement because these patients require adequate RV preload.

## PEARLS:

- If patient has taken nitroglycerin without relief, consider loss of potency due to age.
- If Nitropaste is used, do not continue to use Nitroglycerin SL.
- Allow the patient to be in their position of comfort to maximize their breathing effort.

# Induced Therapeutic Hypothermia - Adult

3.4

## INDICATIONS

- Return of spontaneous circulation after cardiac arrest not related to trauma or hemorrhage.
- Age greater than 18 without identified pregnancy or obviously gravid uterus.
- Initial temperature > 34° C (93.2° F).
- Advanced airway in place.
- Remains comatose (no purposeful response to verbal stimuli).
- Quantitative wave form capnography > 20 mmHg.
- Patient **MUST** be transported to a receiving facility capable of continuing induced therapeutic hypothermia.

## PARAMEDIC STANDING ORDERS - ADULT

P

- Apply ice packs to axilla & groin.
- Midazolam 2.5mg IV/IN may repeat once in 5 minutes or; 5mg IM, may repeat once in 10 minutes, **OR**
- Lorazepam 1 – 2mg IV. May repeat every 15 minutes as needed for shivering or sedation (maximum: 10mg).
- Cold normal saline (approximately 4° C (40°F) bolus 30mL/kg to max of 2000 mL.
- Monitor quantitative wave form capnography with target of 35 to 40 mmHg.
- Maintain systolic blood pressure of >90 mmHg.

### For Post-Resuscitation Hypotension:

- Consider: (An infusion pump is required for the use of these vasopressors)
  - Dopamine infusion 5 – 20 microgram/kg/min, **OR**
  - Norepinephrine infusion 1 – 30 microgram/min **OR**
  - Phenylephrine 100 – 180 microgram loading dose followed by infusion 40 – 60 microgram/min, **OR**
  - Epinephrine infusion 2 – 10 microgram/minute titrated to effect
- Consider nasogastric or orogastric tube for the intubated patient.

**MEDICAL CONTROL ORDERS** (Only to be used by paramedics who are trained and credentialed to perform RSI by the NH Bureau of EMS. Either 2 RSI paramedics or 1 RSI paramedic and 1 RSI assistant must be present.)

- Non-depolarizing paralytic (rocuronium 1 mg/kg IV or vecuronium (0.1mg/kg IV) for shivering uncontrolled by midazolam.



## PEARLS:

- If loss of spontaneous circulation occurs, go to appropriate protocol.
- Monitor quantitative wave form capnography (target 35-40mmHg).
- Patients develop metabolic alkalosis with cooling. Do not hyperventilate.
- Maintain oxygen saturation at ≥ 94%.
- When exposing patient for purpose of cooling undergarments may remain in place. Be mindful of your environment and take steps to preserve the patient's modesty.
- Do not delay transport for the purpose of cooling.
- Perform 12 Lead ECG. Recognition and treatment a STEMI are critical in the post-cardiac arrest patient. Consider transport to a STEMI receiving facility capable of continuing induced therapeutic hypothermia.

### EMT/ADVANCED EMT STANDING ORDERS - ADULT

# E/A

- If feasible, acquire and transmit a 12-lead EKG.
- Initial ventilation rate of 10 - 12 BPM, then titrate to quantitative waveform capnography of 35 to 40 mm Hg, if available.
- Maintain oxygen saturation at  $\geq 94\%$ .

### PARAMEDIC STANDING ORDERS - ADULT

# P

- With return of spontaneous circulation after non-traumatic cardiac arrest and patient is obtunded with no purposeful movements to verbal stimuli consider: [Induced Therapeutic Hypothermia 3.4](#).

- Maintain systolic blood pressure of  $>90$  mmHg.

#### For Post-resuscitation hypotension:

- Administer 0.9% NaCl in 250 – 500ml boluses. Total volume should not exceed 2,000ml.
- Consider: (An infusion pump is required for the use of these pressor agents)
  - Dopamine infusion 5 – 20 microgram/kg/min, **OR**
  - Norepinephrine infusion 1 – 30 microgram/min, **OR**
  - Phenylephrine 100 – 180 microgram loading dose followed by infusion 40 – 60 microgram/min, **OR**
  - Epinephrine infusion 2 – 10 microgram/minute titrated to effect.
- Consider nasogastric or orogastric tube for the intubated patient.

### PARAMEDIC STANDING ORDERS - PEDIATRIC



#### Post-Resuscitative Care

- If the patient is unresponsive, consider transport to a facility capable of inducing therapeutic hypothermia.

#### For Post-Resuscitation Hypotension:

- IV 0.9% NaCl 20ml/kg (may repeat x1), **AND/OR**
  - Consider: (An infusion pump is required for the use of these vasopressors) Dopamine infusion 5 – 20 micrograms/kg/min, **OR**
  - Norepinephrine infusion 0.1 – 2 micrograms/kg/min titrated to effect, **OR**
  - Epinephrine 0.1 – 1 micrograms/kg/min titrated to effect.

#### PEARLS:

- Recognition and treatment of a STEMI are critical in the post-cardiac arrest patient. Consider transport patient to the most appropriate facility in accordance with local STEMI guidelines/agreements. Notify receiving facility of a “STEMI Alert”.
- Avoid hyperventilation as it increases intrathoracic pressures, potentially worsening hemodynamic instability.

## EMT/ADVANCED EMT STANDING ORDERS

**E/A**

- Routine Care.
- 12-lead ECG if available.

## PARAMEDIC STANDING ORDERS

**P**

- Follow ACLS guidelines as trained and credentialed.

### If symptomatic and hemodynamically unstable:

- Synchronized cardioversion:
  - Use the following initial energy doses, then escalate to the next higher energy level if no conversion. Biphasic devices: follow manufacturer's recommendations for dosing.
  - For narrow regular rhythm: 50 – 100J biphasic or 200J monophasic.
  - For narrow irregular rhythm: 120 – 200J biphasic or 200J monophasic.
  - For wide regular rhythm: 100J biphasic or monophasic.
  - For wide irregular/polymorphic VT: 120 – 200J biphasic or 360 monophasic, using unsynchronized defibrillation doses if unable to sync:
- Administer procedural sedation prior to or during cardioversion, if feasible:
  - Midazolam 2.5mg IV/IN, may repeat once in 5 minutes or; 5mg IM may repeat once in 10 minutes, **OR**
  - Lorazepam 1mg IV, may repeat once in 5 minutes or; 2mg IM, may repeat once in 10 minutes, **OR**
  - Diazepam 2mg IV, may repeat once in 5 minutes.
- For regular, narrow complex: consider adenosine 6mg rapid IV.
- May repeat at dose of 12mg every 1 – 2 minutes x2 if no conversion.
- May repeat successful dose if rhythm recurs after conversion.

### If symptomatic, but hemodynamically stable:

#### For narrow complex tachycardia (with a heart rate persistently >150bpm):

- Attempt vagal maneuvers, for regular rhythms.
  - If vagal maneuvers fail and the rhythm is regular:
    - Adenosine 6mg rapid IV.
    - May repeat at dose of 12mg every 1 – 2 minutes x2 if no conversion.
    - May repeat successful dose if rhythm recurs after conversion.
  - Diltiazem 0.25mg/kg IV (maximum dose 20 mg) over 2 minutes.
    - May repeat dose in 15 minutes at 0.35mg/kg (maximum dose 20 mg), if necessary.
    - Consider maintenance infusion at 5 – 15mg/hour, **OR**
  - Metoprolol 5mg IV over 2 – 5 minutes.
    - May repeat every five minutes to a maximum of 15mg as needed to achieve a ventricular rate of 90 – 100.



- Diltiazem is contraindicated in patients with a history of or suspected Wolff-Parkinson-White (WPW) syndrome.
- Medications should be administered cautiously in frail or debilitated patients; lower doses should be considered.

Protocol Continues


 Protocol Continued
**PARAMEDIC STANDING ORDERS - ADULT****For wide complex tachycardia:**

- Only for regular rhythm with monomorphic QRS:
  - Consider: adenosine 6mg rapid IV.
    - May repeat at dose of 12mg after 1 – 2 minutes if no conversion.
    - May repeat successful dose if rhythm recurs after conversion.
  - Consider:
    - Amiodarone 150mg IV mixed with 50 – 100ml of 0.9% NaCl or D5W over 10 minutes.
      - May repeat once in 10 minutes.
      - If successful, consider a maintenance infusion of 1mg/minute.
    - Lidocaine (considered second-line therapy) 1 – 1.5mg/kg IV.
      - May repeat once in 5 minutes to maximum of 3mg/kg.
      - If successful, consider a maintenance infusion of 1 – 4mg/minute.

**For polymorphic Ventricular Tachycardia/Torsades de Pointes:**

- Consider magnesium sulfate 1 – 2 grams IV over 5 minutes.

P

Cardiac Protocol 3.6A

**PEARLS:**

- Consider and treat potential underlying causes, e.g., hypoxemia, dehydration, fever.
- Wide complex tachycardia should be considered Ventricular Tachycardia until proven otherwise
- Signs and symptoms of hemodynamic instability:
  - Hypotension
  - Acutely altered mental status
  - Signs of shock
  - Signs of acute heart failure
  - Ischemic chest pain
- Adenosine should be administered rapidly through a proximal (e.g., antecubital) vein site followed by a rapid saline flush.

## EMT/ADVANCED EMT STANDING ORDERS

E/A

- Routine Care.
- 12-lead ECG if available.

## PARAMEDIC STANDING ORDERS

If symptomatic and hemodynamically unstable:

**For narrow complex/probable SVT:**

- Adenosine 0.1mg/kg IV not to exceed 6mg (first dose).
  - Repeat once at 0.2mg/kg not to exceed 12mg (subsequent dose).
- If adenosine is ineffective or for wide complex, perform synchronized cardioversion:
  - 0.5 – 1J/kg; if unsuccessful, increase to 2J/kg.
- Administer procedural sedation prior to or during cardioversion, if feasible:
  - Midazolam 0.05mg/kg IV, IN **OR**
  - Diazepam 0.05mg/kg IV.

P

If symptomatic but hemodynamically stable:

- **For narrow complex, probable supraventricular tachycardia, or regular wide complex tachycardia (monomorphic QRS ONLY):**
  - Adenosine 0.1mg/kg IV not to exceed 6mg (first dose).
    - May repeat once at 0.2mg/kg IV not to exceed 12mg (subsequent dose).
- **For wide complex:**
  - Contact online **Medical Control** for consideration of amiodarone 5mg/kg IV (maximum: 300mg) over 20-60 minutes.



## PEARLS:

- Consider and treat potential underlying causes, e.g., hypoxemia, dehydration, fever.
- Signs and symptoms of hemodynamic instability:
  - Hypotension
  - Acutely altered mental status
  - Signs of shock
- Probable Sinus Tachycardia:
  - Compatible history consistent with known cause
  - P waves are present and normal
  - Variable R-R and constant P-R interval
  - Infants: rate usually <220/min
  - Children: rate usually <180/min
- Probable Supraventricular Tachycardia:
  - Compatible history (vague, nonspecific); history of abrupt onset / rate changes
  - P waves absent / abnormal
  - Heart-rate is NOT variable
  - Infants: rate usually >220/min
  - Children: rate usually >180/min
  - Adenosine should be administered rapidly through a proximal (e.g., antecubital) vein site followed by a rapid saline flush

**EMT STANDING ORDERS**

**E**

- Routine Patient Care.
- Stop the burning process. Brush off dry chemicals.
- Remove jewelry.
- Decontaminate the patient as appropriate.
- Assess the patient’s airway for evidence of smoke inhalation or burns: soot around mouth or nostrils, singed hair, carbonaceous sputum, see [Smoke Inhalation Protocol 2.22A](#).
- For chemical burns consider contacting Poison Control at 800-222-1222.
- Maintain patent airway.
- Determine percent extent of the burn using rule of nines.
- Do not include 1st degree burns in burn surface area (BSA)%.
- Determine depth of injury.
- If a partial thickness burn (2nd degree) is <10% body surface area, apply room-temperature water or room-temperature wet towels to the burned area for a maximum of 15 minutes. Prolonged cooling may result in hypothermia.
- Maintain body temperature.
- Cover burns with dry, sterile sheets, or dry, sterile dressings.
- Do not apply any ointments, creams, or gels to the burn area.

**ADVANCED EMT STANDING ORDER**

**A**

- Transport time less than 1 hour:
  - Administer 0.9% NaCl at 500 mL/Hour.
- Transport time greater than 1 hour:
  - Administer 0.9% NaCl at 1 – 2 mL/kg x % burn/8 = hourly rate x first 8 hours.

**PARAMEDIC STANDING ORDER**

**P**

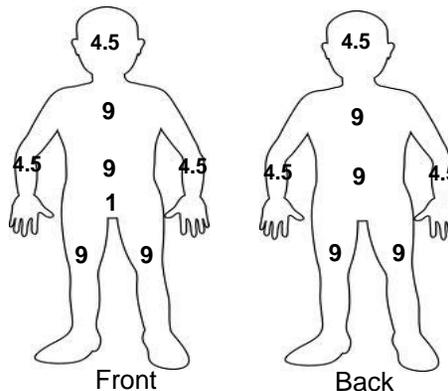
- If the patient has respiratory difficulty, burns about the mouth or neck, or is producing carbonaceous sputum, consider advanced airway management, see [Airway Management Protocol 5.1A](#).
- Refer to [Pain Management Protocol 2.17A](#).



Expert burn center opinion recommends no or limited prehospital IVF, based on concerns for fluid overload and development of compartment syndrome. In cases where burn patients are in shock, IVF administration should be based on use of the [Shock – Traumatic Protocol 4.4](#).

**Rule of Nines**

Head & Neck:	9%
Left arm:	9%
Right arm:	9%
Chest:	9%
Abdomen:	9%
Upper back:	9%
Lower back:	9%
Front left leg:	9%
Front right leg:	9%
Back left leg:	9%
Back right leg:	9%
Genital region:	1%



**PEARLS**

- Patients with severe frostbite injury may benefit from urgent treatment with IV TPA at a burn center.
- Patients who sustain an electrical burn should be placed on a cardiac monitor.
- Consider spinal motion restriction for electrical burns that result in hand to hand flow.
- Patients with extensive electrical burns often require higher volumes of IVF administration compared with thermal burns.

## EMT STANDING ORDERS

# E

- Routine Patient Care.
- Stop the burning process.
- Remove jewelry.
- Decontaminate the patient as appropriate.
- Assess the patient's airway for evidence of smoke inhalation or burns: soot around mouth or nostrils, singed hair, carbonaceous sputum, see [Smoke Inhalation Protocol 2.22P](#).
- For chemical burns consider contacting Poison Control at 800-222-1222.
- Maintain patent airway.
- Determine percent extent of the burn using rule of nines. Remember to use the Pediatric Rule of Nines.
- Do not include 1st degree burns in burn surface area (BSA)%.
- Determine depth of injury.
- If a partial thickness burn (2nd degree) is <10% body surface area, apply room-temperature water or room-temperature wet towels to the burned area for a maximum of 15 minutes. Prolonged cooling may result in hypothermia.
- Maintain body temperature.
- Cover burns with dry, sterile sheets, or dry, sterile dressings.
- Do not apply any ointments, creams, or gels to the burn area.

## ADVANCED EMT STANDING ORDERS

# A

- Transport time less than 1 hour:
  - 5 – 15 years of age: Administer 0.9% NaCl at 250 mL/hr.
  - 2 – 5 years of age: Administer 0.9% NaCl at 125 mL/hr.
  - Less than 2 years of age: Administer 0.9% NaCl at 100 mL/hr.
- Transport time greater than 1 hour
  - Administer 0.9% NaCl at  $2 \text{ mL/kg} \times \% \text{ burn} / 8 = \text{hourly rate} \times \text{first 8 hours}$ .

## PARAMEDIC STANDING ORDERS

# P

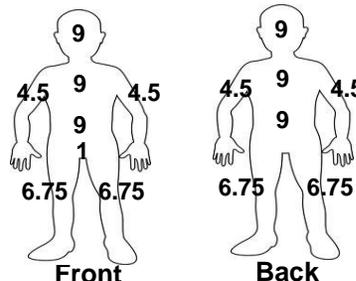
- If the patient has respiratory difficulty, burns about the mouth or neck, or is producing carbonaceous sputum, consider advanced airway management, see [Airway Management Protocol 5.1P](#).
- Refer to [Pain Management Protocol 2.17P](#).



Expert burn center opinion recommends no or limited prehospital IVF, based on concerns for fluid overload and development of compartment syndrome. In cases where burn patients are in shock, IV fluid administration should be based on use of the [Shock - Traumatic Protocol 4.4](#).

### Rule of Nines

Head & Neck:	18%
Left arm:	9%
Right arm:	9%
Chest:	9%
Abdomen:	9%
Upper back:	9%
Lower back:	9%
Left leg:	13.5%
Right leg:	13.5%
Genital region:	1%



### PEARLS

- Patients with severe frostbite injury may benefit from urgent treatment with IV TPA at a burn center.
- Patients who sustain an electrical burn should be placed on a cardiac monitor.
- Consider spinal motion restriction for electrical burns that result in hand to hand flow.
- Patients with extensive electrical burns often require higher volumes of IVF administration compared with thermal burns.

# 4.1

## Drowning/Submersion Injuries Adult & Pediatric

**SUBMERSION:** When a patient goes under the water immediately, has a hypoxic cardiac arrest and then cools down. Prognosis considered dismal.

**IMMERSION:** Patients are in the water with head above water and they continue to breathe while they cool down before they eventually arrest. Prognosis can be good with patients surviving after prolonged CPR.

### EMT STANDING ORDERS

**E**

- Routine Patient Care.
- Consider spinal motion restriction for suspected spinal injury, see [Spinal Injury Protocol 4.5](#).
- If unresponsive, obtain esophageal or rectal temperature.
- Consider NOT initiating resuscitation efforts with:
  - A clear history of prolonged submersion prior to cooling and/or cardiac arrest prior to submersion, **OR**
  - If esophageal or rectal temperature greater than 32°C (89.6° F) with asystole documented in 2 leads.
- Obtain specific history.
- Consider hypothermia. (Refer to table below)
- Remove wet clothes and warm the patient.
- Conscious patients with submersion injuries should be transported to the hospital.

### ADVANCED EMT/PARAMEDIC STANDING ORDERS

**A/P**

- Consider CPAP to supplement the patient's own respiratory effort.

STAGE: I Core Temp Treatment:	Conscious, shivering 35 to 32°C Warm environment and clothing, warm sweet drinks, and active movement (if possible)
STAGE: II Core Temp Treatment:	Impaired consciousness, not shivering <32 to 28°C Cardiac monitoring, minimal and cautious movements to avoid arrhythmias, horizontal position and immobilization, full-body insulation, active external and minimally invasive rewarming techniques (warm environment; chemical, electrical, or forced- air heating packs or blankets; warm parenteral fluids)
STAGE: III Core Temp Treatment:	Unconscious, not shivering, vital signs present <28 to 24°C Stage II management plus airway management as required; ECMO or CPB in cases with cardiac instability that is refractory to medical management
STAGE: IV Core Temp Treatment:	No vital signs <24°C Stage II and III management plus CPR and up to three doses of epinephrine (at an intravenous or intraosseous dose of 1 mg) and defibrillation, with further dosing guided by clinical response; rewarming with ECMO or CPB (if available) or CPR with active external and alternative internal rewarming

### PEARLS

- Patients with Stage III or IV hypothermia may benefit from treatment at a facility capable of ExtraCorporeal Membrane Oxygenation (ECMO) or CardioPulmonary Bypass (CPB). Provide a list of these facilities.

# Eye & Dental Injuries

## Adult & Pediatric

4.2

### EYE – EMT/ADVANCED EMT STANDING ORDERS

E/A

- Routine Care.
- Obtain visual history (e.g., use of corrective lenses, surgeries, use of protective equipment).
- Obtain visual acuity, if possible.
- Assist patient with the removal of contact lens, if applicable.
- Chemical irritants, including pepper spray: flush with copious amounts of water, or 0.9% NaCl.
- Thermal burns to eyelids: patch both eyes with cool saline compress.
- Impaled object: immobilize object and patch both eyes.
- Puncture wound: place rigid protective device over both eyes (e.g., eye shield). Do not apply pressure.
- Foreign body: patch both eyes.
- If the patient cannot close their eyelids, keep their eye moist with a sterile saline dressing.

### EYE - PARAMEDIC STANDING ORDERS

P

- Proparacaine or tetracaine apply:
  - 2 drops to affected eye; repeat every 5 minutes as needed.
- Consider use of Morgan lens for irrigation.
- Refer to [Pain Management Protocol 2.17A](#).
- Refer to the [Nausea/Vomiting Protocol 2.12](#).

### DENTAL AVULSION – EMT/ADVANCED EMT/PARAMEDIC STANDING ORDERS

E/A/P

- Routine Patient Care.
- Dental avulsions should be placed in an obviously labeled container with saline-soaked dressing, milk, or cell-culture medium (example: Save-a-tooth®).

### EMT/ADVANCED EMT/PARAMEDIC EXTENDED CARE ORDERS

X

- If definitive treatment is expected to be greater than 4 hours, an attempt to reinsert the avulsed tooth in its socket should be made, after rinsing tooth in water or normal saline. If multiple teeth require reinsertion, use the shape and size of dentition on the opposing side to guide you in proper placement.

#### PEARLS:

Handle the tooth carefully. Avoid touching the root of the tooth (the part of the tooth that was embedded in the gum) because it can be damaged easily.

# Musculoskeletal Injuries

## Adult & Pediatric

### EMT STANDING ORDERS - ADULT & PEDIATRIC

# E

- Routine Patient Care.
- Manually stabilize the injury.
- Control bleeding with pressure and/or tourniquet, see [Tourniquet Procedure 6.5](#). Consider hemostatic dressing for severe hemorrhage.
- 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.
  - Traction splinting is preferred technique for isolated adult and pediatric mid-shaft femur fractures.
  - For pain relief apply ice and elevate.
- In a patient with a high risk mechanism of injury, [Spinal Injury Protocol 4.5](#).
- Stabilize suspected pelvic fractures with commercial device (preferred) or bed sheet.

### ADVANCED EMT AND PARAMEDIC STANDING ORDERS - ADULT

# A/P

- Assess pain level and consider pain control measures, see [Pain Management Protocol 2.17](#).
- Administer 0.9% NaCl in 250mL boluses to maintain systolic blood pressure greater than 90 mmHg. Total volume not to exceed 2000mL without medical control consultation.

### ADVANCED EMT AND PARAMEDIC STANDING ORDERS - PEDIATRIC

- Administer 0.9% NaCl in 20 mL/kg boluses to improve clinical condition (capillary refill rate, extremity pulses and warmth, mentation, and blood pressure.). Total volume not to exceed 40mL/kg without medical control consultation.

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

# X

- For impaled objects of 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. (Nationally recognized training required to perform these procedures)
- For open/compound fractures consider:
  - Ceftriaxone 1 grams IV/IM, if available. (Advanced EMT/Paramedic only)
- For musculoskeletal pain consider:
  - Adult: Ibuprofen 400 – 600mg or acetaminophen 325 – 650mg 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](#).



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.

# 4.4

# Shock - Traumatic Adult & Pediatric

### 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 peripheral pulse, decreased distal pulse
- Cool extremities
- Altered mental status
- Mild tachypnea



**Hemorrhagic shock:** Locations of blood loss include the chest, abdomen, pelvis, and multiple long bone fractures. Signs include pale, cool, clammy skin, tachycardia, and or hypotension.

**Neurogenic shock:** May occur after an injury to the spinal cord disrupts sympathetic outflow resulting in unopposed vagal tone. Signs include warm, dry skin, bradycardia, and/or hypotension.

### EMT & EMR STANDING ORDERS – ADULT & PEDIATRIC

# E

- Routine Patient Care.
- Follow appropriate traumatic emergency protocols 4.0 – 4.7.
- Keep patient supine.
- Control active bleeding using direct pressure, pressure bandages, tourniquets (commercial preferred) see [Tourniquet Procedure 6.5](#), or hemostatic bandage.
- Keep warm and prevent heat loss.
- Assess blood glucose.
- Do not delay transport; consider hospital destination per [Trauma Triage and Transport Decision Protocol 8.17](#).

### ADVANCED EMT STANDING ORDERS - ADULT

# A

- Administer 0.9% NaCl to maintain systolic blood pressure >90 mmHg in 250 - 500 mL boluses. Total volume should not exceed 2000 mL without consultation with Medical Control. Do not delay transport of IV access.

### ADVANCED EMT STANDING ORDERS - PEDIATRIC



- Administer fluid bolus 20mL/kg of 0.9% NaCl by syringe 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

# P

- Consider obtaining a finger stick lactate level (if available and trained)
- If tension pneumothorax is suspected, consider needle thoracostomy. See [Thoracic Injury Protocol 4.6](#).
- If cardiac tamponade is suspected, rapid transport and treat arrhythmias per [Cardiac Protocols 3.0 – 3.6](#).



- Record time that tourniquet is applied.
- Hemostatic bandages must be non-exothermic type that washes off with 0.9% NaCl.

### PEARLS:

For patients with uncontrolled hemorrhagic or penetrating torso injuries:

- Restrict IV fluids:
  1. Delaying aggressive fluid resuscitation until operative intervention may improve outcome.
  2. Several poor outcomes associated with IV fluid administration have been suggested, including dislodgement of clot formation, dilution of clotting factors, and acceleration of hemorrhage caused by elevated blood pressure.
- Patients should be reassessed frequently, with special attention given to the lung examination to ensure volume overload does not occur.
- Do not overlook the possibility of associated domestic violence and child abuse.

The New Hampshire Medical Control Board has approved the following protocol. It supersedes Advanced Spinal Assessment Protocol 6.1. It represents a significant change in practice for EMS providers. It reflects our intention to ensure that EMS standards in New Hampshire remain consistent with the best emergency medicine standards. As with all protocol changes, services should promptly provide training for providers in the use of this protocol. Resources are available online at: <http://nhoodle.nh.gov/ola/course/index.php?categoryid=13>

### EMT/ADVANCED EMT/PARAMEDIC STANDING ORDERS

**PURPOSE:** This protocol provides guidance regarding the assessment and care of patients who have a possible spinal injury.

Patients who have experienced a mechanism of spinal injury (esp. high risk mechanisms. See Red Flag Box.) require spinal motion restriction (as described further on) and protection of the injury site if they exhibit:

- Midline spinal pain or tenderness with palpation.
- Abnormal (i.e. not baseline) neurological function or motor strength in any extremity.
- Numbness or tingling (paresthesia).
- Sensation is not intact and symmetrical (or baseline for patient).
- Cervical flexion, extension and rotation elicits midline spinal pain.

E/  
A/  
P

Or if they cannot competently participate in the assessment due to one of the following:

- Altered mental status (e.g., dementia, preexisting brain injury, developmental delay, psychosis).
- Alcohol or drug intoxication.
- Unable to participate in assessment (e.g. distracted by significant injuries to self or others.).
- Insurmountable communication barriers (e.g., deafness, or hard of hearing, language).

Patients without any of the above findings should generally be transported without the use of a cervical collar or other means to restrict spinal motion. Utilize spinal motion restriction only where, in the professional judgment of the provider, the patient is at high risk for spinal injury as described above or with clear clinical indications of injury (e.g. midline spinal pain or deformity of the spine).



Long backboards do not have a role for patients being transported between facilities. If the sending facility has the patient on a long backboard or is asking EMS to use a long backboard for transport, EMS providers should discuss not using a long backboard with the sending facility physician before transporting a patient. If a long backboard is used, it should be padded to minimize patient discomfort.

#### PEARLS:

- Secondary injury to the spine often arises from increased pressure (e.g. swelling, edema, hemorrhage) or from hypoperfusion or hypoxia (e.g. vascular injury). While the optimal treatment for secondary injury has not been established, providers should protect the injury site. Protecting the injury site from pressure may be as important as reducing spinal movement.
- In some circumstances, extrication of a patient using traditional spinal immobilization techniques may result in greater spinal movement or may dangerously delay extrication.
- Patients with penetrating trauma **DO NOT** require spinal motion restriction. All patients who have suffered possible spinal trauma should be handled gently and spinal motion should be minimized.
- Even with neurologic deficits caused by transection of the spinal cord, additional movement will not worsen an already catastrophic injury. Emphasis should be on airway and breathing management, treatment of shock, and rapid transport to a Level 1 or 2 trauma center.
- Caution should be exercised in older patients (e.g. 65 years or older) and in very young patients (e.g. less than 3 years of age), as spinal assessment may be less sensitive in discerning spinal fractures in these populations.

Protocol Continues

Protocol Continued

## EMT/ADVANCED EMT/PARAMEDIC STANDING ORDERS

- Routine Patient Care.
- Maintain manual in-line stabilization during assessment.
- Minimize spinal movement during assessment and extrication.
- Self-extrication by patient is allowable if patient is capable.
- A long backboard, scoop stretcher, vacuum mattress, or other appropriate full length extrication device may be used for extrication if needed. Do not use short board or KED device.
- Apply adequate padding to prevent tissue ischemia, minimize discomfort and maintain spinal neutrality after removing helmet or pads

### If patient requires spinal motion restriction:

- Apply a rigid cervical collar.
- Allow ambulatory patients to sit on stretcher and then lie flat. "Standing Take-Down" is eliminated.
- Position backboarded patient on stretcher then remove backboard by using log roll or lift-and-slide technique.
- Situations or treatment priorities may require patient to remain on rigid vacuum mattress or backboard including the combative patient, elevated intracranial pressure (see [Traumatic Brain Injury 4.7](#)) or rapid transport of unstable patient.
- With patient lying flat, secure patient firmly with all stretcher straps and leave collar in place. Instruct patient to avoid moving head or neck as much as possible.
- Elevate stretcher back only if necessary for patient compliance, respiratory function, or other significant treatment priority.
- If patient poorly tolerates collar (e.g., due to anxiety, shortness of breath, torticollis), replace with towel roll and/or padding.
- Patients with nausea or vomiting may be placed in a lateral recumbent position. Maintain neutral head position with manual stabilization, padding/pillows, and/or patient's arm.

### Pediatric Patients Requiring a Child Safety Seat

If child requires spinal motion restriction, transport in a child safety seat (See [Pediatric Transportation Policy 8.12](#)).

- Apply cervical collar. Use rolled towels/padding if infant/child will not tolerate collar.
- Patient may remain in own safety seat after motor vehicle crash if it has a self-contained harness with a high back and two belt paths and is undamaged. If all criteria are not met, use ambulance's safety seat.
- If required treatment (e.g., airway management) cannot be performed in a safety seat, secure patient directly to stretcher using padding and pediatric-sized restraints.

E/  
A/  
P

Procedure 4.5

### RED FLAG: Mechanisms that indicate a high risk for spinal injury include:

- Motor vehicle crash >60 mph, rollover, ejection (low-speed, rear-end can usually be excluded).
- Falls >3 feet/5 stairs (patient standing with feet 3' above floor).
- Axial load to head/neck (e.g., diving accident, heavy object falling onto head, contact sports).
- Significant injury or mechanism of injury above the clavicle.
- Injuries involving motorized recreational vehicles.
- Bicycle struck/collision.



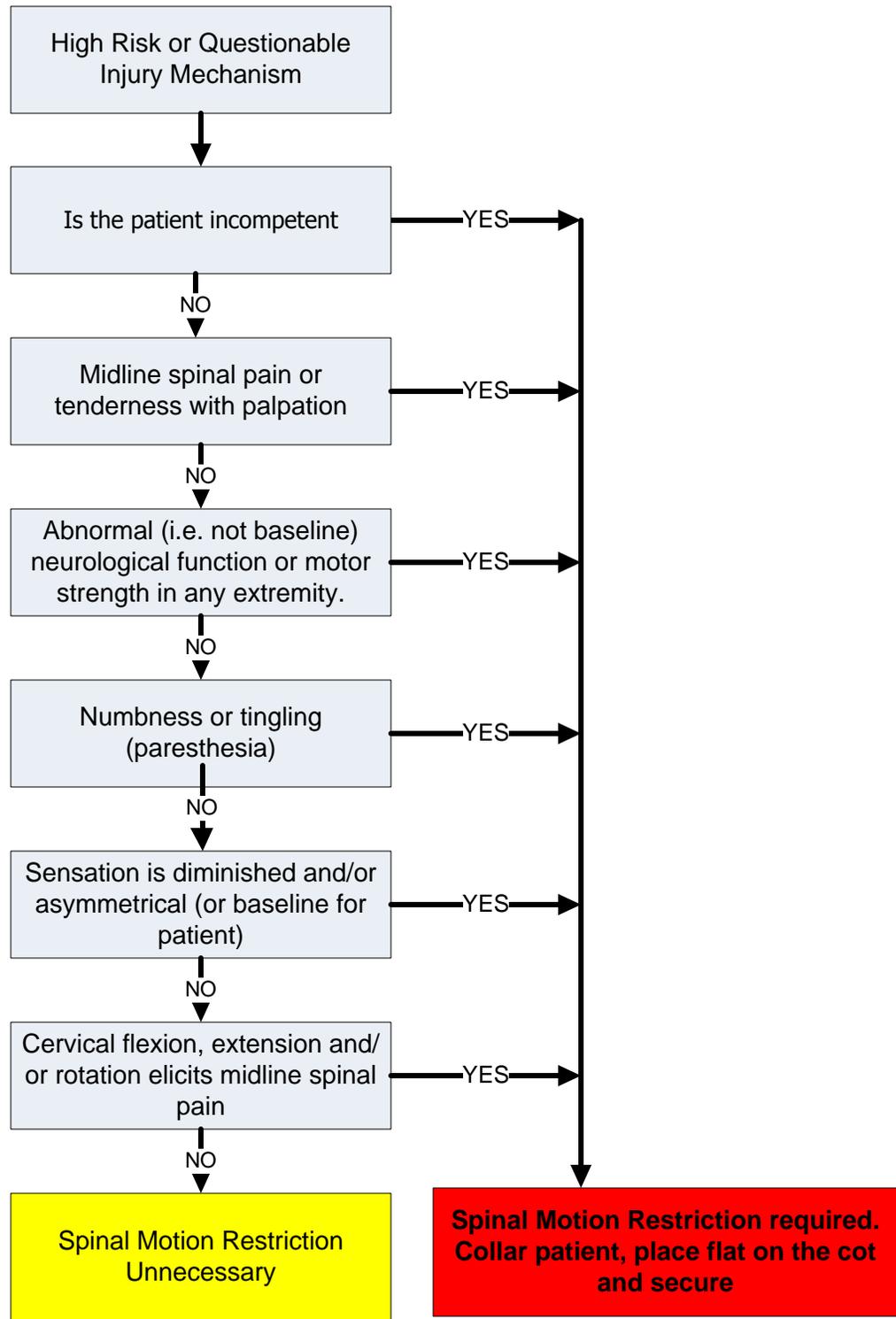
Protocol Continues

# 4.5

# Spinal Trauma

← Protocol Continued

Procedure 4.5



# Thoracic Injuries Adult & Pediatric

4.6

## EMT/ADVANCED EMT STANDING ORDERS

E/A

- Routine Patient Care.
- If in shock, see [Shock Traumatic Protocol 4.4](#).
- Impaled Objects:
  - Secure in place with a bulky dressing.
- Open chest wound:
  - Cover with an occlusive dressing, sealed on 3 sides, or use a commercial device; if the patient's condition deteriorates, remove the dressing momentarily, then reapply.
- Flail segment with paradoxical movement and in respiratory distress:
  - Consider positive-pressure ventilation.
  - Do not splint the chest.
- Consider Air Medical Transport.

## PARAMEDIC STANDING ORDERS

P

- Consider pain management, see [Pain Management Protocols 2.17A&P](#).
- In presence of tension pneumothorax\*, perform needle decompression using  $\geq$  3.25 inch angiocath. Repeat decompression may be necessary with returned signs of tension pneumothorax.

### \*Signs and symptoms of Tension Pneumothorax:

- Asymmetric or absent unilateral breath sounds
- Increasing respiratory distress or hypoxia
- Increasing signs of shock including tachycardia and hypotension
- JVD
- Possible tracheal deviation above the sternal notch (late sign)

# Traumatic Brain Injury (TBI)

## Adult & Pediatric

### EMT STANDING ORDERS - ADULT

# E

- Routine Care.
- If breathing is inadequate, ventilate with 100% oxygen utilizing normal ventilation parameters, maintaining SpO<sub>2</sub> >90%.
- If quantitative waveform capnography is available:
  - Ventilate to maintain a quantitative waveform capnography of 35 – 40mmHg.
  - Do not hyperventilate unless clear signs of cerebral herniation are present.
  - If signs of cerebral herniation are present, maintain quantitative waveform capnography of 30 – 35 mmHg. If quantitative waveform capnography is not available, ventilate at the following rates:
    - Adult: 20 breaths per minute.
    - Child: 25 breaths per minute.
    - Infant: 30 breaths per minute.
  - Discontinue hyperventilation when signs/symptoms improve.
- Assess and document pupillary response and Glasgow Coma Scale every 5 minutes.
- Check blood glucose; if hypoglycemic, see [Hypoglycemia Protocol 2.8A&P](#).
- For moderate to severe TBI, utilize long backboard for spinal motion restriction and elevate patient's head to help control intracranial pressure (ICP).

### ADVANCED EMT STANDING ORDERS - ADULT

# A

- Maintain systolic BP >90mmHg.

### PARAMEDIC STANDING ORDERS - ADULT

# P

- Consider intubation if GCS is <8.
  - If intubation is required, consider administration of lidocaine 1.5mg/kg IV prior to intubation.
- Consider sedation for patients that are combative and may cause further harm to self and others.
  - Midazolam 2.5mg IV/IN may repeat once in 5 minutes or; 5mg IM may repeat once in 10 minutes, **OR**
  - Lorazepam 1mg IV, may repeat once in 5 minutes or; 2mg IM may repeat once in 10 minutes, **OR**
  - Diazepam 2mg IV; may repeat once in 5 minutes.

Protocol Continues 

# Traumatic Brain Injury Adult & Pediatric

4.7

Protocol Continued

## PARAMEDIC STANDING ORDERS - PEDIATRIC

P

- Administer fluid bolus 20ml/kg; may repeat x2 (maximum total 60ml/kg) to maintain systolic BP:
  - 1 – 16 years: a minimum of 90mmHg.
  - <1 year: 65 – 90mmHg.
- If intubation is required, consider administration of lidocaine 1.5mg/kg IV prior to intubation.
- Administer fluid in a pediatric patient with normal systolic blood pressure and who has other signs of decreased perfusion including tachycardia, loss of peripheral pulses, and delayed capillary filling time of >2 seconds.
- Consider sedation for patients that are combative and may cause further harm to self and others.
  - Midazolam 0.05mg/kg IV/IM or 0.1mg/kg IN (maximum dose 3 mg); may repeat once in 5 minutes, **OR**
  - Lorazepam 0.05mg/kg IV/IM (maximum dose 1 mg); may repeat once in 5 minutes, **OR**
  - Diazepam 0.1mg/kg IV (maximum dose 5 mg); may repeat once in 5 minutes.



### SIGNS OF HERNIATION (2 or More)

- Extensor posturing, lack of motor response to noxious stimuli.
- Asymmetric, dilated, or non-reactive pupils.
- Decrease in the GCS >2 points from a patient's best score, in a patient with an initial GCS <9.

### PEARLS:

- Prevention of hypoxia and hypotension are imperative to prevent secondary brain injury.
- Intubation should be approached with extreme caution as it has been associated with worse outcomes when performed in the out-of-hospital environment for patients with traumatic brain injury.

# 5.0

# Airway Management

**The goal of good airway management is good gas exchange.**

## ASSESSMENT

Each patient presents unique problems that cannot be fully outlined in any algorithm. As such, the provider must rely on thorough assessment techniques and consider each of the following:

**Airway Patency:** Assess for airway obstruction or risk of impending obstruction due to facial injuries, mass, foreign body, swelling, etc. Assess for presence/absence of gag reflex.

**Ventilatory Status:** Assess for adequate respiratory effort and impending fatigue/failure/apnea. Assess for accessory muscle use, tripod positioning, the ability of the patient to speak in full sentences. If available, assess quantitative waveform capnography.

**Oxygenation:** Any oxygen saturation <90% represents relatively severe hypoxia and should be considered an important warning sign. In addition to oxygen saturation, assess for cyanosis.

**Airway Anatomy:** Before attempting airway maneuvers or endotracheal intubation, especially with the use of RSI, assess patient anatomy to predict the probability of success and the need for backup device or technique.

- First, assess for difficulty of mask seal. Patients with facial hair, facial fractures, obesity, no teeth, pregnancy, extremes of age, and pathologically stiff lungs (COPD, acute respiratory distress syndrome, etc.) may require special mask techniques or alternatives.
- Next assess for difficulty of intubation. Patients with a short neck, the inability to open their mouth at least three finger widths (or other oral issues such as a large tongue or high arched palate), less than three finger-widths of thyromental distance (or a receding jaw), reduced atlanto-occipital movement (such as in suspected c-spine injury), obesity or evidence of obstruction (such as drooling or stridor) may be difficult to intubate.

## DEVISE A PLAN

1. Each patient will present unique challenges to airway management. Therefore, before any intervention is attempted, the provider should contemplate a plan of action that addresses the needs of the patient, anticipates complications, and management plan.
2. Airway management is a continuum of interventions, not an “all or none” treatment. Frequently patients may only need airway positioning or a nasal or oral airway to achieve adequate ventilation and oxygenation. Others will require more invasive procedures. The provider should choose the least invasive method that can be employed to achieve adequate ventilation and oxygenation.
3. Continually reassess the efficacy of the plan and change the plan of action as the patient’s needs dictate.
4. In children, a graded approach to airway management is recommended. Basic airway maneuvers and basic adjuncts followed by bag-valve-mask ventilation are usually effective.

## BASIC SKILLS

Mastery of basic airway skills is paramount to the successful management of a patient with respiratory compromise. Ensure a patent airway with the use of:

- Chin-lift/jaw-thrust
- Nasal airway (can be used in combination with oral airways, use with caution if suspected facial fractures)
- Oral airway (can be used in combination with nasal airways)
- Suction
- Removal of foreign body

Provide ventilation with a bag-valve-mask (BVM), consider using BVM with PEEP valve at 3 cmH<sub>2</sub>O. Proper use of the BVM includes appropriate mask selection and head positioning so sternal notch and ear are at the same level, to ensure a good seal. If possible, utilization of the BVM is best accomplished with two people: one person uses both hands to seal the mask and position the airway, while the other person provides ventilation, until chest rise. If the patient has some respiratory effort; synchronize ventilations with the patient’s own inhalation effort.

Procedure Continues 



## ADVANCED AIRWAY SKILLS

Only after basic procedures are deemed inappropriate or have proven to be inadequate should more advanced methods be used. Use the least invasive method Non-rebreather Face Mask (NRFM) → Bag-Valve-Mask (BVM) → Supraglottic Airway (SGA) → Endotracheal Intubation (ETT) → Cricothyrotomy (Cric). Procedures documenting the use of each device/technique listed below are found elsewhere in this manual.

**CPAP:** Continuous positive airway pressure (CPAP) has been shown to be effective in eliminating the need for intubation and in decreasing mortality in properly-selected patients with acute respiratory distress.

**Supraglottic Airways (SGA):** Utilization of supraglottic airways is an acceptable alternative to endotracheal intubation as both a primary device or a back-up device when previous attempt(s) at ETT placement have failed. Each device has its own set of advantages/disadvantages and requires a unique insertion technique. Providers should have access to, and intimate knowledge of, at least one supraglottic airway. Examples include:

- King LT
- Combitube/EasyTube (to be removed in 2017 protocols)
- LMA

**ETT:** The endotracheal tube was once considered the optimal method or “gold standard” for airway management. It is now clear, however, that the incidence of complications is unacceptably high when intubation is performed by inexperienced providers or monitoring of tube placement is inadequate. The optimal method for managing an airway will, therefore, vary based on provider experience, emergency medical services (EMS) or healthcare system characteristics, and the patient’s condition. Use capnography continuously for placement and CO<sub>2</sub> monitoring. Use video laryngoscopy, if available and trained.

**Bougie:** All providers who attempt ETT placement should become intimately familiar with the use of a Bougie. It is the device used most often by anesthesiologists and emergency physicians for helping guide placement when a difficult airway is encountered.

**Cricothyrotomy:** This procedure is indicated only when all other measures fail or you are presented with a situation in which intubation is contraindicated or in which you cannot intubate or otherwise ventilate the patient. Examples include:

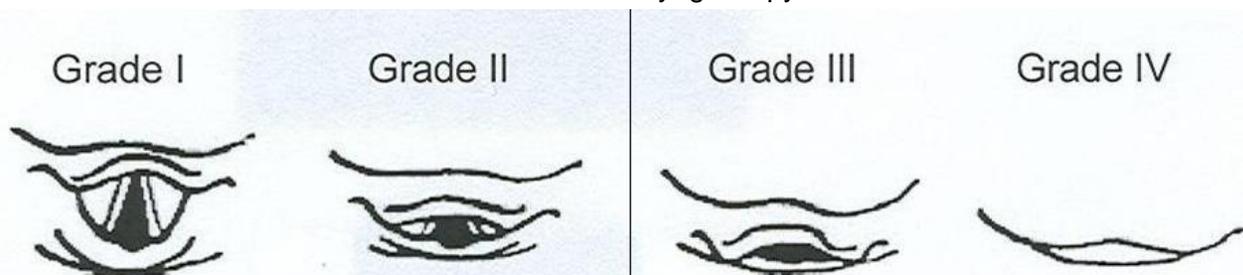
- Massive facial trauma
- Upper airway obstruction due to edema, mass or foreign body

## DOCUMENTATION

All efforts toward airway management should be clearly documented and, at the minimum, should include the following:

- Pre/post intervention vital signs including oxygen saturation as well as capnography (if available).
- Procedures performed/attempted, including number of failed attempts and who performed each attempt/procedure.
- Size of device(s) placed, depth of placement (if applicable).
- Placement confirmation: methods should include auscultation, condensation in the ETT, symmetrical chest wall rise, as well as quantitative waveform capnography, if available.

### Classifications for Laryngoscopy Views



# 5.1A Airway Management - Adult

## EMT STANDING ORDERS

E

- Routine patient care.
- Establish airway patency.
  - Open the airway.
  - Suction as needed.
  - Clear foreign body obstructions.
- Administer oxygen for oxygen saturation < 94% or shortness of breath.
- Consider inserting an oropharyngeal and/or nasopharyngeal airway adjunct.
- If patient has a tracheostomy tube, follow the procedure for [Tracheostomy Care Procedure 5.9](#).
- Assist ventilations with a bag-valve-mask device and supplemental oxygen as needed.
- For adult Cardiac Arrest: consider insertion of a supraglottic airway; see procedures for [Supraglottic Airways 5.8](#).

## ADVANCED EMT STANDING ORDERS

A

- For adults in severe respiratory distress (Asthma/COPD/Pulmonary Edema/Near Drowning) consider use of CPAP. See [CPAP Procedure 5.3](#).

## PARAMEDIC STANDING ORDERS

P

- Use least invasive method for respiratory failure. NRFM → BVM → SGA → ETT → Cric.
- For impending respiratory failure with intact gag reflex or trismus: consider Nasotracheal Intubation, see [Nasotracheal Intubation Procedure 5.5](#)).
- For apnea/respiratory failure or impending respiratory failure with impaired or absent gag reflex: consider supraglottic airway device or intubation. See [Supraglottic Airways 5.8](#) or [Orotracheal Intubation 5.9](#)).
- For adults with immediate, severe airway compromise where respiratory arrest is imminent and other methods of airway management are ineffective: consider Rapid Sequence Intubation see, [Rapid Sequence Intubation Prerequisite Procedure 7.3](#)).
  - **Note: this procedure is only to be used by paramedics who are trained and credentialed to perform RSI by the NH Bureau of EMS.**
- If feasible, place an OGT to decompress the stomach.
- If you cannot establish an airway or ventilate:
  - Consider [Cricothyrotomy – Percutaneous Procedure 5.2](#) OR
  - Consider [\\*Surgical Cricothyrotomy – Bougie Assisted Prerequisite Procedure 7.4](#).

**\*Note: this is a prerequisite procedure only to be used by paramedics who are trained and credentialed to perform bougie assisted surgical cricothyrotomy by the NH Bureau of EMS.**

# Airway Management – Pediatric 5.1P

## EMT STANDING ORDERS

**E**

- Routine patient care.
- Establish airway patency.
  - Open Airway.
    - Consider patient positioning by placing padding under shoulders to ensure sternal notch and ear are at the same level
  - Suction as needed.
  - Clear foreign body obstructions.
- If patient has a tracheostomy tube see [Tracheostomy Care 5.9](#).
- Consider additional help.
- For respiratory distress:
  - Administer high concentration oxygen (preferably humidified) via mask positioned on face or if child resists, held near face.
  - Administer oxygen for oxygen saturation < 94% or shortness of breath; observe for fatigue, decreased mentation, and respiratory failure.
  - For children with chronic lung disease or congenital heart disease, maintain or increase home oxygen level to patient's target saturations.
 

**Note:** Pulse oximetry is difficult to obtain in children. Do not rely exclusively on pulse oximetry. If child continues to exhibit signs of respiratory distress despite high oxygen saturation levels, continue oxygen administration.
- For respiratory failure or for distress that does not improve with oxygen administration:
  - Assist ventilations at rate appropriate for child's age. Reference [Pediatric Color Coded Appendix A3](#).
  - If unable to maintain an open airway through positioning, consider placing an oropharyngeal and/or nasopharyngeal airway.
- Determine if child's respiratory distress/failure is caused by a preexisting condition
  - For Allergic Reaction/Anaphylaxis, refer to the [Allergic Reaction/Anaphylaxis Protocol 2.2P](#).
  - For Asthma/Reactive Airway Disease/Croup, refer to the [Asthma/Bronchiolitis/Croup Protocol 2.4P](#).
- For Pediatric Cardiac Arrest: consider insertion of a supraglottic airway; see procedures for [Supraglottic Airways 5.8](#).

## ADVANCED EMT STANDING ORDERS

**A**

- For pediatrics in severe respiratory distress due to asthma consider use of CPAP. See [CPAP Procedure 5.3](#).

## PARAMEDIC STANDING ORDERS

**P**

- Use least invasive method for respiratory failure. NRFM → BVM → SGA → ETT → Cric. Proceed to advanced airway only if airway can not be maintained with positioning or ventilated via BVM.
- If feasible, place an OGT to decompress the stomach.
- If you cannot establish an airway or ventilate, see [Cricothyrotomy Percutaneous Procedure 5.2](#).

Pediatric Respiratory Distress	Pediatric Respiratory Failure
<ul style="list-style-type: none"> <li>• Child is able to maintain adequate oxygenation by using extra effort to move air.</li> <li>• Signs include increased respiratory rate, sniffing position, nasal flaring, abnormal breath sounds, head bobbing, intercostal retractions, mild tachycardia.</li> </ul>	<ul style="list-style-type: none"> <li>• Hallmarks of respiratory failure are respiratory rate less than 20 breaths per minute for children &lt;6 years old; less than 12 breaths per minute for children &lt;16 years old; and &gt;60 breaths per minutes for any child; cyanosis, marked tachycardia or bradycardia, poor peripheral perfusion, decreased muscle tone, and depressed mental status.</li> </ul>

Respiratory distress in children and infants must be promptly recognized and aggressively treated as patient may rapidly decompensate.

## 5.2 Cricothyrotomy - Percutaneous

This procedure cannot be performed until the provider has received training from their EMS unit on the commercial device selected and is deemed competent. The device and training must be approved by the EMS unit's Medical Director. **Written notification will be provided to the Medical Resource Hospital's EMS Medical Director, Hospital EMS Coordinator, and Bureau of EMS within 48 hours of an event.** Use of this procedure documented under "Procedures Used" in the Patient Care Report constitutes notification of the Bureau of EMS.

### PARAMEDIC STANDING ORDERS

This protocol is intended for the use of commercially prepared rapid cricothyrotomy devices. Devices requiring use of a guide wire may not be used. Approved devices have a plastic cannula preloaded onto a metal introducer (e.g., Rusch QuickTrach).



- Devices may be utilized on patients of any age for which they are designed and appropriate sizes are available.
- If anatomical landmarks cannot be identified the procedure should not be performed.

### INDICATIONS:

Inability to adequately oxygenate and ventilate using less invasive methods including BVM, supraglottic airways and endotracheal intubation.

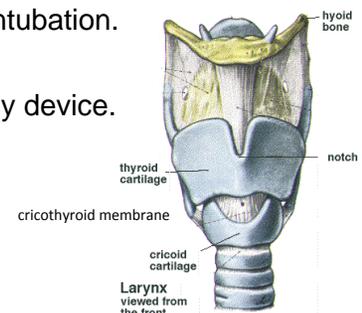
### EQUIPMENT:

- Commercially prepared percutaneous cricothyrotomy device.
- Chlorhexadine wipes.
- Bag-valve-mask.
- Quantitative Waveform ETCO<sub>2</sub>.

### PROCEDURE:

(May vary slightly with different devices)

1. Position the patient supine and extend the neck as needed to improve anatomic view.
2. Prepare neck with Chlorhexidine.
3. Using non-dominant hand, stabilize larynx and locate the following landmarks: thyroid cartilage (Adam's apple) and cricoid cartilage (solid ring below the thyroid cartilage). The cricothyroid membrane lies between these cartilages.
4. Insert needle bevel through soft tissue and cricothyroid membrane at 90-degree angle while aspirating with syringe.
5. As soon as air is freely aspirated stop advancing the needle as this indicates entry into the trachea.
6. Direct the needle tip inferiorly by modifying angle to 60-degrees from the patient's head. Advance the assembly until the stopper is in contact with the skin. (Note: If air is not freely aspirated and the stopper has contacted the skin the stopper may need to be removed in order to reach the trachea. Be aware that if the stopper is removed there is increased risk of perforating the posterior aspect of the trachea.)
7. Remove the stopper while holding assembly firmly in place.
8. Hold the needle firmly in place and advance only the plastic cannula off the needle into the trachea until the flange rests on the neck. Carefully remove the needle and syringe.
9. Secure cannula in place with neck strap.
10. Inflate cuff if one is present.
11. Apply BVM with waveform ETCO<sub>2</sub> and ventilate the patient.
12. Confirm placement by assessing for bilateral lung sounds and presence of quantitative and qualitative ETCO<sub>2</sub>.
13. Frequently reassess placement and continuously monitor ETCO<sub>2</sub>.



# Continuous Positive Airway Pressure (CPAP) 5.3

## ADVANCED EMT STANDING ORDERS

### INDICATIONS

- Spontaneously breathing patient in severe respiratory distress due to Asthma/COPD, Congestive Heart Failure / Pulmonary Edema, Pneumonia or Drowning.

### CONTRAINDICATIONS

- Cardiac/Respiratory arrest.
- Unable to follow commands.
- Unable to maintain their own airway.
- Agitated or combative behavior.
- Vomiting and/or active upper GI bleed.
- Respiratory distress secondary to trauma.
- Suspicion of pneumothorax.
- Pediatric patient who is too small for the masks size available.

### PROCEDURE

# A

1. **Ensure adequate oxygen supply for CPAP device.**
2. Explain procedure to patient. Be prepared to coach patient for claustrophobia or anxiety.
3. Place patient in upright position. Apply pulse oximetry, capnography nasal capture device and ECG as available and trained.
4. Choose appropriate sized device mask for patient, assemble the CPAP device, attach to oxygen supply and insure oxygen is flowing (follow manufacturers directions for preparation for your particular device).
5. Place mask over face and secure with straps until minimal air leak.
6. Adjust Positive End Expiratory Pressure (PEEP) to 5-10 cmH<sub>2</sub>O to effect for patient condition.
7. Recheck mask for leaks and adjust straps as needed to minimize air leaks.
8. Reassure anxious patient.
9. Monitor pulse oximetry, quantitative waveform capnography and ECG as available and trained.
10. If patient stabilizes, maintain CPAP for duration of transport and notify receiving hospital to prepare for a CPAP patient.
11. If patient begins to deteriorate, discontinue CPAP and assist respirations by BVM
12. Document CPAP procedure, including time and provider. Document serial pulse oximetry and capnography readings to demonstrate effects.

## PARAMEDIC STANDING ORDERS

# P

- Consider supraglottic airway, intubation
- Consider Rapid Sequence Intubation (if trained and credentialed)
- Consider administering anxiolytic:
  - Midazolam 2.5mg IV/IN may repeat once in 5 minutes or; 5mg IM may repeat once in 10 minutes **OR**
  - Lorazepam 0.5 – 1mg IV may repeat once in 5 minutes or; 1 – 2mg IM may repeat once in 10 minutes **OR**
  - Diazepam 5mg IV (then 2.5mg every 5 minutes to total of 20mg)



Administer benzodiazepines with caution in patients with signs of hypercarbia.

# Gum Elastic Bougie/Flexguide – Adult

## PARAMEDIC STANDING ORDERS – ADULT

### INDICATIONS

- Unable to fully visualize vocal cords during an intubation attempt.
- To facilitate routine placement of endotracheal tube.

### LIMITATIONS

- Adult Bougies should not be used on less than 6.0 ETT.

### PROCEDURE

1. Lubricate Bougie with water-based lubricant.
2. Using a laryngoscope (Macintosh or Miller blade) and standard intubation techniques, attempt to visualize the vocal cords.
3. If the vocal cords are partially visualized, pass the Bougie through the cords while attempting to feel the signs of tracheal placement (see below). The Bougie is advanced until the black line on the Bougie reaches the lip line.
4. If the vocal cords are not visualized, pass the Bougie behind the epiglottis, guiding the tip of the Bougie anteriorly towards the trachea, and assess for signs of tracheal placement (see below).
5. With the laryngoscope still in place, have an assistant load the ETT over the Bougie and slide it to the level of the lip line.
6. Advance the ETT over the Bougie, rotating the ETT about 1/4 turn counterclockwise so that the bevel is oriented vertically as the ETT passes through the vocal cords. This maneuver allows the bevel to gently spread the arytenoids with a minimum of force, thus avoiding injury. If resistance is felt, withdraw the ETT, rotating it in a slightly more counterclockwise direction, and advance the tube again. Advance the tube to a lip-line of 24 cm in an adult male, and 22 cm in an adult female.
7. Holding the ETT firmly in place, have an assistant remove the Bougie.
8. Remove the laryngoscope.
9. Inflate the cuff with 5 – 10 ml of air.
10. Follow the procedures outlined in Procedure: [Orotracheal Intubation 5.6](#) to confirm placement, secure the ETT, monitor and document placement of the ETT.

### SIGNS OF TRACHEAL PLACEMENT

- The Bougie is felt to stop or get “caught up” as the airway narrows and is unable to be advanced further. This is the most reliable sign of proper Bougie placement. If the Bougie enters the esophagus, it will continue to advance without resistance.
- It may be possible to feel the tactile sensation of “clicking” as the Bougie tip is advanced downward over the rigid cartilaginous tracheal rings.
- The Bougie can be felt to rotate as it enters a mainstem bronchus. Usually it is a clockwise rotation as the Bougie enters the right mainstem bronchus, but occasionally it will rotate counterclockwise if the Bougie enters the left mainstem bronchus.
- If the patient is not paralyzed, he/she may cough.

P

### PEARLS:

- BVM ventilation can be performed, as needed (e.g. hypoxia), with a Bougie in place prior to insertion of the endotracheal tube.

## PARAMEDIC STANDING ORDERS - ADULT

### INDICATIONS

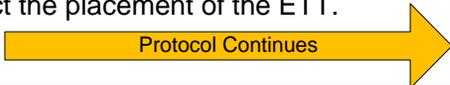
- Impending respiratory failure, with intact gag reflex or jaw is clenched and unable to be opened. Only after basic procedures are deemed inappropriate or have proven to be inadequate should more advanced methods be used. Use a graded approach for treatment by using least invasive method first. NRFM → BVM → SGA → ETT → Cric.

### CONTRAINDICATION

- Apnea.
- Nasal obstruction.
- Suspected basilar skull fracture.
- Patient fits on a pediatric length-based resuscitation tape (e.g., Broselow Tape).

### PROCEDURE

1. Pre-medicate nasal mucosa with 2% lidocaine jelly and nasal decongestant spray, if available.
2. Pre-oxygenate the patient.
3. Select the largest and least obstructed nostril and insert a lubricated nasal airway to help dilate the nasal passage.
4. Lubricate the ETT with water-based lubricant.
5. Remove the nasal airway and gently insert the ETT with continuous quantitative waveform capnography monitoring, keeping the bevel toward the septum (a gentle rotation movement may be necessary at the turbinates).
6. Continue to advance the ETT while listening for maximum air movement and watching for capnography wave form.
7. At the point of maximum air movement, indicating proximity to the level of the glottis, gently and evenly advance the tube through the glottic opening on inspiration.
  - If resistance is encountered, the tube may have become lodged into the pyriform sinus and you may note tenting of the skin on either side of the thyroid cartilage. If this happens, slightly withdraw the ETT and rotate it toward the midline and attempt to advance tube again with the next inspiration.
8. Upon entering the trachea, the tube may cause the patient to cough, buck, strain, or gag. This is normal. Do not remove the ETT. Be prepared to control the cervical spine and the patient, and be alert for vomiting.
9. Placement depth from the nares to the tip of the tube should be approximately 28cm in males and 26 cm in females.
10. Inflate cuff with 5 – 10ml of air.
11. Confirm appropriate placement by quantitative waveform capnography, symmetrical chest-wall rise, auscultation of equal breath sounds over the chest and a lack of epigastric sounds with bagging, and condensation in the ETT.
12. Secure the ETT, consider applying a cervical-collar and securing patient to a long backboard (even for the medical patient) to protect the placement of the ETT.

Protocol Continues 

P

Protocol Continued**PARAMEDIC STANDING ORDERS**

13. Ongoing monitoring of ETT placement and ventilation status using waveform capnography is required for all patients.
14. Document each attempt as a separate procedure so it can be time stamped in the ePCR. **An attempt is defined as placement of the tube into the patient's nare.** For each attempt, document the time, provider, placement success, pre-oxygenation, airway grade, ETT size, placement depth, placement landmark (e.g. cm at the patient's lip), and confirmation of tube placement including chest rise, bilateral, equal breath sounds, absence of epigastric sounds and end-tidal CO<sub>2</sub> readings.

If continued intubation attempts are unsuccessful (maximum of 3 attempts) consider Cricothyrotomy. See [Cricothyrotomy Procedures 5.2 OR 7.4](#).

**POST INTUBATION CARE - ADULT**

Sedation:

- Midazolam 2 – 5 mg IV, every 5 – 10 minutes as needed, **OR**
- Lorazepam 1 – 2mg IV every 15 minutes as needed (maximum: 10mg) **AND**
- Fentanyl 50 – 100 micrograms IV.

**P**

## PARAMEDIC STANDING ORDERS – ADULT & PEDIATRIC

### INDICATIONS

- Apnea/respiratory failure, impending respiratory failure, impaired or absent gag reflex. Only after basic procedures are deemed inappropriate or have proven to be inadequate should more advanced methods be used. Use a graded approach for treatment by using least invasive method first. NRFM → BVM → SGA → ETT → Cric.

### CONTRAINDICATION

- Epiglottitis.
- Facial or neck injuries that prohibit visualization of airway anatomy (relative).

### PROCEDURE

1. Prepare all equipment and have suction ready.
2. Pre-oxygenate the patient.
3. Open the patient's airway. While holding the laryngoscope in the left hand, insert the blade into the right side of the patient's mouth, sweeping the tongue to the left. Use video laryngoscopy, if available and trained.
4. Use the blade to lift the tongue and the epiglottis, either directly with the straight (Miller) blade, or indirectly with the curved (Macintosh) blade.
5. Once the glottic opening is visualized, insert the tube through the vocal cords and continue to visualize while passing the cuff through the cords.
6. Remove the laryngoscope and then the stylet from the ETT.
7. Inflate the cuff with 5 – 10ml of air.
8. Confirm appropriate proper placement by quantitative waveform capnography, symmetrical chest-wall rise, auscultation of equal breath sounds over the chest and a lack of epigastric sounds with ventilations using bag-valve-mask and condensation in the ETT.
9. Secure the ETT, consider applying a cervical-collar and securing patient to a long backboard (even for the medical patient) to protect the placement of the ETT.
10. Reassess tube placement frequently, especially after movement of the patient.
11. Ongoing monitoring of ETT placement and ventilation status using waveform capnography is required for all patients.
12. Document each attempt as a separate procedure so it can be time stamped in the ePCR. **An attempt is defined as placement of the blade into the patient's mouth.** For each attempt, document the time, provider, placement success, pre-oxygenation, airway grade, ETT size, placement depth, placement landmark (e.g. cm at the patient's lip), and confirmation of tube placement including chest rise, bilateral, equal breath sounds, absence of epigastric sounds and end-tidal CO<sub>2</sub> readings.

P

Protocol Continues 

# 5.6

# Orotracheal Intubation



## PARAMEDIC STANDING ORDERS – ADULT & PEDIATRIC

If intubation attempt is unsuccessful, ETT placement cannot be verified or ETT becomes dislodged:

- Monitor oxygen saturation and end-tidal CO<sub>2</sub> **AND**
- Ventilate the patient with 100% oxygen via a BVM until ready to attempt intubation again.

If continued intubation attempts are unsuccessful (maximum of 3 attempts) consider Cricothyrotomy. See [Cricothyrotomy Procedure 5.2 OR 7.4](#).

### POST INTUBATION CARE – ADULT

Sedation:

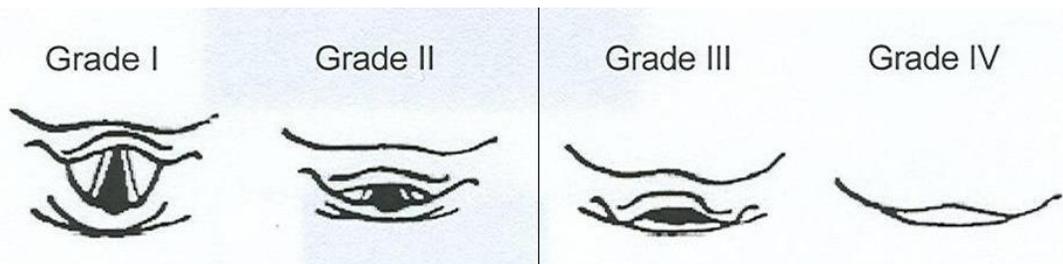
- Midazolam 2 – 5 mg IV, every 5 – 10 minutes as needed, **OR**
- Lorazepam 1 – 2mg IV every 15 minutes as needed (maximum: 10mg). **AND**
- Fentanyl 50 – 100 micrograms slow IV push.

### POST INTUBATION CARE – PEDIATRIC

Sedation:

- Fentanyl 2-3 micrograms/kg IV.

Airway Procedure 5.6



Classifications for Laryngoscopy Views

# Suctioning of Inserted Airway 5.7

## EMT/ ADVANCED EMT / PARAMEDIC STANDING ORDERS

### INDICATIONS

- Obstruction of the airway (secondary to secretions, blood, and/or any other substance) in a patient currently being assisted by an inserted airway such as an endotracheal tube, or King LTD. For tracheostomy tube see [Tracheostomy Care 5.9](#).

### CONTRAINDICATIONS

- None.

### PROCEDURE

1. Ensure the suction device is operable.
2. Pre-oxygenate the patient.
3. While maintaining aseptic technique, attach the suction catheter to the suction unit.
4. If applicable, remove ventilation device from the airway.
5. Insert the sterile end of the suction catheter into the tube without suction. Insert until resistance is met; pull back approximately 1 – 2cm.
6. Once the desired depth is met, apply suction by occluding the port of the suction catheter and slowly remove the catheter from the tube using a twisting motion.
7. Suctioning duration should not exceed 10 seconds, using lowest pressure that effectively removes secretions.
8. Saline flush may be used to help loosen secretions and facilitate suctioning.
9. Re-attach the ventilation device to the patient.

E/  
A/  
P

# Supraglottic Airway Adult & Pediatric

This protocol applies to commercially available supraglottic airway devices. It replaces other protocols which were written for specific devices. These airways must be used as directed by the manufacturer's guidelines. They may be used in all age groups for which the devices are designed. Providers must be trained on and competent with the airway device they will be using.

The airway devices approved by the NH Bureau of EMS and Medical Control Board are:

- Single Lumen Device (e.g., King, iGel, LMA Supreme).
- Double Lumen Device (e.g., Combitube, to be removed in 2017 protocols).

## EMT/ADVANCED EMT STANDING ORDERS

### INDICATIONS:

- Cardiac Arrest.

### RELATIVE CONTRAINDICATIONS:

- Intact gag reflex.
- Active vomiting.
- Severe maxillofacial or oral trauma.
- Latex allergy (Combitube).
- For devices inserted into the esophagus:
  - The patient has known esophageal disease.
  - The patient has ingested a caustic substance.
  - The patient has burns involving the airway.

### PROCEDURE:

- Insertion procedure should follow manufacturer guidelines as each device is unique.
- Confirm appropriate placement by symmetrical chest-wall rise, auscultation of equal breath sounds over the chest and a lack of epigastric sounds with bag valve mask ventilation, and quantitative waveform capnography, if available.
- Secure the device.
- Document the time, provider, provider level and success for the procedure. Complete all applicable airway confirmation fields including chest rise, bilateral, equal breath sounds, absence of epigastric sounds and end-tidal CO<sub>2</sub> readings.
- Reassess placement frequently, especially after patient movement.

### INDICATIONS:

- Inability to adequately ventilate a patient with a bag-valve-mask or longer EMS transports requiring a more definitive airway.
- Back up device for failed endotracheal intubation attempt.

### POST TUBE PLACEMENT CARE – ADULT

- If a supraglottic airway device has an orogastric tube port, consider placement of an orogastric tube to decompress the stomach after the airway is secured.

Sedation may be used if required once a supraglottic airway is in place:

- Midazolam 2 – 5 mg IV, every 5 – 10 minutes, as needed, **OR**
- Lorazepam 1- 2 mg IV, may every 15 minutes as needed (maximum: 10mg) **AND**
- Fentanyl 50 – 100 mcg, slow IV push.

### POST TUBE PLACEMENT CARE – PEDIATRIC

Sedation:

- Fentanyl 2-3 micrograms/kg IV.

E/A

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## EMT/ADVANCED EMT STANDING ORDER – ADULT & PEDIATRIC

### INDICATIONS

- An adult or pediatric patient with an established tracheostomy in respiratory distress or failure.

### PROCEDURE

- Consult with the patient's caregivers for assistance.
- Assess tracheostomy tube: Look for possible causes of distress which may be easily correctable, such as a detached oxygen source.
- If the patient's breathing is adequate but exhibits continued signs of respiratory distress, administer high-flow oxygen via non-rebreather mask or blow-by, as tolerated, over the tracheostomy.
- If patient's breathing is inadequate, assist ventilations using bag-valve-mask device with high-flow oxygen.
- If on a ventilator, remove the patient from the ventilator prior to using bag valve mask device as there may be a problem with the ventilator or oxygen source.
- Suction if unable to ventilate via tracheostomy or if respiratory distress continues.
- Use no more than 100 mmHg suction pressure.
- If the tracheostomy tube has a cannula, remove it prior to suctioning.
- Determine proper suction catheter length by measuring the obturator.
- If the obturator is unavailable, insert the suction catheter approximately 2 – 3 inches into the tracheostomy tube. **Do not use force!**
- 2 – 3ml saline flush may be used to help loosen secretions.
- If the patient remains in severe distress, continue ventilation attempts using bag valve mask with high-flow oxygen via the tracheostomy. Consider underlying reasons for respiratory distress and refer to the appropriate protocol for intervention.

E/A

## PARAMEDIC STANDING ORDERS – ADULT & PEDIATRIC

### INDICATIONS

- An adult or pediatric patient with an established tracheostomy, in respiratory distress or failure where EMT and Advanced EMT tracheostomy interventions have been unsuccessful.
- Dislodged tracheostomy tube.

### CONTRAINDICATIONS

- None.

### PROCEDURE:

- If the patient continues in severe respiratory distress, remove tracheostomy tube and attempt bag valve mask ventilation.
- If another tube is available from caregivers, insert into stoma and resume ventilation (a standard endotracheal tube may be used or the used tracheostomy tube, after being cleaned).
- If unable to replace tube with another tracheostomy tube or endotracheal tube, assist ventilations with bag valve mask and high-flow oxygen.

P

# 5.10

# Ventilator

# P

## PARAMEDIC – ADULT & PEDIATRIC

### PURPOSE

- To define the methodology and practice for using a mechanical ventilator.
- To optimize oxygenation and ventilation of endotracheally intubated patients as well as patients with supraglottic airways.

### INDICATIONS

- Adult patients with advanced airways placed by EMS prehospital. The use of ventilators in the PIFT environment is not addressed by this protocol.
- Adult and pediatric patients on their own ventilator:
  - If the ventilator is operational, transport patient with their ventilator and caregiver on previously prescribed ventilator settings.
  - If the ventilator is inoperable, assist caregiver with troubleshooting using the SCOPE mnemonic (see below). Use bag valve mask device and transition to EMS ventilator as necessary, if available.

### CONTRAINDICATIONS

- Pediatric patients with advanced airway placed by EMS.

### SPECIAL CONSIDERATIONS

- All patients receiving mechanical ventilation will have an appropriate size BVM with mask, an appropriately sized OPA, and a 10cc luer lock syringe readily accessible.

### SETTINGS

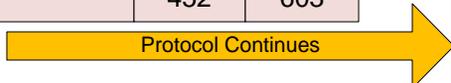
The following initial settings are recommended:

**Mode:** Assist Control (AC) – Volume.

**Tidal Volume:** 6-8 mL/kg of Ideal Body Mass (see charts below):

MALE		
Height in Ft/In	6 mL/kg	8 mL/kg
5.0	314	418
5.1	320	426
5.2	328	437
5.3	341	455
5.4	355	474
5.5	369	492
5.6	383	510
5.7	397	529
5.8	410	547
5.9	424	566
5.10	438	584
5.11	452	602
6.0	466	621
6.1	479	639

FEMALE		
Height in Ft/In	6 mL/kg	8 mL/kg
5.0	286	382
5.1	293	390
5.2	300	400
5.3	314	406
5.4	328	438
5.5	342	456
5.6	356	474
5.7	370	493
5.8	383	511
5.9	397	530
5.10	411	548
5.11	425	566
6.0	439	585
6.1	452	603





## PARAMEDIC – ADULT & PEDIATRIC

**Rate:** Initially 8 - 12, titrate to appropriate EtCO<sub>2</sub> based on patient's condition (e.g. severe asthma, aspirin overdose, traumatic brain injury).

**FiO<sub>2</sub>:** Start at 100% FiO<sub>2</sub>, then titrate to maintain SpO<sub>2</sub>>94% (90% for COPD patients).

**PEEP:** 2 to 5 cmH<sub>2</sub>O.

### ALARM SETTINGS

- High pressure alarm: 30 cmH<sub>2</sub>O.
- Low pressure alarm, if available: 4 cmH<sub>2</sub>O.



Further adjustments in ventilator settings may be done in conjunction with on or offline **Medical Control**.

# P

### SCOPE

- S: Suction
- C: Connections
- O: Obstructions
- P: Pneumothorax
- E: Equipment/Tube Dislodgement

# 6.0

# 12-Lead ECG Acquisition

## EMT/ADVANCED EMT/PARAMEDIC STANDING ORDER

Obtain 12 lead ECG with baseline vitals within 10 minutes if available and practical and transmit per local guidelines.

### INDICATIONS

- Congestive Heart Failure/Pulmonary Edema.
- Dysrhythmias.
- Suspected Acute Coronary Syndrome.
- Syncope.
- Shortness of breath.
- Stroke/CVA.

### PROCEDURE

1. Prepare ECG Monitor and connect cable with electrodes.
2. Properly position the patient (supine or semi-reclined).
3. Enter patient information (e.g., name, age, gender) into monitor.
4. Prep chest as necessary, (e.g., hair removal, skin prep pads).
5. Apply chest and extremity leads using recommended landmarks:
  - RA – Right arm or shoulder.
  - LA – Left arm or shoulder.
  - RL – Right leg or hip.
  - LL – Left leg or hip.
  - V1 – 4<sup>TH</sup> intercostal space at the right sternal border.
  - V2 – 4<sup>TH</sup> intercostal space at the left sternal border.
  - V3 – Directly between V2 and V4.
  - V4 – 5<sup>th</sup> intercostal space midclavicular line.
  - V5 – Level with V4 at left anterior axillary line.
  - V6 – Level with V5 at left midaxillary line.
6. Instruct patient to remain still.
7. Acquire the 12 lead ECG.
8. If 12 lead ECG indicates a STEMI (e. g., ECG identifies \*\*\*Acute MI Suspected\*\*\* and/or Paramedic interpretation) transport patient to the most appropriate facility in accordance with local STEMI guidelines/agreements. Notify receiving facility of a "STEMI Alert".
9. For patients with continued symptoms consistent with acute coronary syndrome, perform repeat ECGs during transport to evaluate for evolving STEMI.
10. Copies of 12 lead ECG labeled with the patient's name and date of birth should be left with the receiving hospital.
11. Document the procedure and time of the ECG acquisition in appropriate section of the Patient Care Record.

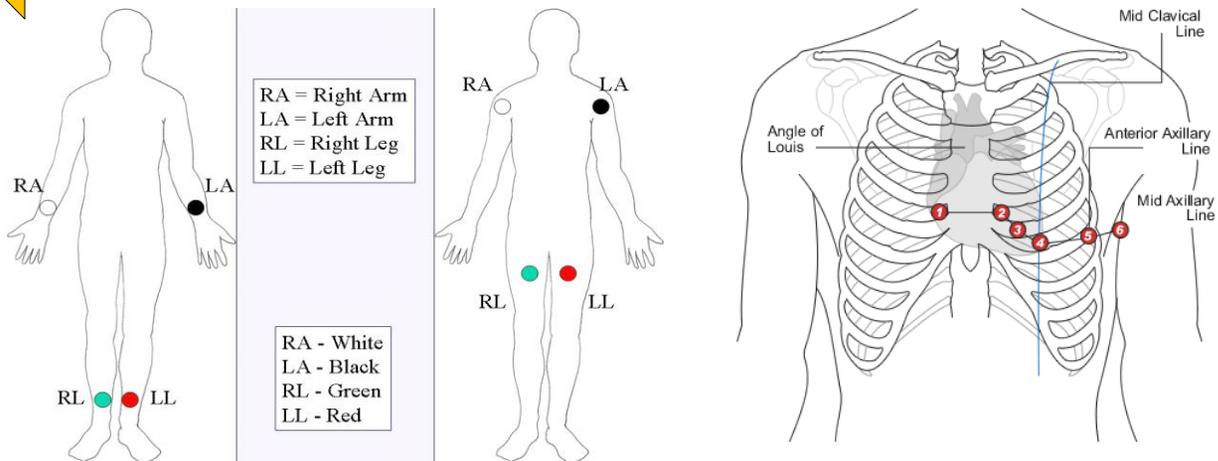
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Procedure 6.0

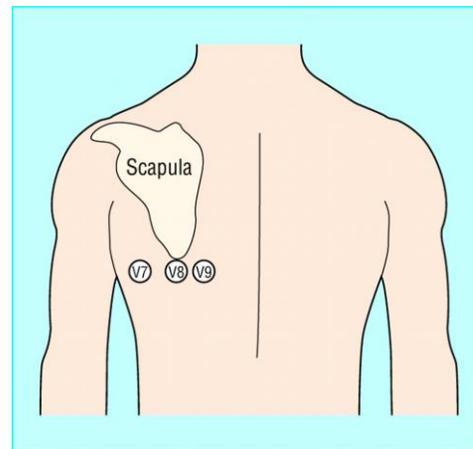
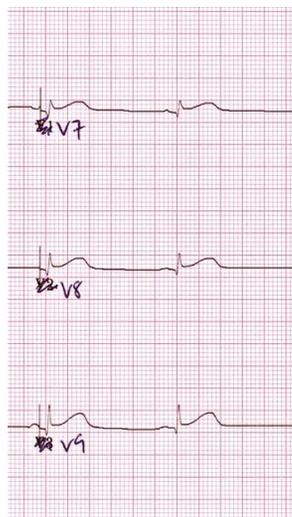
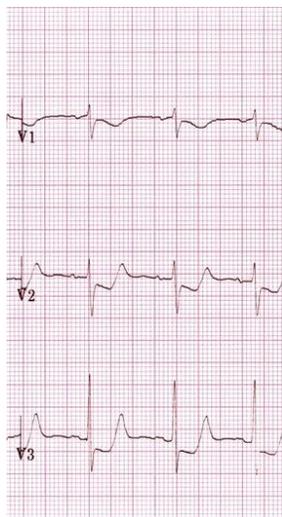
Protocol Continues 

# 6.0 12-Lead ECG Acquisition

Protocol Continued



Consider posterior leads for suspected isolated posterior STEMI



## PEARLS:

- Ensure the patient's age is entered for proper interpretation.
- When transmitting either include the patient's name or notify the receiving facility of the patient's identity.
- Be alert for causes of artifact: dry or sweaty skin, dried out electrodes, patient movement, cable movement, vehicle movement, electromagnetic interference, static electricity
- According to manufacturers, dried out electrodes are a major source of artifact; keep in original sealed foil pouches; plastic bags are not sufficient; use all the same kind of electrodes; press firmly around the edge of the electrode, not the center.
- Sweaty patients should be dried thoroughly. Consider tincture of benzoin. Dry skin is especially problematic. Clean the site (e.g., alcohol prep pad) and gently abrade skin using a towel or 4x4 gauze. Consider ECG skin prep pad, fine sandpaper, or 3M green scrubby.
- Check for subtle movement: toe tapping, shivering, muscle tension (e.g., hand grasping rail or head raised to "watch")

# 6.1

# Intraosseous Access

## ADVANCED EMT/PARAMEDIC STANDING ORDERS– ADULT & PEDIATRIC

### Provider Level Approved

- Advanced EMT, commercial intraosseous introduction device (e.g., EZ-IO) (EMT-Intermediates must have transitioned to the Advanced EMT licensure to perform pediatric IO insertion and/or administer lidocaine 2%).
- Paramedic.

### Definition

Intraosseous insertion establishes access in a patient where venous access cannot be rapidly obtained. The bone marrow space serves as a “noncollapsible vein” and provides access to the general circulation for the administration of fluids and resuscitation drugs. This protocol applies to all appropriate IO insertion sites.

### Indication

- Drug or fluid resuscitation of a patient in need of immediate life-saving intervention and unable to rapidly obtain peripheral IV access.
- May be used as a primary vascular device in cardiac arrest.

### Contraindications

- Placement in or distal to a fractured bone.
- Placement near prosthetic limb, joint or orthopedic procedure.
- Placement at a burn or infected site.

### Complications

- Infusion rate may not be adequate for resuscitation of ongoing hemorrhage or severe shock, extravasation of fluid, fat embolism, and osteomyelitis (rare).

### Equipment:

- 15 – 19 gauge bone marrow needle or FDA-approved commercial intraosseous infusion device.
- Povidone-iodine or chlorhexidine solution and gloves.
- Primed IV tubing, IV stopcock, solution.
- 10ml syringe with 0.9% NaCl.
- Pressure pump/bag or 60ml syringe for volume infusion or slow push.
- 1 vial of 2% lidocaine (preservative free) .
- 5mL syringe.

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Procedure 6.1



**EMT-Intermediates MUST have transitioned to the Advanced EMT licensure to perform pediatric IO insertion.**

Procedure Continues

← Procedure Continued

## Procedure:

When using an FDA-approved commercial IO device, follow manufacturer's instructions.

1. Place the patient in a supine position.
2. Identify the bony landmarks as appropriate for device.
3. Prep the site.
4. Needle is appropriately placed if the following are present:
  - Aspiration with syringe yields blood with marrow particulate matter.
  - Infusion of saline does not result in infiltration at the site.
  - Needle stands without support.
5. Attach IV tubing, with or without stopcock.
6. Prior to IO syringe bolus (flush) or continuous infusion in alert patients:
  - Ensure that the patient has no allergies or sensitivity to lidocaine.
  - SLOWLY administer lidocaine 2% (preservative free) through the IO device catheter into the medullary space.
  - Allow 2 – 5 minutes for anesthetic effects, if feasible:
    - Adult: 1 – 2.5ml (20 – 50mg) 2% lidocaine.
    - Pediatric: 0.5mg/kg 2% lidocaine.
7. Flush with 10ml of 0.9% NaCl rapid bolus prior to use:
  - Recommend use of a stop cock inline with syringe for bolus infusions.
  - Use a pressure bag for continuous 0.9% NaCl infusions.
  - Infuse emergent pressors using an IV pump.
8. Stabilize needle:
  - Consider utilizing a commercially available stabilization device as recommended by the manufacturer, **OR**
  - Stabilize needle on both sides with sterile gauze and secure with tape (avoid tension on needle).

A/P



**EMT-Intermediates must have transitioned to the Advanced EMT licensure to administer lidocaine 2%.**

## 6.2 Quantitative Waveform Capnography

### EMT/ADVANCED EMT/PARAMEDIC STANDING ORDERS

#### Indications:

- Confirmation of and ongoing monitoring of ETT and supraglottic airway device placement and ventilation status in both adult and pediatric patients, see [Airway Management – Adult 5.1A/Pediatric 5.1P](#), [Nasotracheal 5.5](#), [Orotracheal Intubation 5.6 Protocols](#), [Supraglottic Airways 5.8](#).
- To confirm and document ETT and supraglottic airway device placement, after every move, and at transfer of care.
- ETCO<sub>2</sub> should be used when respiratory distress is significant and or patient does not respond to initial beta-agonist treatment, see [Asthma, COPD, RAD 2.4A OR Asthma, Bronchiolitis, Croup 2.4P](#).
- Routine monitoring of ventilation status in patients with altered mental status or patients with a history of asthma, CHF, diabetes, circulatory shock, pulmonary embolus and or acidosis.
- Monitoring of CPR quality and for signs of return of spontaneous circulation (ROSC) in cardiac arrest patients. High quality chest compressions are achieved when the ETCO<sub>2</sub> is at least 10-20 mmHg. If ETCO<sub>2</sub> abruptly increases it is reasonable to consider that this as an indicator of ROSC.
- To assist with termination of resuscitation efforts when ETCO<sub>2</sub> is <20 mmHg despite adjusting the quality of chest compressions. Low CO<sub>2</sub> production after 20 minutes of effective CPR is a predictor of mortality. See [Resuscitation Initiation & Termination Policy 8.16](#).
- Monitoring patients following administration of narcotic pain medications or sedatives for evidence of hypoventilation and/ or apnea.
- For head injuries see, [Traumatic Brain Injury Protocol 4.7](#).

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#### Procedure:

1. Attach the sensor to endotracheal tube, supraglottic airway, BVM or apply cannula with ETCO<sub>2</sub> mouth scoop or bi-cannula.
2. Observe numeric capnometry CO<sub>2</sub> level, (normal ETCO<sub>2</sub> range 35-45 mmHg) and real-time capnography waveforms.
3. Numeric capnometry as well as capnography morphology should be documented for patients undergoing airway management, cardiac arrest, altered mental status and respiratory distress.

#### Notes:

- High levels of CO<sub>2</sub> (>45 mmHg) may indicate hypoventilation/CO<sub>2</sub> retention, considering adjusting rate and depth of ventilation.
- Low levels of CO<sub>2</sub> (< 35 mmHg) may indicate hyperventilation, low perfusion, pulmonary embolus and/or sepsis, consider adjusting rate and depth of ventilation.
- Colorimetric CO<sub>2</sub> detectors are not an alternative to quantitative waveform capnography. ETT and supraglottic airway device placement should always be confirmed using quantitative waveform capnography.



Any abrupt loss of ETCO<sub>2</sub> detection or waveform may indicate a catastrophic failure of the airway, apnea, and/or cardiac arrest warranting assessment of the airway, breathing, circulation, and/ or airway device.

## EMT/ ADVANCED EMT STANDING ORDERS

### INDICATIONS

Any patient who may harm himself, herself, or others may be restrained to prevent injury to the patient or crew. Restraining must be performed in a humane manner and used only as a last resort.

### PROCEDURE

2. Request law enforcement assistance, as necessary.
3. When appropriate, attempt less restrictive means of managing the patient, including verbal de-escalation.
4. Ensure that there are sufficient personnel available to physically restrain the patient safely.
5. Restrain the patient in a lateral or supine position. No devices such as backboards, splints, or other devices may be placed on top of the patient. Never hog-tie a patient. In order to gain control, the patient may need to be in a prone position, but must be moved to supine or lateral position as soon as possible.
6. The patient must be under constant observation by the EMS crew at all times. This includes direct visualization of the patient as well as cardiac, pulse oximetry, and quantitative waveform capnography monitoring, if available.
7. The extremities that are restrained should have a circulation check at least every 15 minutes. The first of these checks should occur as soon as possible after restraints are placed.
8. Documentation in the EMS Incident Report should include the reason for the use of restraints, the type of restraints used, the time restraints were placed, and circulation checks.
9. If a patient is restrained by law enforcement personnel with handcuffs or other devices that EMS personnel cannot remove, a law enforcement officer should accompany the patient to the hospital in the transporting ambulance. If this is not feasible, the officer **MUST** follow directly behind the transporting ambulance to the receiving hospital.

**E/A**

## PARAMEDIC STANDING ORDERS

**P**

- Paramedic Standing Orders continued next page.

### PEARLS:

- Causes of combativeness may be due to comorbid medical conditions or due to hypoxia, hypoglycemia, drug and/or alcohol intoxication, drug overdose, brain trauma.
- Struggling against restraints may lead to hyperkalemia, rhabdomyolysis, and/or cardiac arrest.
- Verbal de-escalation is the safest method and should be delivered in an honest, straightforward, friendly tone avoiding direct eye contact and encroachment of personal space.

Protocol Continues 


 Protocol Continued
**PARAMEDIC STANDING ORDERS - ADULT****P**

Once physically restrained:

- Midazolam 5mg IM, may repeat once in 20 minutes; or 2.5mg IV/IN, may repeat once in 5 minutes; **OR**
- Lorazepam 2mg IM, may repeat once in 20 minutes; or 1mg IV, may repeat once in 5 minutes; **OR**
- Diazepam 2mg IV (preferred route), may repeat once in 5 minutes; or 5mg IM, may repeat once in 20 minutes **AND/OR**
- Haloperidol 5 - 10mg IM, may repeat once in 10 minutes (max total dose 10 mg).

For patient with suspected Excited/Agitated Delirium or extreme agitation:

- Midazolam 5mg IV/IM/IN; may repeat once in 10 minutes.
  - If agitation continues after the second dose of midazolam, then consider:
    - Haloperidol 10mg IM; may repeat once in 10 minutes.

**NOTE:** Contact **Medical Control** for additional doses.

- If cardiac arrest occurs, consider fluid bolus and sodium bicarbonate early, see [Cardiac Arrest 3.2A](#).

For acute dystonic reaction to haloperidol:

- Diphenhydramine 25 – 50mg IV/IM.

Procedure 6.3



- Excited/Agitated Delirium is characterized by extreme restlessness, irritability, and/or high fever. Patients exhibiting these signs are at high risk for sudden death.
- Medications should be administered cautiously in frail or debilitated patients; lower doses should be considered.
- Administer haloperidol with caution to patients who are already on psychotropic medications which may precipitate serotonin syndrome or malignant hyperthermia.
- Placing a patient in prone position creates a severe risk of airway and ventilation compromise and death.

# Tasers (Conductive Electrical Weapon)

6.4

State and local law enforcement may use a conductive energy weapon called a Taser. This device is a non-lethal tool. When used, the device discharges a wire that, at the distal end, contains an arrow-like barbed projectile that penetrates the suspect's skin and embeds itself, allowing a 5-second incapacitating electric shock. Current medical literature does not support routine medical evaluation for an individual after Taser application. **In most circumstances probes can be removed by law enforcement without further medical intervention.**

## EMT/ ADVANCED EMT / PARAMEDIC STANDING ORDERS

EMS should be activated following Taser application in the following circumstances:

- The probe is embedded in the eye, genitals, or bone.
- Seizure is witnessed after Taser application.
- There is excessive bleeding from probe site after probe removal.
- Cardiac arrest, complaints of chest pain, palpitations.
- Respiratory distress.
- Change in mental status after application.
- Pregnancy.

## INDICATIONS FOR REMOVAL

- Patient with uncomplicated conducted electrical weapon (Taser) probes embedded subcutaneously in non-vulnerable areas of skin.

## CONTRAINDICATIONS TO REMOVAL

- Patients with probe penetration in vulnerable areas of the body as mentioned below should be transported for further evaluation and probe removal.
- Genitalia, female breast, or skin above level of clavicles.
- Suspicion that probe might be embedded in bone, blood vessel, or other sensitive structure.

## PROCEDURE

1. Ensure wires are disconnected from weapon.
2. Stabilize skin around probe using non-dominant hand.
3. Grasp probe by metal body using dominant hand.
4. Remove probe by pulling straight out in a single quick motion.
5. Removed probes should be handled and disposed of like contaminated sharps in a designated sharps container, unless requested as evidence by police.
6. Cleanse wound and apply dressing.
7. If last tetanus immunization was greater than 5 years, advise the patient that they may need one.
8. Obtain a refusal of care for patients refusing transport.

# 6.5

# Tourniquet Application

## EMT/ADVANCED EMT/PARAMEDIC STANDING ORDERS– ADULT & PEDIATRIC

A tourniquet is a commercial device used to control a life threatening hemorrhage on an injured extremity to prevent exsanguination.

### INDICATIONS:

Life threatening extremity hemorrhage that cannot be controlled by other means.  
 Serious or life threatening extremity hemorrhage in the face of operational considerations that prevent the use of less aggressive hemorrhage control techniques.

### PROCEDURE:

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1. If hemorrhage is not severe, attempt to control the hemorrhage with direct pressure, bandaging and elevation.
2. With a commercial tourniquet:
  - Place tourniquet proximal to wound on the affected extremity.
  - Tighten per manufacturer instructions until hemorrhage stops and distal pulses are extinguished.
  - If initial tourniquet fails to stop bleeding, ensure proper deployment of first tourniquet, and consider placement of a second tourniquet just proximal to first.
  - Document time of tourniquet application and communicate this clearly with receiving facility.
  - Do not cover tourniquet.
  - Dress wounds per standard wound care and consider use of hemostatic bandage.
  - Reassess for rebleeding frequently, especially after any patient movement.
  - Proper tourniquet placement often causes significant pain. Consider pain management, see [Pain Protocol 2.17](#).
  - Do not remove or loosen tourniquet once hemostasis achieved.

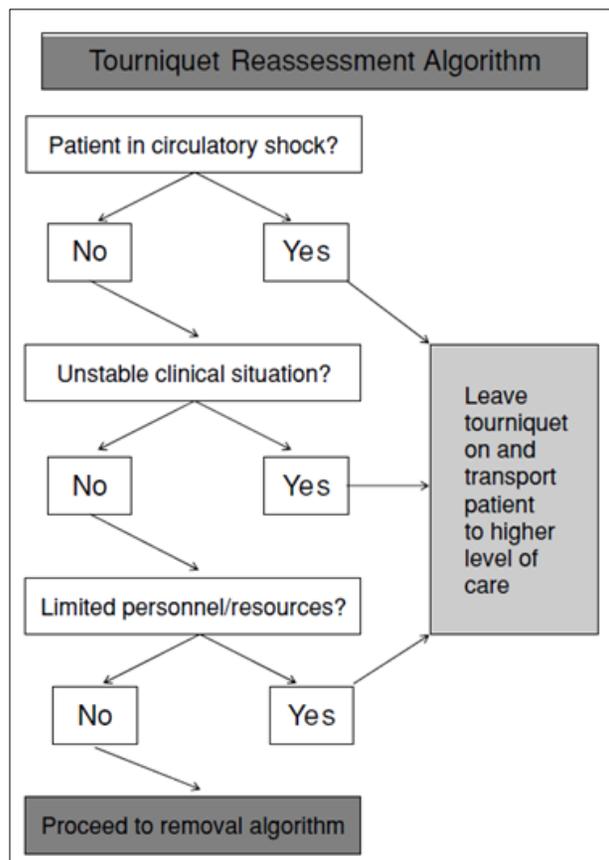
Procedure 6.5



In the absence of a commercial tourniquet (preferred), an improvised device e.g., cravat with windlass, blood pressure cuff could be used. The device must be a minimum of 2 inches wide, otherwise it can cut through the skin.

### PEARLS:

- Do not apply tourniquets over clothing or joints. If wound is just distal to joint, the tourniquet should be placed just proximal to joint.
- Delay in placement of a tourniquet for life threatening hemorrhage significantly increases mortality. Do not wait for hemodynamic compromise to apply a tourniquet.
- Transport patients directly to a Level 1 or Level 2 trauma center if feasible and provide earliest possible notification / trauma alert.
- Damage to the limb from tourniquet application is unlikely if removed in several hours.



# Vascular Access via Central Catheters

6.6

## PARAMEDIC – ADULT & PEDIATRIC

### PROVIDER LEVEL:

- Paramedic who has taken the NH Bureau of EMS and Medical Control Board approved training module.

### INDICATIONS

- In the presence of a life threatening condition, with clear indications for immediate use of medication or fluid bolus (Not for prophylactic IV access.)

### CONTRAINDICATIONS

- Suspected infection at skin site.

### PROCEDURE

Determine the type of catheter present: PICC, Broviac, Hickman, Groshong, Mediport, etc.

### Procedure for peripherally inserted Central Catheter (Cook, Neo-PICC, etc.) and Tunneled Catheter (Broviac, Hickman, Groshong, etc.)

1. Utilize good hand-hygiene with either alcohol gel based cleanser or soap and water.
2. Utilize respiratory precautions if indication of respiratory infection in provider or patient:
  - Mask the provider and/or the patient.
3. Prepare equipment:
  - 2-3 10ml prefilled syringes of 0.9% NaCl.
  - Sterile gloves (if available).
4. If more than one lumen is available (PICCs, Hickmans and Broviacs can have one, two, or three lumens), select the largest lumen available.
5. Vigorously cleanse the cap of the lumen with chlorhexidine or 70% alcohol prep pad.
  - Allow to dry.
6. Unclamp the selected catheter lumen and using a prefilled 10ml syringe.
  - Vigorously flush the catheter using a pulsating technique and maintaining pressure at the end of the flush to prevent reflux of fluid or blood.
  - If catheter does not flush easily (note that a PICC line will generally flush more slowly and with greater resistance than a typical intravenous catheter), re-clamp the selected lumen and attempt to use another lumen (if present).
  - If unable to flush any of the lumens, the catheter is unable to be used.
7. Attach IV administration set and observe for free flow of IV fluid.
  - Utilizing an IV pump, set the flow rate based on the patient condition and in accordance to NH Protocols.



- Do not exceed recommended flow rates.
- Avoid taking a blood pressure reading in the same arm as the PICC.

CATHETER	SIZE	MAX FLOW RATE
PICC	Less than 2.0 fr	125 mL/hr
PICC	Greater than 2.0 fr	250 mL/hr
Groshong PICC	3 fr	240 mL/hr
Groshong PICC NXT	4 fr	540 mL/hr
Groshong PICC NXT	5 fr	200 mL/hr
Hickman/Broviac		
Hickman/Broviac – Power Port	8 – 9.5 fr	3000 mL/hr

### PEARLS:

- There are many peripherally inserted, tunneled and/or implanted ports options. Providers should do their best to discern what option the patient has. Patient may be carrying a reference/wallet card about their device.
- PICC lines will not tolerate rapid infusions or infusions under pressure.

Procedure Continues

Procedure 6.6

P



← Procedure Continued

## P



### Procedure for implanted catheter (Port-a-Cath, P.A.S. port, Medi-port)

1. Utilize good hand-hygiene with either alcohol gel based cleanser or soap and water.
2. Utilize respiratory precautions if indication of respiratory infection in provider or patient.
  - Mask the provider and/or the patient.
3. Prepare all necessary equipment:
  - Non-coring, right angle needle specific for implanted vascular access ports
  - 2-3 10ml prefilled syringes of 0.9% NaCl.
  - Sterile infusion port cap.
  - Sterile gloves (if available).
  - Sterile occlusive dressing large enough to completely cover the insertion site
4. Identify the access site; usually located in the chest.
5. Vigorously cleanse the access site with chlorhexidine or 70% alcohol prep pad.
  - Allow to dry.
6. Attach the infusion port cap to the end of the non-coring, right angle needle tubing.
7. Prime the non-coring needle with tubing with saline using one of the prefilled 10ml syringes.
  - Leave the syringe attached to the tubing.
8. Palpate the port to determine the size and center of the device.
  - If not utilizing sterile gloves, re-clean the skin and apply new gloves.
9. Secure the access point port firmly between two fingers and firmly insert the non-coring needle into the port, entering at a direct 90° angle.
10. Aspirate 3 – 5ml of blood with the syringe.
  - If unable to aspirate blood, re-clamp the catheter and do not attempt further use.
  - Dispose of aspirated blood in bio hazard container.
  - Asking the patient to cough may facilitate access of the port.
11. Flush the catheter with 3 – 5ml 0.9% NaCl using a prefilled 10ml syringe.
  - If catheter does not flush easily, do not attempt further use.
12. Attach IV administration set and observe for free flow of IV fluid.
  - Utilizing an IV pump, set the flow rate based on the patient condition and in accordance with NH Protocols.
13. Cover the needle and insertion site with the sterile occlusive dressing.



- Only non-coring, right angle needles specific for implanted ports are to be used for vascular access devices that are implanted in the patient. These are generally not carried by EMS units but may be provided by the patient.
- Priming the tubing of the non-coring needle is essential to prevent air embolism.

#### PEARLS:

- Many of the newer implanted ports are double lumen ports. Providers should ask the patient or family if they have a double lumen port or palpate carefully to discern this.
- Newer non-coring, right angle insertion needles have a hard plastic top which later serves as a safety device, housing the needle when the port is de-accessed.

## **Prerequisite Required**

This procedure is only to be used by Paramedics or AEMTs who are trained and credentialed to perform immunization by the NH Bureau of EMS and the NH Medical Control Board.

## **INDICATIONS:**

Pre-hospital providers may be called upon to provide certain immunizations as necessary to assist state health officials in the event of a public health crisis, or under the written order of a physician.

## **Non-Patient Specific Orders:**

A non-patient specific order authorizes Paramedic or AEMT to administer specified immunizations for a specified period of time to an entire group of persons such as school children, employees, patients of a nursing home, etc.

- Some examples of non-patient specific orders are:
  - Administer influenza vaccine 0.5ml IM to all incoming freshmen students at X College who are eligible per protocol.
  - Administer influenza vaccine 0.5ml IM to all employees of X organization who request it and who are eligible by protocol.
  - Administer influenza vaccine 0.5ml IM to all X town residents who request it and who are eligible by protocol.
  - Administer hepatitis B series to all employees of X organization eligible per protocol.

## **Immunizations**

Many of the immunizations listed in the Centers for Disease Control and Prevention (CDC) guidelines fall under this protocol. The list of authorized immunizations differs for adults and children. For the purposes of immunizations, adults are persons who are 18 years of age or older; children are persons under 18 years of age.

### **Immunizations for adults:**

- Diphtheria
- Hepatitis A
- Hepatitis B
- Inactivated polio
- Influenza
- Measles
- Meningococcus
- Mumps
- Pneumococcus
- Rubella
- Smallpox vaccine
- Tetanus
- Varicella

### **Immunizations for children:**

- Acellular pertussis
- Diphtheria
- Haemophilus influenza Type b (hiB)
- Hepatitis A
- Hepatitis B
- Inactivated polio

Protocol Continues 

 Protocol Continued

- Influenza
- Measles
- Meningococcus
- Mumps
- Pneumococcal Conjugate
- Rubella
- Tetanus
- Varicella

Note: The Medical Control Board may add immunizations in accordance with the recommendations of the Centers for Disease Control and Prevention and the New Hampshire Department of Health and Human Services.

### **Administration of Immunizations**

The non-patient specific standing order and protocol must be authorized by a physician.

### **Epidemics**

Any Paramedic or AEMT may administer immunizations that are authorized by a non-patient specific standing order and protocol as part of an immunization program when the immunization program is instituted as a result of an epidemic declared by public health officials.

### **Protocol requirements**

- Ensure that the potential immunization recipient is assessed for contraindications to immunizations.
- Inform each potential immunization recipient of the potential side effects and adverse reactions, orally and in writing, prior to immunization, and inform each potential immunization recipient, in writing, of the appropriate course of action in the event of an untoward or adverse event. Vaccine Information Statements (VIS), developed by the Centers for Disease Control and prevention (CDC), United States Department of Health and Human Services are recommended for this use. <http://www.cdc.gov/vaccines/pubs/vis/>
- Before the immunization is administered, obtain consent for the immunization from the potential recipient.
- In cases of minors and persons incapable of personally consenting to immunization consent may be gained by informing the legally responsible person of the potential side effects and adverse reactions in writing and obtaining a written consent prior to administering the immunization.
- Provide to each legally responsible immunization recipient a signed certificate of immunization noting the recipient's name, date of immunization, address, administering Paramedic or AEMT, immunizing agent, manufacturer and lot number.
- Have available on-site medications to treat anaphylaxis including, but not limited to, epinephrine and necessary needles and syringes.

Protocol Continues 

Protocol Continued

- Report all adverse immunization outcomes to the Vaccine Adverse Event Reporting System (VAERS) using the appropriate form from the Centers for Disease Control and Prevention, United States Department of Health and Human Services. <https://vaers.hhs.gov/esub/index>
- Coordinate with program site managers to ensure that the record of all persons immunized includes: the non-patient specific standing order and protocol utilized, recipient's name, date, address of immunization site, immunization, manufacturer and lot number of administered vaccine(s), and recommendations for future immunizations.
- For the administration of the influenza vaccine to adults only it is acceptable to maintain a log of the names, addresses, and phone numbers of all adult patients immunized with the influenza vaccine under non-patient specific orders, in a dated file.
- Coordinate with program site managers to ensure that a record is kept of all potential recipients, noting those who declined immunization.

## Introduction

The purpose of this section is to reconcile the unique aspects of interfacility transfers with current NH EMS law, licensure, and acute care protocols. It is intended to provide flexibility, when possible, for individual agencies, institutions, and communities to meet their unique needs.

## Interfacility transfer

An interfacility transfer is defined as any EMS ambulance transport from one healthcare facility to another. Examples include hospital-to-hospital, hospital-to-rehabilitation, and hospital-to-long-term care. (Guide for interfacility patient Transfer, NHTSA, April 2006.)

## Transferring Institution

Responsibility for patient transfer lies with the transferring physician/provider and must take into account the risks versus the benefits to the patient. Providing appropriate equipment, medications, and qualified staffing during transport is paramount to patient safety. These parameters should be based on the requirements of the patient at the time of transfer, and in reasonable anticipation of foreseeable complications, deterioration, and medical needs that might arise during transport.

Initiation of a transfer should be a carefully coordinated effort by the transferring and receiving physicians/providers, the transferring and receiving facilities, and the transferring unit and personnel. Time or advanced notification may be needed for the transferring EMS unit to reconfigure in order to meet the needs outlined here. The following provides guidelines for the selection of appropriate NH EMS personnel to provide interfacility transport of patients consistent with their current scope of licensure, protocols, and training. Staffing, Medical Control, documentation, medications, transfer protocols, and procedures are addressed.

## Training Levels

Standard paramedic curriculum does not specifically address the care of the critically ill patient during an extended transport. NH requires specific training for paramedics to provide extended transport of critically ill or injured patients.

New Hampshire has multiple levels of interfacility transfer capabilities including: Paramedic Interfacility Transport (PIFT) and Critical Care Teams (CCT) as defined in the PIFT Administrative Manual. All paramedics who will be staffing an interfacility transfer must be credentialed at a minimum of PIFT level training. The PIFT level of training is intended to address the majority of interfacility transfer situations. However, some patients will have a level of acuity and/or complexity that requires a CCT level transport—either air or ground. The CCT level of credentialing requires greater training, medical oversight, and service support, and is intended for the more limited number of acute and complex interfacility transfers that occur; therefore, a limited number of paramedics will be credentialed to function at the CCT level. If that level of resource is not readily available it is an acceptable practice to supplement the PIFT crew with hospital staff that is qualified to provide the level of care the patient requires.

Interfacility transfers that are appropriate for EMT or AEMT level of care do not require additional levels of credentialing beyond training requirements defined in the NH EMS protocols and by Saf-C 5900.

Policy Continues 

Policy Continued

NH EMS protocols enable PIFT paramedics to continue medications that are not within their routine scope of practice during an interfacility transport, including continuous infusions, repeat boluses, or blood products, providing that, prior to transporting the patient:

- Medication is started prior to leaving the transferring facility.
- The paramedic proactively obtains working knowledge and education of any such medications or products by reviewing current medication monographs (hardcopy or electronic), consulting with sending clinicians, medical directors, or clinical pharmacists, reviewing established practice policies (such as for blood products), or other standard clinical research means.

EMS providers must refuse to transport patients that have a level of acuity and/or medication regimen that they are not comfortable with, and work with the sending facility to acquire optimal staffing (such as sending nursing staff or requesting a CCT transport).

### Minimum Staffing

The transferring physician/provider is responsible for determining the level of EMS provider and resources that are appropriate to meet the patient's current and anticipated condition and needs. The following are examples only and do not comprise a comprehensive list.

### Stable patient with no risk for deterioration

1 EMT provider and second licensed provider (minimum) driver.

- No IV infusions.
- Oxygen for stable patients permitted.
- Previously inserted Foley catheter, suprapubic tube, established feeding tube (NG, PEG, J-tube not connected to infusion or suction).
- Saline lock permitted.

### Stable patients with low risk of deterioration

1 AEMT provider and second licensed provider driver.

- Any crystalloid infusion.
- IV infusion pump for non-pharmacologic agents.
- Patient-controlled analgesic (PCA) pump.
- Medications within the AEMT scope of practice.

### Stable patients with medium risk of deterioration

PIFT credential required. This protocol is only to be used by paramedics and EMS units who have been trained and credentialed to perform PIFT-level transfers by the NH Bureau of EMS and the EMS Medical Control Board.

1 PIFT paramedic provider and second licensed provider (as driver or second provider).

- Transcutaneous pacing.
- BiPap
- Stable long-term ventilated patient to or from a medical facility, long term care facility, and/or home, provided the patient is stable and the transport is not of an acute nature.
- Intubated/mechanically ventilated patients on assist control or SIMV with non-complex settings. All intubated patients must have second provider in patient compartment. All intubated patients must be on a mechanical ventilator.
- Medical monitoring devices, procedures, and medication administration consistent with scope of practice and/or PIFT training.

Policy Continues

Policy Continued

- Advanced airway management.
- Chest tube.
- Infusion of previously initiated blood products.
- Maintenance of previously initiated medications.
- Epidural catheter if secured, capped, and labeled.

### **Unstable or stable patients with high risk of deterioration**

**CCT required.** Option 1 of this policy is only to be used by paramedics and EMS units who have been trained and credentialed to perform CCT-level transfers by the NH Bureau of EMS and the EMS Medical Control Board.

**Option 1:** CCT air or ground ambulance, **OR**

**Option 2:** 1 PIFT paramedic provider, 1 EMT driver and, at a minimum, 1 additional, (sending) **hospital-based**, qualified advanced health care provider (e.g., a critical care or emergency registered nurse, physician assistant, nurse practitioner, physician, CCT paramedic). The 2 advanced care providers must be in the patient compartment.

- Multiple vasoactive medication drips.
- Uncorrected shock.
- Invasive monitoring.
- Balloon pump.
- Transvenous pacing.
- Intubated/ventilated patients with advanced or complex vent settings (such as pressure control, peep >10 mmHg, etc.). **Non CCT crews** must also have 1 respiratory care practitioner in the patient compartment. This is in addition to the PIFT paramedic provider and the hospital-based advanced health care provider.
- Procedures consistent with provider licensure, scope of practice, and training.

The MCB strongly encourages the use of paramedics specially trained for the type of patient/condition being transported but recognizes that a CCT crew may not always be available.

As a measure of last resort, in cases where CCT providers are unavailable **AND** delay in transfer would have a significant negative impact on patient outcome, other transport arrangements may be initiated provided that:

1. The sending facility makes an exhaustive effort to send additional personnel.
2. The NH Bureau of EMS and Unit EMS Medical Director are notified within 48 hours and appropriate TEMSIS and IFT documentation is completed by the EMS Unit and the sending physician/institution.
3. All interventions are within the scope of practice of the transporting paramedic and vehicle.
4. EMS providers must refuse to transport patients that have a level of acuity and/or medication regimen that they are not comfortable with, and work with the sending facility to acquire optimal staffing.

### **Definitions**

- **Unstable Patient:** A patient who cannot be stabilized at the transporting facility, who is deteriorating or likely to deteriorate. (From "Guide for Interfacility Patient Transfer," NHTSA.)
- **Stable Patient:** Hemodynamically stable patient with a secure airway and who is **NOT** in acute distress.

Policy Continues

← Policy Continued

## **Medical Control Responsibilities**

According to EMTALA, patient care during transport until arrival at the receiving facility is the responsibility of the transferring physician/provider unless other arrangements are made.

Sometimes, as in certain air medical transport services or ground critical care units, the transport unit is functioning as an extension of a tertiary care center. It operates under that facility's protocols, medical directorship, and on-line medical control.

In the prehospital environment the EMS system operates under protocols. In the interfacility transfer environment written transfer orders that are within the scope of the provider's protocols and licensure are also required to be authored by the transferring physician/provider. The combination of protocols and transfer orders provide off-line medical control.

Transfer orders must be specific, appropriate to the patient being transferred, and reasonably anticipate potential complications en route. Transfer orders may reference the use of NH EMS protocols where they are applicable. If patients develop new signs and/or symptoms during transport, beyond their initial transfer diagnosis, providers may treat the new signs and/or symptoms according to protocols. Where transfer orders and NH EMS protocols are in conflict, transfer orders take precedence.

The transferring physician/provider should be immediately available to review transport orders and provide medical control communication via radio telephone during the transport. If the physician/provider is unavailable they must make other arrangements for review of the transfer orders with the transport crew.

## **PIFT and CCT Prerequisites and Oversight**

It is the responsibility of the NH Bureau of EMS to monitor the quality of care delivered under this system and to set the standards for credentialing providers and units. PIFT and CCT transports shall only be conducted by those providers who have completed and maintain the approved training and who are credentialed by a unit that is approved by the NH Bureau of EMS.

The field of critical care interfacility transport is fluid and there are often questions related to scope of practice. There is a subcommittee established by the NH EMS Medical Control Board (MCB) to consider questions and make interim rulings on those questions until such a time as the MCB has the opportunity to consider and modify or adopt such rulings. These responses will be posted on the NHBEMS website.

# 7.2 Mobile Integrated Healthcare

## Introduction

This prerequisite protocol enables an EMS Unit, a hospital and/or a Medicare-certified home health agency to form a collaboration for the purpose of providing community healthcare. A community that is experiencing a gap in healthcare coverage, as evidenced by a community needs assessment, may elect to utilize the capabilities of the EMS system in cooperation with a medical resource hospital and other healthcare professionals.

EMS Providers have traditionally functioned as a mobile healthcare unit and are a logical means of providing healthcare to the community as an extension of the primary care network, provided that a formal process has been followed, as outlined in this protocol. Only those EMS Units that have applied for, and have been approved by the NH BEMS under this prerequisite protocol, and only EMS providers who have met the requirements of this protocol may practice under these guidelines.

## Definition of Mobile Integrated Healthcare

Mobile Integrated Healthcare (MIH) is the provision of healthcare using patient centered, mobile resources in the out-of-hospital environment.

In NH the MIH concept is envisioned to be an organized system of services, based on local need, which are provided by EMT's, AEMT's and Paramedics integrated into the local health care system, working with and in support of physicians, mid-level practitioners, home care agencies and other community health team colleagues, and overseen by emergency and primary care physicians. The purpose of the initiative is to address the unmet needs of individuals who are experiencing intermittent healthcare issues. It is not intended to address long-term medical or nursing case management.

## General Project Description

Describe the community/communities to be served, the Unit's base location(s) to be employed, the unmet community health need being addressed, the current community health team members being partnered with, and the methodology for addressing the need (including any enhancements of the EMS response system that will result).

## Community Needs Analysis

The EMS Unit, hospital, and any other partners must provide a needs assessment, using the NH Needs Assessment Tool, that demonstrates the gap in healthcare coverage that the MIH program intends to fill.

## Patient Interaction Plan

Describe the nature of anticipated patient care and diagnostic interactions. Specify how the patient community will be educated to have realistic expectations of the MIH provider and these interactions.

## Staffing Plan

Define who will be providing the MIH services and how will these services fit within the normal EMS staffing of the Unit. Specify what type of schedule will these services be made available and how this staffing arrangement will be funded.



Policy Continued

## Training Plan

Describe what training will be provided to enable the providers to deliver the services described above. List the objectives and outcomes of the training plan. Document who is responsible for training oversight and coordination and their qualifications.

There must be a continuing education and credentialing process in place, with documentation of each EMS Provider's participation in it. Such a process shall be approved by the EMS Unit's Medical Director(s).

## Quality Management Program and Data Collection

The EMS Unit shall conduct a quality management (QM) program specifically for the community healthcare program. The QM program will incorporate all the components of an EMS QM program as specified in Administrative Rule Saf-C 5923.

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 NH Bureau of EMS will be included in it.

## Documentation

The EMS Provider may at any time, using their own discretion, decide to activate the 911 system for emergency treatment and transport to appropriate care.

Electronic patient care reports of all community healthcare patient encounters must be submitted to the requesting medical practice according to policies developed in coordination between the EMS Unit, MRH, collaborating home health agency and medical practice. Copies of these records shall be maintained by the EMS Unit, and be available for review by the NHBEMS.

The EMS Unit will participate in electronic data collection as required by the NHBEMS.

## Medical Direction

Must establish a collaborative working relationship between the EMS Physician Medical Director or designee, who will be responsible for operations and continuous quality improvement, and a primary care provider providing medical direction for MIH services.

# 7.3 Rapid Sequence Intubation (RSI)

## PARAMEDIC - PREREQUISITES REQUIRED - ADULT ONLY

This procedure is only to be used by paramedics who are trained and credentialed to perform RSI by the NH Bureau of EMS. 1 RSI paramedic **AND** 1 RSI assistant or non-RSI paramedic must be present.

### INDICATION:

- Immediate, severe airway compromise in the adult patient in the context of trauma, drug overdose, status seizures etc., where respiratory arrest is imminent and other methods of airway management are ineffective.

### PROCEDURE: THE SEVEN P'S

#### PREPARATION "SOAPME": T minus 5 minutes.

- Suction set up.
- Oxygen: 100% non-rebreather mask, with bag-valve mask ready.
- Airway : ETT (check cuff), Stylet, BVM.
- Pharmacology: IV/Medications drawn .
- Monitor: Cardiac / O<sub>2</sub> saturation/ ETCO<sub>2</sub> .
- Equipment: Laryngoscope / Blades / Suction / Bougie / Back-up devices.

#### PREOXYGENATION: T minus 5 minutes .

- When possible, use a non-rebreather mask for at least 3 minutes to effect nitrogen washout and establish an adequate oxygen reserve. In emergent cases, administer 8 vital capacity bag-valve-mask breaths with 100% oxygen.
- Apply nasal cannula with oxygen regulator turned up to its fullest capacity, (nasal cannula should remain in place until endotracheal tube is secured).

#### PREMEDICATION: T minus 3-5 minutes.

- Consider lidocaine. (1.5mg/kg) for patients with suspected increased intracranial pressure (ICP) (e.g., traumatic brain injury, seizures, suspected intracranial hemorrhage).
- Consider atropine 0.5mg IV for bradycardia.

#### PARALYZE AND SEDATE: T minus 45 seconds.

- Etomidate 0.3mg/kg IV; maximum 40mg. **OR**
- Ketamine 2 mg/kg IV.
- If Etomidate or Ketamine is not available:
  - Midazolam 0.2 mg/kg IV; 0.1mg/kg IV for patients in shock.
- Succinylcholine 1.5mg/kg IV immediately after sedation (maximum 200mg).
- For patients with contraindications to succinylcholine:
  - Rocuronium 1mg/kg IV **OR**
  - Vecuronium 0.1mg/kg IV.

#### PASS THE TUBE: T minus 0 seconds.

- Observe for fasciculations approximately 90 seconds after succinylcholine to indicate imminent paralysis.
- After paralysis is achieved, follow the procedure outlined in Procedure: [Orotracheal Intubation 5.6](#) to place the ETT.

P

Prerequisite Protocol 7.3



### SUCCINYLCHOLINE CONTRAINDICATIONS:

- Extensive recent burns or crush injuries > 24 hours old.
- Known or suspected hyperkalemia.
- History of malignant hyperthermia.

Protocol Continues

# 7.3 Rapid Sequence Intubation (RSI)



## PARAMEDIC - PREREQUISITES REQUIRED - Continued

### PROOF OF PLACEMENT

- Assess for proper placement by following the procedure outlined in Procedure: [Orotracheal Intubation 5.6](#).

### POST INTUBATION CARE

Sedation:

- Midazolam 2 – 5 mg IV, every 5 – 10 minutes as needed **OR**
- Lorazepam 1 – 2mg IV, every 15 minutes as needed for sedation (maximum: 10mg) **AND**
- Fentanyl 50 – 100 micrograms IV.

Paralysis (via on-line **Medical Control** only):

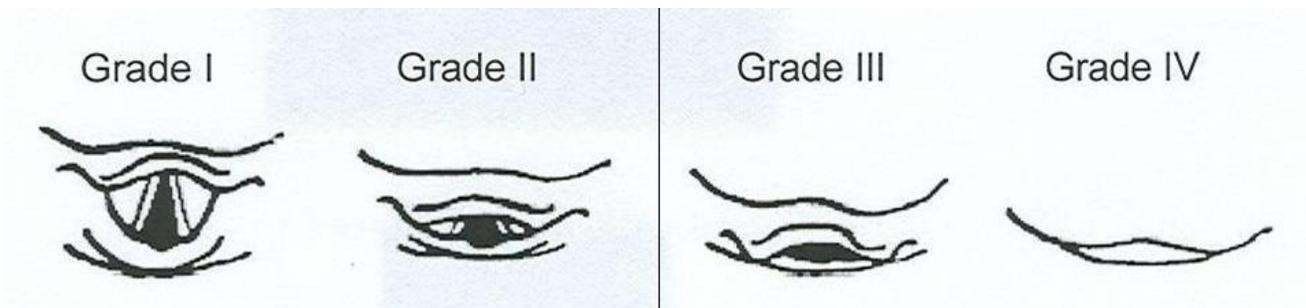
- Vecuronium 0.1mg/kg IV **OR**
- Rocuronium 1mg/kg IV.

### DOCUMENTATION

- Each attempt at passing an ETT should be documented as a separate procedure of "Rapid Sequence Intubation". The procedure should include the provider and time for each separate attempt. **DO NOT** also document a second procedure of "oro-tracheal intubation" as this will constitute double documentation of the intubation process. In this case, the procedure of RSI counts as the passing of the ETT itself.
- All medications administered should be documented, including the time and provider who administered them.
- Follow all other required documentation outlined in Procedure: [Orotracheal Intubation 5.6](#).



If failed airway and unable to ventilate consider [Cricothyrotomy Protocols 5.2 OR 7.4](#).



Classifications for Laryngoscopy Views

# Surgical Cricothyrotomy

## Bougie Assisted — ADULT

Written notification will be provided to the Medical Resource Hospital's EMS Medical Director, Hospital EMS Coordinator, and Bureau of EMS within 48 hours of an event. Use of this procedure documented under "Procedures Used" in the Patient Care Report constitutes notification of the Bureau of EMS.

### PARAMEDIC - PREREQUISITE REQUIRED— ADULT

#### INDICATIONS:

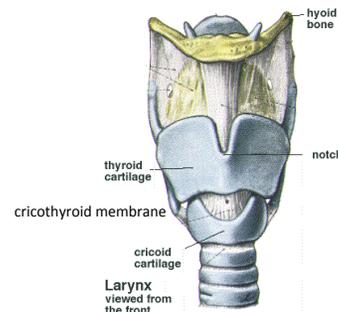
Inability to adequately oxygenate and ventilate using less invasive methods

#### CONTRAINDICATIONS:

- Ability to oxygenate and ventilate using less invasive measures
- Age less than 12 years old

#### EQUIPMENT:

- Chlorhexidine
- #10 blade scalpel
- Bougie
- 6.0 mm endotracheal tube
- 10ml Syringe
- BVM
- Quantitative ETCO<sub>2</sub>



# P

#### PROCEDURE:

1. Position the patient supine and extend the neck as needed to improve anatomic view.
2. Prep neck with Chlorhexidine
3. Using your non-dominant hand, stabilize the larynx and locate the following landmarks: thyroid cartilage (Adam's apple) and cricoid cartilage. The cricothyroid membrane lies between these cartilages.
4. Make an approximately a 3cm vertical incision 0.5cm deep through the skin and fascia, over the cricothyroid membrane. With finger, dissect the tissue and locate the cricothyroid membrane.
5. Make approximately a 1.5cm horizontal incision through the cricothyroid membrane.
6. With your finger, bluntly dilate the opening through the cricothyroid membrane.
7. Insert the bougie curved-tip first through the incision and angled towards the patient's feet.
8. Advance the bougie into the trachea feeling for "clicks" of tracheal rings and until "hangup" when it cannot be advanced any further. This confirms tracheal position.
9. Advance a 6.0 mm endotracheal tube (ensure all air aspirated out of cuff) over the bougie and into the trachea.
10. Remove bougie while stabilizing ETT ensuring it does not become dislodged
11. Inflate the cuff with 5 – 10ml of air.
12. Confirm appropriate proper placement by symmetrical chest-wall rise, auscultation of equal breath sounds over the chest and a lack of epigastric sounds with ventilations using bag-valve-mask, condensation in the ETT, and quantitative waveform capnography.
13. Secure the ETT.
14. Reassess tube placement frequently, especially after movement of the patient.
15. Ongoing monitoring of ETT placement and ventilation status using waveform capnography is required for all patients.

**Purpose**

To provide a process for identification, assessment, management, and reporting of patients who are suspected of having been abused, neglected, and/or exploited. This includes physical, sexual or emotional abuse, neglectful acts or omissions by self or others, and/or the illegal use of an incapacitated adult's person or property for profit or advantage.

**Scene Safety**

Maintain a heightened awareness of scene safety. Family members or caregivers may exhibit anger; family member or caregiver may be the perpetrator.

**Procedure for Assessment**

- Provide emotional support and comfort.
- Treat and document assessment findings using appropriate medical treatment protocols without causing undue emotional trauma.
- Limit physical contact with patient to that which is required to perform assessment and treatment.
- Interview patient in a calm, respectful, and private manner, while observing for:
  - Mental status.
  - Inappropriate fears or atypical reaction to situation.
  - Avoidance behaviors.
  - Inappropriate interaction with caregiver, parent, or spouse.
- Do not interrogate, accuse, or otherwise address specifics of abuse or neglect to patient, caregiver, parent, or spouse.
- Obtain pertinent history relating to presenting injuries or illness.
- Document verbatim any patient statements of instances of rough handling, sexual abuse, alcohol/drug abuse, verbal or emotional abuse, isolation or confinement, misuse of property, threats, and gross neglect such as restriction of fluids, food, medications, or hygienic care.
- Note any potential indicator of an abusive or neglectful circumstance or environment:
  - Unsolicited history provided by the patient.
  - Delay in seeking care for injury or illness.
  - Injury inconsistent with history provided, the patient's developmental abilities, or mobility potential.
  - Conflicting reports regarding injury from the patient, caregiver, parent, or spouse.
  - Patient unable, or unwilling, to describe mechanism of injury.
  - Injuries in unusual locations, (e.g., genital area).
  - Multiple fractures, bruises or other injuries in various stages of healing.
  - Scald burns with demarcated immersion lines without splash marks.
  - Scald burns involving anterior or posterior half of extremity.
  - Scald burns involving buttocks or genitalia.
  - Burns or injuries consistent with cigarette burns, rope burns, or other identifiable patterned markings.
  - Patient confined to restricted space or position.
  - Pregnancy or presence of sexually transmitted disease in child or vulnerable adult.
  - Problems with living conditions and environment.

**Special Considerations**

- Contact law enforcement.
- According to NH laws, any and all cases of suspected abuse, neglect, or exploitation of children or adults must be reported. This applies even in cases when the patient is not transported.
- If a parent/guardian refuses treatment of a minor child or an incapacitated adult whom you feel needs medical attention, contact law enforcement immediately.
- Written documentation is vital because the "story" often changes as investigation proceeds.

Policy Continues 

# 8.0

## Abuse and Neglect

### Child, Elder, Incapacitated Adults, or Other Vulnerable Individuals

Policy Continued

#### **Reporting Procedures**

##### **Child Abuse\***

Report suspected child abuse immediately

- Call Child Abuse Report Line, 800-894-5533 or (603) 271-6556 between the work hours of 8:00 am to 4:30 pm, Monday through Friday.
  - Call local police department during non-work hours and holidays and follow up with a telephone call to the Child Abuse Report Line during work hours.
  - Informing hospital personnel or involving law enforcement does not fulfill legal reporting responsibilities in accordance with state law.
  - Do not send reports of suspected child abuse by email.

\* Responsibility for reporting child abuse and protection from liability for such reporting is established by the NH Child Protection Act, Chapter 169-C.

##### **Abuse to Elders and Incapacitated Adults\*\***

- Report suspected adult abuse immediately
- Call the Bureau of Elderly & Adult Services at 800-949-0470 between the work hours of 8:00 am to 4:30 pm, Monday through Friday, for adults in any of the following situations when suspected incident occurred:
  - Independent living situation (own home or apartment, home or apartment of friends or relatives, boarding home, or no fixed address).
  - Homes or programs affiliated with the Bureau of Behavioral Health or the Bureau of Developmental Services.
  - Hospital or rehabilitation center.

Call the Office of the Long-Term Care Ombudsman at 800-422-5640 or 603-271-4375 between the work hours of 8:00 am to 4:30 pm, Monday through Friday, for adult residents of nursing or assisted living facilities.

Call the local police department during non-work hours and holidays and follow up with a telephone call to the Bureau of Elderly & Adult Services or Office of Long-Term Care Ombudsman during work hours.

\*\*Responsibility and protection from liability for reporting an incapacitated adult or an adult who has been subjected to abuse, neglect, self-neglect or exploitation, or is living in hazardous conditions is established by the NH Elderly and Adult Services Act Chapter 161-F:42 & F:46.

EMS personnel may request Air Medical Transport (AMT) when operational conditions exist and/or the indicated clinical conditions are present.

The use of AMT is determined by the prehospital provider with the highest medical level providing patient care. It should not be determined by police or bystanders.

AMT does not require approval of on-line Medical Control. However, if in doubt of the appropriateness of a patient for AMT, please contact Medical Control as soon as possible.

## Operational Conditions

- When a patient meets the defined clinical criteria listed below and the ground transport time to the closest hospital capable of providing definitive care (e.g., Level I or 2 trauma hospital, PCI center, stroke center) exceeds the ETA of air medical transport, **OR**
- Patient location, weather, or road conditions preclude the use of ambulance, **OR**
- Multiple patients are present that will exceed the capabilities of local hospital and agencies.

## Clinical Conditions

- Severe respiratory compromise with respiratory arrest or abnormal respiratory rate.
- Circulatory insufficiency: sustained systolic blood pressure <90mmHg in both children and adults or other signs of shock.
- Neurologic compromise: total GCS  $\leq$  13, or motor component <5. If the patient's neurologic status improves above these limits, consider canceling the helicopter and transporting to the local hospital.
- Trauma: All penetrating injuries to head, neck, torso, and extremities proximal to elbow or knee; chest wall instability or deformity (e.g., flail chest); two or more proximal long-bone fractures; crushed, degloved, mangled, or pulseless extremity; amputation proximal to wrist or ankle; pelvic fracture; open or depressed skull fracture; paralysis.
- Major burns with greater than 20% BSA and/or inhalation injury with risk of airway compromise.
- Electrocution injuries with loss of consciousness, arrhythmia, or any respiratory abnormality.
- STEMI: If 12-lead ECG indicates a STEMI (e.g., machine reads **\*\*\*Acute MI Suspected\*\*\*** and/or Paramedic interpretation), per your local STEMI plan.
- Stroke: 1 or more abnormal signs of the stroke scale; per local stroke plans.
- Critically ill children, including those with chronic and/or special healthcare needs.

## Additional Notes

- Patients with an uncontrolled airway or uncontrollable hemorrhage should be brought to the nearest hospital unless advanced life support (ALS) service (by ground or air) can intercept in a more timely fashion.
- AMT is **NOT** indicated for patients in cardiac arrest. Should the patient go into cardiac arrest after AMT request the AMT crew may be utilized for resuscitation and stabilization.



AMT is **NOT** indicated for a contaminated patient until **AFTER** decontamination.

AMT may be indicated in a wide range of conditions other than those listed above. In cases where the patient's status is uncertain, **consult with Medical Control** and proceed as directed.

- Transfers from ground-ambulance to air-ambulance shall occur at the closest appropriate landing site, including a hospital heliport, an airport, or an unimproved landing site deemed safe per pilot discretion. In cases where a hospital heliport is used strictly as the ground-to-air ambulance transfer point, no transfer of care to the hospital is implied or should be assumed by hospital personnel, unless specifically requested by the EMS providers.

## 8.2 Bariatric Triage, Care & Transport

**Purpose:** This policy provides guidance for providers concerning the triage, extrication, care and transport for bariatric patients. The New Hampshire EMS system strives to provide all patients, including bariatric patients, with timely and effective care that preserves the comfort, safety and dignity of the patients and ensures the safety of providers. At times, even a single patient can exceed the capacity of the immediately available resources. Like a multi-system trauma patient, a bariatric patient requires:

- Appropriate EMS resources to respond
- Appropriate protocols and equipment for the provision of care
- Specialized equipment for transfer to the ambulance and transport
- Careful selection of the appropriate destination hospital
- Pre-alerting of the ED to ensure adequate resources to manage the patient

On scene times may be significantly extended for bariatric patients.

### Equipment

- Deployment of equipment and procedures shall be done under local or regional operating guidelines.

### Definitions

A bariatric patient is a patient:

- Weight exceeds 400 pounds OR
- **Weight, girth, body contours and/or co-morbidities** challenge the ability of a two person EMS crew to effectively manage.

### Dispatch

Bariatric Ambulance: Based on dispatch information or previous planning, consider requesting a bariatric transport ambulance to respond to the scene. The arrival onscene of a bariatric ambulance may require between 30 and 90 minutes, and should be requested as soon as it becomes clear that bariatric capabilities may be required. The State of New Hampshire has 10 bariatric equipment caches (1 per county) While standard ambulance stretchers can potentially handle some patients up to 750 pounds or more, the use of a specialized bariatric stretcher increases the ability to provide effective care, is more comfortable for the patient and enhances provider safety.

Additional Manpower: Consider requesting additional responders. In general, bariatric patients should be moved with a minimum of personnel. Larger bariatric patients may require additional personnel to participate in moving the patient. For significant extrications, consider designating a Safety Officer to oversee the safety of the operation in conjunction with Incident Command. It may be necessary to remove doors, walls or windows to carry out a safe extrication. The priorities are similar to extrication from a vehicle, although fixed property repair costs might be higher.

Paramedic: Consider requesting a paramedic. Even BLS bariatric patients present unique treatment challenges which may benefit from a higher level of care.

### Medical Care

Medical care must take into account the unique challenges presented by the bariatric patient as well as the likelihood of extended on-scene times. Providers should use appropriately sized equipment to the extent it is available or can be readily obtained. For example, an appropriately sized blood pressure cuff will need to be used and intramuscular injection will be given with a longer needle.

If there are significant barriers to removing the patient from the structure in a timely manner (long narrow stairs, patient in the attic, etc.), there may be situations where EMS will provide extended care to the patient at the scene. In such cases, consult Medical Control and consider use of the extended care protocols.

Policy Continues 

# Bariatric Triage, Care & Transport 8.2

Policy Continued

## Transfer to Ambulance

Specialized equipment will be needed to transfer the patient safely from the scene to the ambulance stretcher for transport. If a bariatric equipment cache is utilized, both the bariatric ambulance and cache equipment needs to be dispatched.

Many services utilize large transfer flats for moving bariatric patients. Be sure before you use any patient transfer device that you understand the procedure for using it safely and that you know the weight limits of the device.

## Hospital Destination

Ensure that you select a destination hospital that has the capabilities to care for your patient. Bariatric patients may require specialized hospital stretchers, CT scanners, catheterization laboratory equipment, operating room equipment, etc. It may be appropriate to bypass a local hospital to take the patient to a facility with the capabilities to properly care for the patient. This may even be appropriate in the case of life threatening emergencies if the closer emergency department does not have needed equipment.

Pre-notification serves both to ensure that the hospital is capable of caring for the patient and allows hospital staff time for adequate preparation. Communication with the hospital shall be in a professional manner. Respect for the patient's privacy and feelings will match the respect for all EMS patients.

## Transport to the Hospital

A bariatric stretcher should be used to transport the patient to the hospital and equipment cache transfer devices may be utilized to facilitate transfer of the patient to the hospital stretcher. Be alert to ensure that the stretcher is adequately secured in the patient compartment. Transfer flats or other specialized transfer equipment may be left in place to facilitate transfer of the patient to the hospital stretcher.

Policy 8.2

## PEARLS

- It may be difficult to establish IV and IO access. Consider intramuscular or intranasal as alternatives for some medications. For IM, ensure that the needle used is sufficiently long.
- Weight-based calculations may yield inappropriately large doses in obese patients. Consult with medical control when in doubt.
- Bariatric patients often have decreased functional residual capacity, and are at risk of rapid desaturation. Extremely obese individuals require more oxygen than non-obese individuals due to their diminished lung capacity. Pulse oximetry may not be reliable due to poor circulation. Even patients without respiratory distress may not tolerate the supine position.
- Bariatric patients may present with severe airway challenges. Carefully plan your approach to the airway, and be prepared with backup airway plans.
- If the patient has had recent bariatric surgery, possible complications may include anemia, dehydration, leakage, ulcers, localized infection, sepsis, etc.

## 8.3 Bloodborne/Airborne Pathogens

### **Blood Borne Pathogens**

Emergency medical services personnel should assume that all bodily fluids and tissues are potentially infectious with bloodborne pathogens and must protect themselves accordingly by use of appropriate Body Substance Isolation (BSI) and approved procedures.

Transmission of bloodborne pathogens has been shown to occur when infected blood or Other Potentially Infectious Materials (“OPIM”) enter another individual’s body through skin, mucous membrane, or parenteral contact.

Screen symptomatic patients for out of country travel within the past 21 days, or close contact with another symptomatic individual who has recently traveled out of the country. Provide early notification to receiving hospital.

### **Body Substance Isolation (BSI) procedures**

- BSI procedures include using protective barriers (such as gloves, masks, goggles, etc.), thorough hand washing, and proper use and disposal of needles and other sharp instruments.
- Centers for Disease Control and Prevention Guidelines for hand hygiene include:
  - When hands are visibly dirty, contaminated, or soiled, wash with non-antimicrobial or antimicrobial soap and water.
  - If hands are not visibly soiled, use an alcohol-based handrub for routinely decontaminating hands.
- Personnel with any open wounds should refrain from all direct patient care and from handling patient-care equipment, unless they can ensure complete isolation of these lesions and protection against seepage.
- Personnel who are potentially at risk of coming into contact with blood or OPIM are encouraged to obtain appropriate vaccines to decrease the likelihood of transmission.

### **Exposure - Procedures and Considerations**

- Personnel who have had a blood borne pathogen exposure should immediately flush the exposed area or wash with an approved solution. At a minimum, use warm water and soap.
- The exposed area should then be covered with a sterile dressing.
- As soon as possible, or after transfer of patient care, the EMS provider should thoroughly cleanse the exposed site and obtain a medical evaluation by the medical advisor as dictated by their department’s Exposure Control Plan and/or Workers Compensation policy.

### **Airborne Pathogens**

- Emergency medical services personnel should assume that all patients who present with respiratory distress, cough, fever, or rash are potentially infectious with airborne pathogens and must protect themselves accordingly by use of appropriate Airborne Personal Protective Equipment (APPE), Body Substance Isolation (BSI), and approved procedures.
- Screen symptomatic patients for out of country travel within the past 21 days, or close contact with another symptomatic individual who has recently traveled out of the country. Provide early notification to receiving hospital.

Policy Continues 

# Bloodborne/Airborne Pathogens 8.3

Policy Continued

## **Airborne Personal Protective Equipment (APPE)**

- The preferred APPE for EMS personnel is an N95 mask, to be worn whenever a patient is suspected of having any communicable respiratory disease.
- The N95 mask should be of the proper size for each individual provider, having been previously determined through an annual fit-test procedure.
- A surgical mask should also be placed on suspect patients, if tolerated. If oxygen therapy is indicated, a surgical mask should be placed over an oxygen mask to block pathogen release. This will require close monitoring of the patient's respiratory status and effort.

## **Pre-hospital - Procedures and Considerations**

- Early notification to the receiving hospital should be made such that the receiving hospital may enact its respective airborne pathogen procedures.
- Limit the number of personnel in contact with suspected patients to reduce the potential of exposure to others.
- Limit procedures that may result in the spread of the suspected pathogen, (e.g., nebulizer treatments), if feasible.
- Utilize additional HEPA filtration on equipment, (e.g., BVM or suction).
- Exchange of fresh air into the patient compartment is recommended during transport of a patient with a suspected airborne pathogen.
- EMS providers who believe they have been exposed to an airborne pathogen may proceed as above in getting timely medical care. The Patient Care Report enables hospital infection control staff to contact at-risk EMS personnel, should that patient be found to have a potential airborne pathogen such as tuberculosis, neisseria meningitis, SARS, etc.

## **Decontamination and Follow-up**

- In addition to accepted procedures for cleaning and disinfecting surfaces and equipment with approved solutions and for the proper disposal of contaminated items, the use of fresh air ventilation should be incorporated (e.g., open all doors and windows to allow fresh air after arrival at the hospital).
- All personnel in contact with the patient should wash their hands thoroughly with warm water and an approved hand-cleansing solution. When soap and water are not immediately available, a hand sanitizer containing 60% isopropyl alcohol is recommended as an interim step until thorough hand washing is possible.
- Contaminated clothing should not be brought home by the employee for laundering, but laundered in a department provided washer or by other uniform cleaning arrangements.
- Ambulances equipped with airborne pathogen filtration systems should be cleaned and maintained in accordance with the manufacturer's guidelines.
- As soon as possible following all suspected blood borne or airborne exposures, the EMS provider should complete all appropriate documentation as identified in their department's specific policies, including Worker Compensation Notice of Accidental Injury or Occupational Disease 8aWCA form and the Emergency Response/Public Safety Worker Incident Report Form.

EMS providers transporting status I, II, or III patients (see [Status Determination 8.11](#)) should advise the receiving hospital, in a timely manner, of patients en route to that Emergency Department (except in Mass Casualty Incidents (MCI) during which routine communications cease).

An EMS provider may establish contact with a Medical Control physician via VHF radio on one of the assigned medical frequencies, via telephone direct to each Department's recorded EMS line, or via telephone patch through the Resource Coordination Center. If a Medical Control physician is needed for consultation, request this before giving patient information. It is recommended that all medical communications be recorded.

#### **VHF Medical Frequencies**

- Initiate call to the appropriate hospital and identify:
  - Destination hospital.
  - Ambulance unit calling.
  - Status of the patient.

#### **Telephone**

- To contact the destination hospital via telephone, use of a direct-recorded line to the Emergency Department is recommended.
- Request Medical Control, if needed, give the name of the patient, his or her age, status, and complaint.

Upon establishing voice communication with the destination hospital/medical control physician (if needed), present the following information in a concise and clear manner:

- Emergency response unit and level of care: Paramedic/AEMT/Basic, with ETA.
- Patient's age, sex, and status level.
- Patient's chief complaint.
- Patient's present medical condition.
- Patient's vital signs, including level of consciousness.
- Patient's physical signs of illness or injury.
- Patient's electrocardiogram rhythm, if indicated.
- Patient's relevant medical history.
- Prehospital diagnostic tests performed/results and treatment rendered/results.

Give a list of medications and allergies only if requested by the destination hospital, or if it is anticipated that a medication order would be given by Medical Control.

In case of a communications failure with Medical Control due to equipment (cell phone, landline, radio, IHERN) malfunction or incident location, the following will apply:

- EMS personnel may, within the limits of their license, perform necessary ALS procedures that under normal circumstances would require a direct physician order.
- These procedures shall be the minimum necessary to prevent the loss of life or the critical deterioration of a patient's condition.
- All procedures performed under this order, and the conditions that created the communications failure, need to be thoroughly documented.
- Attempts must be made to establish contact with Medical Control as soon as possible.
- The EMS provider shall provide a written notification pertaining to the communications failure 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 and/or Hospital EMS Coordinator within 48 hours of the event.

## 8.6 Consent for Treatment of a Minor

A “minor” is a person who has not yet reached his/her eighteenth birthday.

Note that the legal definition of a “minor” for purposes of consent is unrelated to the medical definitions of “pediatric patient,” “child,” and “children,” as used in these protocols.

Under RSA 153-a:18, EMS personnel may treat minors under the doctrine of implied consent when the minor’s parent or other authorized representative is unavailable to provide expressed consent. With the exception of life-threatening emergencies, personnel should attempt to contact the minor’s parent or legal guardian to obtain informed consent to treat and transport the child. When a parent or legal guardian is unavailable, another authorized representative (e.g., a school or camp official), who has been expressly authorized by the minor’s parent, may consent to health care treatment.

A parent or legal guardian may refuse care for a minor:

- When a parent or legal guardian is not reasonably available, another adult family member (e.g., grandparent), or other authorized representative having custody of the minor, may refuse care.
- EMS personnel may accept a telephonic refusal of care, provided that they have explained the consequences of refusing care; telephonic refusal of care should be carefully documented.

Except for the special circumstances listed below, a minor may not refuse care. When a minor attempts to refuse care and/or transport to the hospital, EMS personnel should enlist the assistance of the police, including requesting that the police place the minor in protective custody. Minors should be restrained only as a last resort.

### Special Circumstances

- A minor parent who has not yet reached his/her eighteenth birthday may consent to or refuse care on behalf of his or her minor children, provided that the minor parent has the capacity to understand the nature of the treatment and the possible consequences of consenting to or refusing care.
- Any patient 14 years of age or older does not need parental consent for treatment of sexually transmitted diseases ([RSA 141-C:18](#)).
- Any patient 12 years of age or older may voluntarily submit to a healthcare facility for drug dependency or any problem related to drugs (see [RSA 318-B:12-a](#)).
- An emancipated minor may consent to, or refuse health care. A minor patient bears the burden of establishing, by legal documentation or otherwise, that he/she is emancipated. New Hampshire recognizes emancipation decrees issued by other states.
- An adolescent patient under the age of 18 must give his/her consent for a sexual assault forensic exam ( "Sexual Assault: An Acute Care Protocol for Medical/Forensic Evaluation", Office of the NH Attorney General, Sixth Edition, 2011). Adolescents with no life threatening injuries may be hesitant to seek medical attention after a sexual assault. Other reasons for transport to hospital include prophylactic treatment for sexually transmitted disease or pregnancy and drug/alcohol screening which is crucial for possible prosecution. If unable to convince patient to seek emergency care at a hospital, contact **Medical Control** and request assistance from a hospital-based advocate or from the local crisis center.



# Crime Scene Preservation of Evidence

8.7

If you have been dispatched to a possible crime scene, including motor vehicle incidents, or if you believe a crime has been committed, immediately contact law enforcement.

Protect yourself and other EMS personnel. You will not be held liable for failing to act if a scene is not safe to enter. Once a crime scene is deemed safe by law enforcement, initiate patient contact and medical care if necessary.

- Have all EMS providers use the same path of entry and exit, if feasible.
- Do not walk through fluids.
- Do not touch or move anything at a crime scene unless it is necessary to do so for patient care (notify law enforcement prior to moving so if possible).
- Observe and document original location of items moved by crew.
- When removing patient clothing, leave it intact as much as possible.
  - Do not cut through clothing holes made by gunshot or stabbing.
- If you remove any items from the scene, such as impaled objects or medication bottles, document your actions and advise a law enforcement official.
- Do not sacrifice patient care to preserve evidence.
- Consider requesting a law enforcement officer to accompany the patient in the ambulance to the hospital.
- Document statements made by the patient or bystanders on the EMS patient care report.
  - Comments made by a patient or bystanders should be denoted in quotation marks.
- Inform staff at the receiving hospital that this is a “crime scene” patient.
- If the patient is obviously dead consistent with Special Resuscitation Situations & Exceptions Policy, notify law enforcement of decision not to initiate resuscitation/patient care.
- At motor vehicle incidents, preserve the scene by not driving over debris, not moving debris and parking away from tire marks, if feasible.

## Recognized DNR Options in New Hampshire

1. The following are the only recognized DNR options in New Hampshire:  
“P-DNR” (portable DNR) order: statewide recognized document of any color and/or a “DNR” (Portable DNR) wallet card signed by a physician or APRN.
2. Medical orders form documenting the patient’s name and signed by a physician or APRN and that clearly documents the DNR order.
3. DNR bracelet or necklace worn by a patient, inscribed with the patient’s name, date of birth (in numerical form), and “NH DNR” or “NH Do not resuscitate.”

**Note:** Under state law, a DNR bracelet or necklace may only be issued to patients who have a valid DNR order.

**Note:** Neither a Living will or a Durable Power of Attorney for Healthcare (DPOAH) form is as effective as a valid DNR order. A patient’s healthcare agent under a DPOAH may not direct EMS providers to withhold resuscitation in the absence of a valid DNR Order.



When a written DNR order is not available and a DPOAH is present and requests that resuscitation be withheld, contact online **Medical Control** for guidance.

## For patients present or residing in a healthcare facility, the following is also acceptable

A DNR order written by a physician or APRN at a nursing home, hospital, or other healthcare facility issued in accordance with the healthcare facility’s policies and procedures.

## For Patients Being Transferred

All forms of DNR identified above remain valid during a transfer from one healthcare facility to another.

## DNR Orders from Other States

EMS providers should honor any DNR order that is substantially similar to the NH statutory form. Medical orders from other states must be signed by a physician or APRN that clearly documents a DNR order.

## Revocation of a DNR Order

The following are the only recognized methods for revoking a DNR order:

### Patients residing at home

- A patient residing at home may revoke a DNR order by destroying the DNR order and removing a DNR bracelet or necklace.
- If the patient lacks the capacity to make health care decisions, the patient’s healthcare agent (under a DPOAH—see below) may revoke the DNR order by destroying the DNR order and removing any DNR bracelet or necklace.

### Patients residing in a healthcare facility

- A patient in a healthcare facility may revoke his or her previous consent to a DNR order by making a written, oral, or other act of communication to the attending physician or APRN or other professional staff of the healthcare facility.
- For a patient who lacks the capacity to make health care decisions, the patient’s healthcare agent (under a DPOAH—see below) may revoke a DNR order by notifying the attending physician or APRN in writing or, if a witness over the age of 18 is present, orally.

Policy Continues

Policy Continued

**Procedures not to be Performed**

If there is a valid DNR order and the patient is in cardiac or respiratory arrest, or cardiac or respiratory arrest is imminent, EMS providers should withhold the following procedures:

- Do not perform chest compressions or actively assist ventilations via BVM.
- Do not intubate or place advanced airway devices.
- Do not defibrillate.
- Do not administer resuscitation drugs to treat cardiac arrest or the rhythms identified below:
  - Ventricular fibrillation.
  - Pulseless ventricular tachycardia.
  - Pulseless electrical activity.
  - Asystole.

**Procedures that may be performed**

If the patient is not in imminent cardiac or respiratory arrest, and has a valid DNR order appropriate medical treatment for all injuries, pain, difficult or insufficient breathing, hemorrhage, and/or other medical conditions must be provided.

EMS providers **MAY** perform any other measures, including comfort measures, for these patients, within their scope of practice per the usual treatment guidelines, including but not limited to:

- Oxygen therapy via nasal cannula, non-rebreather mask, and/or CPAP.
- Medications for treatment of pain, respiratory distress, dysrhythmias (except for those identified above).
- Intravenous fluid therapy for medication access.
- Mouth or airway suctioning.

**NH statutory DNR Form**

Do not resuscitate Order.

As attending physician or APRN of [patient's name here] and as a licensed physician or advanced practice registered nurse, I order that this person **SHALL NOT BE Resuscitated** in the event of cardiac or respiratory arrest.

This order has been discussed with [patient's name here] (or, if applicable, with his/her agent,) [name of DPOAH], who has given consent as evidenced by his/her signature below.

Attending physician or APRN name: \_\_\_\_\_

Attending physician or APRN signature: \_\_\_\_\_

Address: \_\_\_\_\_

Patient signature: \_\_\_\_\_

Address: \_\_\_\_\_

Agent signature (if applicable): \_\_\_\_\_

Address: \_\_\_\_\_

Policy Continues

## 8.8 Provider Orders for Life Sustaining Treatment (POLST) and Advanced Directives



Policy Continued

### **Durable Power of Attorney for Healthcare**

Under a Durable power of attorney for healthcare, a patient may designate another person—a healthcare agent—to make health care decisions for the themselves.

- Before a healthcare agent may make decisions on behalf of the patient, the patient's attending physician or APRN must certify in writing that the patient lacks capacity (this certification is filed within the patient's medical record).
- A patient who, in the clinical judgment of the EMS provider, retains the capacity to make health care decisions, shall direct his or her health care, even where a healthcare agent has been appointed. That is, EMS providers shall follow the wishes of the patient rather than the healthcare agent unless the patient lacks the capacity to make health care decisions.
- The healthcare agent must make an informed decision. It is generally advisable for EMS providers to perform at least a preliminary assessment and inform the healthcare agent of the options for caring for the patient.



**Note:** in the absence of a valid DNR order, a healthcare agent does not have the authority to direct prehospital providers to withhold resuscitation in the event of a cardiac arrest. When a written DNR order is not available and a DPOAH is present and requests that resuscitation be withheld, contact online **Medical Control** for guidance.

### **Living Will**

A living will is intended to address patients who have been admitted to a healthcare facility. Living wills will rarely, if ever, have application in the prehospital environment.

### **POLST (Provider Orders for Life-Sustaining Treatment)**

#### **Section A**

When patients are in cardiac arrest and have indicated they do not want resuscitation in Section A but do not have a valid DNR, contact **Medical Control** for guidance.

#### **Section B**

When confronted with a seriously ill patient who is not in cardiac arrest and a POLST form (yellow form), see [POLST Appendix A5](#) is available, utilize as follows:

- Full Treatment box is checked: Use all appropriate measures to stabilize/resuscitate patient.
- Limited Interventions box is checked: The maximum airway interventions are non-rebreather mask, CPAP, and suctioning. All appropriate IV medications may be utilized. No electrical therapies are to be provided.
- Comfort-focused Care box is checked: The maximum airway interventions are non-rebreather mask, suctioning and treatment of airway obstruction, as needed. Medications to relieve pain or discomfort.

#### **PEARLS:**

- You must have a valid DNR order or DNR jewelry. Neither a Durable Power of Attorney or a Living Will may be treated as a DNR order.
- Neither a spouse nor a healthcare agent / durable power of attorney may direct you not to perform resuscitation unless the patient has a valid DNR order.
- Your decision to withhold resuscitation is protected under the New Hampshire DNR law as long as it is based on the good faith belief that you have been presented with a valid DNR order or DNR jewelry.

# Left Ventricular Assist Device (LVAD)

8.9

Policy 8.9

## EMT/ ADVANCED EMT / PARAMEDIC STANDING ORDERS

### PURPOSE

To provide an overview of how a Left Ventricular Assist Device (LVAD) works and how EMS provider assessment and treatment differs for a patient with a LVAD.

### Highlights of Assessing and Treating and LVAD Patient

- Recognize that you have a patient with a LVAD.
- Consult family/caregiver and telephone LVAD coordinator for guidance.
- Determine if your patient has a LVAD problem, or an unrelated illness or injury.
- A completely stable patient may have no palpable pulse or measurable blood pressure.
- Mental status and skin color must be used to determine patient stability.
- CPR should almost never be performed on a LVAD patient.
- Patients with a LVAD should almost never be pronounced dead at the scene.

### Overview of a LVAD

The LVAD, or Left Ventricular Assist Device, is a mechanical device that takes over some or all of the pumping function of the heart's left ventricle. This device is used for patients of any age or gender with advanced heart failure who would not otherwise survive without this device. Heart failure can result from chronic/long-term hypertension and heart disease, congenital heart defects, mechanical damage to the heart, infection, postpartum complications and many other reasons.

Some LVAD patients will have a LVAD while they are waiting for a heart transplant (called Bridge-to-Transplant). Other LVAD patients, who are not eligible for a heart transplant for some reason, will live with the device for the rest of their lives (called Destination Therapy, or Lifetime use).

### How the Heart Works versus How LVADs Work

The normal pumping function of the heart is achieved by the contraction of the left ventricular muscle, which pushes a bolus of blood forward in the cardiovascular system with each contraction. This contraction is what we feel when checking a pulse, and what we hear when taking a blood pressure. If the heart is not contracting, blood is not moving forward in the system, and we don't feel or hear a pulse. The LVAD, in contrast, flows constantly and therefore creates no "pulse" to feel or hear.

The LVAD is a tube that is about ½ -1 inch in diameter with a pump in the middle. One end of the tube (inflow) is surgically inserted into the left ventricle, and the other end (outflow) is sewn into the aorta, just above where it exits the heart.

The pump on the LVAD spins constantly. The right side of the heart still pushes blood through the lungs and back to the left ventricle, but then the LVAD pump pulls the blood out of the left ventricle and pumps it out to the body, taking over most or all of the failed pumping action of the left ventricle.

The drive unit for the pump, which includes the power source and programming controls, is outside of the body and connects to the LVAD by a cord that exits the body through the abdomen, usually in the right upper quadrant.

**NOTE:** The important part to us as EMS providers is that *the pump is a constant flow pump*. There is no rhythmic pumping as there is with the ventricle, and therefore there is little to no pulse. This means you can have a perfectly stable and healthy looking person who has no palpable pulse and whom you may or may not be able to take a blood pressure!

Protocol Continues

E/  
A/  
P


 Protocol Continued

## EMT/ ADVANCED EMT / PARAMEDIC STANDING ORDERS

### Assessing the LVAD Patient

#### 1. Recognize you have a LVAD patient!

- The LVAD patient has a control unit attached to their waist, or in a shoulder bag. The control unit is attached to a power cord exiting from the patients' abdomen.
- The control unit will be attached to batteries mounted to the belt, in shoulder holsters, or in a shoulder bag. At home, it could be attached to a long cord that connects to a large power unit.

**2. Decide if you have a patient with a LVAD problem**, or a patient with a medical problem who just happens to have a LVAD. Patients with LVADs will have all the same illnesses and injuries as any other patient you see. Their LVAD may have nothing to do with the reason you were called.

#### 3. Look:

- Alarms on the control unit will most likely indicate a LVAD problem. Follow resource guides with the patient to trouble shoot.
- Skin color and mental status are the most reliable indicators of patient stability for the LVAD patient.

#### 4. Listen:

- Listen over the LVAD pump location to make sure you can hear it running. This will be just to the left of the epigastrium, immediately below the base of the heart. You should hear a low hum with a stethoscope if the pump is running. Don't assume the pump is running just because the control unit looks OK.
- The patient and their family are experts on this device. Listen to what they have to say about any problems with the LVAD.

#### 5. Feel:

Feel the control unit. A hot control unit indicates the pump is working harder than it should and often indicates a pump problem such as a thrombosis (clot) in the pump. The use of pulse and blood pressure to assess stability can be unreliable in a LVAD patient, even if they are very stable.

#### 6. Vitals:

- Pulse: Generally, you will be unable to feel a pulse.
- Blood Pressure: Not Reliable: you may or may not be able to obtain one, standard readings often varying widely from attempt to attempt, and correlation to systemic pressures is unreliable, even with consistent readings in the "normal" range.
- Pulse-oximetry: Readings seem to be fairly accurate and consistent, according to TEMSIS data, despite the manufacturer stating that pulse oximetry often doesn't work.
- Quantitative Continuous Waveform Capnography: This should remain accurate, as it relies on respiration, not pulse. Normal (printed) waveform shape with a normal respiratory rate and low CO2 readings (<30) can indicate low perfusion = poor pump function.
- Temperature: infection and sepsis are common, check temperatures!


 Protocol Continues

# Left Ventricular Assist Device (LVAD)

8.9

Protocol Continued

## EMT/ ADVANCED EMT / PARAMEDIC STANDING ORDERS

7. LVAD patients can remain stable and experience a range of ECG rhythms that could be dangerous or fatal in another patient.

8. Remember blood sugar and stroke assessment, particularly for an altered mental status.

### Treating the LVAD Patient

Generally, treatments for a LVAD patient will follow the current NH EMS Protocols. However, there are a few special considerations to keep in mind:

1. Don't let the LVAD distract you from treating the patient!
2. The best medical resource available to you for LVAD related problems is the patient's VAD coordinator. The patient will have a contact sheet for the VAD coordinator with them at all times. Contact the VAD coordinator as soon as possible.
3. Pump has stopped: Battery problems are a common cause for a pump to stop (battery dead, not seated properly, or both taken out at once). This is unlikely to be immediately fatal unless a patient is in VF/VT when the pump stops. The patient is more likely to return to their baseline unstable CHF symptoms. Treat the symptoms and contact the VAD coordinator before restarting a pump that has been stopped longer than 1 – 2 minutes.
4. Sepsis and stroke are leading causes of death for LVAD patients. Keep this in mind when assessing and treating a patient with an altered mental status.
5. Treating ECG changes:
  - Use of ACLS medications, defibrillation and pacing is unchanged for LVAD patients. Follow standard AHA and protocol guidelines as appropriate.
  - An implanted defibrillator and/or a pacemaker may already be in place.
  - The continuous flow of the LVAD means potentially unstable or fatal ECG rhythms, may have minimal to no short-term effect on the cardiac output and stability. Treat ECG changes according to protocol.
6. Trauma: LVAD patients are always on anticoagulant medications. Keep this in mind when treating traumatic injuries. Even minor appearing chest or abdominal trauma, such as a seatbelt mark, could be hiding a very serious injury.
7. CPR: CPR should NOT be performed if there is ANY evidence the pump is still functioning. The decision whether to perform CPR should be made based upon best clinical judgment of the provider in consultation with the patient's family and the VAD coordinators (or medical control if VAD coordinator unavailable). In any event, CPR should be initiated only where:
  - a. You have confirmed the pump has stopped (by listening for pumps sounds) **AND** all trouble shooting efforts to restart it (connect wires, batteries, new control unit, etc.) have failed, **AND**
  - b. The patient is unconscious, unresponsive, and has no detectable signs of life (no pulse, no blood pressure, no pulse ox readings, or waveform capnography reading, **AND**
  - c. The patient does not have a valid DNR in place.

Policy 8.9

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Protocol Continues

Protocol Continued

## EMT/ ADVANCED EMT / PARAMEDIC STANDING ORDERS

8. Patients should not be pronounced dead if LVAD continues to function, unless they have obvious factors of death such as decapitation, rigor mortis or dependent lividity.

### Transport of the LVAD Patient

1. Patients without a LVAD problem should be transported to the closest appropriate hospital for their condition.

2. Patients with a LVAD should be transported to their VAD resource hospital, if possible. The local VAD resource centers are Catholic Medical Center in Manchester and Tufts Medical Center and Brigham and Women's Hospital in Boston. Check with your patient to see which hospital is their resource center.

When in doubt, transport to the closest hospital to access more transport resources and support.

3. Always bring the patient's resource bag with you. It should have spare batteries, possibly a spare control unit, contact sheets for the VAD coordinator and directions for equipment and system alarms.

4. Always bring spare batteries for the LVAD with the patient, even if it is not a LVAD problem (see # 3. above). Fresh batteries generally last 3-10 hours, depending on the battery style.

5. If you have a long transport or expect that the patient may be away from home for more than 4-5 hours, then try and bring the patient's power base unit.

- This is the big unit that can plug into the wall and power the patients control unit. It is often also the battery recharger.
- In some cases, you can ask the family to bring it to the hospital for you, but there may be times when you might need to bring this in the ambulance and plug it into the inverter and use it as the power source.

6. Use your patient and their family as a resource. They are experts about this device and can help you help them.

Recommended Unit Resource: Print EMS Guide for Mechanical Circulatory Support and place in all ambulances (20 pages). This guide has excellent information and trouble shooting guidance for the 5 LVAD devices that patients could have out in the public. Access the resource guide at: <http://www.mylvad.com/sites/mylvadrp/files/Field%20Guides%20Master%20Document.pdf>.

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Policy 8.9

# On-Scene Medical Personnel

8.10

- The medical care provided at the scene is the responsibility of the highest level of EMS provider who has responded by usual dispatch systems to that scene. Passersby who stop to help, even though possibly more highly trained than the system providers, may **NOT** assume responsibility (except as outlined below) but may be allowed to help in care at the discretion of the lead EMS provider assuming they have proof of licensure.
- When an EMS provider, under Medical Control (on- or off-line), arrives at the scene of an emergency, the provider acts as the agent of Medical Control, (i.e., the on-line physician is ultimately responsible).
- Any health care provider (MD, PA, RN, nurse midwife, EMS provider, etc.) who is not an active member of the responding EMS unit or the unit's medical director, and who is either at the scene at the time of the EMS unit's arrival or arrives after an EMS unit has initiated care, and who desires to assume primary patient care, should be put in touch with the on-line **Medical Control** physician and:
  - Continue to provide care during transport of the patient; or
  - Transfer patient care to another provider at the same licensing level for transport of the patient to a medical hospital/facility;
  - Document all advanced care procedures performed while rendering care, which shall include an emergency care provider's current license number assigned by the division; and
  - Submit all documentation to the unit in charge of the incident.
- Where a higher level provider offers to assist, but that assistance is declined by the lead responding agency, the higher level provider shall not have any responsibility or liability for the patient's care.

See Saf-C 5922.01 (c)



# 8.11 Patient Status Determinants

Determination of the patient's status should be based on the highest level of acuity during patient care.

**Status I Critical** (Patients with symptoms of a life-threatening illness or injury with a high probability of mortality (death) if immediate intervention is not begun to prevent further airway, respiratory, hemodynamic, and/or neurologic instability).

For Example:

- Cardiac arrest.
- Respiratory arrest.
- Patient unresponsive with abnormal vital signs.
- Severe and/or deteriorating respiratory condition.
- Pediatric non-responsive respiratory distress
- Decompensating Shock or Sepsis.
- Major trauma
- Uncontrolled bleeding.
- Status epilepticus.

**Status II Emergent** (Patients with symptoms of an illness or injury that may progress in severity or result in complications with a high probability for morbidity (increased illness or disability) if treatment is not begun quickly.

For Example:

- Moderate injury without shock or respiratory compromise.
- Major fractures without shock.
- Moderate dyspnea.
- Acute MI (STEMI Alerts/activation of cath lab if applicable).
- Stroke (Stroke Alerts/activation of stroke team if available).

**Status III Lower Acuity** (Patients with symptoms of an illness or injury that have a low probability of progression to more serious disease or development of complication.

For Example:

- Patient alert, vital signs within normal limits, and with simple uncomplicated injuries or medical complaints.
- Soft tissue injuries including minor burns.
- Extremity fractures and dislocations.
- Maxillofacial injuries without airway compromise.
- Asthma attack that has responded to bronchodilators.
- Status: post seizure.
- Psychological emergencies.

**Status IV Non-Acute** (EMS evaluation with no interventions provided)

For Example:

- Scheduled medical transport, e.g. dialysis or return home
- Public assists
- Medical alarm with false activation
- Good intent calls

### Notes of Clarification

- Should a patient deteriorate in status while en route to a hospital, the unit may divert to the nearest hospital after consultation with **Medical Control** and notification of both the hospital of original destination and the new destination hospital.



## PATIENT TRANSPORT

NH RSA 265:107-a requires all children up to 57 inches to be properly restrained in a safety seat or harness when riding in a vehicle. Any child who fits on a length-based resuscitation tape is 57 inches or less in height. An ill or injured child must be restrained in a manner that minimizes injury in an ambulance crash. The best location for transporting a pediatric patient is on the ambulance cot. The method of restraint will be determined by various circumstances including the child's medical condition and weight.

## CONVENTIONAL CAR SEATS

1. Convertible car seat with two belt paths (front and back) with four points for belt attachment to the cot is considered best practice for pediatric patients who can tolerate a semi-upright position.

- Position safety seat on cot facing foot-end with backrest elevated to meet back of child safety seat.
- Secure safety seat with 2 pairs of belts at both forward and rear points of seat.
- Place shoulder straps of the harness through slots just below child's shoulders and fasten snugly to child.
- Follow manufacturer's guidelines regarding child's weight.

 **Note:** Non-convertible safety seats cannot be secured safely to cot. If child's personal safety seat is not a convertible seat, it cannot be used on the cot.



2. Stretcher harness device with 5 point harness

Restraint device (marketed to EMS) with 5-point harness (examples: Ferno Pedi-Mate, SafeGuard Transport, ACR)

- Attach securely to cot utilizing upper back strap behind cot and lower straps around cot's frame.
- 5-point harness must rest snugly against child. Secure belt at child's shoulder level so no gaps exists above shoulders.
- Adjust head portion of cot according to manufacturer's recommendation.
- Pedi-mate fits children weighing 10 – 40 lbs. SafeGuard Transport fits children weighing 22 – 100 lbs.

Follow manufacturer's guidelines regarding weight.



Policy Continues 

← Policy Continued

3. Car bed with both a front and rear belt path (example: Cosco Dream Ride SE)
  - For infants who cannot tolerate a semi-upright position or who must lie flat.
  - Position car bed so infant lies perpendicular to cot, keeping infant's head toward center of patient compartment.
  - Fully raise backrest and anchor car bed to cot with 2 belts, utilizing the 4 attachment sites supplied with car bed.
  - Only appropriate for infants from 5 – 20 lbs.



4. Properly secure isolette and infant according to manufacture's guidelines.
  - Blankets or towels may be used for additional stabilization

#### NON-PATIENT TRANSPORT

Best practice is to transport well children in a vehicle other than the ambulance, whenever possible, for safety.

If no other vehicle is available and circumstances dictate that the ambulance must transport a well child, he/she may be transported in the following locations:

- Captain's chair in patient compartment using a size appropriate integrated seat or a convertible safety sea
- Passenger seat of the driver's compartment if child is large enough (according to manufacturer's guidelines) to ride forward-facing in a child safety seat or booster seat. Airbag should be turned off. If the air bag can be deactivated, an infant, restrained in a rear-facing infant seat, may be placed in the passenger seat of the driver's compartment.

#### USE OF PATIENT'S CHILD PASSENGER SAFETY SEAT AFTER INVOLVEMENT IN MOTOR VEHICLE CRASH

The patient's safety seat may be used to transport the child to the hospital after involvement in a minor crash if ALL of the following apply:

- It is a convertible seat with both front and rear belt paths.
- Visual inspection, including under movable seat padding, does not reveal cracks or deformation.
- Vehicle in which safety seat was installed was capable of being driven from the scene of the crash.
- Vehicle door nearest the child safety seat was undamaged.
- The air bags (if any) did not deploy.

## **Purpose**

The purpose of this policy is to give EMS guidance for patients who are in police custody, restrained, and/or protective custody is required.

## **Protective Custody**

Protective custody is a civil status in which an incapacitated person is detained by a peace officer for the purposes of:

- (a) Assuring the safety of the individual or the public or both; and
- (b) Assisting the individual to return to a functional condition.
  - Patients with evidence of suicidal ideation who refuse care may be placed into protective custody under [RSA 135C:28 III](#).
  - Patients who present with an altered level of consciousness, diminished mental capacity, or evidence of impaired judgment from alcohol or drug use may be placed into protective custody under [RSA 172:B3](#).
  - If law enforcement refuses to place a patient into protective custody at the request of EMS, on-line medical control must be contacted and a law enforcement supervisor should be requested for further guidance.

## **Police Custody**

- Police custody for this policy, shall mean a person under arrest.
- Patients who EMS believe require medical care should be transported to a medical facility. If police and EMS disagree about whether a patient in police custody requires transport to a medical facility for further assessment or treatment, on-line medical control must be contacted and a law enforcement supervisor should be requested for guidance.

## **EMS Initiated Restraints**

For any patient potentially requiring restraints by EMS, see the [Restraints Procedure 6.3](#).

## **Police Restraint Devices**

Patients transported by EMS who have been restrained by law enforcement devices (e.g., handcuffs) should be accompanied, in the patient compartment, by a law enforcement officer who is capable of removing the device. If this is not feasible, the officer MUST follow directly behind the transporting ambulance to the receiving hospital.

## **Tasers® (Conductive Electrical Weapon)**

Patients who have been subdued by a Taser device, see [Tasers Procedure 6.4](#).

## **Pepper Spray**

Patients who have been subdued by pepper spray, see [Eye and Dental Protocol 4.2](#).

## **Excited Delirium**

Excited/Agitated Delirium is characterized by extreme restlessness, irritability, and/or high fever. Patients exhibiting these signs are at high risk for sudden death, see [Restraint Procedure 6.3](#).

**PURPOSE:**

Establish guidelines for the management and documentation of situations where patients refuse treatment or transportation.

**Refusal of care**

There are three components to a valid refusal of care. Absence of any of these components will most likely result in an invalid refusal. The three components are as follows:

1. **Competence:** In general, a patient who is an adult or a legally emancipated minor is considered legally competent to refuse care. A parent or legal guardian who is on-scene or available by phone, may refuse care on his or her minor children's behalf.
2. **Capacity:** In order to refuse medical assistance a patient must have the capacity to understand the nature of his or her medical condition, the risks and benefits associated with the proposed treatment, and the risks associated with refusal of care.
3. **Informed Refusal:** A patient must be fully informed about his or her medical condition, the risks and benefits associated with the proposed treatment and the risks associated with refusing care.

Patients who meet criteria to allow self-determination shall be allowed to make decisions regarding their medical care, including refusal of evaluation, treatment, or transport. These criteria include:

1. Adults ( $\geq 18$  years of age or a legally emancipated minor).
2. Orientation to person, place, time, and situation.
3. No evidence of altered level of consciousness resulting from head trauma, medical illness, intoxication, dementia, psychiatric illness or other causes.
4. No evidence of impaired judgment from alcohol or drug influence.
5. No language communication barriers. Reliable translation available (e.g., on scene interpreter, language line).
6. No evidence or admission of suicidal ideation resulting in any gesture or attempt at self harm. No verbal or written expression of suicidal ideation regardless of any apparent inability to complete a suicide.

EMS providers will make every reasonable effort to convince reluctant patients to access medical care at the emergency department via the EMS system before accepting a Refusal of Care.

Consider on-line medical control for all patients who present a threat to themselves, present with an altered level of consciousness or diminished mental capacity, or have history or examination findings consistent with a high-risk refusal.

The physician should be provided with all relevant information and may need to speak directly with the patient by radio or preferably a recorded landline. The physician should determine if protective custody is to be pursued in consultation with the Law Enforcement.

Protocol Continues 

Protocol Continued

If the patient is intoxicated and in need of medical treatment or protective custody, and refuses care, police can take custody of the individual under [NH RSA 172:B3](#).

Examples of high-risk refusals include but are not limited to:

1. Treated / resolved hypoglycemia.
2. Patient with obvious head trauma and taking anticoagulant medications.
3. Intoxicated patients.
4. Abnormal vital signs.
5. Treated / resolved narcotic overdose.
6. High risk mechanism of injuries, see [Spinal Injury Protocol 4.5](#).
7. Patient / witness reports suicidal ideations.
8. Possible Apparent Life Threatening Event, see [ALTE Protocol 2.3](#).

### Procedure

1. Clearly offer the patient both treatment and transportation to the hospital and document the offer in your Patient Care Report.
2. Perform an assessment of the patient's mental capacity and, to the extent permitted by the patient, a physical exam including vital signs. Your assessment, or the patient's refusal of care, must be fully documented in your Patient Care Report
3. Explain to the patient the nature and severity of his/her illness or injury, the treatments being proposed, the risks and consequences of accepting or refusing treatment, and the potential alternatives. Fully document the explanation given to the patient in your patient care report.
4. A parent or legal guardian may refuse care for a minor or:
  - When a parent or legal guardian is not reasonably available, another adult family member (e.g., grandparent), or other authorized representative having custody of the minor, may refuse care.
  - EMS personnel may accept a telephonic refusal of care, provided that they have explained the consequences of refusing care; telephonic refusal of care should be carefully documented.
5. Prepare and explain the Refusal of Care form to the patient (or, in the case of a minor patient, the patient's parent, legal guardian, or authorized representative).
6. The Refusal of Care form should be signed by the patient (or, in the case of a minor patient, by the minor patient's parent, legal guardian, or authorized representative) at the time of the refusal. The form should also be dated and, where possible, signed by a witness, preferably a competent relative, friend, police officer, or impartial third person.
7. If on-line medical control was consulted for a refusal of care, obtain and document the physician's name in the patient care report.
8. All patients in police custody retain the right to request transport. This should be coordinated with law enforcement.
9. If child or adult abuse and/or neglect is suspected and a refusal of care situation exists, the EMT must contact police immediately, see [Abuse and Neglect Protocol 8.0](#).

# 8.15 Response to Domestic Violence

Domestic violence is the willful intimidation, assault, battery, sexual assault, and/or other abusive behavior perpetrated by an intimate partner against another. It affects individuals in every community, regardless of age, gender, economic status, race, religion, nationality, or educational background. The consequences of domestic violence can cross generations and last a lifetime.

When domestic violence is suspected, the EMS provider should further assess the patient and take appropriate action in accordance with New Hampshire state law.

## **PURPOSE**

To ensure that individuals affected by domestic violence are identified and provided with comprehensive medical and psychosocial interventions.

## **Indicators of Domestic Violence**

The following are potential indicators of domestic violence. If the patient presents with one or more of these indicators, further assessment is warranted:

- The patient admits to past or present physical or emotional abuse, as a victim or witness.
- The patient denies physical abuse, but presents with unexplained bruises, whiplash injuries consistent with shaking, areas of erythema consistent with slap injuries, grab-marks on arms or neck, lacerations, burns, scars, fractures, or multiple injuries in various stages of healing, fractured mandible, or perforated tympanic membranes.
- The patient presents with injury sites suggestive of battering. Common injury sites include areas hidden by clothing or hair (e.g., face, head, chest, breasts, abdomen, and genitals).
- The extent or type of injury is inconsistent with the explanation offered by the patient.
- Pregnancy, which increases a woman's risk of domestic violence.
- The patient presents evidence of sexual assault or forced sexual actions by a partner.
- The partner (or suspected abuser) insists on staying close to the patient and may try to answer all questions directed to the patient.
- The patient is afraid of returning home or indicates concerns for safety of self, children, and/or pets.
- A substantial delay exists between the time of the injury and presentation for treatment.
- The patient describes the alleged "accident" in a hesitant, embarrassed, or evasive manner, or avoids eye contact.
- The patient has "psychosomatic" complaints such as panic attacks, anxiety, choking sensation, or depression.
- The patient has complaints of chronic pain (back or pelvic pain) with no substantiating physical evidence.
- The patient or partner has a history of psychiatric illness, alcohol, and/or drug abuse.
- The patient has a history of suicide attempts or suicidal ideation.
- Medical history reveals many "accidents" or remarks indicating that previous injuries were of suspicious origin.
- The patient has a history of self-induced abortions or multiple therapeutic abortions.
- The patient has a pattern of avoiding continuity in health care.

Policy Continues 

# Response to Domestic Violence 8.15

Policy Continued

## Responsibility of EMS Provider

Domestic violence calls are among the most potentially dangerous to responding personnel.

- If EMS providers respond to a known domestic violence call and arrive prior to police, the providers should stage until police arrive and secure the scene.
- If EMS providers respond to an unknown call and suspect domestic violence on arrival, the providers should consider withdrawing, notifying police, and proceeding as above.
- Don't hesitate to return to the vehicle at any time to make decisions or notify police and/or Medical Control.

## When Cleared to Proceed

- Clearly and simply identify yourself and your role. Use non-threatening body language and approach.
- Use a team approach. Designate one provider to observe for safety and one or more to work on the patient or discreetly assess children for injuries.
- Know where your partner is.
- Be aware of the surroundings:
  - The number and location of exits.
  - The number and location of people in the residence.
  - Potential weapons and hiding places.
  - Position rescuers with access to exit(s).
- Secure pets.
- Limit the number of people present (e.g., responders, neighbors, family).
- Let occupants lead down hallways or into stairwells or rooms. (Keep them in front.)
- Avoid treating a patient in a bedroom (only one exit, intimate setting, possible hidden weapons) or kitchen (many possible weapons).
- Use hard chairs rather than upholstered furniture as weapons are easily hidden among cushions.
- Attempt to separate the patient from the suspected batterer for treatment and/or questioning. If possible, move the patient to the ambulance to assess and treat, even if non-transport.
- If removing personal items from the patient for assessment purposes, place them in paper bags, if possible, to preserve evidence.
- Treat injuries according to appropriate protocol.
- Provide psychological support and offer the patient choices when possible to allow the patient to regain a sense of control.

## Documentation and Reporting Responsibilities

Per NH RSA 631:6, a person must report to the police:

- Any gunshot wound or other serious bodily injuries caused by a criminal act.
- Any other injury he/she believes was caused by a criminal act, with the following exception:
  - If the patient is 18 years old or older and
  - If the injury was caused by sexual assault or domestic violence and
  - If it is **not** a gunshot wound or other serious bodily injury, the patient can refuse to have the information released to the police.



Policy Continues

Policy 8.15

# 8.15 Response to Domestic Violence

Policy Continued

## Children on scene

- Domestic violence is family violence and children and pets are often injured even when they are not the primary target of the abuse. Children should be carefully assessed for physical injury whenever adults are injured in a domestic violence incident, and/or if the scene suggests a mechanism of injury such as broken glass or furniture.
- If physically uninjured, children should be sheltered from further harm on scene, e.g., witnessing patient care, view of the crime scene, police interaction with the suspected abuser.
- Witnessing violence qualifies as child abuse and neglect and therefore mandates a report (see Child Abuse Reporting for more information.) A child who has witnessed violence will need care for potential emotional/psychological injuries, even if s/he has not suffered physical injury. The child should be put in the care of Law Enforcement until Child Protective Services (CPS) can be contacted and arrangements can be made for the child's safety. The procedure for contacting CPS can vary by regional office/police department. Discuss this scenario with local law enforcement in advance of an incident.
- An EMS provider may assist law enforcement with caring for the uninjured child/children until appropriate arrangements have been made by law enforcement.

## Referrals

The NH Coalition Against Domestic and Sexual Violence (NHCADSV) is a network of 14 agencies across the State that supports survivors of domestic and sexual violence. Each agency offers the following free, confidential services:

- **24-Hour Domestic Violence Crisis Line: 1-866-644-3574.**
- **24-Hour Sexual Assault Crisis Line: 1-800-277-5570.**
- Emergency shelter and transportation.
- Legal advocacy.
- Hospital and court accompaniment.
- Information about public assistance.

## **WHEN NOT TO START**

Resuscitation efforts should be withheld under the following circumstances:

- **VALID DO NOT RESUSCITATE ORDER:** Refer to [DNR, POLST & Advanced Directives Protocol 8.8](#).
- **SCENE SAFETY:** The physical environment is not safe for providers.
- **DEAD ON ARRIVAL (DOA):** A person is presumed dead on arrival when all five “Signs of Death” are present **AND** at least one associated “Factor of Death” is present.

### **Signs of Death (All five signs of death must be present)**

- Unresponsiveness.
- Apnea.
- Absence of palpable pulses at carotid, radial, and femoral sites.
- Unresponsive pupils.
- Absence of heart sounds.

### **Factors of Death (At least one associated factor of death must be present)**

- Damage or destruction of the body incompatible with life, such as:
  - ✓ Decapitation.
  - ✓ Decomposition.
  - ✓ Deforming brain injury.
  - ✓ Incineration or extensive full thickness burns.
- Lividity/Rigor mortis of any degree.
- Major blunt or penetrating trauma.



Patients with ventricular assist devices (VAD) should almost never be pronounced dead at the scene, see [LVAD Policy 8.9](#).

## **SUDDEN UNEXPLAINED INFANT DEATH SYNDROME (SUIDS).**

- An infant <12 months who is apneic, asystolic (no heartbeat or umbilical cord pulse), and exhibiting lividity and/or rigor mortis should be presumed dead.
- For unexpected, unexplained infant death, record carbon monoxide level in room where infant was found unresponsive, if possible.

## **NEONATE:**

- A neonate who is apneic, asystolic, and exhibits either neonatal **maceration** (softening or degeneration of the tissues after death in utero) or **anencephaly** (absence of a major portion of the brain, skull, and scalp) may be presumed dead.
- Contact **Medical Control** hospital if gestational age is less than 20 weeks and neonate shows signs of obvious **immaturity** (translucent and gelatinous skin, lack of fingernails, fused eyelids).



**NOTE:** Infant and/or neonatal resuscitation and transport may be initiated in cases where the family does not accept the idea of nonintervention.

Policy Continues 

## 8.16 Resuscitation Initiation and Termination

Policy Continued

### **WHEN TO STOP**

Termination of resuscitation **MAY BE** considered if return of spontaneous circulation does not return before transport is initiated.

### **Resuscitation may be stopped under the following circumstances:**

- The physical environment becomes unsafe for providers.
- The exhaustion of EMS providers.
- The automatic external defibrillator has advised “no shock” on 5 sequential analyses and ALS/hospital care is not available within 15 minutes (hypothermia is an exception).
- There is no return of spontaneous circulation after 15 minutes of either BLS alone or combined BLS and ALS in the absence of hypothermia, unless the patient exhibits recurrent ventricular fibrillation or ventricular tachycardia and has quantitative waveform capnography (if available) >20 mmHg.
- Extrication is prolonged (>15 minutes) with no resuscitation possible during extrication (hypothermia is an exception).
- If directed to do so by Medical Control.
- There is no return of spontaneous circulation after 30 minutes of either BLS alone or combined BLS and ALS in the hypothermic patient and extrication is going to be prolonged.
- If resuscitation is terminated during transport, continue to the receiving hospital without lights and sirens and notify receiving facility.

- Prolonging resuscitation efforts, beyond 15 minutes, without a return of spontaneous circulation is usually futile, unless cardiac arrest is compounded by hypothermia or immersion in cold water.
- EMS providers are not required to transport every victim of cardiac arrest to a hospital. Unless special circumstances are present, it is expected that most resuscitations will be performed on-scene until the return of spontaneous circulation or a decision to cease resuscitation efforts is made based on the criteria listed under “when to stop” (above). Transportation with continuing CPR may be justified if hypothermia is present or suspected. Current AHA guidelines state: “cessation of efforts in the out-of-hospital setting...should be standard practice.”

Policy Continues

Policy Continued

## **DETERMINING DEATH IN THE FIELD**

When efforts to resuscitate are not initiated or are terminated under the above provisions, EMS providers shall:

- Document time of death.
- Notify law enforcement.
- Consider possibility of a crime scene and restrict access.
- Any decision to move the body must be made in collaboration with law enforcement and the medical examiner.
- Leave any resuscitation adjuncts such as advanced airway devices, IV/IO access devices, electrode pads, etc., in place.
- Inform family on scene of patient's death and offer to contact family, friends, clergy, or other support systems.

The above requirements apply to situations in which law enforcement or the medical examiner may take jurisdiction. Law enforcement and the medical examiner are not required to take jurisdiction of hospice or other patients who are known to have been terminally ill from natural causes or congenital anomaly, and death was imminent and expected. Where law enforcement is not involved, EMS providers may provide appropriate assistance to families or other caregivers.

**Mass Casualty Incident (MCI):** [See MCI Protocol 9.1.](#)

## **Documentation**

- Complete a Patient Care Record (PCR) in all cases. If available, include ECG rhythm strips with the patient care report.
- Document special orders including DNR, on-line Medical Control, etc.
- MCI conditions may require a triage tag in addition to an abbreviated PCR.
- Record any special circumstances or events that might impact patient care or forensic issues.

# 8.17 Trauma Triage and Transport Decision

## Measure Vital Signs and Level of Consciousness

Glasgow Coma Scale ≤13  
 Systolic Blood Pressure <90 mmHg or signs of shock  
 Respiratory Rate <10 or >29 breaths per minute or need for ventilatory support (<20 in infants aged <1 year)

- YES →
- If feasible, transport directly to a Level 1 or 2 Trauma Center by ground or air and notify receiving hospital of a "Trauma Alert".
  - If above is not feasible, notify closest appropriate hospital of a "Trauma Alert", as soon as possible.
  - For a child <15 years of age, direct transport to a Level 1 or 2 Pediatric Trauma Center is desired.

NO

## Assess Anatomy of Injury

- All penetrating injuries to head, neck, torso, and extremities proximal to elbow or knee
- Chest wall instability or deformity (e.g. flail chest)
- Two or more proximal long-bone fractures
- Crushed, degloved, mangled, or pulseless extremity
- Amputation proximal to wrist or ankle
- Pelvic fractures
- Open or depressed skull fracture
- Paralysis

- YES →
- Transport to the closest appropriate facility.
  - Provide early patient notification
  - Consider "Trauma Alert".

NO

## Assess Mechanism of Injury and Evidence of High-Energy impact

- Falls
  - Adult: >20 feet (1 story is equal to 10 feet)
  - Pediatric: >10 feet or 2 to 3 times the height of the child.
- High-risk auto crash
  - Intrusion, including roof: >12 inches occupant side; >18 inches any side
  - Ejection (partial or complete) from automobile
  - Death in same passenger compartment
- Auto vs. pedestrian/bicyclist: thrown, run over, or with significant (>20 mph) impact
- Motorcycle crash >20 mph

- YES →
- Transport to the closest appropriate facility.
  - Provide early patient notification
  - Consider "Trauma Alert".

NO

## Assess Special Patient or System Considerations

- Older Adults
  - Risk of injury/death increases after age 55 years
  - SBP <110 may represent shock after age 65
  - Low impact mechanisms (e.g. ground level falls) may result in severe injury
- Pediatric
  - Should be triaged preferentially to pediatric capable trauma centers
- Anticoagulants and bleeding disorders
  - Patients with head injury are at high risk for rapid deterioration
- Burns
  - Without other trauma mechanism: triage to burn facility
  - With trauma mechanism: triage to trauma center
- Pregnancy >20 weeks
- EMS Provider judgment

- YES →
- Transport to the closest appropriate facility.
  - Provide early patient notification including presence of high risk factors.

NO

Transport to closest hospital

The threshold for entering children into the trauma system may be lower than the same criteria for adults. In addition prehospital providers must be aware that an assigned adult trauma hospital may have a different level of trauma care assignment for pediatric trauma. The use of air medical transport to take a patient directly to a Level I pediatric trauma hospital may be warranted

Reference: CDC 2011 Guidelines for Field Triage of Injured Patients and NH Trauma Plan

# Hazardous Material Exposure 9.0

## Purpose

The goal of the hazardous materials exposure protocol is to prepare the EMS provider for the potential risks that may be encountered and to provide guidelines to mitigate the effects of a hazardous exposure incident. The EMS provider may reference additional protocols for the management of specific hazardous materials exposure in dealing with known chemicals.

Successful management of a hazardous materials exposure depends on effective coordination between EMS, local hazardous materials teams, fire and police departments, the Poison Control Center, and appropriate state and federal agencies.

## Identification

- Identification of the exposed material should be made at the earliest convenient time possible.
- Proper chemical name and spelling will be necessary for identification of procedures for Poison Control (1-800-222-1222) and receiving hospitals.
- Utilization of shipping papers, waybills, and Safety Data Sheets (SDS) may assist in identifying chemical hazards, safety precautions, personal protective equipment, and treatments.

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

## Personal Safety

- Personal protection is the highest priority when responding to an incident where hazardous material exposure is suspected. DO NOT ENTER THE HOT ZONE. Only HazMat Teams should enter the hot zone.
- If there is a major hazardous materials release:
  - Request specific staging information and be alert for clusters of injured patients.
  - Maintain safe location upwind and uphill of the site (at least 300 ft.).
  - Observe strict adherence to hot, warm, and cold-zone areas for personal safety, decontamination, and treatment.
  - Activate the HazMat Response/Incident Command System.
  - Incident Command to notify NH Bureau of Emergency Management (603-271-2231) to request additional resources including law enforcement and pharmaceutical supply.

## Hospital Notification

- 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. Communication with the hospital should include such information as covered under the documentation and treatment section.

## Patient Decontamination

Only properly trained and protected personnel should conduct patient decontamination. The decontamination system is established by the appropriately trained fire department/HazMat Team. EMS personnel will work cooperatively with them during the decontamination process.

Patient decontamination is necessary to minimize injury due to exposure, as well as to mitigate risk of secondary exposure.

Protocol Continues 

# 9.0 Hazardous Materials Exposure

Protocol Continued

## **Mass/Gross Decontamination**

- Mass Decontamination (Large-scale Multiple/Mass Casualty) involves the effective dilution of a chemical or hazardous substance utilizing large quantities of water. This process should be supervised by the appropriately trained local fire department or HazMat Team.
- This process is necessary due to the involvement of an overwhelming number of patients, the severity of symptoms, and where technical or fine decontamination cannot be utilized due to time and personnel.

## **Technical Decontamination**

- Technical Decontamination involves a multi-step process, supervised by the appropriately trained fire department or HazMat Team.
- This decontamination process is dependent on the type of chemical hazard present, and may require different methods such as:
  - Dilution.
  - Absorption.
  - Neutralization.
  - Chemical degradation.
  - Solidification.

Each method of decontamination has specific uses. Ascertain from the HazMat Team which method was used, if there are any hazards associated with the decontamination process, and if further definitive decontamination is required at the hospital.

## **Definitive/Fine Decontamination**

- Usually completed at the hospital, it involves additional washing and rinsing to further dilute and finally remove any contaminants. Definitive decontamination should be performed in an authorized decontamination facility and with appropriately trained personnel.

## **Decontamination of Special Populations**

- Children and their families, the elderly/frail, and patients with medical appliances will require more EMS personnel and time for general assistance and may also require simultaneous basic life support assistance during decontamination. An individual patient requiring special needs decontamination may take 10 – 15 minutes to complete.

Although the principles of decontamination are the same, certain precautions may need to be taken, depending on the patient.

- These patients may have the inability to give history or describe symptoms and physical complaints.
- Typical stress response of children is to be highly anxious and inconsolable, making assessment difficult.
- Small children are more difficult to handle while wearing personal protection equipment (PPE).
- Attempt to keep children with their families, as the decontamination process is likely to be frightening and children may resist.

Protocol Continues

# Hazardous Materials Exposure 9.0

Protocol Continued

- Keep patients with existing medical conditions together with their caregivers, if feasible.
- Children and elderly, and possibly special needs patients, are inherently unable to maintain body temperature and quickly become hypothermic. Utilize water warmed to 100°F, if available, keep warm after drying procedure.

Use low-pressure water and soft washcloths and protect the airway and eyes throughout the decontamination process.

## **Treatment during Decontamination**

- If medication is required, limit administration route to intramuscular or medi-inhaler.
- Intravenous therapy and advanced airway interventions should be delayed until after gross decontamination.
- Specific individual treatment should be referenced from Poison Control or MSDS sheets.

## **Document Exposure and Treatment 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) must have appropriate PPE.
- Lining of the interior of the ambulance and further use of PPE may be necessary, dependent upon the level of completed decontamination.
- 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 will 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.
- With in the scope of the MCI, the EMS provider may perform procedures within their scope of practice.

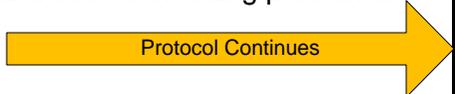
## Scene Assessment and Triage Priorities

1. The initial response team should assess the scene for potential hazards, safety and number of victims to determine the appropriate level of response.
2. Notify agency dispatch to declare an MCI and need for interagency support as defined by incident level. Agency dispatch should coordinate request for additional resources and contact local mutual aid, regional and state level agencies for assistance and notification as needed.
3. Identify and designate the following positions as qualified personnel become available: EMS Command responsible for overall command of all EMS resources and tactics; Triage Officer responsible for overseeing all triage group activities; Treatment Officer responsible for overseeing all treatment group activities; Staging Officer responsible for overseeing staging of all arriving ambulances and other mobile EMS resources; Loading Officer responsible for overseeing loading of all treated patients into ambulances, buses, and helicopters and logging patient information, tag numbers and coordinating hospital destinations
4. Identify and designate EMS sector areas of MCI including Triage, Treatment, Staging and Loading.
5. Post incident MCI Plan.

## 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.

Protocol Continues 

# Mass/Multiple Casualty Triage 9.1

Protocol Continued

## SALT Triage Categories:

- Immediate: **RED** Immediately life-threatening problems, high potential for survival (eg., tension pneumothorax, exposure to nerve agent resulting in severe shortness of breath or seizures). Likely to survive given available resources. If no to any of the following: Has a peripheral pulse? Not in respiratory distress? Hemorrhage is controlled? Follows commands or makes purposeful movements?
- Delayed: **YELLOW** Serious (not minor) injuries requiring care but management can be delayed without increasing morbidity or mortality (e.g., long bone fractures, 40% BSA). If yes to all of the following: Has a peripheral pulse? Not in respiratory distress? Hemorrhage is controlled? Follows commands or makes purposeful movements?
- Minimal: **GREEN** Injuries require minor care or no care (e.g., abrasions, minor lacerations, nerve agent exposure with mild runny nose). If yes to all of the following: Has a peripheral pulse? Not in respiratory distress? Hemorrhage is controlled? Follows commands or makes purposeful movements?
- Expectant: **GREY** Unlikely to survive given available resources. Does not mean Dead. Method of preserving resources: should receive comfort care or resuscitation when resources are available. Serious injuries: very poor survivability even with maximal care in hospital or prehospital setting (e.g., 90% body surface area burn, multiple trauma with exposed brain matter). If no to any of the following: Has a peripheral pulse? Not in respiratory distress? Hemorrhage is controlled? Follows commands or makes purposeful movements?
- Dead: **BLACK** Patient is not breathing after opening airway. (In children, if after giving 2 rescue breaths, if appropriate.) Deceased or casualties whose injuries are so severe that their chance of survival does not justify expenditure of limited resources. Tag patients to prevent re-triage. Do not move bodies unless they are hindering efforts to rescue live patients, or they are in danger of being further damaged, for example, burned by fire, building collapse, etc.

## 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.

## 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.

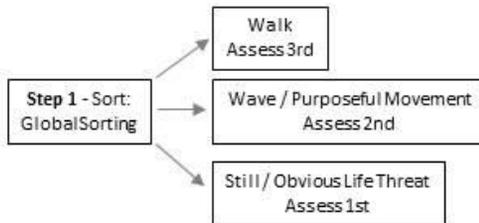
Protocol Continues

# 9.1 Mass/Multiple Casualty Triage

Protocol Continued

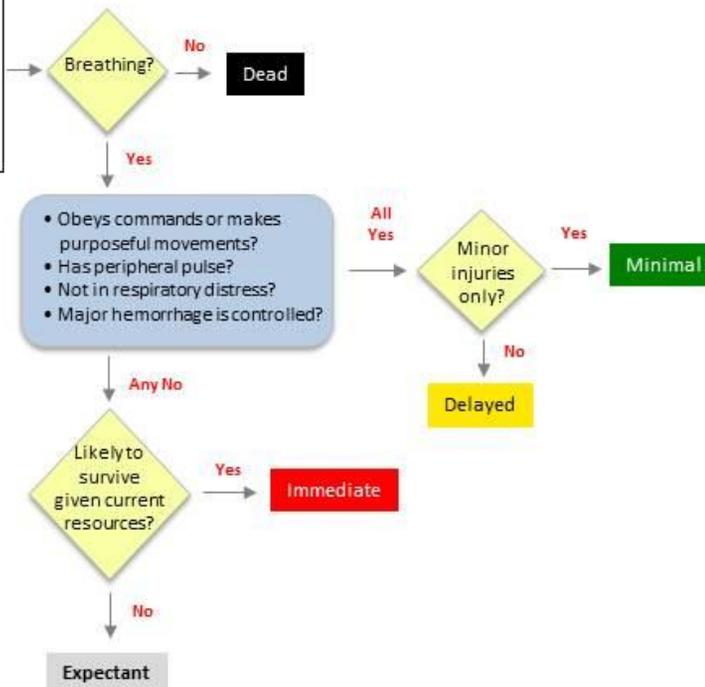
SALT Mass Casualty Triage Algorithm  
(Sort, Assess, Lifesaving Interventions, Treatment/Transport)

## SALT Mass Casualty Triage



**Step 2 - Assess: Individual Assessment**

- Lifesaving Interventions:**
- Control major hemorrhage
  - Open airway  
*if child, consider 2 rescue breaths*
  - Chest decompression
  - Auto injector antidotes



# Radiation Injuries Adult & Pediatric

9.2

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 2.12.](#)

## PARAMEDIC STANDING ORDERS

P

- Consider pain management, see [Pain Management Protocol 2.17.](#)

Radiation Injuries 9.2

### 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.

# 2015 NH Approved EMS Medications

Level	Generic	Trade name	Notes
EMT	Acetaminophen	Tylenol	Pedi and Adult
EMT	Activated Charcoal		Pedi and Adult
EMT	Albuterol	Proventil	MDI Assist only
EMT	Aspirin		Adult
EMT	Atropine (autoinjector)	AtroPen, AtroPen Jr.	Pedi and Adult
EMT	Atropine & Pralidoxime (autoinjector)	DuoDote or Nerve Agent Antidote Kit	Pedi and Adult
EMT	Diazepam - rectal gel & nerve agent autoinjectors	Diastat	Pedi and Adult - patient assist only
EMT	Epinephrine (autoinjector)	Epi-Pen, Epi-Pen Jr.	Pedi and Adult
EMT	Dextrose	Oral Glucose	Pedi and Adult
EMT	Ibuprofen	Motrin or Advil	Pedi and Adult
EMT	Ipratropium Bromide (mixed with Albuterol)	Atrovent (mixed with Albuterol) OR DuoNeb	MDI Assist only
EMT	Levalbuterol	Xopenex	MDI Assist only
EMT	Naloxone	Narcan	Adult
EMT	Nitroglycerin	Tridil, Nitrobid, Nitrostat	Adult - patient
	Sucrose		Newborns
EMT	Pralidoxime (autoinjector)	2-Pam, Protopam Chloride	Pedi and Adult
AEMT	Albuterol	Proventil	Pedi and Adult
AEMT	Dextrose	D10	Pedi and Adult
AEMT	Epinephrine		Pedi and Adult
AEMT	Glucagon		Adult & Pedi
AEMT	Hydrocortisone	SoluCortef	Pedi and Adult - patient assist only
AEMT	Hydroxocobalamin	Cyanokit®	Pedi and Adult
AEMT	Ipratropium Bromide (mixed with Albuterol)	Atrovent (mixed with Albuterol) OR DuoNeb	Pedi and Adult
AEMT	Lidocaine		Adult - IO anesthetic only
AEMT	Naloxone	Narcan	Pedi and Adult
AEMT	Nitroglycerin	Tridil, Nitrobid, Nitrostat	Adult
AEMT	Nitrous Oxide premixed with oxygen	Nitronox®	Pedi and Adult
AEMT	Ondansetron	Zofran	Adult



EMT- Intermediates may only give their approved medications to adult patients; once the EMT-Intermediate has transitioned to AEMT they may also give these medications to pediatric patients.

# 2015 NH Approved EMS Medications

Level	Generic	Trade name	Notes
Paramedic	Adenosine	Adenocard	Pedi and Adult
Paramedic	Amiodarone	Cordarone	Pedi and Adult
Paramedic	Atropine		Pedi and Adult
Paramedic	Calcium Chloride		Pedi and Adult
Paramedic	Calcium Gluconate		Pedi and Adult
Paramedic	Dexamethasone	Decadron	Pediatric
Paramedic	Diazepam	Valium	Pedi and Adult
Paramedic	Diltiazem	Cardizem, Dilacor, Tiazac	Adult
Paramedic	Diphenhydramine	Benadryl	Pedi and Adult
Paramedic	Dolasetron	Anzemet	Adult
Paramedic	Dopamine		Pedi and Adult
Paramedic	Epinephrine		Pedi Nebulized
Paramedic	Etomidate (RSI only)	Amidate	Adult
Paramedic	Fentanyl	Sublimaze	Pedi and Adult
Paramedic	Granisetron	Kytril	Pedi and Adult
Paramedic	Haloperidol	Haldol	Adult
Paramedic	Heparin		Adult
Paramedic	Hydrocortisone	SoluCortef	Pedi and Adult
Paramedic	Hydromorphone	Dilaudid	Adult
Paramedic	Ketamine (RSI only)		Adult
Paramedic	Ketorolac	Toradol	Adult
Paramedic	Levalbuterol	Xopenex	Pedi and Adult
Paramedic	Lidocaine		Pedi and Adult
Paramedic	Lorazepam	Ativan	Pedi and Adult
Paramedic	Magnesium Sulfate		Pedi and Adult
Paramedic	Methylprednisolone	Solumedrol	Adult & Pedi
Paramedic	Metoclopramide	Reglan	Adult
Paramedic	Metoprolol	Lopressor	Adult
Paramedic	Midazolam	Versed	Pedi and Adult
Paramedic	Morphine		Pedi and Adult
Paramedic	Norepinephrine	Levophed	Pedi and Adult
Paramedic	Ondansetron	Zofran	Pedi and Adult
Paramedic	Oxytocin	Pitocin	Adult
Paramedic	Phenylephrine	Neo-Synephrine	Adult
Paramedic	Pralidoxime	2-Pam, Protopam Chloride	Pedi and Adult
Paramedic	Prednisone		Adult
Paramedic	Prochlorperazine	Compazine	Adult
Paramedic	Proparacaine	Alcaine	Pedi and Adult
Paramedic	Rocuronium (RSI only)	Zemuron	Adult
Paramedic	Sodium Bicarbonate		Pedi and Adult
Paramedic	Succinylcholine (RSI Only)	Anectine	Adult
Paramedic	Tetracaine		Pedi and Adult
Paramedic	Vasopressin		Adult
Paramedic	Vecuronium (RSI Only)	Norcuron	Adult

## Appendix 1

# NH Adult Medication Reference

This document is to serve as a reference for the 2015 NH Patient Care Protocols.

See the Pediatric Color Coded Appendix for pediatric dosages

Medication	Adult Protocol/Dosing
<p><b><u>Acetaminophen</u></b> <b>(Tylenol)</b></p> <p><b>Indications/Contraindications:</b></p> <ul style="list-style-type: none"> <li>Indicated for fever control.</li> <li>Avoid in patients NSAID allergy, aspirin-sensitive asthma, or renal insufficiency</li> </ul>	<p><b>Fever</b></p> <ul style="list-style-type: none"> <li>500 - 1000 mg.</li> </ul> <p><b>Fever - Extended Care</b></p> <ul style="list-style-type: none"> <li>650 mg every 4 hours OR 1000 mg every 6 hours, not to exceed 3,000 mg/24 hours.</li> </ul> <p><b>Musculoskeletal Injuries – Extended Care</b></p> <ul style="list-style-type: none"> <li>325-650 mg by mouth every 6 hours as needed, not to exceed 3000 mg/24hours.</li> </ul> <p>Suggested Formulations:</p> <ul style="list-style-type: none"> <li>Oral 325mg tablets, 500mg tablets, 160mg/5ml</li> <li>Rectal 325mg supp, 650mg supp, 80mg supp</li> </ul>
<p><b><u>Activated Charcoal</u></b></p> <p><b>Indications:</b></p> <ul style="list-style-type: none"> <li>Poisoning/Overdose.</li> </ul>	<p><b>Poisoning/Substance Abuse/OD</b></p> <ul style="list-style-type: none"> <li>25 – 50 grams PO if advised by Poison Control or Medical Control.</li> </ul> <p>Suggested Formulations:</p> <ul style="list-style-type: none"> <li>Ez-Char 25g (requires reconstitution)</li> <li>Kerr-Insta Char 25g/120ml</li> <li>Actidose 25g/120ml</li> </ul>
<p><b><u>Adenosine</u></b> <b>(Adenocard)</b></p> <p><b>Indications/Contraindications:</b></p> <ul style="list-style-type: none"> <li>Specifically for treatment or diagnosis of Supraventricular Tachycardia.</li> <li>Consider for regular or wide complex tachycardia</li> </ul>	<p><b>Tachycardia</b></p> <ul style="list-style-type: none"> <li>6 mg rapid IV push. <ul style="list-style-type: none"> <li>May repeat 12 mg every 1 – 2 minutes X 2, if no conversion.</li> </ul> </li> </ul> <p>Suggested Formulations:</p> <p>Intravenous</p> <ul style="list-style-type: none"> <li>Adenosine pre-filled syringe 12mg/4ml</li> <li>Adenosine pre-filled syringe 6mg/2ml</li> <li>Adenocard 12mg/4ml</li> <li>Adenocard 6mg/2ml</li> </ul>
<p><b><u>Albuterol</u></b> <b>Beta-Agonist</b></p> <p><b>Indications/Contraindications:</b></p> <ul style="list-style-type: none"> <li>Nebulized treatment for use in respiratory distress with bronchospasm.</li> </ul>	<p><b>Allergic Reaction/Anaphylaxis</b></p> <ul style="list-style-type: none"> <li>2.5mg via nebulizer.</li> <li>May repeat 2.5mg via nebulizer, repeat every 5 minutes (4 doses total).</li> </ul> <p><b>Asthma/COPD/RAD</b></p> <ul style="list-style-type: none"> <li>4-6 puffs per dose of MDI .</li> <li>May repeat every 5 minutes, as needed.</li> <li>Albuterol is second line drug, the initial treatment should be 2.5mg albuterol and 0.5mg ipratropium (DuoNeb).</li> <li>May repeat every 5 minutes (4 doses total).</li> <li>Following 4 DuoNeb treatments, 2.5mg albuterol via nebulizer every 5 minutes, as needed.</li> </ul> <p>Suggested Formulations:</p> <p>Albuterol</p> <ul style="list-style-type: none"> <li>Albuterol 0.083% [2.5 mg/3 mL] nebule</li> </ul> <p>Albuterol/Ipratropium (Duoneb)</p> <ul style="list-style-type: none"> <li>Ipratropium bromide 0.5 mg and albuterol (base) 2.5 mg per 3 mL nebule</li> </ul>

# NH Adult Medication Reference

This document is to serve as a reference for the 2015 NH Patient Care Protocols.

See the Pediatric Color Coded Appendix for pediatric dosages

Medication	Adult Protocol/Dosing
<p><b><u>Amiodarone</u></b> <b>(Cordarone)</b></p> <p><u>Indications/Contraindications:</u></p> <ul style="list-style-type: none"> <li>• Antiarrhythmic used mainly in wide complex tachycardia and ventricular fibrillation.</li> <li>• Avoid in patients with heart block or profound bradycardia.</li> <li>• Contraindicated in patients with iodine hypersensitivity.</li> </ul>	<p><b>Cardiac Arrest</b> <b>V-Fib/Pulseless V-Tach</b></p> <ul style="list-style-type: none"> <li>• 300 mg IV push.</li> <li>• Repeat dose of 150 mg IV push for recurrent episodes.</li> </ul> <p><b>Tachycardia</b> <b>Wide complex tachycardia</b></p> <ul style="list-style-type: none"> <li>• 150 mg in 50 – 100mL normal saline or D5W over 10 min.</li> <li>• May repeat once in 10 minutes.</li> <li>• If successful, consider maintenance infusion of 1 mg/minute.</li> </ul> <p>Suggested Formulations: Amiodarone HCL</p> <ul style="list-style-type: none"> <li>• 150 mg/3 mL (3 mL);</li> <li>• 450mg/9ml (9ml)</li> </ul>
<p><b><u>Aspirin</u></b></p> <p><u>Indications/Contraindications:</u></p> <ul style="list-style-type: none"> <li>• An antiplatelet drug for use in cardiac chest pain.</li> <li>• History of anaphylaxis to aspirin or NSAIDs</li> <li>• Active GI bleeding</li> </ul>	<p><b>Acute Coronary Syndrome</b></p> <ul style="list-style-type: none"> <li>• 324 mg by mouth (chewable).</li> </ul> <p>Suggested Formulations: Oral</p> <ul style="list-style-type: none"> <li>• 81mg chewable tablets</li> <li>• 81mg tablet</li> </ul>
<p><b><u>Atropine</u></b></p> <p><u>Indications/Contraindications:</u></p> <ul style="list-style-type: none"> <li>• Anticholinergic drug used in bradycardias and organophosphate poisonings.</li> </ul>	<p><b>Bradycardia</b></p> <ul style="list-style-type: none"> <li>• 0.5 mg IV every 3 – 5 minutes up to maximum of 3 mg.</li> </ul> <p><b>Organophosphate Poisoning and Nerve Agent</b></p> <ul style="list-style-type: none"> <li>• 2 mg IM or IV every 5 minutes until secretions clear.</li> </ul> <p><b>Rapid Sequence Intubation</b></p> <ul style="list-style-type: none"> <li>• Consider 0.5mg IV for bradycardia</li> </ul> <p>Suggested Formulations: Solution, Injection, as sulfate [preservative free]:</p> <ul style="list-style-type: none"> <li>• 0.4 mg/mL (1 mL)</li> <li>• 0.8 mg/mL (0.5 mL)</li> <li>• 1 mg/mL (1 mL)</li> </ul> <p>Device, Intramuscular, as sulfate:</p> <ul style="list-style-type: none"> <li>• AtroPen: 0.25 mg/0.3 mL (0.3 mL) [pyrogen free]</li> </ul> <p>AtroPen: 0.5 mg/0.7 mL (0.7 mL); 1 mg/0.7 mL (0.7 mL); 2 mg/0.7 mL (0.7 mL) [pyrogen free; contains phenol]</p>

# NH Adult Medication Reference

This document is to serve as a reference for the 2015 NH Patient Care Protocols.

See the Pediatric Color Coded Appendix for pediatric dosages

Medication	Adult Protocol/Dosing
<p><b><u>Atropine and Pralidoxime Auto-Injector (DuoDote) Nerve Agent Kit</u></b>  <b><u>Indications/Contraindications:</u></b></p> <ul style="list-style-type: none"> <li>Antidote for Nerve Agents or Organophosphate Overdose.</li> </ul>	<p><b>Nerve Agents</b></p> <ul style="list-style-type: none"> <li>Patients experiencing: apnea, convulsions, unconsciousness, flaccid paralysis administer <u>3 DuoDote and 1 diazepam (10 mg) auto-injectors.</u></li> <li>Patients experiencing: dyspnea, twitching, nausea, vomiting, sweating, anxiety, confusion, constricted pupils, restlessness, weakness administer <u>1 DuoDote.</u></li> <li>Maintenance Dose: <u>1 DuoDote every 3 hours.</u></li> </ul>
<p><b><u>Calcium Chloride 10% solution</u></b>  <b><u>Indications/Contraindications:</u></b></p> <ul style="list-style-type: none"> <li>Indicated for hyperkalemia or calcium channel blocker overdose.</li> <li>Avoid if patient takes digoxin.</li> </ul>	<p><b>Bradycardia</b>            For suspected hyperkalemia with ECG changes or symptomatic calcium channel blocker overdose consider:</p> <ul style="list-style-type: none"> <li>1 gm IV / IO over 5 minutes, ensure IV patency and do not exceed 1 mL per minute.</li> </ul> <p>Suggested Formulations:            Solution, Intravenous: Generic: 10% (10 mL)</p>
<p><b><u>Calcium Gluconate</u></b>  <b><u>Indications/Contraindications:</u></b></p> <ul style="list-style-type: none"> <li>Indicated for hyperkalemia or calcium channel blocker overdose.</li> </ul>	<p><b>Bradycardia</b>            For suspected hyperkalemia with ECG changes or symptomatic calcium channel blocker overdose consider:</p> <ul style="list-style-type: none"> <li>2 gm IV / IO over 5 minutes, with constant cardiac monitoring</li> </ul>
<p><b><u>Dexamethasone</u></b>  <b><u>Indications/Contraindications:</u></b></p> <ul style="list-style-type: none"> <li>Asthma/Croup</li> </ul>	<p><b>Asthma – Adult</b></p> <ul style="list-style-type: none"> <li>10mg IV</li> </ul> <p><b>Asthma/Croup – Pediatric</b></p> <ul style="list-style-type: none"> <li>0.6mg/kg PO/IM/IV</li> </ul>
<p><b><u>Dextrose</u></b>  <b><u>Indications/Contraindications:</u></b></p> <ul style="list-style-type: none"> <li>Sympomatic hypoglycemia.</li> <li>Use in medication infusion medium.</li> </ul>	<p><b>Diabetic Emergencies</b></p> <ul style="list-style-type: none"> <li>Administer dextrose 10% IV via premixed infusion bag (preferred) or prefilled syringe until mental status returns to baseline and glucose level is greater than 70mg/dL or to a maximum of 25 grams (250mL). IV pump not required.</li> </ul> <p>Suggested Formulations:            Solution, Intravenous:</p> <ul style="list-style-type: none"> <li>10% (250 mL, 500 mL, 1000 mL); 20% (500 mL); 50% (50 mL);</li> </ul>

# NH Adult Medication Reference

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Medication	Adult Protocol/Dosing
<p><b><u>Diazepam</u></b> <b>(Valium)</b> <b>Benzodiazepine</b></p> <p><b><u>Indications/Contraindications:</u></b></p> <ul style="list-style-type: none"> <li>• Seizure control.</li> <li>• Sedation.</li> <li>• Anxiolytic.</li> </ul>	<p><b>Bradycardia</b></p> <ul style="list-style-type: none"> <li>• 2 mg IV, may repeat once in 5 minutes.</li> </ul> <p><b>CPAP</b> Consider administering anxiolytic:</p> <ul style="list-style-type: none"> <li>• 5 mg IV (then 2.5 mg every 5 minutes to a total of 20 mg)</li> </ul> <p><b>Hyperthermia</b></p> <ul style="list-style-type: none"> <li>• 2 mg IV, may repeat once in 5 minutes.</li> </ul> <p><b>Nerve Agent</b></p> <ul style="list-style-type: none"> <li>• 5 mg IV every 5 minutes; or 10 mg IM <b>OR</b></li> <li>• Diazepam auto-injector (10mg).             <ul style="list-style-type: none"> <li>• Repeat 10 minutes as needed</li> </ul> </li> </ul> <p><b>Poisoning/Substance Abuse/OD</b></p> <ul style="list-style-type: none"> <li>• 2 mg IV, may repeat once in 5 minutes, <b>OR</b></li> <li>• 5 mg IM, may repeat once in 20 minutes</li> </ul> <p><b>Seizure</b></p> <ul style="list-style-type: none"> <li>• 5 – 10 mg IV (then 2.5 mg every 5 minutes to a total of 20 mg).</li> </ul> <p><b>Restraints</b></p> <ul style="list-style-type: none"> <li>• 2 mg IV, may repeat once in 5 minutes, <b>OR</b></li> <li>• 5 mg IM, may repeat once in 10 minutes</li> </ul> <p><b>Tachycardia</b></p> <ul style="list-style-type: none"> <li>• 2 mg IV, may repeat once in 5 minutes.</li> </ul> <p><b>Traumatic Brain Injury</b></p> <ul style="list-style-type: none"> <li>• 2 mg IV, may repeat once in 5 minutes.</li> </ul> <p>Suggested Formulations: Solution, Injection:</p> <ul style="list-style-type: none"> <li>• Generic: 5 mg/mL (2 mL, 10 mL)</li> </ul>
<p><b><u>Diltiazem</u></b> <b>(Cardizem)</b></p> <p><b><u>Indications/Contraindications:</u></b></p> <ul style="list-style-type: none"> <li>• Calcium channel blocker used to treat narrow complex SVT.</li> <li>• Contraindicated in patients with heart block, ventricular tachycardia, WPW, and/or acute MI.</li> </ul>	<p><b>Tachycardia</b> <b>Narrow Complex Tachycardia</b></p> <ul style="list-style-type: none"> <li>• 0.25 mg/kg IV (maximum dose 20 mg).             <ul style="list-style-type: none"> <li>▪ May repeat dose in 15 minutes at 0.35 mg/kg (maximum dose 20 mg) if necessary.</li> <li>▪ Consider maintenance infusion 5 – 15 mg/hour.</li> </ul> </li> </ul> <p>Suggested Formulations:</p> <ul style="list-style-type: none"> <li>• Solution, Intravenous, as hydrochloride: 25 mg/5 mL (5 mL, 25 mL); 50 mg/10 mL (10 mL); 125 mg/25 mL (25 mL)</li> </ul>

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Medication	Adult Protocol/Dosing
<p><b><u>Diphenhydramine</u></b> <b>(Benadryl)</b> <b><u>Indications/Contraindications:</u></b></p> <ul style="list-style-type: none"> <li>• Antihistamine used as an adjunctive treatment in allergic reactions.</li> <li>• Antidote for dystonic reaction.</li> </ul>	<p><b>Allergic Reaction/Anaphylaxis</b></p> <ul style="list-style-type: none"> <li>• 25-50 mg IM/IV or by mouth</li> </ul> <p>Extended Care:</p> <ul style="list-style-type: none"> <li>• 25-50 mg IM/IV or by mouth. May repeat every 4-6 hours as needed; maximum dose of 300mg in 24 hours.</li> </ul> <p><b>Behavioral</b></p> <ul style="list-style-type: none"> <li>• 25-50 mg IV Or 50 IM.</li> </ul> <p><b>Nausea/Vomiting</b></p> <ul style="list-style-type: none"> <li>• 25 – 50 mg IV/IM.</li> </ul> <p>Extended Care:</p> <ul style="list-style-type: none"> <li>• For motion sickness: administer diphenhydramine:           <ul style="list-style-type: none"> <li>• Adult: 25 mg PO/chewed</li> <li>• Ages 2 – 5 years: 6.25 mg PO</li> <li>• Ages 6 – 11 years: 12.5 - 25 mg PO</li> </ul> </li> </ul> <p><b>Poisoning/Substance Abuse/OD</b></p> <ul style="list-style-type: none"> <li>• 25 – 50 mg IV/IM.</li> </ul> <p><b>Restraints</b></p> <ul style="list-style-type: none"> <li>• 25 – 50 mg IV/IM.</li> </ul> <p>Suggested Formulations: Oral</p> <ul style="list-style-type: none"> <li>• 25mg Capsule</li> </ul> <p>Solution, Injection, as hydrochloride [preservative free]: 50 mg/mL (1 mL)</p>
<p><b><u>Dolasetron</u></b> <b>(Anzemet)</b> <b><u>Indications/Contraindications:</u></b></p> <ul style="list-style-type: none"> <li>• Anti-Emetic used to control nausea and/or vomiting.</li> </ul>	<p><b>Nausea/Vomiting</b></p> <ul style="list-style-type: none"> <li>• 12.5mg IV (one-time dose).</li> </ul> <p>Suggested Formulations: Solution, Intravenous, as mesylate:</p> <ul style="list-style-type: none"> <li>• Anzemet: 20 mg/mL (0.625 mL)</li> </ul>

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Medication	Adult Protocol/Dosing
<p><b><u>Dopamine</u></b>  <b><u>Indications/Contraindications:</u></b></p> <ul style="list-style-type: none"> <li>• A vasopressor used in shock or hypotensive states.</li> <li>• Infusion pump required.</li> </ul>	<p><b>Bradycardia</b></p> <ul style="list-style-type: none"> <li>• Infusion 2 – 10 micrograms/kg/minute.</li> </ul> <p><b>Induced Therapeutic Hypothermia</b></p> <ul style="list-style-type: none"> <li>• Infusion 5 – 20 microgram/kg/minute.</li> </ul> <p><b>Post Resuscitation</b></p> <ul style="list-style-type: none"> <li>• Infusion 5 – 20 microgram/kg/minute.</li> </ul> <p>Suggested Formulations:            Solution, Intravenous, as hydrochloride:</p> <ul style="list-style-type: none"> <li>• Generic: 0.8 mg/mL (250 mL, 500 mL); 1.6 mg/mL (250 mL, 500 mL); 3.2 mg/mL (250 mL); 40 mg/mL (5 mL, 10 mL); 80 mg/mL (5 mL); 160 mg/mL (5 mL)</li> </ul>
<p><b><u>Epinephrine 1:1,000</u></b>  <b><u>Indications/Contraindications:</u></b></p> <ul style="list-style-type: none"> <li>• Bronchodilation in Asthma and COPD exacerbation. Primary treatment for anaphylaxis</li> <li>• Vasopressor in cardiac arrest.</li> </ul>	<p><b>Allergic Reaction/Anaphylaxis</b></p> <ul style="list-style-type: none"> <li>• 0.3 mg IM               <ul style="list-style-type: none"> <li>▪ Repeat every 5 minutes to a total of 3 doses.</li> </ul> </li> </ul> <p><b>Asthma/COPD/RAD</b></p> <ul style="list-style-type: none"> <li>• 0.3 mg IM (no repeat).</li> </ul> <p>Septic Shock            Infusion 2 – 10 micrograms/minute (Dilute epinephrine 1mg in 1000 mL 0.9% NaCl for 1 microgram/mL)</p>
<p><b><u>Epinephrine 1:10,000</u></b>  <b><u>Indications/Contraindications:</u></b></p> <ul style="list-style-type: none"> <li>• Vasopressor used in cardiac arrest.</li> </ul>	<p><b>Cardiac Arrest</b></p> <ul style="list-style-type: none"> <li>• 1 mg IV.               <ul style="list-style-type: none"> <li>▪ Repeat every 3 – 5 minutes.</li> </ul> </li> </ul> <p><b>Induced Therapeutic Hypothermia</b></p> <ul style="list-style-type: none"> <li>• Infusion 2 -10 micrograms/minute titrated to effect</li> </ul> <p>Suggested Formulations:            Device, Injection:</p> <ul style="list-style-type: none"> <li>• EpiPen 2-Pak: 0.3 mg/0.3 mL (2 ea) [latex free; contains sodium metabisulfite]</li> <li>• EpiPen Jr 2-Pak: 0.15 mg/0.3 mL (2 ea) [contains sodium metabisulfite]</li> <li>• Auvi-Q: 0.15 mg/0.15 mL (2 ea); 0.3 mg/0.3 mL (2 ea) [contains sodium bisulfite]</li> </ul> <p>Nebulization Solution, Inhalation [preservative free]:</p> <ul style="list-style-type: none"> <li>• S2: 2.25% (1 ea) [sulfite free; contains edetate disodium]</li> </ul> <p>Solution, Injection:</p> <ul style="list-style-type: none"> <li>• Generic: 0.1 mg/mL (10 mL); 1 mg/mL (1 mL)</li> </ul> <p>Solution, Intravenous [preservative free]:            Generic: 1 mg/mL (1 mL)</p>

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<p><b><u>Etomidate</u></b> <b>(Amidate)</b> <u>Indications/Contraindications:</u></p> <ul style="list-style-type: none"> <li>Sedative used in Rapid Sequence Intubation.</li> </ul>	<p><b>Rapid Sequence Intubation</b></p> <ul style="list-style-type: none"> <li>0.3 mg/kg IV / IO (maximum 40 mg).</li> </ul> <p>Suggested Formulations: Solution, Intravenous:</p> <ul style="list-style-type: none"> <li>Amidate: 2 mg/mL (10 mL, 20 mL) [contains propylene glycol]</li> <li>Generic: 2 mg/mL (10 mL, 20 mL)</li> </ul>
<p><b><u>Fentanyl</u></b> <b>(Sublimaze)</b> <u>Indications/Contraindications:</u></p> <ul style="list-style-type: none"> <li>Narcotic analgesic</li> <li>Avoid use if BP &lt; 100 mmHg.</li> </ul>	<p><b>Acute Coronary Syndrome</b></p> <ul style="list-style-type: none"> <li>25 – 100 mcg slow IV push. <ul style="list-style-type: none"> <li>Repeat every 5 minutes up to 300 mcg.</li> </ul> </li> </ul> <p><b>Pain</b></p> <ul style="list-style-type: none"> <li>25 – 100 mcg slow IV push OR 50 – 100 mcg IM/IN. <ul style="list-style-type: none"> <li>Repeat every 5 minutes to a total 300 mcg IV/IM.</li> </ul> </li> </ul> <p><b>Post Intubation</b></p> <ul style="list-style-type: none"> <li>50 – 100 mcg, slow IV push.</li> </ul> <p>Suggested Formulations:</p> <ul style="list-style-type: none"> <li>Injection, solution, as citrate [strength expressed as base, preservative free]: 0.05 mg/mL (2 ml)</li> </ul>
<p><b><u>Glucagon</u></b> <u>Indications/Contraindications:</u></p> <ul style="list-style-type: none"> <li>Converts glycogen to glucose in the liver to increase blood sugar</li> <li>Use in patients with no IV access</li> <li>Indicated for beta blocker or calcium channel blocker overdose</li> </ul>	<p><b>Hypoglycemia</b></p> <ul style="list-style-type: none"> <li>1 mg IM. <ul style="list-style-type: none"> <li>Recheck glucose 15 minutes after administration of glucagon.</li> <li>May repeat glucagon 1mg IM if glucose level is &lt;70mg/dl with continued altered mental status.</li> </ul> </li> </ul> <p><b>Bradycardia</b></p> <ul style="list-style-type: none"> <li>5 mg IV over 3 – 5 minutes.</li> </ul> <p>Suggested Formulations: Kit, Injection:</p> <ul style="list-style-type: none"> <li>Glucagon Emergency: 1 mg</li> </ul> <p>Solution Reconstituted, Injection, as hydrochloride:</p> <ul style="list-style-type: none"> <li>GlucaGen: 1 mg (1 ea)</li> <li>GlucaGen HypoKit: 1 mg (1 ea)</li> </ul>
<p><b><u>Glucose Oral</u></b> <b><u>Glucose Solutions</u></b> <u>Indications/Contraindications:</u></p> <ul style="list-style-type: none"> <li>Use in conscious hypoglycemic states.</li> </ul>	<p><b>Diabetic Emergencies</b></p> <ul style="list-style-type: none"> <li>Administer 1 tube of commercially prepared glucose gel or equivalent.</li> </ul> <p>Suggested Formulations: Gel, Oral:</p> <ul style="list-style-type: none"> <li>Glucose 15: 40% (37.5 g)</li> <li>Glucose 15: 40% (37.5 g) [lemon flavor]</li> <li>Glucose 45: 40% (112.5 g) [lemon flavor]</li> <li>Insta-Glucose: 77.4% (31 g)</li> </ul> <p>Liquid, Oral: Glutol: 55 % (180 mL) [lemon flavor]</p>

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Medication	Adult Protocol/Dosing
<p><b>Granisetron (Kytril)</b>  <u>Indications/Contraindications:</u></p> <ul style="list-style-type: none"> <li>Anti-Emetic used to control nausea and/or vomiting.</li> </ul>	<p><b>Nausea/Vomiting</b></p> <ul style="list-style-type: none"> <li>01. - 1mg IV over 5 minutes (one-time dose).</li> </ul> <p>Suggested Formulations:            Solution, Intravenous:</p> <ul style="list-style-type: none"> <li>Generic: 0.1 mg/mL (1 mL); 1 mg/mL (1 mL); 4 mg/4 mL (4 mL)</li> </ul>
<p><b>Haloperidol (Haldol)</b>  <b>Phenothiazine Preparation</b>  <u>Indications/Contraindications:</u></p> <ul style="list-style-type: none"> <li>Medication to assist with sedation of agitated patients.</li> <li>Chemical restraint.</li> </ul>	<p><b>Restraints</b></p> <ul style="list-style-type: none"> <li>5 – 10 mg IM; may repeat once in 5 minutes, (max total dose 10 mg).</li> <li>For Excited Delirium:               <ul style="list-style-type: none"> <li>Haloperidol 10 mg IM; may repeat once in 10 minutes.</li> </ul> </li> </ul> <p><b>NOTE:</b> Contact <b>Medical Control</b> if more than 20 mg of haloperidol is needed.</p> <p>Suggested Formulations:            Solution, Injection, as lactate [strength expressed as base]:</p> <ul style="list-style-type: none"> <li>Haldol: 5 mg/mL (1 mL)</li> <li>Generic: 5 mg/mL (1 mL, 10 mL)</li> </ul>
<p><b>Heparin</b>  <u>Indications/Contraindications</u></p> <ul style="list-style-type: none"> <li>STEMI and no affirmative finding from fibrinolytic questionnaire.</li> <li>Contraindication - history of Heparin Induced Thrombocytopenia</li> </ul>	<p><b>Acute Coronary Syndrome</b></p> <ul style="list-style-type: none"> <li>Heparin 5000 u IV bolus.</li> </ul> <p>Suggested Formulations:            Solution, Injection, as sodium:</p> <ul style="list-style-type: none"> <li>Generic: 1000 units (500 mL); 2000 units (1000 mL); 12,500 units (250 mL); 25,000 units (250 mL, 500 mL); 1000 units/mL (1 mL, 10 mL, 30 mL); 2500 units/mL (10 mL); 5000 units/mL (1 mL, 10 mL); 10,000 units/mL (1 mL, 4 mL, 5 mL); 20,000 units/mL (1 mL)</li> </ul> <p>Solution, Intravenous, as sodium:            Hep Flush-10: 10 units/mL (10 mL)</p>
<p><b>Hydrocortisone (Solu-Cortef)</b>  <u>Indications/Contraindications:</u></p> <ul style="list-style-type: none"> <li>Adrenal Insufficiency</li> </ul>	<p><b>Adrenal Insufficiency</b></p> <ul style="list-style-type: none"> <li>100mg IV/IM.</li> </ul> <p>Suggested Formulations:            Solution Reconstituted, Injection, as sodium succinate [strength expressed as base]:</p> <ul style="list-style-type: none"> <li>A-Hydrocort: 100 mg (1 ea)</li> <li>Solu-CORTEF: 100 mg (1 ea)</li> </ul>
<p><b>Hydromorphone</b>  <u>Indications/Contraindications:</u></p> <ul style="list-style-type: none"> <li>Pain control</li> </ul>	<p><b>Pain – Adult</b></p> <ul style="list-style-type: none"> <li>0.5-1mg IV, every 10 minutes to a total 4mg titrated to pain relief.</li> </ul>
<p><b>Hydroxocobalamin (Cyanokit)</b>  <u>Indications/Contraindications:</u>            Smoke Inhalation</p>	<p><b>Smoke Inhalation</b></p> <ul style="list-style-type: none"> <li>Via use of Cyanokit.</li> </ul>

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<p><b><u>Ibuprofen</u></b> <b>(Motrin)</b> <b><u>Indications/Contraindications:</u></b></p> <ul style="list-style-type: none"> <li>• A non-steroidal anti-inflammatory drug (NSAID) fever control.</li> <li>• Avoid in women who are pregnant or could be pregnant.</li> <li>• Use with caution in patients with dehydration, cardiovascular disease, or preexisting renal disease.</li> </ul>	<p><b>Fever</b></p> <ul style="list-style-type: none"> <li>• 400 – 800 mg oral or rectal</li> <li>• If ibuprofen has been taken within the last 6 hours: Consider acetaminophen 500 – 1,000mg oral.</li> </ul> <p><b>Fever – Extended Care</b></p> <ul style="list-style-type: none"> <li>• May repeat ibuprofen dose 400-600 mg every 6 hours or 800 mg every 8 hours. Maximum of 2,400 mg/24 hours.</li> </ul> <p><b>Musculoskeletal</b></p> <ul style="list-style-type: none"> <li>• 400 – 600 mg by mouth; repeat every 6 hours as needed.</li> </ul> <p>Suggested Formulations: Capsule, Oral:</p> <ul style="list-style-type: none"> <li>• Generic: 200 mg</li> <li>• Advil: 200 mg</li> </ul>
<p><b><u>Ipratropium Bromide</u></b> <b>(Atrovent)</b> <b><u>Indications/Contraindications:</u></b></p> <ul style="list-style-type: none"> <li>• Anticholinergic bronchodilator. Blocks the muscarinic receptors of acetylcholine.</li> <li>• Relief of bronchospasm in patients with reversible obstructive airway disease and bronchospasm.</li> </ul>	<p><b>Asthma/COPD/RAD</b></p> <ul style="list-style-type: none"> <li>• 0.5mg ipratropium and 2.5mg albuterol(DouNeb). <ul style="list-style-type: none"> <li>▪ May repeat every 5 minutes (3 doses total).</li> </ul> </li> </ul> <p>Suggested Formulations: Solution, Inhalation, as bromide:</p> <ul style="list-style-type: none"> <li>• Generic: 0.02% (2.5 mL)</li> </ul> <p>Aerosol Solution, Inhalation, as bromide:</p> <ul style="list-style-type: none"> <li>• Atrovent HFA: 17 mcg/actuation (12.9 g) [contains alcohol, usp]</li> </ul>
<p><b><u>Ketamine</u></b> <b><u>Indications/Contraindications:</u></b></p> <ul style="list-style-type: none"> <li>• Sedative used in Rapid Sequence Intubation.</li> </ul>	<p><b>Rapid Sequence Intubation</b> 2 mg/kg IV</p> <p>Suggested Formulations: Solution, Injection:</p> <ul style="list-style-type: none"> <li>• Ketalar: 10 mg/mL (20 mL); 50 mg/mL (10 mL); 100 mg/mL (5 mL)</li> <li>• Generic: 10 mg/mL (20 mL); 50 mg/mL (10 mL); 100 mg/mL (5 mL, 10 mL)</li> </ul>

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<p><b><u>Ketorolac</u></b> <b><u>(Toradol)</u></b> <b><u>Indications/Contraindications:</u></b></p> <ul style="list-style-type: none"> <li>• A nonsteroidal anti-inflammatory drug used for pain control.</li> <li>• Consider as first line in renal colic.</li> <li>• Avoid Ketorolac in patients with NSAID allergy, aspirin-sensitive asthma, renal insufficiency, pregnancy, or known peptic ulcer disease.</li> <li>• Avoid NSAIDS in women who are pregnant or could be pregnant.</li> <li>• Avoid in patients currently taking anticoagulants such as coumadin.</li> </ul>	<p><b>Pain Management</b></p> <ul style="list-style-type: none"> <li>• 15 - 30 mg IV or 30 - 60 mg IM (no repeat)</li> </ul> <p>Suggested Formulations: Solution, Injection,</p> <ul style="list-style-type: none"> <li>• Generic: 15 mg/mL (1 mL); 30 mg/mL (1 mL); 60 mg/2 mL (2 mL)</li> </ul>
<p><b><u>Levalbuterol</u></b> <b><u>(Xopenex)</u></b></p>	<p><b>Asthma/COPD/RAD</b></p> <ul style="list-style-type: none"> <li>• 1.25mg via nebulizer, repeat every 20 minutes (4 doses total).</li> </ul> <p>Suggested Formulations: Nebulization Solution, Inhalation, as hydrochloride [strength expressed as base]:</p> <ul style="list-style-type: none"> <li>• Xopenex: 0.63 mg/3 mL (3 mL); 1.25 mg/3 mL (3 mL)</li> <li>• Generic: 0.63 mg/3 mL (3 mL)</li> </ul> <p>**Special Note all product should be protected from light and should be stored in foil line container supplied**</p>
<p><b><u>Lidocaine</u></b> <b><u>Indications/Contraindications:</u></b></p> <ul style="list-style-type: none"> <li>• Antiarrhythmic used for control of ventricular dysrhythmias.</li> <li>• Used prior to intubation of patients with suspected increased intracranial pressure (e.g., TBI, ICH) to reduce increases in intracranial pressure</li> <li>• Anesthetic for nasotracheal intubation and intraosseous.</li> </ul>	<p><b>Cardiac Arrest</b></p> <ul style="list-style-type: none"> <li>• 1 – 1.5mg/kg IV.             <ul style="list-style-type: none"> <li>▪ Repeat dose 0.75 mg/kg up to a maximum dose of 3 mg/kg.</li> </ul> </li> </ul> <p><b>Tachycardia</b></p> <ul style="list-style-type: none"> <li>• 1 – 1.5mg/kg IV. (considered second-line therapy to Amiodarone).             <ul style="list-style-type: none"> <li>▪ May repeat once in 5 minutes to maximum of 3mg/kg.</li> <li>▪ If successful, consider a maintenance infusion of 1 – 4mg/minute.</li> </ul> </li> </ul> <p><b>Traumatic Brain Injury</b></p> <ul style="list-style-type: none"> <li>• 1.5 mg/kg prior to intubation.</li> </ul> <p><b>Nasotracheal Intubation</b></p> <ul style="list-style-type: none"> <li>• 2% lidocaine jelly.</li> </ul> <p><b>Rapid Sequence Intubation</b></p> <ul style="list-style-type: none"> <li>• 1.5 mg/kg.</li> </ul> <p><b>Intraosseous</b></p> <ul style="list-style-type: none"> <li>• 1 – 2.5ml (20 – 50mg) 2% lidocaine.</li> </ul>

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Medication	Adult Protocol/Dosing
<p><b><u>Lorazepam</u></b> <b><u>(Ativan)</u></b> <b>Benzodiazepine</b></p> <p><b><u>Indications/Contraindications:</u></b></p> <ul style="list-style-type: none"> <li>• Seizure control.</li> <li>• Sedation.</li> <li>• Anxiolytic.</li> </ul>	<p><b>Bradycardia</b></p> <ul style="list-style-type: none"> <li>• 1 mg IV, may repeat once in 5 minutes <b>OR</b></li> <li>• 2 mg IM, may repeat once in 10 minutes.</li> </ul> <p><b>CPAP</b></p> <ul style="list-style-type: none"> <li>• 0.5 – 1mg IV may repeat once in 5 minutes or; 1 – 2mg IM may repeat once in 10 minutes</li> </ul> <p><b>Hyperthermia</b></p> <ul style="list-style-type: none"> <li>• 1 mg IV, may repeat once in 5 minutes <b>OR</b></li> <li>• 2 mg IM, may repeat once in 10 minutes.</li> </ul> <p><b>Induced Therapeutic Hypothermia</b></p> <ul style="list-style-type: none"> <li>• 1 – 2 mg IV. May repeat every 15 minutes as needed for shivering or sedation (maximum: 10mg).</li> </ul> <p><b>Nerve Agent</b></p> <ul style="list-style-type: none"> <li>• 1 mg IV, may repeat once in 5 minutes <b>OR</b></li> <li>• 2 mg IM, may repeat once in 10 minutes.</li> </ul> <p><b>Poisoning/Substance Abuse/OD</b></p> <ul style="list-style-type: none"> <li>• 1 mg IV, may repeat once in 5 minutes <b>OR</b></li> <li>• 2 mg IM, may repeat once in 10 minutes.</li> </ul> <p><b>Post Intubation/SGA Care</b></p> <ul style="list-style-type: none"> <li>• 1-2mg IV every 15 minutes as needed (maximum 10mg)</li> </ul> <p><b>Restraints</b></p> <ul style="list-style-type: none"> <li>• 2mg IM, may repeat once in 20 minutes; or 1mg IV, may repeat once in 5 minutes</li> </ul> <p><b>Seizure</b></p> <ul style="list-style-type: none"> <li>• 2 – 4 mg IV every 5 minutes to a total of 8mg</li> </ul> <p><b>Tachycardia</b></p> <ul style="list-style-type: none"> <li>• 1 mg IV, may repeat once in 5 minutes <b>OR</b></li> <li>• 2 mg IM, may repeat once in 10 minutes.</li> </ul> <p><b>Traumatic Brain Injury</b></p> <ul style="list-style-type: none"> <li>• 1 mg IV, may repeat once in 5 minutes <b>OR</b></li> <li>• 2 mg IN, may repeat once in 10 minutes.</li> <li>•</li> </ul> <p>Suggested Formulations: Solution, Injection:</p> <ul style="list-style-type: none"> <li>• Generic: 2 mg/mL (1 mL, 10 mL); 4 mg/mL (1 mL, 10 mL)</li> </ul> <p><b>**Special Note</b> Product should be refrigerated unless specified otherwise**</p>

# NH Adult Medication Reference

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See the Pediatric Color Coded Appendix for pediatric dosages

Medication	Adult Protocol/Dosing
<p><b><u>Magnesium Sulfate</u></b>  <u>Indications/Contraindications:</u></p> <ul style="list-style-type: none"> <li>• Elemental electrolyte used to treat eclampsia during the third trimester of pregnancy.</li> <li>• A smooth muscle relaxor used in refractory respiratory distress resistant to beta-agonists.</li> <li>• Torsades de Pointes.</li> </ul>	<p><b>Asthma/COPD/RAD</b></p> <ul style="list-style-type: none"> <li>• 2 grams in 100ml NS given IV over 10 minutes.</li> </ul> <p><b>OB/GYN</b></p> <ul style="list-style-type: none"> <li>• Magnesium sulfate, 4 grams IV (mix in 100 mL 0.9% NaCl) bolus over 10 minutes, then consider 1 gram/hr continuous infusion</li> </ul> <p><b>Seizure</b></p> <ul style="list-style-type: none"> <li>• Magnesium sulfate, 4 grams IV (mix in 100 mL 0.9% NaCl) bolus over 10 minutes, then consider 1 gram/hr continuous infusion</li> </ul> <p><b>.Cardiac Arrest/Tachycardia – Torsades de Pointes.</b></p> <ul style="list-style-type: none"> <li>• 1 – 2 grams IV over 5 minutes.</li> </ul> <p>Suggested Formulations:            Solution, Injection:</p> <ul style="list-style-type: none"> <li>• Generic: 40 mg/mL (50 mL, 100 mL, 500 mL, 1000 mL); 80 mg/mL (50 mL); 50% (2 mL, 10 mL, 20 mL, 50 mL)</li> </ul> <p>Solution, Intravenous:</p> <ul style="list-style-type: none"> <li>• Generic: 10 mg/mL (100 mL); 20 mg/mL (500 mL)</li> </ul> <p>**Special Note 1 g of magnesium sulfate = elemental magnesium 98.6 mg = magnesium 8.12 mEq = magnesium 4.06 mmol**</p>
<p><b><u>Methylprednisolone (Solu-medrol)</u></b>  <u>Indications/Contraindications:</u></p> <ul style="list-style-type: none"> <li>• Steroid used in respiratory distress to reverse inflammatory and allergic reactions.</li> </ul>	<p><b>Allergice Reaction</b>            Extended Care</p> <ul style="list-style-type: none"> <li>• 125 mg IV.</li> </ul> <p><b>Asthma/COPD/RAD</b></p> <ul style="list-style-type: none"> <li>• 125 mg IV.</li> </ul> <p>Suggested Formulations:            Solution Reconstituted, Injection, as sodium succinate:</p> <ul style="list-style-type: none"> <li>• Solu-MEDROL: 40 mg (1 ea); 125 mg (1 ea); 500 mg (1 ea); 1000 mg (1 ea)</li> </ul>
<p><b><u>Metoclopramide (Reglan)</u></b>  <u>Indications/Contraindications:</u></p> <ul style="list-style-type: none"> <li>• Anti-Emetic used to control Nausea and/or Vomiting.</li> </ul>	<p><b>Nausea/Vomiting</b></p> <ul style="list-style-type: none"> <li>• 5mg IV.</li> <li>• May repeat once after 10 minutes if nausea/vomiting persists</li> <li>• Extended care, may repeat every 4 – 6 hours as needed.</li> </ul> <p>Suggested Formulations:            Solution, Injection:</p> <ul style="list-style-type: none"> <li>• Generic: 5 mg/mL (2 mL)</li> </ul>

# NH Adult Medication Reference

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See the Pediatric Color Coded Appendix for pediatric dosages

Medication	Adult Protocol/Dosing
<b><u>Metoprolol</u></b> <b>(Lopressor)</b>	<b>Tachycardia</b> <ul style="list-style-type: none"><li>• 5mg IV over 2 – 5 minutes.<ul style="list-style-type: none"><li>▪ May repeat every five minutes to a maximum of 15mg as needed to achieve a ventricular rate of 90 – 100.</li></ul></li></ul> <p>Suggested Formulations: Solution, Intravenous, as tartrate:</p> <ul style="list-style-type: none"><li>• Generic: 1 mg/mL (5 mL); 5 mg/5 mL (5 mL)</li><li>• Lopressor: 1 mg/mL (5 mL)</li></ul>

# NH Adult Medication Reference

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Medication	Adult Protocol/Dosing
<p><b><u>Midazolam</u></b> <b>(Versed)</b> <b>Benzodiazepine</b></p> <p><b><u>Indications/Contraindications:</u></b></p> <ul style="list-style-type: none"> <li>• Seizure control.</li> <li>• Sedation.</li> <li>• Anxiolytic.</li> </ul>	<p><b>Bradycardia</b></p> <ul style="list-style-type: none"> <li>• 2.5 mg IV/IN may repeat once in 5 minutes <b>OR</b></li> <li>• 5 mg IM may repeat once in 10 minutes.</li> </ul> <p><b>CPAP</b></p> <ul style="list-style-type: none"> <li>• 2.5 mg IV/IN may repeat once in 5 minutes <b>OR</b></li> <li>• 5 mg IM may repeat once in 10 minutes.</li> </ul> <p><b>Hyperthermia</b></p> <ul style="list-style-type: none"> <li>• 2.5 mg IV/IN may repeat once in 5 minutes <b>OR</b></li> <li>• 5 mg IM may repeat once in 10 minutes.</li> </ul> <p><b>Nerve Agent</b></p> <ul style="list-style-type: none"> <li>• 2.5 mg IV/IN may repeat once in 5 minutes <b>OR</b></li> <li>• 5 mg IM may repeat once in 10 minutes.</li> </ul> <p><b>Poisoning/Substance Abuse/OD</b></p> <ul style="list-style-type: none"> <li>• 2.5 mg IV/IN may repeat once in 5 minutes <b>OR</b></li> <li>• 5 mg IM may repeat once in 20 minutes.</li> </ul> <p><b>Post ETT Care</b></p> <ul style="list-style-type: none"> <li>• 2– 5 mg IV, every 5 – 10 minutes as needed.</li> </ul> <p><b>Rapid Sequence Intubation</b></p> <ul style="list-style-type: none"> <li>• 0.2 mg/kg IV; 0.1mg/kg IV for patients in shock.</li> </ul> <p><b>Seizure</b></p> <ul style="list-style-type: none"> <li>• Midazolam 10 mg IM (preferred route) every 10 minutes or 5 – 10 mg IV/IN every 5 minutes</li> </ul> <p><b>Induced Therapeutic Hypothermia</b></p> <ul style="list-style-type: none"> <li>• 2.5 mg IV/IN may repeat once in 5 minutes <b>OR</b></li> <li>• 5 mg IM may repeat once in 10 minutes.</li> </ul> <p><b>Restraints</b></p> <ul style="list-style-type: none"> <li>• 5mg IM, may repeat once in 20 minutes; or 2.5mg IV/IN, may repeat once in 5 minutes</li> </ul> <p><b>Excited/Agitated Delirium</b></p> <ul style="list-style-type: none"> <li>• 5mg IV/IM/IN; may repeat once in 10 minutes</li> </ul> <p><b>Tachycardia</b></p> <ul style="list-style-type: none"> <li>• 2.5 mg IV/IN may repeat once in 5 minutes <b>OR</b></li> <li>• 5 mg IM may repeat once in 10 minutes.</li> </ul> <p><b>Traumatic Brain Injury</b></p> <ul style="list-style-type: none"> <li>• 2.5 mg IV/IN may repeat once in 5 minutes <b>OR</b></li> <li>• 5 mg IM may repeat once in 10 minutes.</li> </ul> <p>Suggested Formulations: Solution, Injection</p> <ul style="list-style-type: none"> <li>• Generic: 2 mg/2 mL (2 mL); 5 mg/5 mL (5 mL); 5 mg/mL (1 mL); 10 mg/2 mL (2 mL)</li> </ul>

# NH Adult Medication Reference

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See the Pediatric Color Coded Appendix for pediatric dosages

Medication	Adult Protocol/Dosing
<p><b><u>Morphine Sulfate</u></b>  <b><u>Indications/Contraindications:</u></b></p> <ul style="list-style-type: none"> <li>Narcotic analgesic</li> <li>Avoid use if BP &lt; 100 mmHg.</li> </ul>	<p><b>Pain</b></p> <ul style="list-style-type: none"> <li>2 – 5mg IV/IM every 10 minutes to a total of 20 mg titrated to pain relief and if systolic BP is &gt;100 mmHg.</li> </ul> <p><b>Acute Coronary Syndrome</b></p> <ul style="list-style-type: none"> <li>2 – 5 mg IV/IM every 5 minutes to a maximum of 15mg titrated to pain and systolic BP remains &gt;100 mmHg.</li> </ul> <p>Suggested Formulations:            Solution, Injection, as sulfate:</p> <ul style="list-style-type: none"> <li>Generic: 2 mg/mL (1 mL); 10 mg/mL (1 mL)</li> </ul>
<p><b><u>Naloxone</u></b>  <b>(Narcan)</b>  <b>Narcotic Antagonist</b>  <b><u>Indications/Contraindications:</u></b></p> <ul style="list-style-type: none"> <li>Narcotic overdose.</li> </ul>	<p><b>Pain</b></p> <p><b>Antidote:</b> For hypoventilation from opiate administration by EMS personnel, assist ventilations and administer naloxone 0.4 mg IV/IM or 2mg IN. If no response, may repeat initial dose every 5 minutes to a total of 10mg.</p> <p><b>Poisoning/Substance Abuse/OD</b>  <b>Narcotic OD</b></p> <ul style="list-style-type: none"> <li>1mg (1mL) per nostril (IN) via prefilled syringe and atomizer for a total of 2mg.               <ul style="list-style-type: none"> <li>If no response repeat in 3 - 5 minutes.</li> </ul> </li> <li>0.4 – 2.0 mg IV/IM or 2mg IN.</li> </ul> <p>Suggested Formulations:            Solution, Injection, as hydrochloride</p> <ul style="list-style-type: none"> <li>Generic: 1 mg/mL (2 mL)</li> </ul> <p>Solution Auto-injector, Injection, as hydrochloride:</p> <ul style="list-style-type: none"> <li>Evzio: 0.4 mg/0.4 mL (0.4 mL)</li> </ul>

# NH Adult Medication Reference

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See the Pediatric Color Coded Appendix for pediatric dosages

Medication	Adult Protocol/Dosing
<p><b><u>Nitroglycerin</u></b>  <b><u>Indications/Contraindications:</u></b></p> <ul style="list-style-type: none"> <li>• Vasodilator used in the treatment of chest pain secondary to acute coronary syndrome and CHF</li> <li>• Infusion pump required for infusion.</li> </ul>	<p><b>Acute Coronary Syndrome</b></p> <ul style="list-style-type: none"> <li>• Facilitate administration of the patient's own nitroglycerin every 3 – 5 minutes while symptoms persist and systolic BP remains &gt;100 mmHg, to a total of 3 doses</li> <li>• 0.4mg SL every 3 – 5 minutes while symptoms persist and if systolic BP remains &gt;100 mmHg.</li> <li>• 10 micrograms/minute if symptoms persist after 3rd SL nitroglycerin (must be on a pump).             <ul style="list-style-type: none"> <li>▪ Increase IV nitroglycerin by 10 micrograms/minute every 5 minutes while symptoms persist and systolic remains &gt;100 mmHg.</li> </ul> </li> <li>• If IV nitroglycerin is not available, consider the application of nitroglycerin paste 1 – 2 inches transdermally.</li> </ul> <p><b>Congestive Heart Failure</b></p> <ul style="list-style-type: none"> <li>• Consider nitroglycerin 0.4mg SL every 5 minutes while symptoms persist and if the systolic BP is &gt;140 mmHg.</li> <li>• If not improving with above measures and systolic BP remains &gt;140 mmHg, consider: IV nitroglycerin 5 microgram/minute, increase by 5 micrograms/minute every 3 – 5 minutes to 20 micrograms/minute. (The IV nitroglycerin must be on an infusion pump).             <ul style="list-style-type: none"> <li>▪ If not response at 20 micrograms/minute, may increase by 10 – 20 micrograms/minutes every 3 – 5 minute. (Generally, accepted maximum dose: 400 micrograms/minute.) OR</li> </ul> </li> <li>• Nitroglycerin paste 1" – 2" transdermally.</li> </ul>
<p><b><u>Nitrous Oxide</u></b>  <b><u>Indications/Contraindications:</u></b></p> <ul style="list-style-type: none"> <li>• "non-narcotic analgesic gas</li> <li>• Contraindicated in abdominal pain, pneumothorax, head injury, or diving emergency patients.</li> </ul>	<p><b>Pain</b></p> <ul style="list-style-type: none"> <li>• Patient self administers gas for pain control as needed</li> </ul>

# NH Adult Medication Reference

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Medication	Adult Protocol/Dosing
<p><b><u>Norepinephrine</u></b> <b>(Levophed)</b> <b><u>Indications/Contraindications:</u></b></p> <ul style="list-style-type: none"> <li>• Alpha and Beta 1 receptor adrenergic receptor agonist vasopressor</li> <li>• Infusion pump required.</li> </ul>	<p><b>Bradycardia</b></p> <ul style="list-style-type: none"> <li>• Infusion 1 – 30 microgram/minute (Dilute 4mg in 1000mL in NaCl for 4 micrograms/mL) via pump</li> </ul> <p><b>Induced Therapeutic Hypothermia</b></p> <ul style="list-style-type: none"> <li>• Infusion 1 – 30 microgram/min. (Dilute 4mg in 1000mL in NaCl for 4 micrograms/mL) via pump</li> </ul> <p><b>Post Resuscitation Care</b></p> <ul style="list-style-type: none"> <li>• Infusion 1 – 30 microgram/min. (Dilute 4mg in 1000mL in NaCl for 4 micrograms/mL) via pump</li> </ul> <p><b>Septic Shock</b></p> <ul style="list-style-type: none"> <li>• Infusion 1 – 30 microgram/minute (Dilute 4mg in 1000mL in NaCl for 4 micrograms/mL) via pump</li> </ul> <p>Suggested Formulations: Solution, Intravenous [strength expressed as base]:</p> <ul style="list-style-type: none"> <li>• Levophed: 1 mg/mL (4 mL) [contains sodium metabisulfite]</li> <li>• Generic: 1 mg/mL (4 mL)</li> </ul>
<p><b><u>Ondansetron</u></b> <b>(Zofran)</b> <b>Anti-emetic</b> <b><u>Indications/Contraindications:</u></b></p> <ul style="list-style-type: none"> <li>• Anti-Emetic used to control Nausea and/or Vomiting.</li> </ul>	<p><b>Nausea/Vomiting</b></p> <ul style="list-style-type: none"> <li>• 4mg by mouth or IV</li> </ul> <p>Tablet Dispersible, Oral:</p> <ul style="list-style-type: none"> <li>• Zofran ODT: 4 mg,</li> <li>• Generic: 4 mg,</li> </ul> <p>Solution, Injection [preservative free]:</p> <ul style="list-style-type: none"> <li>• Generic: 4 mg/2 mL (2 mL)</li> </ul>
<p><b><u>Oxygen</u></b> <b><u>Indications/Contraindications:</u></b></p> <ul style="list-style-type: none"> <li>• Indicated in any condition with increased cardiac work load, respiratory distress, or illness or injury resulting in altered ventilation and/or perfusion. Goal oxygen saturation <math>\geq 94\%</math>.</li> <li>• Indicated for pre-oxygenation whenever possible prior to endotracheal intubation. Goal oxygen saturation 100%.</li> </ul>	<ul style="list-style-type: none"> <li>• 1-4 liters/min via nasal cannula.</li> <li>• 6-15 liters/min via NRB mask.</li> <li>• 15 liters via BVM / ETT / supraglottic airway.</li> </ul>
<p><b><u>Oxytocin</u></b> <b>(Pitocin)</b> <b><u>Indications/Contraindications:</u></b> Routine administration after placental delivery</p>	<p><b>Obstetrical</b></p> <ul style="list-style-type: none"> <li>• Oxytocin 10 units IM.</li> </ul>

# NH Adult Medication Reference

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Medication	Adult Protocol/Dosing
<p><b><u>Phenylephrine</u></b> <b>(Neo-Synephrine)</b> Pump Required.</p>	<p><b>Induced Therapeutic Hypothermia</b></p> <ul style="list-style-type: none"> <li>100 – 180 microgram loading dose followed by infusion 40 – 60 microgram/min.</li> </ul> <p><b>Post Resuscitative Care</b></p> <ul style="list-style-type: none"> <li>100 – 180 microgram loading dose followed by infusion 40 – 60 microgram/min.</li> </ul>
<p><b><u>Pralidoxime</u></b> <b>(2-PAM)</b> <b>Indications/Contraindications:</b></p> <ul style="list-style-type: none"> <li>Antidote for Nerve Agents or Organophosphate Overdose.</li> <li>Administered with Atropine.</li> </ul>	<p><b>Nerve Agent</b></p> <ul style="list-style-type: none"> <li>1 – 2 gram over 30 – 60 minutes.</li> <li><b>Medical Control:</b> Maintenance infusion: up to 500mg per hour (maximum of 12 grams/day).</li> </ul>
<p><b><u>Prochlorperazine</u></b> <b>(Compazine)</b> <b>Indications/Contraindications:</b></p> <ul style="list-style-type: none"> <li>Anti-Emetic used to control Nausea and/or Vomiting.</li> </ul>	<p><b>Nausea/Vomiting</b></p> <ul style="list-style-type: none"> <li>5 – 10mg IV, or 5mg IM.</li> </ul> <p>Suggested Formulations: Solution, Injection, as edisylate [strength expressed as base]:</p> <ul style="list-style-type: none"> <li>Generic: 5 mg/mL (2 mL, 10 mL)</li> </ul>
<p><b><u>Proparacaine</u></b> <b>(Alcaine)</b> <b>Indications/Contraindications:</b></p> <ul style="list-style-type: none"> <li>Topical anesthetic</li> </ul>	<p><b>Eye &amp; Dental</b></p> <ul style="list-style-type: none"> <li>2 drops to affected eye; repeat every 5 minutes as needed.</li> </ul> <p>Suggested Formulations: Solution, Ophthalmic, as hydrochloride:</p> <ul style="list-style-type: none"> <li>Alcaine: 0.5% (15 mL)</li> <li>Parcaine: 0.5% (15 mL)</li> <li>Generic: 0.5% (15 mL)</li> </ul>
<p><b><u>Rocuronium</u></b> <b>Indications/Contraindications:</b></p> <ul style="list-style-type: none"> <li>Non-depolarizing paralytic agent used as a component of rapid sequence intubation, when succinylcholine is contraindicated and for post intubation paralysis.</li> <li>Onset of action is longer than succinylcholine, up to 3 minutes, patient will NOT defasciculate.</li> </ul>	<p><b>Induced Therapeutic Hypothermia</b></p> <ul style="list-style-type: none"> <li>1 mg/kg IV.</li> </ul> <p><b>Rapid Sequence Intubation</b></p> <ul style="list-style-type: none"> <li>1mg/kg IV.</li> </ul> <p>Suggested Formulations: Solution, Intravenous, as bromide:</p> <ul style="list-style-type: none"> <li>Zemuron: 50 mg/5 mL (5 mL); 100 mg/10 mL (10 mL)</li> <li>Generic: 50 mg/5 mL (5 mL); 100 mg/10 mL (10 mL)</li> </ul>
<p><b><u>Sodium Bicarbonate</u></b> <b>Indications/Contraindications:</b></p> <ul style="list-style-type: none"> <li>A buffer used in acidosis to increase the pH in Cardiac Arrest, Hyperkalemia or Tricyclic Overdose.</li> </ul>	<p><b>Poisoning/Substance Abuse/OD</b> <b>Tricyclic with symptomatic dysrhythmias, (eg. tachycardia and wide QRS):</b></p> <ul style="list-style-type: none"> <li>2meq/kg IV.</li> </ul> <p><b>Cardiac Arrest</b></p> <ul style="list-style-type: none"> <li>2 meq/kg IV.</li> </ul>

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Medication	Adult Protocol/Dosing
<p><b><u>Succinylcholine</u></b>  <b>Paralytic Agent</b>  <u>Indications/Contraindications:</u></p> <ul style="list-style-type: none"> <li>Paralytic Agent used as a component of rapid sequence intubation.</li> <li>Avoid in patients with burns &gt;24 hours old, chronic neuromuscular disease (e.g., muscular dystrophy), ESRD, or other situation in which hyperkalemia is likely.</li> </ul>	<p><b>Rapid Sequence Intubation</b></p> <ul style="list-style-type: none"> <li>1.5mg/kg IV immediately after sedation (maximum 150mg).</li> </ul> <p>Suggested Formulations:            Solution, Injection, as chloride:</p> <ul style="list-style-type: none"> <li>Generic: 20 mg/mL (10 mL) [contains methylparaben]</li> <li>Quelicin: 20 mg/mL (10 mL)</li> </ul>
<p><b><u>Sucrose</u></b>  <u>Indications/Contraindications:</u></p> <ul style="list-style-type: none"> <li>Pain control for minor procedures</li> </ul>	<p><b>Pain – Pediatric</b>            Full term infants up to 60 days of age:</p> <ul style="list-style-type: none"> <li>Slowly administer 1.5 to 2 ml of a 24% solution directly onto infant's anterior tongue over a period of 2 minutes, repeat once.</li> <li>Provide a pacifier for non-nutritive sucking and wait two minutes for onset.</li> <li>Pain control effects should persist for up to 8 minutes.</li> </ul> <p>Preterm infants:</p> <ul style="list-style-type: none"> <li>Follow same administration procedure using 0.1 –1.0 ml.</li> </ul> <p>Dose may be repeated once for full term and preterm infants.</p>
<p><b><u>Tetracaine</u></b>  <u>Indications/Contraindications:</u>            Topical anesthetic</p>	<p><b>Eye &amp; Dental</b></p> <ul style="list-style-type: none"> <li>2 drops to affected eye; repeat every 5 minutes as needed.</li> </ul> <p>Suggested Formulations:</p> <ul style="list-style-type: none"> <li>Generic: 0.5% (1 mL, 2 mL, 15 mL)</li> </ul>
<p><b><u>Vasopressin</u></b>  <b>(Pitressin)</b>  <u>Indications/Contraindications:</u></p> <ul style="list-style-type: none"> <li>Used in place of and/or in addition to epinephrine in the setting of cardiac arrest.</li> </ul>	<p><b>Cardiac Arrest</b></p> <ul style="list-style-type: none"> <li>40 units IV / IO, may replace first or second dose of epinephrine.</li> </ul> <p>Suggested Formulations:            Solution, Injection:</p> <ul style="list-style-type: none"> <li>Generic: 20 units/mL (1 mL)</li> </ul>
<p><b><u>Vecuronium</u></b>  <b>Paralytic Agent</b>  <u>Indications/Contraindications:</u></p> <ul style="list-style-type: none"> <li>Long-acting non-depolarizing paralytic agent.</li> <li>Avoid in patients with chronic neuromuscular disease (e.g., muscular dystrophy).</li> </ul>	<p><b>Induced Therapeutic Hypothermia</b></p> <ul style="list-style-type: none"> <li>0.1 mg/kg IV.</li> </ul> <p><b>Rapid Sequence Intubation</b></p> <ul style="list-style-type: none"> <li>0.1 mg/kg IV.</li> </ul> <p>Suggested Formulations:            Solution Reconstituted, Intravenous, as bromide:</p> <ul style="list-style-type: none"> <li>Generic: 10 mg (1 ea); 20 mg (1 ea)</li> </ul>

# Pediatric Color Coded Appendix

Weight 3-5 Kg (Avg 4.0 Kg)			
Length < 59.5 cm	<b>Vital Signs</b> Heart Rate: 120-150 Respirations: 24-48 BP Systolic: 70 (+/-25)	Albuterol 2.5 mg Amiodarone 20 mg Atropine- Bradycardia 0.08 mg - Organophosphate Poison 0.2 mg Calcium Chloride 80 mg Calcium Gluconate 400mg Dexamethasone 2 mg Dextrose 10% Titrate to baseline Diazepam (IV) 0.8 mg (Rectal) 2.0 mg Diphenhydramine HOLD Epinephrine 1:10,000 0.04 mg Epinephrine 1:1000 Nebulized 3 mg Epinephrine 1:1000 IM 0.04 mg Fentanyl 4 mcg Glucagon 0.5 mg Glucose Oral 1 tube Hydrocortisone 8 mg Hydroxocobalamin 280 mg Ibuprofen HOLD	Ipratropium w/ albuterol 500 mcg Levalbuterol 0.63 mg Lidocaine: - Cardiac Arrest 4 mg - Traumatic Brain Injury 6 mg - Intraosseous 2 mg Lorazepam 0.4 mg Magnesium Sulfate - RAD 160 mg - Torsades 200 mg Methylprednisolone 1mg/kg 4 mg 2mg/kg 8 mg Midazolam (0.1mg/kg) 0.4 mg Morphine Sulfate 0.4 mg Naloxone 0.4 mg Ondansetro - IV 0.4 mg - ODT 4 mg Pralidoxime IV 200 mg - Infusion 80 mg/hr Proparacaine 2 drops Sodium Bicarbonate 8 mEq Tetracaine 2 drops
	<b>Equipment</b> ET Tube: 2.5 - 3.5 Blade Size: 0 - 1		
	<b>Defibrillation</b> Defibrillation: 8 J, 15 J Cardioversion: 2 J, 4 J		
	<b>Normal Saline</b> 40-80 ml		
	Acetaminophen 60 mg Adenosine: 1 <sup>st</sup> Dose- 0.4 mg Repeat Dose- 0.8 mg Activated Charcoal 4.2grams		

Gray (0-3 months)

Weight 6-7 Kg (Avg 6.5 Kg)			
Length 59.5-66.5 cm	<b>Vital Signs</b> Heart Rate: 120-125 Respirations: 24-48 BP Systolic: 85 (+/-25)	Albuterol 2.5 mg Amiodarone 32.5 mg Atropine- Bradycardia 0.13 mg - Organophosphate Poison 0.325 mg Calcium Chloride 130 mg Calcium Gluconate 650mg Dexamethasone 4 mg Dextrose 10% Titrate to baseline Diazepam (IV) 1.3 mg (Rectal) 3.25 mg Diphenhydramine HOLD Epinephrine 1:10,000 0.065 mg Epinephrine 1:1000 Nebulized 3 mg Epinephrine 1:1000 IM 0.065 mg Fentanyl 6.5 mcg Glucagon 0.5 mg Glucose Oral 1 tube Hydrocortisone 13 mg Hydroxocobalamin 455 mg Ibuprofen HOLD	Ipratropium w/ albuterol 500 mcg Levalbuterol 0.63 mg Lidocaine: - Cardiac Arrest 6.5 mg - Traumatic Brain Injury 9.75 mg - Intraosseous 3.25 mg Lorazepam 0.65 mg Magnesium Sulfate - RAD 260mg - Torsades 325 mg Methylprednisolone 1mg/kg 6.5 mg 2mg/kg 13 mg Midazolam (0.1mg/kg) 0.65 mg Morphine Sulfate 0.65 mg Naloxone 0.4 - 0.65 mg Ondansetro - IV 0.65mg - ODT 4 mg Pralidoxime IV 325 mg - Infusion 130 mg/hr Proparacaine 2 drops Sodium Bicarbonate 13 mEq Tetracaine 2 drops
	<b>Equipment</b> ET Tube: 3.5 Blade Size: 1		
	<b>Defibrillation</b> Defibrillation: 10 J, 20 J Cardioversion: 2 J, 5 J		
	<b>Normal Saline</b> 65-130 ml		
	Acetaminophen 97.5 mg Adenosine: 1 <sup>st</sup> Dose- 0.65 mg Repeat Dose- 1.3 mg Activated Charcoal 6.3 grams		

Pink (3-6 Months)

Weight 8-9 Kg (Avg 8.5 Kg)			
Length 66.5-74 cm	<b>Vital Signs</b> Heart Rate: 120 Respirations: 24-32 BP Systolic: 92 (+/-25)	Albuterol 2.5 mg Amiodarone 42.5 mg Atropine- Bradycardia 0.17 mg - Organophosphate Poison 0.425 mg Calcium Chloride 170 mg Calcium Gluconate 850mg Dexamethasone 5 mg Dextrose 10% Titrate to baseline Diazepam (IV) 1.7 mg (Rectal) 4.25 mg Diphenhydramine HOLD Epinephrine 1:10,000 0.085 mg Epinephrine 1:1000 Nebulized 3 mg Epinephrine 1:1000 IM 0.085 mg Fentanyl 8.5 mcg Glucagon 0.5 mg Glucose Oral 1 tube Hydrocortisone 17 mg Hydroxocobalamin 595 mg Ibuprofen 85 mg	Ipratropium w/ albuterol 500 mcg Levalbuterol 0.63 mg Lidocaine: - Cardiac Arrest 8.5 mg - Traumatic Brain Injury 12.75 mg - Intraosseous 4.25 mg Lorazepam 0.85 mg Magnesium Sulfate - RAD 340 mg - Torsades 425 mg Methylprednisolone 1mg/kg 8.5 mg 2mg/kg 17 mg Midazolam (0.1mg/kg) 0.85 mg Morphine Sulfate 0.85 mg Naloxone 0.4 - 0.85 mg Ondansetro - IV 0.85 mg - ODT 4 mg Pralidoxime IV 425 mg - Infusion 210 mg/hr Proparacaine 2 drops Sodium Bicarbonate 21 mEq Tetracaine 2 drops
	<b>Equipment</b> ET Tube: 3.5 - 4.0 Blade Size: 1		
	<b>Defibrillation</b> Defibrillation: 20 J, 40 J Cardioversion: 5 J, 9 J		
	<b>Normal Saline</b> 85-170 ml		
	Acetaminophen 127.5 mg Adenosine: 1 <sup>st</sup> Dose- 0.85 mg Repeat Dose- 1.7 mg Activated Charcoal 8.3grams		

Red (7-10 Months)

# Pediatric Color Coded Appendix

## Weight 10-11 Kg (Avg 10.5 Kg)

Length 74-84.5 cm

<b>Vital Signs</b>	
Heart Rate:	115-120
Respirations:	22-30
BP Systolic:	96 (+/-30)
<b>Equipment</b>	
ET Tube:	4.0
Blade Size:	1
<b>Defibrillation</b>	
Defibrillation:	20 J, 40 J
Cardioversion:	5 J, 10 J
<b>Normal Saline</b> 105-210 ml	
Acetaminophen 160 mg	
Adenosine:	
1 <sup>st</sup> Dose-	1.05 mg
Repeat Dose-	2.1 mg
Activated Charcoal 10.4 grams	

Albuterol	2.5 mg
Amiodarone	52. mg
Atropine- Bradycardia	0.21 mg
- Organophosphate Poison	0.525 mg
Calcium Chloride	210 mg
Calcium Gluconate	1050mg
Dexamethasone	6 mg
Dextrose 10%	Titrate to baseline
Diazepam (IV)	2.1 mg
(Rectal)	5.25 mg
Diphenhydramine	13.125 mg
Epinephrine 1:10,000	0.105 mg
Epinephrine 1:1000 Nebulized	3 mg
Epinephrine 1:1000 IM	0.105 mg
Fentanyl	10.5 mcg
Glucagon	0.5 mg
Glucose Oral	1 tube
Hydrocortisone	21 mg
Hydroxocobalamin	735 mg
Ibuprofen	105 mg

Ipratropium w/ albuterol	500 mcg
Levalbuterol	0.63 mg
Lidocaine:	
- Cardiac Arrest	10.5 mg
- Traumatic Brain Injury	15.75 mg
- Intraosseous	5.25 mg
Lorazepam	1.05 mg
Magnesium Sulfate	
- RAD	420 mg
- Torsades	525 mg
Methylprednisolone	
1mg/kg	10.5 mg
2mg/kg	21 mg
Midazolam (0.1mg/kg)	1.05 mg
Morphine Sulfate	1.05 mg
Naloxone	1.05 mg
Ondansetron - IV	1.05 mg
- ODT	4 mg
Pralidoxime IV	525 mg
- Infusion	210 mg/hr
Proparacaine	2 drops
Sodium Bicarbonate	21 mEq
Tetracaine	2 drops

Purple (11-18 Months)

## Weight 12-14 Kg (Avg 13 Kg)

Length 84.5-97.5 cm

<b>Vital Signs</b>	
Heart Rate:	110-115
Respirations:	20-28
BP Systolic:	100 (+/-30)
<b>Equipment</b>	
ET Tube:	4.5
Blade Size:	2
<b>Defibrillation</b>	
Defibrillation:	30 J, 50 J
Cardioversion:	6 J, 15 J
<b>Normal Saline</b> 130-260 ml	
Acetaminophen 195 mg	
Adenosine:	
1 <sup>st</sup> Dose-	1.3mg
Repeat Dose-	2.6 mg
Activated Charcoal 12.5 grams	

Albuterol	2.5 mg
Amiodarone	65 mg
Atropine- Bradycardia	0.26 mg
- Organophosphate Poison	0.65 mg
Calcium Chloride	260 mg
Calcium Gluconate	1300mg
Dexamethasone	8 mg
Dextrose 10%	Titrate to baseline
Diazepam (IV)	2.6 mg
(Rectal)	6.5 mg
Diphenhydramine	16.25
Epinephrine 1:10,000	0.13 mg
Epinephrine 1:1000 Nebulized	3 mg
Epinephrine 1:1000 IM	0.13 mg
Fentanyl	13 mcg
Glucagon	0.5 mg
Glucose Oral	1 tube
Hydrocortisone	26 mg
Hydroxocobalamin	910 mg
Ibuprofen	130 mg

Ipratropium w/ albuterol	500 mcg
Levalbuterol	0.63 mg
Lidocaine:	
- Cardiac Arrest	13 mg
- Traumatic Brain Injury	19.5mg
- Intraosseous	6.5 mg
Lorazepam	1.3 mg
Magnesium Sulfate	
- RAD	520 mg
- Torsades	650 mg
Methylprednisolone	
1mg/kg	13 mg
2mg/kg	26 mg
Midazolam (0.1mg/kg)	1.3 mg
Morphine Sulfate	1.3 mg
Naloxone	0.4 - 1.3 mg
Ondansetron - IV	1.3 mg
- ODT	4 mg
Pralidoxime IV	650 mg
- Infusion	260 mg/hr
Proparacaine	2 drops
Sodium Bicarbonate	26 mEq
Tetracaine	2 drops

Yellow (19-35 Months)

## Weight 15-18 Kg (Avg 16.5 Kg)

Length 97.5-110 cm

<b>Vital Signs</b>	
Heart Rate:	100 - 115
Respirations:	20-26
BP Systolic:	100 (+/-20)
<b>Equipment</b>	
ET Tube:	5.0
Blade Size:	2
<b>Defibrillation</b>	
Defibrillation:	30 J, 70 J
Cardioversion:	8 J, 15 J
<b>Normal Saline</b> 165-330 ml	
Acetaminophen 247.5 mg	
Adenosine:	
1 <sup>st</sup> Dose-	1.65 mg
Repeat Dose-	3.3 mg
Activated Charcoal 16.7 grams	

Albuterol	2.5 mg
Amiodarone	82.5 mg
Atropine- Bradycardia	0.33 mg
- Organophosphate Poison	0.825 mg
Calcium Chloride	330 mg
Calcium Gluconate	1650mg
Dexamethasone	10 mg
Dextrose 10%	Titrate to baseline
Diazepam (IV)	3.3 mg
(Rectal)	8.5 mg
Diphenhydramine	20.625
Epinephrine 1:10,000	0.165 mg
Epinephrine 1:1000 Nebulized	3 mg
Epinephrine 1:1000 IM	0.165 mg
Fentanyl	16.5 mcg
Glucagon	0.5 mg
Glucose Oral	1 tube
Hydrocortisone	33 mg
Hydroxocobalamin	1155 mg
Ibuprofen	165 mg

Ipratropium w/ albuterol	500 mcg
Levalbuterol	0.63 mg
Lidocaine:	
- Cardiac Arrest	16.5 mg
- Traumatic Brain Injury	24.75 mg
- Intraosseous	8.25 mg
Lorazepam	1.65 mg
Magnesium Sulfate	
- RAD	660 mg
- Torsades	825 mg
Methylprednisolone	
1mg/kg	16.5 mg
2mg/kg	33 mg
Midazolam (0.1mg/kg)	1.65 mg
Morphine Sulfate	1.65 mg
Naloxone	0.4 - 1.65 mg
Ondansetron - IV	1.65 mg
- ODT	4 mg
Pralidoxime IV	825 mg
- Infusion	330 mg/hr
Proparacaine	2 drops
Sodium Bicarbonate	33 mEq
Tetracaine	2 drops

White (3-4 yrs)

# Pediatric Color Coded Appendix

## Weight 19-22 Kg (Avg 20.75 Kg)

Length 110-122 cm

<b>Vital Signs</b>	
Heart Rate:	100
Respirations:	20-24
BP Systolic:	100 (+/-15)
<b>Equipment</b>	
ET Tube:	5.5
Blade Size:	2
<b>Defibrillation</b>	
Defibrillation:	40 J, 85 J
Cardioversion:	10 J, 20 J
<b>Normal Saline</b> 205-410 ml	
Acetaminophen	311.25 mg
Adenosine:	
1 <sup>st</sup> Dose-	2.075 mg
Repeat Dose-	4.15 mg
Activated Charcoal	20.8 grams

Albuterol	2.5 mg
Amiodarone	103.75 mg
Atropine- Bradycardia	0.415 mg
- Organophosphate Poison	1.0375 mg
Calcium Chloride	415 mg
Calcium Gluconate	2grams
Dexamethasone	10 mg
Dextrose 10%	Titrate to baseline
Diazepam (IV)	4.15 mg
(Rectal)	10.375 mg
Diphenhydramine	25.93mg
Epinephrine 1:10,000	0.2075 mg
Epinephrine 1:1000 Nebulized	3 mg
Epinephrine 1:1000 IM	0.2075 mg
Fentanyl	20.75 mcg
Glucagon	1 mg
Glucose Oral	1 tube
Hydrocortisone	41.5 mg
Hydroxocobalamin	1452.5 mg
Ibuprofen	207.5 mg

Ipratropium w/ albuterol	500 mcg
Levalbuterol	0.63 mg
Lidocaine:	
- Cardiac Arrest	20.75 mg
- Traumatic Brain Injury	31.125mg
- Intraosseous	10.375 mg
Lorazepam	2.075 mg
Magnesium Sulfate	
- RAD	830 mg
- Torsades	1037.5 mg
Methylprednisolone	
1mg/kg	20.75 mg
2mg/kg	41.5 mg
Midazolam (0.1mg/kg)	2.075 mg
Morphine Sulfate	2.075 mg
Naloxone	0.4 - 2 mg
Ondansetro - IV	2.075 mg
- ODT	4 mg
Pralidoxime IV	1037.5 mg
- Infusion	415 mg/hr
Proparacaine	2 drops
Sodium Bicarbonate	41.5 mEq
Tetracaine	2 drops

Blue (5-6 yrs)

## Weight 24-30 Kg (Avg 27 Kg)

Length 122-137 cm

<b>Vital Signs</b>	
Heart Rate:	90
Respirations:	18-22
BP Systolic:	105 (+/-15)
<b>Equipment</b>	
ET Tube:	6.0
Blade Size:	2-3
<b>Defibrillation</b>	
Defibrillation:	50 J, 100 J
Cardioversion:	15 J, 30 J
<b>Normal Saline</b> 250-500 ml	
Acetaminophen	405 mg
Adenosine:	
1 <sup>st</sup> Dose-	2.7 mg
Repeat Dose-	5.4 mg
Activated Charcoal	27 grams

Albuterol	2.5 mg
Amiodarone	135 mg
Atropine- Bradycardia	0.5 mg
- Organophosphate Poison	1.35 mg
Calcium Chloride	540 mg
Calcium Gluconate	2grams
Dexamethasone	10 mg
Dextrose 10%	Titrate to baseline
Diazepam (IV)	5.4 mg
(Rectal)	13.5 mg
Diphenhydramine	33.75 mg
Epinephrine 1:10,000	0.27 mg
Epinephrine 1:1000 Nebulized	3 mg
Epinephrine 1:1000 IM	0.27 mg
Fentanyl	27 mcg
Glucagon	1 mg
Glucose Oral	1 tube
Hydrocortisone	54 mg
Hydroxocobalamin	1890 mg
Ibuprofen	270 mg

Ipratropium w/ albuterol	500 mcg
Levalbuterol	0.63 mg
Lidocaine:	
- Cardiac Arrest	27 mg
- Traumatic Brain Injury	40.5 mg
- Intraosseous	13.5 mg
Lorazepam	2.7 mg
Magnesium Sulfate	
- RAD	1080 mg
- Torsades	1350 mg
Methylprednisolone	
1mg/kg	27 mg
2mg/kg	54 mg
Midazolam (0.1mg/kg)	2.7 mg
Morphine Sulfate	2.7 mg
Naloxone	0.4 - 2 mg
Ondansetro - IV	2.7 mg
- ODT	4 mg
Pralidoxime IV	1350 mg
- Infusion	540 mg/hr
Proparacaine	2 drops
Sodium Bicarbonate	54 mEq
Tetracaine	2 drops

Orange (7-9 yrs)

## Weight 32-40 Kg (Avg 36 Kg)

Length 137-150 cm

<b>Vital Signs</b>	
Heart Rate:	85-90
Respirations:	16-22
BP Systolic:	115 (+/-20)
<b>Equipment</b>	
ET Tube:	6.5
Blade Size:	3
<b>Defibrillation</b>	
Defibrillation:	60 J, 150 J
Cardioversion:	15 J, 30 J
<b>Normal Saline</b> 250-500 ml	
Acetaminophen	540 mg
Adenosine:	
1 <sup>st</sup> Dose-	3.6 mg
Repeat Dose-	7.2 mg
Activated Charcoal	33.3

Albuterol	2.5 mg
Amiodarone	180 mg
Atropine- Bradycardia	0.5 mg
- Organophosphate Poison	1.8 mg
Calcium Chloride	720 mg
Calcium Gluconate	2grams
Dexamethasone	10 mg
Dextrose 10%	Titrate to baseline
Diazepam (IV)	7.2 mg
(Rectal)	18 mg
Diphenhydramine	45 mg
Epinephrine 1:10,000	0.36 mg
Epinephrine 1:1000 Nebulized	3 mg
Epinephrine 1:1000 IM	0.36 mg
Fentanyl	36 mcg
Glucagon	1 mg
Glucose Oral	1 tube
Hydrocortisone	72 mg
Hydroxocobalamin	2520 mg
Ibuprofen	360 mg

Ipratropium w/ albuterol	500 mcg
Levalbuterol	0.63 mg
Lidocaine:	
- Cardiac Arrest	36 mg
- Traumatic Brain Injury	54 mg
- Intraosseous	18 mg
Lorazepam	3.6 mg
Magnesium Sulfate	
- RAD	1440 mg
- Torsades	1800 mg
Methylprednisolone	
1mg/kg	36 mg
2mg/kg	72 mg
Midazolam (0.1mg/kg)	3.6 mg
Morphine Sulfate	3.6 mg
Naloxone	0.4 - 2 mg
Ondansetro - IV	3.6 mg
- ODT	4 mg
Pralidoxime IV	1800 mg
- Infusion	720 mg/hr
Proparacaine	2 drops
Sodium Bicarbonate	72 mEq
Tetracaine	2 drops

Green (10-12 yrs)

# NH Pediatric Drip Rate Reference

**Pediatric Dopamine 200mg in 250mL = 800 mcg/mL**

**5-20mcg/kg/min**

Dose	4kg		6.5kg		8.5kg		10.5kg		13kg		16.5kg		20.75kg		27kg		36kg	
	mL/min	mL/hr	mL/min	mL/hr	mL/min	mL/hr	mL/min	mL/hr										
2	0.01	0.6	0.02	1	0.02	1	0.03	2	0.03	2	0.04	2	0.05	3	0.07	4	0.09	5
5	0.03	1.5	0.04	2	0.05	3	0.07	4	0.08	5	0.10	6	0.13	8	0.17	10	0.23	14
10	0.05	3.0	0.08	5	0.11	6	0.13	8	0.16	10	0.21	12	0.26	16	0.34	20	0.45	27
15	0.08	4.5	0.12	7	0.16	10	0.20	12	0.24	15	0.31	19	0.39	23	0.51	30	0.68	41
20	0.10	6.0	0.16	10	0.21	13	0.26	16	0.33	20	0.41	25	0.52	31	0.68	41	0.90	54

**Pediatric Dopamine 200mg in 500mL = 400mcg/mL**

**2-10mcg/kg/min**

Dose	4kg		6.5kg		8.5kg		10.5kg		13kg		16.5kg		20.75kg		27kg		36kg	
	mL/min	mL/hr	mL/min	mL/hr	mL/min	mL/hr	mL/min	mL/hr										
2	0.02	1.2	0.03	2	0.04	3	0.05	3	0.07	4	0.08	5	0.10	6	0.14	8	0.18	11
5	0.05	3.0	0.08	5	0.11	6	0.13	8	0.16	10	0.21	12	0.26	16	0.34	20	0.45	27
10	0.10	6.0	0.16	10	0.21	13	0.26	16	0.33	20	0.41	25	0.52	31	0.68	41	0.90	54
15	0.15	9.0	0.24	15	0.32	19	0.39	24	0.49	29	0.62	37	0.78	47	1.01	61	1.35	81
20	0.20	12.0	0.33	20	0.43	26	0.53	32	0.65	39	0.83	50	1.04	62	1.35	81	1.80	108

**Pediatric Dopamine 400mg in 250mL = 1600mcg/mL**

**2-10mcg/kg/min**

Dose	4kg		6.5kg		8.5kg		10.5kg		13kg		16.5kg		20.75kg		27kg		36kg	
	mL/min	mL/hr	mL/min	mL/hr	mL/min	mL/hr	mL/min	mL/hr										
2	0.01	0.3	0.01	0.5	0.01	1	0.01	1	0.02	1	0.02	1	0.03	2	0.03	2	0.05	3
5	0.01	0.8	0.02	1	0.03	2	0.03	2	0.04	2	0.05	3	0.06	4	0.08	5	0.11	7
10	0.03	1.5	0.04	2	0.05	3	0.07	4	0.08	5	0.10	6	0.13	8	0.17	10	0.23	14
15	0.04	2.3	0.06	4	0.08	5	0.10	6	0.12	7	0.15	9	0.19	12	0.25	15	0.34	20
20	0.05	3.0	0.08	5	0.11	6	0.13	8	0.16	10	0.21	12	0.26	16	0.34	20	0.45	27

**Pediatric Dopamine 400mg in 500mL = 800mcg/mL**

**2-10mcg/kg/min**

Dose	4kg		6.5kg		8.5kg		10.5kg		13kg		16.5kg		20.75kg		27kg		36kg	
	mL/min	mL/hr	mL/min	mL/hr	mL/min	mL/hr	mL/min	mL/hr										
2	0.01	0.6	0.02	1	0.02	1	0.03	2	0.03	2	0.04	2	0.05	3	0.07	4	0.09	5
5	0.03	1.5	0.04	2	0.05	3	0.07	4	0.08	5	0.10	6	0.13	8	0.17	10	0.23	14
10	0.05	3.0	0.08	5	0.11	6	0.13	8	0.16	10	0.21	12	0.26	16	0.34	20	0.45	27
15	0.08	4.5	0.12	7	0.16	10	0.20	12	0.24	15	0.31	19	0.39	23	0.51	30	0.68	41
20	0.10	6.0	0.16	10	0.21	13	0.26	16	0.33	20	0.41	25	0.52	31	0.68	41	0.90	54

# NH Pediatric Drip Rate Reference

## Pediatric Epinephrine: 1mg in 1000 = 1mcg/mL

### 0.1-1mcg/kg/min

Dose	4kg		6.5kg		8.5kg		10.5kg		13kg		16.5kg		20.75kg		27kg		36kg	
	mL/min	mL/hr	mL/min	mL/hr	mL/min	mL/hr	mL/min	mL/hr										
0.1	0.40	24	0.65	39	0.85	51	1.05	63	1.30	78	1.65	99	2.08	125	2.70	162	3.60	216
0.2	0.80	48	1.30	78	1.70	102	2.10	126	2.60	156	3.30	198	4.15	249	5.40	324	7.20	432
0.3	1.20	72	1.95	117	2.55	153	3.15	189	3.90	234	4.95	297	6.23	374	8.10	486	10.80	648
0.4	1.60	96	2.60	156	3.40	204	4.20	252	5.20	312	6.60	396	8.30	498	10.80	648	14.40	864
0.5	2.00	120	3.25	195	4.25	255	5.25	315	6.50	390	8.25	495	10.38	623	13.50	810	18.00	1080
0.6	2.40	144	3.90	234	5.10	306	6.30	378	7.80	468	9.90	594	12.45	747	16.20	972	21.60	1296
0.7	2.80	168	4.55	273	5.95	357	7.35	441	9.10	546	11.55	693	14.53	872	18.90	1134	25.20	1512
0.8	3.20	192	5.20	312	6.80	408	8.40	504	10.40	624	13.20	792	16.60	996	21.60	1296	28.80	1728
0.9	3.60	216	5.85	351	7.65	459	9.45	567	11.70	702	14.85	891	18.68	1121	24.30	1458	32.40	1944
1	4.00	240	6.50	390	8.50	510	10.50	630	13.00	780	16.50	990	20.75	1245	27.00	1620	36.00	2160

## Pediatric Norepinephrine 4mg in 1000mL = 4mcg/mL

### 0.1-2mcg/kg/min

Dose	4kg		6.5kg		8.5kg		10.5kg		13kg		16.5kg		20.75kg		27kg		36kg	
	mL/min	mL/hr	mL/min	mL/hr	mL/min	mL/hr	mL/min	mL/hr										
0.1	0.10	6	0.16	10	0.21	13	0.26	16	0.33	20	0.41	25	0.52	31	0.68	41	0.90	54
0.2	0.20	12	0.33	20	0.43	26	0.53	32	0.65	39	0.83	50	1.04	62	1.35	81	1.80	108
0.3	0.30	18	0.49	29	0.64	38	0.79	47	0.98	59	1.24	74	1.56	93	2.03	122	2.70	162
0.4	0.40	24	0.65	39	0.85	51	1.05	63	1.30	78	1.65	99	2.08	125	2.70	162	3.60	216
0.5	0.50	30	0.81	49	1.06	64	1.31	79	1.63	98	2.06	124	2.59	156	3.38	203	4.50	270
0.6	0.60	36	0.98	59	1.28	77	1.58	95	1.95	117	2.48	149	3.11	187	4.05	243	5.40	324
0.7	0.70	42	1.14	68	1.49	89	1.84	110	2.28	137	2.89	173	3.63	218	4.73	284	6.30	378
0.8	0.80	48	1.30	78	1.70	102	2.10	126	2.60	156	3.30	198	4.15	249	5.40	324	7.20	432
0.9	0.90	54	1.46	88	1.91	115	2.36	142	2.93	176	3.71	223	4.67	280	6.08	365	8.10	486
1.0	1.00	60	1.63	98	2.13	128	2.63	158	3.25	195	4.13	248	5.19	311	6.75	405	9.00	540
1.5	1.50	90	2.44	146	3.19	191	3.94	236	4.88	293	6.19	371	7.78	467	10.13	608	13.50	810
2.0	2.00	120	3.25	195	4.25	255	5.25	315	6.50	390	8.25	495	10.38	623	13.50	810	18.00	1,080

# NH Adult Drip Rate Reference

Adult Dopamine 200mg in 250mL = 800 mcg/mL

5-20mcg/kg.min

Dose	50kg		60kg		70kg		80kg		90kg		100 kg		110kg		120kg		130kg	
	mL/min	mL/hr																
2	0.13	7.5	0.15	9	0.18	11	0.20	12	0.23	14	0.25	15	5.28	17	0.30	18	0.33	20
5	0.31	18.8	0.38	23	0.44	26	0.50	30	0.56	34	0.63	38	13.19	41	0.75	45	0.81	49
10	0.63	37.5	0.75	45	0.88	53	1.00	60	1.13	68	1.25	75	26.38	83	1.50	90	1.63	98
15	0.94	56.3	1.13	68	1.31	79	1.50	90	1.69	101	1.88	113	39.56	124	2.25	135	2.44	146
20	1.25	75.0	1.50	90	1.75	105	2.00	120	2.25	135	2.50	150	52.75	165	3.00	180	3.25	195

Adult Dopamine 200mg in 500mL = 400mcg/mL

2-10mcg/kg/min

Dose	50kg		60kg		70kg		80kg		90kg		100 kg		110kg		120kg		130kg	
	mL/min	mL/hr																
2	0.03	15.0	0.30	18	0.35	21	0.40	24	0.45	27	0.50	30	0.55	33	0.60	36	0.65	39
5	0.06	37.5	0.75	45	0.88	53	1.00	60	1.13	68	1.25	75	1.38	83	1.50	90	1.63	98
10	0.13	75.0	1.50	90	1.75	105	2.00	120	2.25	135	2.50	150	2.75	165	3.00	180	3.25	195
15	0.19	112.5	2.25	135	2.63	158	3.00	180	3.38	203	3.75	225	4.13	248	4.50	270	4.88	293
20	0.25	150.0	3.00	180	3.50	210	4.00	240	4.50	270	5.00	300	5.50	330	6.00	360	6.50	390

Adult Dopamine 400mg in 250mL = 1600mcg/mL

2-10mcg/kg/min

Dose	50kg		60kg		70kg		80kg		90kg		100 kg		110kg		120kg		130kg	
	mL/min	mL/hr																
2	0.06	4	0.08	4.5	0.09	5	0.10	6	0.11	7	0.13	8	0.14	8	0.15	9	0.16	10
5	0.16	9	0.19	11.3	0.22	13	0.25	15	0.28	17	0.31	19	0.34	21	0.38	23	0.41	24
10	0.31	19	0.38	22.5	0.44	26	0.50	30	0.56	34	0.63	38	0.69	41	0.75	45	0.81	49
15	0.47	28	0.56	33.8	0.66	39	0.75	45	0.84	51	0.94	56	1.03	62	1.13	68	1.22	73
20	0.63	38	0.75	45.0	0.88	53	1.00	60	1.13	68	1.25	75	1.38	83	1.50	90	1.63	98

Adult Dopamine 400mg in 500mL = 800mcg/mL

2-10mcg/kg/min

Dose	50kg		60kg		70kg		80kg		90kg		100 kg		110kg		120kg		130kg	
	mL/min	mL/hr																
2	0.13	7.5	0.15	9	0.18	11	0.20	12	0.23	14	0.25	15	5.28	17	0.30	18	0.33	20
5	0.31	18.8	0.38	23	0.44	26	0.50	30	0.56	34	0.63	38	13.19	41	0.75	45	0.81	49
10	0.63	37.5	0.75	45	0.88	53	1.00	60	1.13	68	1.25	75	26.38	83	1.50	90	1.63	98
15	0.94	56.3	1.13	68	1.31	79	1.50	90	1.69	101	1.88	113	39.56	124	2.25	135	2.44	146
20	1.25	75.0	1.50	90	1.75	105	2.00	120	2.25	135	2.50	150	52.75	165	3.00	180	3.25	195

# NH Adult Drip Rate Reference

**Adult Epinephrine 1mg in 1000 mL = 1mcg/mL**  
**2-10mcg/min**

Dose		
	mL/min	mL/hr
2	2	120
3	3	180
4	4	240
5	5	300
6	6	360
7	7	420
8	8	480
9	9	540
10	10	600

**Adult Norepinephrine 4mg in 1000mL = 4mcg/mL**  
**1-30 mcg/min**

Dose		
	mL/min	mL/hr
1	0.25	15
5	1.25	75
10	2.50	150
15	3.75	225
20	5.00	300
25	6.25	375
30	7.50	450

**Adult Epinephrine 1mg in 500 mL = 2 mcg/mL**  
**2-10mcg/min**

Dose		
	mL/min	mL/hr
2	1	60
3	1.5	90
4	2	120
5	2.5	150
6	3	180
7	3.5	210
8	4	240
9	4.5	270
10	5	300

**Adult Norepinephrine 4mg in 500 mL = 8mcg/mL**  
**1-30mcg/min**

Dose		
	mL/min	mL/hr
1	0.13	7.5
5	0.63	37.5
10	1.25	75
15	1.88	112.5
20	2.50	150
25	3.13	187.5
30	3.75	225

**Adult Epinephrine 1mg in 250mL = 4mcg/mL**  
**2-10mcg/min**

Dose		
	mL/min	mL/hr
2	0.5	30
3	0.75	45
4	1	60
5	1.25	75
6	1.5	90
7	1.75	105
8	2	120
9	2.25	135
10	2.5	150

**Adult Nitroglycerin 50mg in 250 = 200mcg/mL**  
**5-400mcg/min**

Dose		
	mL/min	mL/hr
5	0.025	1.5
10	0.05	3
15	0.075	4.5
20	0.1	6
50	0.25	15
100	0.5	30
200	1	60
300	1.5	90
400	2	120

**Adult Nitroglycerin 100mg in 250 = 400mcg/mL**  
**5-400mcg/min**

Dose		
	mL/min	mL/hr
5	0.013	0.75
10	0.025	1.5
15	0.038	2.25
20	0.05	3
50	0.125	7.5
100	0.25	15
200	0.5	30
300	0.75	45
400	1	60

## ADULT Scope of Practice

Airway Management	EMR	EMT	AEMT	PARAMEDIC
BVM	X	X	X	X
Chest Tube Maintenance				X
Cleared, Opened, Heimlich	X	X	X	X
CPAP			*	X
Cricothyrotomy – Percutaneous				X
Cricothyrotomy – Surgical (Bougie Assisted)				<b>Prerequisite</b>
Endotracheal Intubation				X
Endotracheal Suctioning			X	X
Nasogastric Tube				X
Nasopharyngeal Airway		X	X	X
Nasotracheal Intubation				X
Nebulizer Treatment			X	X
Needle Decompression				X
Oral Suctioning	X	X	X	X
Oropharyngeal Airway	X	X	X	X
Oxygen Administration	X	X	X	X
Pulse Oximetry		X	X	X
Rapid Sequence Intubation				<b>Prerequisite</b>
Supraglottic Airways		*	X	X
Tracheostomy Maintenance		X	X	X
Ventilator Operation				X

**X** Skill allowed under protocol and taught in the National Education Standards.

**\*** Skill allowed under protocol after completion of a scope of practice module.

**▲** Skills allowed under protocol for licensed AEMTs; NOT allowed for EMT-Intermediates.

Revised 09/10/15

Appendix 6

## ADULT Scope of Practice

Medication Administration Route	EMR	EMT	AEMT	PARAMEDIC
Auto Injector	Provider Protection	X	X	X
Blood Products				X
Endotracheal				X
Inhalation		MDI	X	X
Intramuscular			X	X
Intraosseous			*	X
Intravenous			X	X
Intravenous Pump				X
Oral		X	X	X
Intranasal	*	*	X	X
Rectal				X
Subcutaneous			X	X
Sublingual		Assist	X	X
Vascular Access	EMR	EMT	AEMT	PARAMEDIC
Blood Draw			*	X
Blood Glucose Analysis		*	X	X
Central Line Maintenance				X
External Jugular				X
Peripheral Venous Access			X	X
Intraosseous - Adult			Δ or * Commercial Devices	X

**X** Skill allowed under protocol and taught in the National Education Standards.

**\*** Skill allowed under protocol after completion of a scope of practice module.

**Δ** Skills allowed under protocol for licensed AEMTs; NOT allowed for EMT-Intermediates.

Revised 09/10/15

Appendix 6

## ADULT Scope of Practice

Cardiac Management	EMR	EMT	AEMT	PARAMEDIC
Application of 12 Lead ECG		*	*	X
Application of 3 or 4 lead ECG		*	*	X
CPR - Cardiopulmonary Resuscitation	X	X	X	X
Defibrillation - AED	X	X	X	X
Defibrillation - Manual			*	X
Induced Therapeutic Hypothermia				X
Interpretation of 12 Lead ECG				X
Interpretation of 3 or 4 lead			Vfib/Vtach Asystole, PEA*	X
Synchronized Cardioversion				X
Transcutaneous Pacing				X

**X** Skill allowed under protocol and taught in the National Education Standards.

**\*** Skill allowed under protocol after completion of a scope of practice module.

**Δ** Skills allowed under protocol for licensed AEMTs; NOT allowed for EMT-Intermediates.

Revised 09/10/15

Appendix 6

## PEDIATRIC Scope of Practice

Airway Management	EMR	EMT	AEMT	PARAMEDIC
BVM	X	X	X	X
Cleared, Opened, Heimlich	X	X	X	X
CPAP			Δ	X
Endotracheal Intubation				X
Endotracheal Suctioning			X	X
Nasogastric Tube				X
Nasopharyngeal Airway		X	X	X
Nebulizer Treatment			Δ	X
Needle Decompression				X
Oral Suctioning	X	X	X	X
Oropharyngeal Airway	X	X	X	X
Oxygen Administration	X	X	X	X
Pulse Oximetry		X	X	X
Supraglottic Airways		*	Δ or *	X
Tracheostomy Maintenance		X	X	X
Ventilator Operation				X

**X** Skill allowed under protocol and taught in the National Education Standards.

**\*** Skill allowed under protocol after completion of a scope of practice module.

**Δ** Skills allowed under protocol for licensed AEMTs; NOT allowed for EMT-Intermediates.

Revised 09/10/15

Appendix 6

## PEDIATRIC Scope of Practice

Medication Administration Route	EMR	EMT	AEMT	PARAMEDIC
Auto Injector		X	X	X
Endotracheal				X
Inhalation		MDI	Δ	X
Intramuscular			Δ	X
Intraosseous			Δ	X
Intravenous			Δ	X
Intravenous Pump			Interfacility transfers	X
Oral		X	X	X
Rectal		Assist Diastat	Assist Diastat	X
Subcutaneous			Δ	X
Vascular Access	EMR	EMT	AEMT	PARAMEDIC
Blood Draw				X
Blood Glucose Analysis		*	Δ or *	X
Central Line Access				X
Intraosseous			Δ	X
Peripheral Venous Access			Δ	X

**X** Skill allowed under protocol and taught in the National Education Standards.

**\*** Skill allowed under protocol after completion of a scope of practice module.

**Δ** Skills allowed under protocol for licensed AEMTs; NOT allowed for EMT-Intermediates.

Revised 09/10/15

Appendix 6

## PEDIATRIC Scope of Practice

Cardiac Management	EMR	EMT	AEMT	PARAMEDIC
Application of 12 Lead ECG		*	*	X
Application of 3 or 4 Lead ECG		*	*	X
CPR - Cardiopulmonary Resuscitation	X	X	X	X
Defibrillation - AED	X	X	X	X
Defibrillation - Manual				X
Interpretation of 12 Lead ECG				X
Interpretation of 3 or 4 lead				X
Synchronized Cardioversion				X
Transcutaneous Pacing				X

**X** Skill allowed under protocol and taught in the National Education Standards.

**\*** Skill allowed under protocol after completion of a scope of practice module.

**Δ** Skills allowed under protocol for licensed AEMTs; NOT allowed for EMT-Intermediates.

Revised 09/10/15

Appendix 6

## ADULT & PEDIATRIC Scope of Practice

OTHER SKILLS	EMR	EMT	AEMT	PARAMEDIC
Advanced Spinal Assessment		*	*	*
Burn Care	X	X	X	X
Cervical Spinal Immobilization	Manual Stabilization	X	X	X
Childbirth	X	X	X	X
Cold Pack	X	X	X	X
Extrication		X	X	X
Eye Irrigation (Morgan Lens)				X
Hot Pack	X	X	X	X
Immunization			X	Prerequisite
Restraints - Pharmacological				X
Restraints - Physical		X	X	X
Spinal Motion Restriction	Manual Stabilization	X	X	X
Splinting	Manual Stabilization	X	X	X
Splinting - Traction	Manual Stabilization	X	X	X
Stroke Scale		X	X	X
Temperature		X	X	X
Wound Care - Occlusive Dressing	X	X	X	X
Wound Care Pressure Bandage	X	X	X	X

**X** Skill allowed under protocol and taught in the National Education Standards.

**\*** Skill allowed under protocol after completion of a scope of practice module.

**▲** Skills allowed under protocol for licensed AEMTs; NOT allowed for EMT-Intermediates.

Revised 09/10/15

Appendix 6

**HIPAA PERMITS DISCLOSURE TO HEALTHCARE PROFESSIONALS AS NECESSARY FOR TREATMENT**

**Provider Orders for Life-Sustaining Treatment (POLST)**

This is a Physician/APRN Order Sheet. **First** follow these orders, **then** contact physician or APRN. These medical orders are based on the patient's **current** medical condition and preferences. Any section not completed does not invalidate the form and implies **full treatment** for that section.

Last Name of Patient

First Name/Middle Initial for Patient

Date of Birth (mm/dd/yyyy)

Last 4 SSN

Gender

M  F

**Section A**  
Check One

**Cardiopulmonary Resuscitation (CPR): Patient has no pulse or is not breathing.**

- Attempt CPR
  - Do Not Attempt Resuscitation/DNR (The PINK Portable-DNR must accompany the POLST for DNR to be in effect in all NH settings.)
- Follow orders in **B**, **C** and **D** when not in cardiopulmonary arrest.

**Section B**  
Check One

**Medical Interventions: Patient has pulse and/or is breathing.**

- Full Treatment** – Includes care described below, Use intubation, advanced airway interventions, mechanical ventilation, and cardioversion as indicated. *Transfer to hospital if indicated. Includes intensive care.*
- Limited Interventions** – Includes care described below. Use medical treatment, IV fluids and cardiac monitor as indicated. Do not use intubation, advanced airway interventions, or mechanical ventilation. May consider less invasive airway support (e.g. CPAP, BiPAP). *Transfer to hospital level of care to meet need, if indicated. Avoid intensive care.*
- Comfort-focused Care** – Use medication by any route, positioning, wound care and other measures to relieve pain and discomfort. Use oxygen, suction and manual treatment of airway obstruction as needed. *Patient prefers no transfer to hospital for life-sustaining treatment. Transfer to more acute level if comfort needs cannot be met in current location.*

Other Instructions:

**Section C**  
Check Only One in Each Column

**Medically Administered Fluids and Nutrition.** Oral fluids and nutrition must be offered if medically feasible and consistent with patient's goals of care.

- IV fluids long-term
- IV fluids for a defined trial period (provide other measures to assure comfort)
- No IV Fluids (provide other measures to assure comfort)
- Feeding tube long-term
- Feeding tube for a defined trial period
- No feeding tube

**Section D**  
Check One

- Antibiotics if indicated clinically or by testing.
- No antibiotics
- Antibiotics only if likely to contribute to comfort

**Section E**  
Check All That Apply

**Discussed with:**

- Patient
- DPOAH representative
- Court-appointed guardian
- Parent(s) of minor
- Other: \_\_\_\_\_ (specify)

**The basis for these orders is:**

- Patient's preference
- Activated Durable Power of Attorney for Healthcare (DPOAH)
- Activated Living Will
- Parent of Minor
- Guardianship
- Other: \_\_\_\_\_ (specify)

Documentation of discussion is located in medical chart at:

Date of Discussion:

**Mandatory Signature of Patient or Activated DPOAH, Guardian or Parent of Minor, and Physician/APRN**

Name (Print)	Signature (Mandatory)	Date	Relationship (write "self" if patient)
Physician/APRN Name: (Print)	Physician/APRN Phone Number:	Physician/APRN State License Number:	
Physician/APRN Signature: (Mandatory)		Date:	

**HIPAA PERMITS DISCLOSURE TO HEALTH PROFESSIONALS INVOLVED IN THE PATIENT'S CARE**

**Information for Patient Named on this form – Patient's Name (print):**

This voluntary form records your preferences for life-sustaining treatment in your **current** state of health. It can be reviewed and updated by you and your health care professional at any time if your preferences change. If you are unable to make your own health care decisions, the orders should reflect your preferences as best understood by your DPOAH, Guardian or by your written Advance Care Plan.

**(Optional) Contact Information for DPOAH, Guardian or Parent of Minor**

Name:	Relationship:	Phone Number:	Address:

**(Optional) Health Care Professional Preparing Form**

Name:	Preparer Title:	Phone Number:
		Date Prepared:

**Directions for Health Care Professionals**

**Completing POLST**

- Encourage completion of an Advance Directive.
- Should reflect current preferences of patient with serious illness or frailty whose death within the next year would not surprise you.
- Verbal/phone orders are acceptable with follow-up signature by physician/APRN in accordance with facility policy.
- Use original form if patient is transferred/discharged.

**Reviewing POLST**

This POLST should be reviewed periodically and if:

- The patient is transferred from one care setting or care level to another, or
- There is a substantial change in the patient's health status, or
- The patient's treatment preferences change.

**Voiding POLST**

- A patient with capacity, or the activated DPOAH or Court appointed Guardian of a patient without capacity, can void the form and request alternative treatment.
- Draw line through sections A through E and write "VOID" in large letters if POLST is replaced or becomes invalid.
- If included in an electronic medical record, follow voiding procedures of facility.

**Review of this POLST Form**

Review Date	Reviewer	Location of Review	Signature

Review Outcome:  No Change                       Form Voided                       New form completed

Review Date	Reviewer	Location of Review	Signature

Review Outcome:  No Change                       Form Voided                       New form completed

Review Date	Reviewer	Location of Review	Signature

Review Outcome:  No Change                       Form Voided                       New form completed

**ORIGINAL TO ACCOMPANY PATIENT IF TRANSFERRED / DISCHARGED**









# State of New Hampshire



# Emergency Medical Services Laws and Rules

# Chapter 153-A Emergency Medical and Trauma Services

## New Hampshire Statutes

### Table of Contents

#### CHAPTER 153-A: EMERGENCY MEDICAL AND TRAUMA SERVICES

- Section 153-A:1 Declaration of Policy and Purpose.
- Section 153-A:2 Definitions.
- Section 153-A:3 Emergency Medical and Trauma Services Coordinating Board.
- Section 153-A:4 Powers and Duties of the Coordinating Board.
- Section 153-A:5 Emergency Medical Services Medical Control Board; Chair; Duties; State Medical Director.
- Section 153-A:6 Regions and Districts.
- Section 153-A:7 Duties of the Commissioner.
- Section 153-A:8 Trauma Medical Review Committee.
- Section 153-A:9 Proceedings Confidential; Liability.
- Section 153-A:10 Licensure of Emergency Medical Service Units and Emergency Medical Service Vehicles.
- Section 153-A:11 Licensure of Emergency Medical Care Providers.
- Section 153-A:12 Authority for Licensed Advanced Emergency Medical Care Providers.
- Section 153-A:13 Revocation of License.
- Section 153-A:14 Investigations.
- Section 153-A:15 Fees.
- Section 153-A:16 Exception for Physician, Registered Nurse, and Physician Assistant.
- Section 153-A:17 Liability.
- Section 153-A:17-a Critical Incident Intervention and Management.
- Section 153-A:18 Limitation of Liability for Failure to Obtain Consent.
- Section 153-A:19 Mutual Aid.
- Section 153-A:20 Rulemaking.
- Section 153-A:21 Prohibited Acts; Penalties.
- Section 153-A:22 Administrative Fines.
- Section 153-A:23 Statement of Intent.
- Section 153-A:24 Responsibility for Public Agency Response Services.
- Section 153-A:25 Collections; Insurance.
- Section 153-A:26 Admissibility in Criminal Proceedings.
- Section 153-A:27 Court Order.
- Section 153-A:28 Intent.
- Section 153-A:29 Definitions.
- Section 153-A:30 Training.
- Section 153-A:31 Liability Limited.
- Section 153-A:32 Automated External Defibrillator Registry.
- Section 153-A:33 Registration Required.
- Section 153-A:34 Quality Management Program

Chapter 153:A can be found at: <http://www.gencourt.state.nh.us/rsa/html/NHTOC/NHTOC-XII-153-A.htm>

# Chapter Saf-C 5900 Emergency Medical Services Rules

## New Hampshire Statutes

### Table of Contents

#### CHAPTER 153-A: EMERGENCY MEDICAL AND TRAUMA SERVICES

- PART Saf-C 5901 Definitions
- PART Saf-C 5902 EMS Operating Standards
- PART Saf-C 5903 Unit and Provider Licensing Standards
- PART Saf-C 5904 EMS Vehicle Equipment and Unit Supplies
- PART Saf-C 5905 Applications
- PART Saf-C 5906 Licensing Fees
- PART Saf-C 5907 Fines and Penalties
- PART Saf-C 5908 EMS Instructor/Coordinator (EMS I/C) Requirements
- PART Saf-C 5909 EMS I/C Responsibilities
- PART Saf-C 5910 EMS Training Program Authorization
- PART Saf-C 5911 Provider Training
- PART Saf-C 5912 Practical Examination Evaluator Training and Education (PEETE) Program
- PART Saf-C 5913 Refresher Training Programs (RTP)
- PART Saf-C 5914 Mechanism for Medical Professional to Challenge National Registry Levels
- PART Saf-C 5915 Examinations
- PART Saf-C 5916 Renewal of Lapsed Certification
- PART Saf-C 5917 Education Institutions and Training Agencies
- PART Saf-C 5918 EMS Inter-Facility Transfer Exception (IFTE) Process Requirements (expired)
- PART Saf-C 5919 Wheelchair Vans for Hire
- PART Saf-C 5920 Possession Procedures for Controlled Drugs
- PART Saf-C 5921 Responsibilities Between MRH and Unit
- PART Saf-C 5922 Patient Care Protocols
- PART Saf-C 5923 Quality Management Program

Chapter Saf-C 5900 can be found at: [http://www.gencourt.state.nh.us/rules/state\\_agencies/saf-c5900.html](http://www.gencourt.state.nh.us/rules/state_agencies/saf-c5900.html)





# State of New Hampshire



## Emergency Medical Services Best Practice Guidelines

# EMS Vehicle Operator Review

- PURPOSE:** This guideline will explain how the review of driver histories for pre-hired and hired operators of EMS vehicles will be performed.
- SCOPE:** These policies are binding to all operators of EMS vehicles.
- DEFINITION:** EMS Vehicle Operator is any employee or member who operates any EMS Vehicle that is owned or operated by ABC Ambulance/Fire Department.
- PROCEDURE:** The following Policy applies to all pre-hired and hired employees.

To download complete best practice please go to and select "SOG1 Prehired Operator Review":  
<http://www.nh.gov/safety/divisions/fstems/ems/BestPractices.html>

## Securing Equipment in Patient Compartment

**PURPOSE:** To reduce the risk of injury to patients and department members while transporting in XYZ Ambulances

**SCOPE:** Applies to all members.

**DEFINITION:**

**PROCEDURE:**

1. Prior to transporting a patient in a XYZ Ambulance, all EMS equipment will be secured.
2. Secured will mean that in the event of a sudden stoppage or collision, the equipment is reasonably restrained so as to not strike a patient or member of the department.
3. Patient condition will not warrant disregarding this SOG.

To download complete best practice please go to and select "SOG2 Select Equipment":  
<http://www.nh.gov/safety/divisions/fstems/ems/BestPractices.html>

# Concern of Adult/Elder Well Being

**PURPOSE:** To enhance the safety and well-being of adults and elders who seek assistance from emergency response systems.

**SCOPE:** This process shall apply to emergency response systems and providers who are concerned for the safety and well-being of adults/elders who present them with situations that are potentially dangerous or harmful to the adult/elder's physical, emotional and mental health. This includes the adult/elder who has made or makes health and welfare decisions that are potentially dangerous or harmful to him/her self. Such decisions may include those made that ignore the potential for dangerous or harmful outcomes, often referred to as self-neglect.

This document is not intended to address the concerns of emotional, physical, sexual abuse or exploitation by others or that occur at licensed care facilities. EMS systems and/or providers should refer to NH State Law, Chapter 161-F, Subdivision 161-F: 42-57 governing Protective Services to Adults and to the current NH Pre-Hospital Patient Care Protocols.

To download complete best practice please go to and select "SOG3 Elder Concern":  
<http://www.nh.gov/safety/divisions/fstems/ems/BestPractices.html>

## Family-Centered Care: Developing Working Partnerships for Children

- PURPOSE:** Family-centered care recognizes the integral role of the family in the health and well being of the pediatric patient. Implementing a family-centered care approach may require significant philosophical, practice, and environmental changes within the EMS culture.
- SCOPE:** All agencies that provide emergency medical care to communities.
- DEFINITION:** Family-Centered Care is a mutually collaborative health care effort between family, patient and EMS provider that helps achieve the best possible outcome for a child experiencing a medical emergency.

To download complete best practice please go to and select "SOG4 Family Centered Care":  
<http://www.nh.gov/safety/divisions/fstems/ems/BestPractices.html>

# Head Injury Information Sheet

You may have had a head injury today. You declined evaluation at the hospital for your injuries. If you change your mind, or, if you develop any of the symptoms below, please call 911 or go to the closest emergency room.

You must be watched closely by another person for 24 hours.

If you show any of these symptoms or signs after your head injury, you or the person watching you should call 911 or go to the Emergency Room:

- Fainting or abnormal sleepiness
- Confusion
- Change in behavior (acting strange, saying things that do not make sense)
- A worsening headache
- Any vomiting/throwing up
- Change in vision
- Difficulty walking
- Problems with memory
- Weakness of any parts of your body
- Seizure (any jerking of the body or limbs)

To download complete best practice please go to and select "SOG5 Head Injury Info Sheet":  
<http://www.nh.gov/safety/divisions/fstems/ems/BestPractices.html>

# Securing Patients

**PURPOSE:** To reduce the risk of injury to patients and department members while transporting patients in XYZ ambulances.

**SCOPE:** Applies to all department members.

To download complete best practice please go to and select "SOG6 Securing Patients":  
<http://www.nh.gov/safety/divisions/fstems/ems/BestPractices.html>

# Responder Rehabilitation

**PURPOSE:** To provide guidance on the implementation and use of a rehabilitation process as required of the incident management system (IMS) at the scene of a fire, other emergency, or training exercise; per NFPA 1584 (current edition). It will ensure that personnel who might be suffering the effects of metabolic heat build-up, dehydration, physical exertion, and/or extreme weather receive evaluation and rehabilitation during emergency operations.

**SCOPE:** All personnel attending or operating at the scene of a fire / emergency or training exercise.

To download complete best practice please go to and select "SOG7 Responder Rehabilitation":  
<http://www.nh.gov/safety/divisions/fstems/ems/BestPractices.html>

# SOG Template - Blank

SOG#	Date:
Topic:	Effective:
Subject:	Revision Date:
Authorizing Signature:	Page 1 of 1

**PURPOSE:**

**SCOPE:**

**DEFINITION:**

**PROCEDURE:**

To download complete best practice please go to and select "SOG8 SOG Template- Blank":  
<http://www.nh.gov/safety/divisions/fstems/ems/BestPractices.html>

**Best Practice - SOG8**

# Use of Lights and Sirens

**PURPOSE:** To establish guidelines for the safe use of lights and sirens on department emergency medical vehicles (EMV).

**SCOPE:** Applies to all members.

To download complete best practice please go to and select “SOG9 EMS Vehicles - Use of Lights and Sirens”:

<http://www.nh.gov/safety/divisions/fstems/ems/BestPractices.html>

# EMS Vehicle - Maintenance

**PURPOSE:** To provide EMS agencies with a standard for a preventative maintenance program on all ambulances that respond in an emergent and non-emergent situation.

**SCOPE:** All EMS agencies that provide ambulance service to communities and healthcare facilities.

To download complete best practice please go to and select "SOG10 EMS Vehicles - Maintenance":  
<http://www.nh.gov/safety/divisions/fstems/ems/BestPractices.html>

**Best Practice - SOG10**

# Person Vehicle - Operations

**PURPOSE:** To define a manner in which all department members shall respond to calls in their privately operated/owned vehicles (POV's).

**SCOPE:** Applies to all members

To download complete best practice please go to and select "SOG11 Personal Vehicle - Operations":

<http://www.nh.gov/safety/divisions/fstems/ems/BestPractices.html>

# Traffic Incident Management

**PURPOSE:** To provide Department members with a guideline for safe operations when responding to and operating on limited access highways.

**SCOPE:** This procedure applies to all personnel.

To download complete best practice please go to and select "SOG12 Traffic Incident Management":  
<http://www.nh.gov/safety/divisions/fstems/ems/BestPractices.html>

# Vehicle Operations

**PURPOSE:** This guideline will explain the expectations and policy for EMS Vehicle Operators. This guideline also contains Emergency Vehicles & Rules of the Road, NH Revised Statutes Annotated.

**SCOPE:** These policies are binding to all operators of EMS vehicles.

To download complete best practice please go to and select "SOG13 Vehicle Operations Guidelines":

<http://www.nh.gov/safety/divisions/fstems/ems/BestPractices.html>

# EMS for Mass Gathering Events

PREFACE	The EMS System bears a responsibility to its Providers and the general public to ensure that the usual and customary standards of EMS care are maintained and provided to all persons attending large scale events with mass gatherings of people.
DEFINITION	For the purpose of this policy, mass gathering events include, but are not limited to, community celebrations, races (motorized, etc.), concerts, athletic events, and other occasions in which at least 1,000 persons are gathered at a specific location for a defined period of time (NAEMSP).

To download complete best practice please go to and select "SOG14 EMS for Mass Gathering Events":

<http://www.nh.gov/safety/divisions/fstems/ems/BestPractices.html>

# EMS in the Warm Zone: Active Shooter Incident

## Preface

New Hampshire is a mainly rural state of approximately 9,000 square miles with a population just over 1.3 million people in 221 towns and 13 cities. Our communities are served by a combination of first responder agencies (Law Enforcement, Fire, and Emergency Medical Service).

Active shooter and other events that create significant traumatic injuries through violence pose special challenges to our first responders. These will evolve rapidly and without the benefit of sufficient resources. The first responder system bears a responsibility to its providers and the general public to ensure appropriate preparation and that the usual and customary standards of Emergency Medical Service (EMS) care during an incident are maintained and provided to the best extent possible. Saving lives depends on the rapid but safe and coordinated response from Law Enforcement (LE), Fire and EMS.

## Purpose

The purpose of this document is to establish policies and procedures for the dispatch and operations of a Rescue Task Force (RTF) in an active shooter or violent incident producing injuries.

To download complete best practice please go to and select "SOG15 EMS in the Warm Zone: Active Shooter Incident":

<http://www.nh.gov/safety/divisions/fstems/ems/BestPractices.html>





# State of New Hampshire



# Emergency Medical Services Trauma System Plan

**STATE OF  
NEW HAMPSHIRE**

**TRAUMA SYSTEM PLAN**

**2010**

**TRAUMA MEDICAL REVIEW COMMITTEE**

**NH DEPARTMENT OF SAFETY  
DIVISION OF FIRE STANDARDS AND TRAINING AND  
EMERGENCY MEDICAL SERVICES**

# NEW HAMPSHIRE TRAUMA SYSTEM PLAN

## TABLE OF CONTENTS

<b>Introduction</b> .....	<b>2</b>
<b>Section One - Administrative Components</b> .....	<b>7</b>
• Organization & Management Overview .....	7
• System Management .....	8
• Lead Agency .....	8
• Injury Prevention .....	10
• Trauma System Performance Improvement .....	11
• Trauma Hospital Performance Improvement & Patient Safety .....	16
• Trauma Registry & Data .....	16
• Prehospital Performance Improvement & Patient Safety .....	17
<b>Section Two - Clinical Components</b> .....	<b>18</b>
• Prehospital Trauma Services .....	18
• Prehospital Trauma Assessment and Triage Guidelines .....	22 - 23
• Hospital Trauma Services .....	27
• Hospital Participation Process .....	28
• Adult Hospital Standards .....	34 - 42
• Pediatric Hospital Standards.....	43-48
<b>Appendix</b> .....	<b>49</b>
• A – Mandatory Performance Improvement and Patient Safety Monitoring Criteria for NH Trauma Hospitals .....	49
• B – Mandatory Data Elements for Trauma Hospital Registry .....	50
• C – Required Pediatric Equipment and Supplies .....	52

## INTRODUCTION

The residents of the State of New Hampshire strongly support a comprehensive state-wide trauma system. This support is based on the following beliefs:

- Traumatic injury is one of the principal causes of premature death and unnecessary disability.
- Residents and visitors are entitled to the highest level of emergency and trauma care services.
- The organized and coordinated delivery of emergency medical and trauma care services will result in an improved system of health care services throughout the state.

The statewide trauma system is described in this document, the New Hampshire Trauma System Plan. This document is designed to provide trauma care professionals, public health officers, and health policy experts with direction to fully integrate the public health and trauma care systems of New Hampshire. It offers guidance to promote the effective collaboration of all whose charge includes the health and welfare of the public.

This model emphasizes a public health approach to trauma system development. The system is inclusive in nature and engages not only all health care facilities to the level of their capabilities, but also the full range of public health services available in the communities served. The overall goal is a collaboration of these two systems of health care to reduce the incidence and severity of injury, as well as to improve the outcomes of those who are injured.

The NH Trauma System Plan has been developed within the public health system framework. In this document trauma care professionals are introduced to the use of the public health framework as a guide for trauma system management. Public health professionals will be introduced to an understanding of an inclusive trauma system organized within the commonly accepted parameters of the public health approach. Health care policy makers will be introduced to collaborative opportunities in which the public health system and the trauma care system can partner to reduce the total burden of injury in the community.

An important principle of the NH Trauma System Plan is that the effective delivery of trauma services to adult and pediatric trauma patients requires the formal, consistent and coordinated action of several agencies and facilities. Formalizing the trauma system adds additional administrative and regulatory components to the current structure while formalizing the relationships and responsibilities of the trauma system participants.

Traumatic injury refers to physical injuries that pose discernible risk for death or long-term disability. Trauma is estimated to be responsible for over 160,000 deaths annually in the United States, an estimated mortality rate of 55 per 100,000 population. These figures are not decreasing; rather, they are on the rise.

Trauma is the leading cause of death for Americans under 44 years of age (including homicides) and is among the top ten causes of death for all other age groups. In addition to the medical, psychosocial, and financial burdens placed on individuals, families, and hospitals, society at large is profoundly affected by injury.

The financial cost of injuries is estimated at more than \$224 billion annually. This estimate includes direct medical care, rehabilitation, lost wages, and lost productivity. The Federal government expenditure on injury-related medical cost approaches an estimated \$13

billion each year, with an additional \$18.4 billion allocated to death and disability benefits. Insurance companies and other private sources pay additional costs estimated at \$161 billion.

When national preparedness for all types of disasters, including terrorist events, is considered; the need for effective injury response (trauma) systems is clearly evident. Even with current efforts to minimize injury, it continues to be “the neglected disease of modern society,” as it was described in the 1966 white paper *Accidental Death and Disability: The Neglected Disease of Modern Society*.

Trauma care of persons with multiple, severe injuries is believed to be as available and reliable nationwide as police and fire protection. Unfortunately, this belief is not universally true. Although great strides have been made during the past generation in extending emergency medical and trauma care to the citizens of our nation, most states are realizing that they need to create, further develop, or enhance their state’s ability to care for trauma patients through system development.

### **Emerging Linkages Between Public Health and Trauma Systems**

Nationwide the increased incidence of major trauma in the late 1980s and early 1990s led public health professionals to recognize obvious parallels between the epidemiologic behaviors of illnesses and injuries. It also led these professionals to champion a public health approach to injury prevention and control.

Injury prevention leaders recognized that public health strategies tested during the years of communicable disease eradication could be successfully applied to the prevention of injury. As a result, these leaders developed the methods used for effective injury prevention programs.

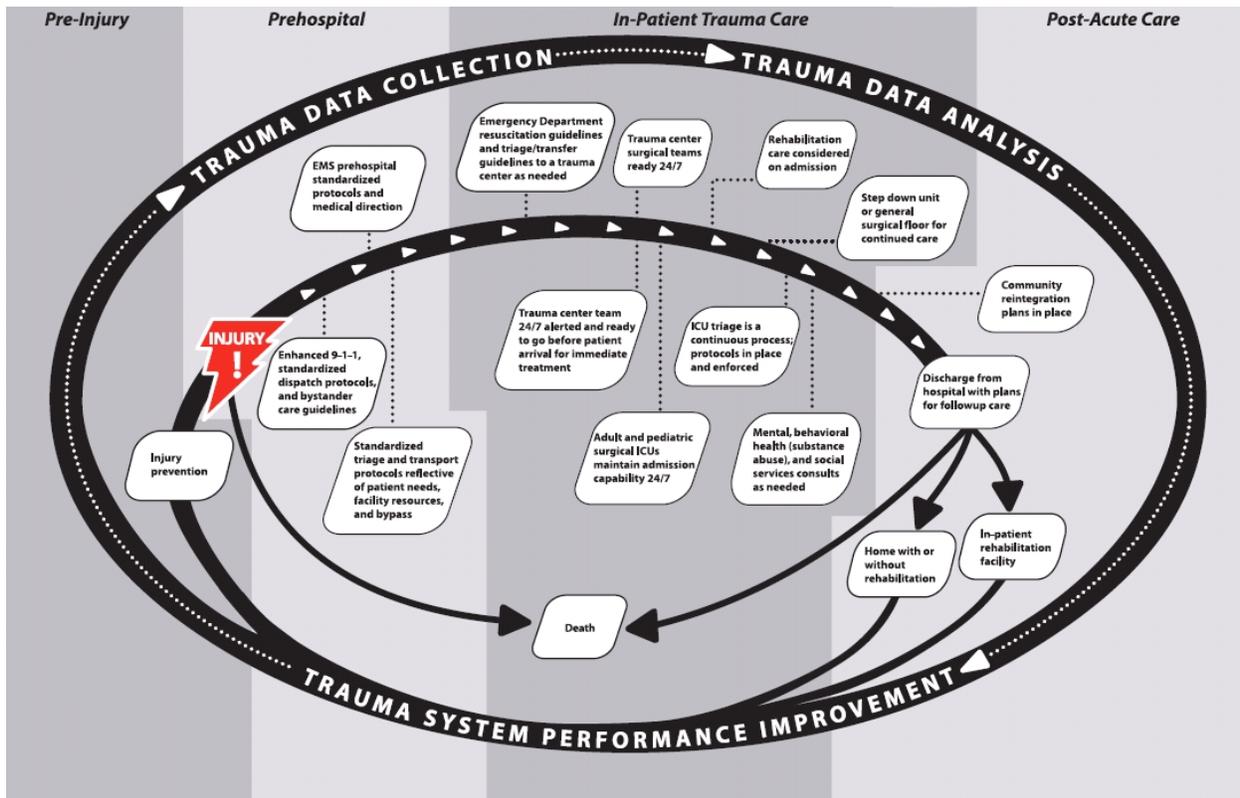
Additionally, the tragic events of September 11, 2001, prompted a reassessment of the strengths and weaknesses of the emergency care and public health systems. Not only did an awareness of the need for prepared and fully interoperable emergency medical, trauma care, and disaster response systems increase, but recognition of the importance of the public health infrastructure in responding to terrorist threats for all hazards became evident. Upon review of the public health infrastructure, a broader understanding emerged of the need for emergency care and public health systems to be more integrated.

### **The Trauma System Approach**

A trauma care delivery system consists of an organized approach to facilitate and coordinate a multidisciplinary system response to provide care for those who experience severe injury. The system encompasses a continuum of care that provides injured persons with the greatest likelihood of returning to their prior level of function and interaction within society. This continuum of care includes injury prevention, EMS 9-1-1/dispatch, medical oversight of prehospital care, appropriate triage and transport, emergency department trauma care, trauma center team activation, surgical intervention, intensive and general in-hospital care, rehabilitative services, mental and behavioral health, social services, community reintegration plans, and medical care followup.

There are many phases in the process of care for those who are traumatically injured. Although injury prevention initiatives can do a very good job to maintain injury rates at a minimum, they cannot prevent all injury. When injury occurs, each phase of care, as demonstrated in Figure 1 should occur seamlessly. Injury data should be collected

throughout each phase of care and analyzed so that data usage will yield continuous performance improvement in trauma care delivery.



**Figure 1.** A Preplanned Trauma Care Continuum. Source: US Department of Health and Human Services, Health Resources and Services Administration, Trauma-EMS Systems Program: Model Trauma Systems Planning and Evaluation, February 2006.

Many components make up the NH Trauma System. Detailed planning is required for all components to interface successfully and health professionals to interact properly, enabling the trauma system to work effectively. This statewide network, or system of health care delivery, requires a multidisciplinary team approach. Such an approach is a requirement for an inclusive, seamless system of health care delivery in which all involved health care providers function in pre-planned concert with one another.

Emergency Medical Service (EMS) providers match patients, through protocols and medical supervision, with the correct medical facility equipped with the right resources to best meet the patient’s needs. This approach may mean bypassing the closest medical facility.

A trauma system is a partnership between public and private entities to address injury as a community health problem. These entities have common interests (e.g., right patient, right hospital, and right time) and interdependent goals (e.g., injury prevention strategies for the community, and quality care in all settings—prehospital, hospital, and rehabilitation). The trauma system must effectively address the needs of the adult population and the specialized needs of seriously injured children.

## **The Public Health System**

Public health is “what we as a society do collectively to assure the conditions in which people can be healthy.” The public health system exists to ensure a safe and healthy environment for all citizens in their homes, in schools, in workplaces, and in such public spaces as medical care facilities, transportation systems, commercial locations, and recreational sites. To achieve the best population health, the public health system functions through activities undertaken within the formal structure of government and the associated efforts of private and voluntary organizations and individuals.

The public health system is a complex network of individuals and organizations that have the potential to play critical roles in creating conditions for health. The collaborative effort between these individuals and organizations is the framework needed to influence social policy that supports health. The primary strategy of the public health approach is the following:

- Identify a problem based on data [Assessment]
- Devise and implement an intervention [Policy Development]
- Evaluate the outcome [Assurance]

The public health approach is a proven, systematic method for identifying and solving problems. Improvements in the public health system, in partnership with the health care system, can be accomplished through informed, strategic, and deliberate efforts to positively affect health.

## **Integration of Trauma Care and Public Health Systems**

The application of the public health model to trauma systems is based on the concept that injury as a disease can be prevented and/or its negative impacts decreased by primary, secondary, or tertiary prevention efforts. Efforts to prevent or decrease the morbidity and mortality from injury are similar to those taken for infectious diseases. Thus, injury prevention is an essential component of the trauma system continuum of care. This concept provides support for public health system collaboration on targeted risk reduction programs for injury prevention, including major trauma.

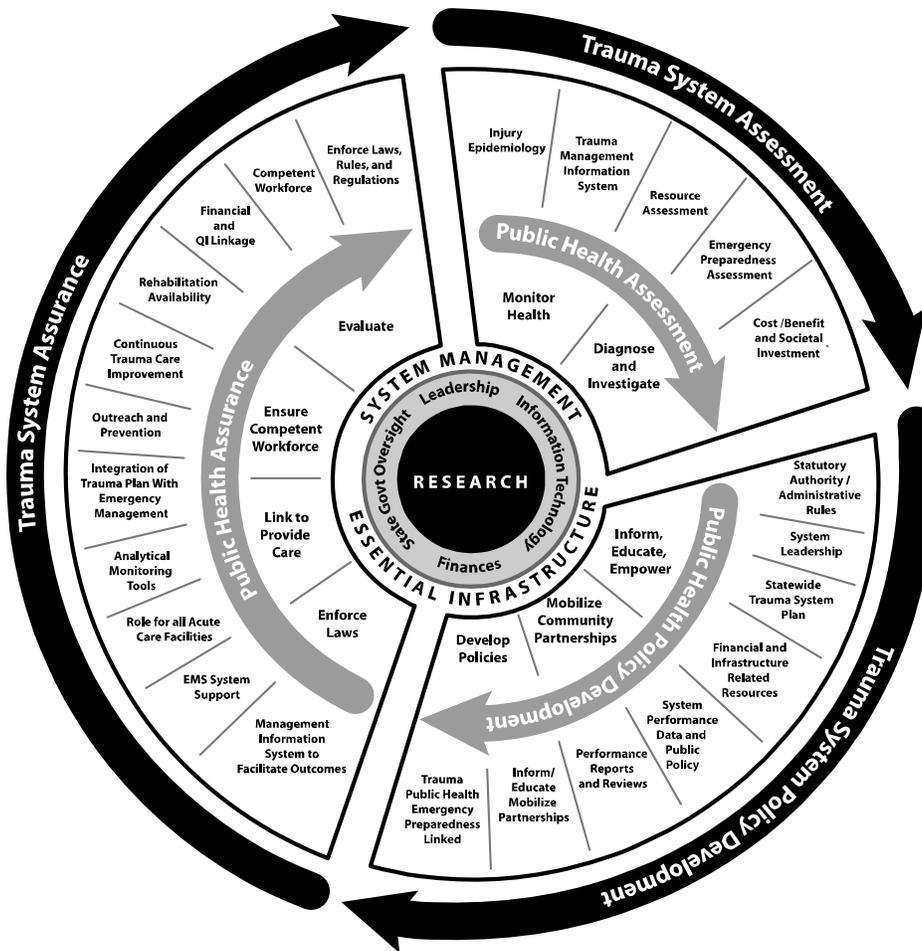
Specialized trauma care is not enough to minimize the burden of injury to society at large. It must be combined with other risk reduction strategies to reduce the overall burden of physical injury. Many experts in trauma care and injury prevention recognize the need for both excellent trauma care and effective injury prevention programs to reduce injury deaths and disabilities.

This goal can be accomplished when private-public partnerships between health care providers and public health agencies emphasize optimal approaches for the three phases of injury prevention. Key objectives in reducing the burden of injury and in making improvements in the trauma care of persons with serious injury include forging effecting collaborations among community health care facilities and public health agencies. Injury will be significantly reduced through planned interventions that are based on public health strategies.

The application of the public health approach to trauma system development will result in the following:

- Recognition that injury continues to be a public health problem of monumental importance despite significant efforts at trauma system development.

- Identification and management of injury- and trauma system-related problems using data-driven problem identification and evaluation methods as employed by public health professionals.
- Access to local, regional, and state public health professionals with injury prevention training and experience, as well as a broader range of strategies for primary and secondary prevention. Trauma care professionals are traditionally educated in tertiary prevention.
- Expansion of the focus of outreach for trauma system injury prevention to include primary prevention. Trauma centers and trauma systems usually address secondary and tertiary injury prevention.



**Figure 2** demonstrates public health functions (PH) and trauma system functions (TS) in one wheel. It displays how the conceptual public health model applies to trauma system planning.

## **SECTION ONE**

### **ADMINISTRATIVE COMPONENTS**

#### **ORGANIZATION AND MANAGEMENT**

##### **I. DESCRIPTION**

The New Hampshire Trauma System is an organized and coordinated delivery of pre-hospital, hospital and rehabilitation medical and health care services. The organizational structure of the New Hampshire Trauma System is dictated by the course of appropriate medical treatment and admission of all injured patients with specific emphasis on the optimal care needs of the severely injured trauma patient. The organizational structure of the New Hampshire trauma system identifies and defines the authorities and responsibilities of each system provider (agency or facility), the relationships between each facility and the reporting requirements between each.

State-wide trauma systems have an additional organizational feature, a trauma system administrative lead agency and governing or coordinating board. The NH Department of Safety, Division of Fire Standards and Training and Emergency Medical Services (FST&EMS) is the lead agency that has the responsibility and authority to administer the system. The Trauma Medical Review Committee (TMRC) is the coordinating board for trauma care.

The NH Trauma System recognizes and addresses the need for effective and competent care of both the adult and pediatric trauma patient.

##### **II. STANDARDS**

The organizational structure of the NH Trauma System fosters coordinated action by each system participant to assure and facilitate the appropriate course of medical treatment that is necessary for the severely injured trauma patient. The statewide trauma system adds an administrative and regulatory structure to the delivery of trauma services, and formalizes the relationships and responsibilities of the trauma system participants.

The NH Trauma System is a voluntary, inclusive trauma system. One of the hallmarks of a trauma system is the ability to categorize hospitals according to the level of resources each can apply to the definitive care of trauma. A level I trauma hospital has all the resources available to treat a seriously injured patient. A community hospital (level III or IV) might be capable of providing definitive care to minor to moderate patients, but has a limited role in caring for seriously injured patients (stabilization and transfer).

The NH Trauma System is voluntary in that hospitals may choose to actively participate in the trauma system by seeking trauma hospital assignment. In some states this process is mandatory, but in NH it is not. A NH hospital seeking assignment at a particular level agrees to meet the standards set by the TMRC, undergo an assessment of its ability to meet the standards, and adhere to those standards.

An inclusive trauma system means that all acute care hospitals with emergency departments are recognized to have a role in trauma care, whether or not they actively participate in the NH Trauma System through trauma hospital assignment. Non-participating hospitals in the NH Trauma System benefit from statewide performance

improvement activities, improvements in care delivered by EMS providers, educational opportunities, and consulting services offered through the Trauma System Section of the NH Division of FST&EMS.

## **SYSTEM MANAGEMENT**

### **I. DESCRIPTION**

An effective trauma system is one which has a lead agency or bureau implementing the recommendations of a coordinating board. The coordinating board should be empowered by legislation with the authority to establish, implement, monitor and enforce trauma system standards, policies, procedures and protocols. The board should also be empowered to define participation in the system and make recommendations for the correction of non-compliance with standards and regulations.

The delivery of trauma care services to severely injured trauma patients in New Hampshire involves several agencies and facilities providing rapid and coordinated health care services to individual trauma patients. These agencies are pre-hospital emergency medical service providers, assigned trauma hospitals, other acute care hospitals, rehabilitation facilities and specialty care facilities.

In optimal trauma systems each of these diverse agencies provide trauma services based on specific performance standards, operate in a coordinated manner and continually strive to improve their individual and coordinated delivery of service

### **II. STANDARDS**

The New Hampshire Trauma System is a coordinated system managed on the state level by FST&EMS which should have sufficient resources and personnel to effectively manage the trauma system.

To assure public accountability and responsiveness to the needs of the trauma system service providers, the TMRC is composed of representatives of the trauma system participants, governmental officials and concerned citizens.

## **TRAUMA SYSTEM LEAD AGENCY**

### **Commissioner of Safety and the Division of Fire Standards and Training and Emergency Medical Services: Authorities and Responsibilities**

The Commissioner of Safety has been empowered to educate the public, establish a data collection system and provide for training of providers about the trauma system. The Commissioner has been specifically empowered by RSA 153-A-7 to:

- Adopt rules, with the approval of the Coordinating Board and the Trauma Medical Review Committee, in accordance with RSA 153-A:20.
- Oversee the establishment of the Trauma Medical Review Committee.

As regards rulemaking authority specifically for the trauma system, the Commissioner has been empowered by RSA 153-A:20 to develop rules relative to:

- Patient triage and transfer.
- The categories of classification of hospitals which provide adult and pediatric trauma services.

The staff to administer the day-to-day operation of the trauma system has been organizationally placed within the New Hampshire Department of Safety, Division of Fire Standards and Training and Emergency Medical Services, and has been charged with the following responsibilities:

- Implement the recommendations of the Trauma Medical Review Committee.
- Perform staff and clerical functions needed by the Trauma Medical Review Committee to carry out its responsibilities, specifically staff and clerical services related to hospital classification and participation.
- Monitor the performance of trauma system service providers in accordance with standards, criteria and provider obligations recommended by the Trauma Medical Review Committee
- Implement the system-wide data collection program and system quality management and evaluation program.
- Facilitate the implementation of injury prevention and public education and information programs.

**Emergency Medical and Trauma Services Coordinating Board: Authorities and Responsibilities:**

The Emergency Medical and Trauma Services Coordinating Board has been empowered by New Hampshire statute, RSA 153-A:4 as regards the trauma system to:

- Routinely assess the delivery of emergency medical services, based on information and data provided by the department and from other sources the board deems appropriate, with particular attention to the quality and availability of care.
- Propose rules to the commissioner prior to their adoption under RSA 541-A, or consider and advise on rules proposed by the Commissioner.
- Approve statewide trauma policies, procedures, and protocols of the statewide trauma system and the establishment of minimum standards for system performance and patient care proposed by the Commissioner prior to their adoption under RSA 541-A.
- Coordinate interstate cooperation and delivery of emergency medical and trauma services.

**Trauma Medical Review Committee: Authorities and Responsibilities**

The Trauma Medical Review Committee has been empowered by New Hampshire statute, RSA 153-A:8-V to:

- a Develop and routinely update the adult and pediatric trauma system plan.
- b Review statewide system operations, including monitoring adherence to established guidelines and standards, the availability of appropriate resources, and the periodic review of trauma hospital classification criteria.
- c Review the delivery of emergency medical services by providers and units concerning the provision of care to trauma patients.
- d Make recommendations to the Coordinating Board based on the reviews described in (a) and (b) above.
- e Recommend to the Emergency Medical Services Medical Control Board

- modifications of the protocols of trauma care as a result of system-wide review.
- f Assist trauma hospitals in the development and implementation of trauma quality improvement programs.
  - g Establish such subcommittees as deemed appropriate to carry out the functions of the committee.
  - h Assist the Coordinating Board in the coordination of a system of comprehensive emergency medical services and the establishment of standards throughout the state by advising the Coordinating Board on policies, procedures and protocols.

The Trauma Medical Review Committee will systematically collect data in order to evaluate trauma system operations, including monitoring compliance with standards, availability of appropriate resources, maintaining confidentiality, and periodic review of trauma facility standards.

## **INJURY PREVENTION**

### **I. DESCRIPTION**

A primary goal of the NH Trauma System is to decrease the incidence and severity of trauma. To accomplish this goal, the NH Trauma System will utilize a state-wide public health initiative which considers injury as a disease that can be prevented or its negative impacts decreased. This concept provides support for collaboration between trauma system managers, community health care providers, including EMS and Fire personnel, and public health agencies. It also allows the injury prevention initiative to address all phases of injury prevention efforts: pre-injury (primary); at the time of injury (secondary); and post injury (tertiary). Combining the expertise of professionals from many organizations enables effective leveraging of all resources for primary and secondary prevention and their coordination with the trauma system in tertiary prevention.

Statewide injury prevention planning, implementation and evaluation requires extensive collaboration between agencies and organizations beyond those providing direct clinical care. The NH Injury Prevention Program located in the NH Department of Health and Human Services has overall responsibility for the development, implementation and evaluation of the NH Injury Prevention Plan. The NH Trauma System leadership will collaborate closely with the NH Injury Prevention Program to implement and monitor its injury prevention initiatives and programs.

A critical element of an injury prevention program is the necessity for statewide data to assess the incidence and severity of injury in the state and local communities. Data are collected and analyzed by many agencies and organizations but individual databases may provide an incomplete analysis of injury occurrence. Collaboration of these various organizations and sharing of data will enhance monitoring capability and development of directed prevention programs. Potential data sources include vital statistics, hospital discharges, emergency department discharges, trauma registries, state fire marshal, law enforcement, emergency medical services, and transportation departments.

### **II. STANDARDS**

The NH State Trauma System will be an active partner in the NH Department of Health and Human Services based Injury Prevention Program for reducing injury-related morbidity and mortality. Leadership will:

- Partner with statewide initiatives including but not limited to: Fall Prevention Program, Poison Control, SafeKids, Injury Prevention Program at Dartmouth, Emergency Nurse Association, NFPA's Risk Watch, and Learn Not to Burn.
- Identify, promote, and disseminate proven strategies for trauma system participants to effectively contribute to prevention activities.
- Monitor injury-related morbidity and mortality and regularly provide information to statewide injury programs and hospitals.
- Link injury prevention strategies at the state and community level to injury databases.

Hospitals play an important role in reducing the impact of injury in their communities by providing leadership and participating in targeted evidence-based prevention efforts. Hospitals are urged to take part in ongoing prevention programs that meet their community's needs. Ideally hospitals should:

- Designate a prevention coordinator.
- Implement targeted injury prevention programs/strategies using trauma information specific to their communities.
- Participate in existing/ongoing community prevention coalitions or activities.

## **TRAUMA SYSTEM PERFORMANCE IMPROVEMENT PROGRAM**

### **I. DESCRIPTION**

The New Hampshire Trauma System state-wide performance improvement program is a system-wide evaluation program that monitors the performance of the trauma system over time and assesses the system's impact on trauma victims' mortality and morbidity. It is important to understand that there are two major foci of the New Hampshire performance improvement program; a system-wide performance improvement program and individual hospital and EMS agency trauma performance improvement programs. These two programs operate concurrently and there is a direct relationship between the state-wide performance improvement program and the performance improvement programs of the individual trauma care service providers. The trauma care service providers, particularly the hospitals, will gather detailed data regarding services rendered to trauma patients. These providers will also submit specific data elements relating to system-wide issues to the state-wide trauma performance improvement program. This state-wide program will routinely analyze and report on the effectiveness and efficiency of the overall trauma system.

#### **System-wide Data**

A crucial part of a system-wide performance improvement program is the collection of system-wide data. This data is typically collected through a state-wide trauma registry. In addition, nation-wide trauma databases have been established. Hospitals that actively participate in the NH Trauma System are required to submit data to the state trauma registry. See Appendix B for information regarding the statewide trauma registry.

#### **Pre-hospital Data**

The Division of Fire Standards and Training and EMS has designed and implemented a state-wide electronic pre-hospital run report program. In 1992, the Legislature of New Hampshire passed a new emergency medical services statute. This legislation empowered FST&EMS to mandate the collection of pre-hospital run report data. The NH

Trauma and EMS Information System (TEMSIS) is the state's electronic data system, and has been in place since 2006.

## **Hospital Data**

As regards trauma patients, there have been two types of data collection and analysis that the hospitals have performed. Several of the hospitals that admit a significant number of trauma patients have installed trauma registries, either commercially available programs or in-house developed programs. Refer to Appendix B for information regarding the statewide trauma registry.

The second data collection and analysis program in which all New Hampshire hospitals participate is the reporting of uniform hospital discharge abstract data on all admitted patients. The data are collected by the New Hampshire Hospital Association and the NH Department of Health and Human Services and has been analyzed to identify the number, type, and severity of injuries of patients admitted to hospitals with traumatic injuries. There are two limitations of the discharge abstract data. First, there is a lag time of several years in the collection, analysis and reporting of the data. Secondly the data elements do not contain information regarding pre-hospital activity, source of admission, or the activity of trauma medical personnel.

The NH Hospital Association collects data about emergency room encounters. This data is collected from all hospitals and describes a significant number of patient encounters.

## **Rehabilitation and Specialty Care Facilities Data**

In 1994, the NH Hospital Association began collecting data from rehabilitation and other specialty health care facilities. This data set is similar to the hospital data and provides information regarding the number, type and severity of trauma patients admitted to these types of facilities.

## **II. STANDARDS**

The statewide/system-wide performance improvement program focuses on the overall effectiveness of the trauma system, particularly whether there has been significant improvement in the care delivered to major trauma patients as a result of the operation of the trauma system. Some examples of issues the Trauma Medical Review Committee will consider are: whether significantly more major trauma patients are being transported to and treated in trauma qualified hospitals than before; whether the performance of all system service providers is consistent with published performance standards and criteria; and whether the mortality and morbidity of major trauma patients is improving.

### **1. Guiding Principles**

The design of the state-wide performance improvement program and its data collection and reporting system is guided by several principles. These principles are:

- The data collection systems used by the major providers of trauma service providers, the hospitals and pre-hospital agencies, will be the primary source for system-wide data. These facilities and agencies will routinely submit uniform system-wide data elements to FST&EMS. This process of data collection will insure the highest degree of data consistency and the lowest amount of data entry redundancy.

- The state-wide trauma system data collection program should collect only that data and information from trauma system service providers that is appropriate and necessary to evaluate the system-wide delivery of trauma services.
- The data collection program should attempt to minimize the added costs and responsibilities related to the collection of new data from the trauma system service providers.
- The data program should utilize, where ever possible, currently available data and information which relates to or describes trauma patients.
- The program should only attempt to collect data that has a high potential for being complete, accurate and descriptive.

## **2. Data Collection Standards**

Some of the regional trauma hospitals have installed a common trauma registry to collect, analyze and report data on trauma patients transported and treated at their facilities. These registries include hospital, pre-hospital and referring hospital data and have the ability to "download" system-wide data elements. A condition of active participation in the NH Trauma System is that all trauma-assigned hospitals will collect and submit data elements to FST&EMS on each major trauma patient.

All New Hampshire hospitals will be encouraged to utilize a uniform trauma registry or data collection and reporting program. Smaller hospitals may participate with a regional hospital that has a formal program for the collection of the data elements.

Because the trauma system's performance improvement and medical review processes are developmental in nature, data requirements are subject to modification based on the performance improvement recommendations of the Trauma Medical Review Committee.

In addition to aggregated trauma registry data, data and information that is available from other sources regarding or describing trauma victims will be collected, linked, analyzed and reported. As previously described, data that is currently available from the New Hampshire Hospital Association, the hospital discharge abstract data (UHDDS) and ambulatory data as well as traffic accident data from the New Hampshire Department of Safety contains a considerable amount of information regarding traumatic injuries, particularly of trauma patients that have been hospitalized or involved in traffic accidents.

## **III. STATE-WIDE TRAUMA PERFORMANCE IMPROVEMENT**

The Trauma Medical Review Committee (TMRC) has been empowered to systematically collect data in order to perform the following activities:

- Evaluate trauma system operations, including monitoring compliance with standards, availability of appropriate resources, maintaining confidentiality and periodic review of trauma facility standards.
- Evaluate patient care outcomes at the system level.
- Establish a process for documenting corrective action plans, problem re-evaluation and oversight.

- Recommend modifications of the standards of care in light of the results of system-wide review.
- Review the trauma performance improvement programs of the trauma system providers.

The TMRC has the authority to collect data from all trauma system service providers. Committee staff may collect and link (where appropriate) traffic accident reports, pre-hospital run reports, hospital discharge abstract data, trauma receiving facility registry data, rehabilitation facility data and medical examiner data. On an ongoing basis, the TMRC will collect more detailed data and information from the trauma receiving facilities. Patient confidentiality will be maintained in two ways. RSA 153-A:9 provides protection against judicial discovery of the records and actions of the Trauma Medical Review Committee. In addition any and all patient identifiers will be purged from the data system after the necessary data linkages have occurred.

The Trauma Medical Review Committee may generate some or all of the following reports to assess the status of the NH Trauma System:

### **System-wide Reports**

- Total incidence of traumatic injury treated by pre-hospital providers, emergency departments, and admitted to trauma system hospitals, compared to prior years.
- The number and nature of traumatic deaths.
- The type and severity of trauma injury.
- The causes of injury.
- The demographics of injury, age, sex, location, etc.
- System efficiency reports:
  - The evaluation and analysis of:
    - times of injury as compared to times of treatment,
    - trauma patient injury assessment and scoring,
    - interhospital transfer information,
    - trauma patient identification, pre-hospital and hospital.
  - The results of standards enforcement:
    - Trauma team mobilization
    - Arrival of trauma team members
- Injury prevention initiatives and priorities.
- The analysis of traffic accident injuries, including restraint utilization

### **Hospital Specific Reports**

- Total number of traumatic injury admissions for all hospitals
- The number and nature of traumatic deaths of admitted trauma patients
- The type and severity of trauma injury.
- The cause of injury (E codes)
- The demographics of injury, age, sex, residence, date.
- The financial impact of traumatic injury
  - Total charges by financial classification
- Hospital disposition/outcome

#### **Regarding Emergency Room Encounters**

- Total number of traumatic injury ER encounters for all hospitals
- The type and severity of trauma injury.

- The demographics of injury, age, sex, residence, date.
- The financial impact of traumatic injury
  - Total charges by financial classification
- ER disposition/outcome

### **Rehabilitation Reports**

- Total number of traumatic injury admissions for all rehabilitation facilities
- The number and nature of traumatic deaths of admitted trauma rehabilitation patients
- The financial impact of traumatic injury
  - Total charges by financial classification
- Patient disposition

### **Pre-hospital Reports**

- response times
- dispatch time
- nature of field assessment & treatment
- use of field triage criteria and standards
- nature of transport decisions
- scene time
- transport time
- overtriage and undertriage rates
- air medical transport utilization
- interfacility transfer transports

### **Medical Examiner Reports**

- cause of death
- circumstance of death

### **Traffic Accident Reports**

- location and time of accident
- conditions causing accident and circumstances of accident scene
- nature and severity of vehicular damage
- position and activities of driver, occupants

### **Implementing Trauma Care Improvement Initiatives**

After analysis of the data, the TMRC should recommend to the Emergency Medical and Trauma Services Coordinating Board corrective action and remediation in instances where the performance of EMS providers does not meet the criteria and standards of the trauma system. In addition the TMRC may consult directly with hospitals in the NH Trauma System to develop plans to remediate any deficiencies. The TMRC will consider changes to prehospital protocols and shall undertake efforts to conduct educational programs to enhance trauma care.

#### **IV. TRAUMA FACILITY AND EMS PROVIDER TRAUMA PERFORMANCE IMPROVEMENT PROGRAM GUIDELINES**

The NH Trauma Plan requires Level I, II, III and IV assigned hospitals to conduct a trauma performance improvement and patient safety (PIPS) program. Other acute care hospitals in NH and EMS agencies are strongly encouraged to conduct trauma performance improvement. The specific design and nature of the facility and service provider performance improvement programs is an institutional or service provider decision.

The trauma hospital performance improvement program should be administered under the auspices of the hospital's trauma service and although integrated with the hospital's overall quality improvement program, should be an independent activity. The Trauma System Section of the NH Division of Fire Standards and Training and EMS is available to assist hospitals and EMS agencies develop trauma PI programs.

##### **1. Trauma Facility Performance Improvement Programs and Patient Safety**

The NH Trauma Plan requires all trauma assigned hospitals to conduct PIPS review of certain criteria. The Trauma Medical Review Committee will periodically review the criteria for **mandatory** review. These criteria may be found in Appendix A. Just as important, the NH Trauma Plan strongly encourages hospitals to conduct trauma PIPS review on selected criteria that are meaningful for their facility.

The following are **recommendations** regarding the Trauma Facility Performance Improvement Programs. The trauma facility performance improvement program may address some or all of the following:

- a. The adherence to treatment protocols in the:
  - emergency department and
  - all other departments treating trauma victims.
- b. Evaluation of personnel availability in accordance with:
  - system criteria and standards and
  - facility verification level.
- c. Evaluation of the process of patient management:
  - timeliness of response and therapy,
  - appropriateness of length of stay,
  - appropriateness of procedures performed and care provided.
- d. Evaluation of patient outcome:
  - Efficacy of specific treatments.
  - Complications.
  - Physician performance compared to an established norm.
  - Patient morbidity, mortality, disability, and the effect of rehabilitation.

The Trauma Medical Review Committee has the authority and responsibility to periodically review or audit the PIPS documentation of assigned hospitals.

##### **2. Hospital Trauma Registry**

All Level I, II, III, and IV trauma hospitals must submit required data to the statewide trauma registry. Each facility may choose which additional data elements to collect in order to facilitate their own performance improvement program.

The Trauma Medical Review Committee will periodically review the data elements that are

subject to mandatory reporting. These elements will be published and distributed as required, for inclusion into Appendix B of the facility's or service's copy of the NH Trauma System Plan.

### **Reporting Requirements**

All Level I, II, III, and IV assigned trauma centers must collect the data elements listed in the Trauma Data Sheet (see Appendix B). The collection of the data elements is a condition of assignment. The Level I, II, III, and IV assigned trauma hospitals will submit the trauma data elements electronically to the NH Division of Fire Standards and Training and EMS on a regular basis as noted in Appendix B.

### **Types of Trauma Patients Qualifying for Data Collection – Inclusion Criteria**

- All patients receiving a “trauma alert” from EMS, whether a trauma team was activated or not.
- All trauma team activation patients.
- All injured patients admitted from the emergency department (ED) to an intensive care unit (ICU) or operating room (OR).
- All expired injured patients.
- All injured patients with an injury severity score (ISS) of 10 or greater.
- All trauma patients who underwent interfacility transfer to another hospital.

### **3. Pre-hospital Provider Trauma Performance Improvement Programs**

The data elements collected in the NH Trauma and EMS Information System (TEMSIS) for the EMS patient care record (PCR) are sufficient to address each of the performance improvement issues for the service provider and the trauma service hospitals. It is important that the individual service providers are routinely and periodically provided information based on the analysis of their data. The periodic provider reports should assist the agencies in their individual performance improvement programs. A pre-hospital provider trauma performance improvement program may address the following:

- a. The evaluation of response times
  - dispatch time
  - time to scene
  - on-scene time
  - time to hospital
  - total response time
- b. The evaluation of the efficacy of
  - field assessment
  - field therapy
  - field triage decisions
  - transport decisions
- c. The adherence to treatment protocols
- d. Evaluation of patient outcome
  - overtriage rates
  - undertriage rates
- e. The evaluation of medical direction

## **SECTION TWO**

### **CLINICAL COMPONENTS**

#### **PRE-HOSPITAL TRAUMA SERVICES**

##### **I. DESCRIPTION**

The delivery of pre-hospital trauma care to both adults and children is a major aspect of the New Hampshire Trauma System. The EMS system works in a coordinated manner with other components of the trauma system. Pre-hospital trauma care includes the following sub-components:

- **Public Education**
- **Communication**
- **Trauma Triage and Transport**
- **Medical Control and Medical Direction**
- **Helicopter Services**
- **Human Resources**

##### **II. PRE-HOSPITAL TRAUMA SYSTEM SUB-COMPONENTS**

###### **PUBLIC EDUCATION**

###### **DESCRIPTION**

Pre-hospital providers contribute to the overall trauma system public education programs by facilitating public understanding of the nature and significance of a trauma system including: what the trauma system is supposed to do; how to easily access the trauma system in times of need; and how to perform appropriate citizen assistance and interventions to trauma victims. The training of citizens in the appropriate use of cardiopulmonary resuscitation (CPR) and first aid is of particular importance. The first medical contact that trauma victims have with the trauma system is usually with pre-hospital personnel. Public perception correctly identifies the initial provision of life-saving care and assistance as that provided by fire/rescue or ambulance services. Public education programs are related to and complement trauma injury prevention programs.

###### **STANDARDS**

The pre-hospital focus of trauma system public education programs deals with the purpose and significance of the trauma system, public access and citizen appropriate treatment activities such as CPR and first aid assistance. Educational programs should target groups or individuals at high risk for injury. Specific focus should be placed on changing personal behavior that is injury-inducing such as the failure to use car seat belts and restraints, child restraints, motorcycle and bicycle helmets. New Hampshire benefits from public education programs that specifically address recreational and water safety and firearms safety training. Since trauma (primarily auto and firearm related) is the leading cause of death for the 1-24 age group in New Hampshire as well as in the rest of the country, direct attention should be placed on public education programs targeted at the elementary and high school student population, parents and young adults.

The utilization of pre-hospital personnel, such as emergency medical technicians and paramedics, in the presentation of public education programs has the potential for producing excellent results. It is recommended that EMS agencies work with their local medical resource hospital to coordinate these activities.

## **COMMUNICATION**

There are four aspects to pre-hospital communications; citizen access to the emergency medical system to report the discovery of an injury and associated citizen assistance instructions by dispatch personnel, communication from the dispatch center to the EMS service provider, communication between EMS providers, the receiving hospital or medical control facility, and communication to and from helicopter transport services.

### **1. SYSTEM ACCESS**

#### **DESCRIPTION**

System access is defined as the ability to rapidly and effectively report a medical emergency to the proper authorities which will culminate in the dispatch of appropriate emergency services. The most effective access system is 9-1-1. In addition, this element includes the process of advising citizens to take appropriate actions to benefit the injury victim. The NH Emergency Communications system effectively addresses these needs.

#### **STANDARDS**

The universal emergency telephone access number (9-1-1) has been conclusively shown to significantly shorten emergency response times and save lives. This system has been installed throughout New Hampshire. Upon accessing this three digit number, callers are screened immediately to public safety dispatch and a coordinated emergency response is obtained. The NH Enhanced 9-1-1 system permits the call receiver to automatically identify the caller's number and location. The provision of first aid advice to citizen callers by emergency communicators (via standardized dispatcher protocols) is an integral aspect of trauma system citizen access. The type of assistance that can be provided by a citizen, such as applying pressure to an open wound, based on the instructions given by the dispatcher, can make a significant difference in the trauma victim's outcome.

### **2. DISPATCHER COMMUNICATION WITH EMS SERVICES**

#### **DESCRIPTION**

Dispatcher communication is the ability of a dispatch center to rapidly communicate with EMS service providers. The center alerts the service of the nature of the emergency and directs the service to respond to the emergency situation. This activity also includes the EMS agency's ability to communicate from the scene of the injury with the dispatch center to request additional assistance or information.

#### **STANDARDS**

Each emergency medical service provider in the state of New Hampshire should be dispatched by a dispatch center that has rapid and accurate ability to communicate with EMS agencies in its coverage area. This communications ability shall be available 24 hours-a-day, 7 days-a-week. Each EMS agency and provider shall have the ability to

rapidly and easily communicate with its dispatch center from the scene of the injury and enroute to or from the scene.

### **3. COMMUNICATION BETWEEN THE EMS SERVICES AND MEDICAL FACILITIES**

#### **DESCRIPTION**

Communication between EMS services and receiving hospitals refers to the ability of the EMS service provider to communicate with his/her receiving or medical control hospital to provide information concerning the patient's condition and to receive instructions.

#### **STANDARDS**

Rapid and accurate two-way communication from EMS service providers with medical control should be assured. Licensed emergency medical service vehicles are required by NH law to be adequately equipped with communication equipment.

### **4. HELICOPTER COMMUNICATION**

#### **DESCRIPTION**

Helicopter communication refers to the ability of an EMS service provider or hospital to request helicopter emergency air transport and the ability of the helicopter to maintain continuous communication with the EMS service or the hospital.

#### **STANDARDS**

EMS services and hospitals must have radio systems that enable communications with helicopter services. EMS services and hospitals must have a process in place to request air medical services.

## **TRAUMA TRIAGE AND TRANSPORT**

### **I. DESCRIPTION**

The decision regarding where the acutely injured trauma patient will receive definitive care is based on an assessment process performed by pre-hospital field personnel. Consultation with on-line medical control personnel may be initiated at the discretion of the EMS provider.

The NH EMS trauma triage protocol is regularly updated as part of the overall state EMS protocols. Multidisciplinary trauma stakeholders, including members of the Trauma Medical Review Committee, participate in the review and revision of NH EMS Protocols that refer to traumatic injury. These protocols are reviewed by the NH EMS Medical Control Board and approved protocols go through a formal roll-out process. This process is on a biennial basis

### **II. STANDARDS**

According to NH EMS protocol each person accessing the EMS system who has sustained an injury requiring transport should be transported to the closest facility possessing the capability of providing the level of care to meet that patient's needs. In the setting of minor

or even moderate injury the closest appropriate hospital may be the closest acute care hospital. For a patient with actual or potential major trauma the closest appropriate facility may be a trauma hospital that has demonstrated that it is specially qualified for trauma care, even if another acute care hospital might be physically closer.

Prehospital personnel shall apply triage standards:

1. To determine where the injured patient should be transported;
2. To alert the trauma facility of the pending arrival of a severely injured patient;
3. To determine whether helicopter response is appropriate.

Potential exceptions to this standard may be applied under the following circumstances:

- If unable to establish and maintain an adequate airway, the patient should go to the nearest acute care facility to obtain definitive airway control by a qualified person.
- It may be appropriate to take a patient to the nearest hospital for immediate evaluation and stabilization if the expected transport time to a trauma facility is greater than 30 minutes.
- Prehospital providers have additional considerations in the case of a seriously injured child. The threshold for entering children into the trauma system may be lower than the same criteria for adults. In addition prehospital providers must be aware that an assigned adult trauma hospital may have a different level of trauma care assignment for pediatric trauma. For example Level III adult trauma hospital may have a Level IV assignment for pediatric trauma. The use of air medical transport to take a patient directly to a Level I pediatric trauma hospital may be warranted.

## PREHOSPITAL TRAUMA ASSESSMENT GUIDELINES

While providing treatment according to NH EMS Protocols the EMS personnel will perform the following:

### STEP 1

#### CONDUCT PHYSIOLOGICAL ASSESSMENT

Determine the presence of blunt or penetrating traumatic injury with associated vital signs and level of consciousness:

- Shock/hemodynamic compromise: Sustained Systolic Blood Pressure < 90 mmHg in both children and adults or other signs of shock OR
- Respiratory Distress: Apnea or Abnormal Respiratory Rate OR
- Altered Mentation: Glasgow Coma Score <9 or motor component of GCS <5 or P or U on the AVPU scale (See note below on assessment of mentation of infants less than six months old)

#### IF YES, CONSIDER:

1. DIRECT TRANSPORT TO LEVEL I BY GROUND OR AIR IF FEASIBLE.
2. IF ABOVE NOT FEASIBLE NOTIFY CLOSEST APPROPRIATE HOSPITAL, RECOMMEND TRAUMA TEAM ACTIVATION.

IF NO, GO TO STEP 2

### STEP 2

#### CONDUCT ANATOMICAL ASSESSMENT

Determine presence of:

- Penetrating injury or severe blunt injury of head, neck, torso
- Multiple system trauma

#### IF YES, CONSIDER

1. DIRECT TRANSPORT TO LEVEL I BY GROUND OR AIR IF FEASIBLE.
2. IF ABOVE NOT FEASIBLE NOTIFY CLOSEST APPROPRIATE HOSPITAL, RECOMMEND TRAUMA TEAM ACTIVATION.

IF NO, GO TO STEP 3

NOTE FOR STEP 1 AND 2 ABOVE: FOR POSITIVE FINDINGS ON A CHILD <15 DIRECT TRANSPORT TO A LEVEL I PEDIATRIC TRAUMA FACILITY IS DESIRED

[NEXT PAGE]

### **STEP 3**

#### **CONDUCT MECHANISM OF INJURY ASSESSMENT**

Determine presence of :

- Death of same vehicle/car occupant: or
- Ejection of patient from enclosed vehicle: or
- Falls > 20 feet for adult, for children > 2 times their height; or
- Pedestrian hit at >20 mph or
- Auto crash with significant vehicular body damage
- Significant motorcycle, ATV, snowmobile or bicycle impact

**IF YES, TRANSPORT PATIENT TO CLOSEST APPROPRIATE FACILITY,  
PROVIDE PATIENT REPORT AND SUGGEST TRAUMA TEAM ACTIVATION**

**IF NO, GO TO STEP 4**

### **STEP 4**

#### **CONSIDER CO-MORBID FACTORS:**

- Extremes of age <6 and >60 years of age)
- Hostile environment (such as extremes of heat or cold)
- Medical illness (such as COPD, CHF, renal failure, etc.)
- Second/third trimester of pregnancy
- Extrication time >20 minutes
- Anticoagulation or bleeding disorders
- Severe burns

**IF YES, TRANSPORT PATIENT TO CLOSEST FACILITY, PROVIDE PATIENT  
REPORT AND SUGGEST TRAUMA TEAM ACTIVATION**

**IF NO, TRANSPORT TO CLOSEST FACILITY**

**Please note that these guidelines are intended to complement, not conflict with,  
current NH EMS Protocols**

The following guidelines are recommended for the AVPU assessment of infants less than six months of age:

A – alert – awake with eyes open, moving, vocalizing as a normal infant.

V – verbal – asleep, but opens eyes, moves and vocalizes to voice or touch/handling

P – pain – opens eyes, moves, or vocalizes to painful stimulation (such as a pinch)

U – unresponsive – does not open eyes, move or vocalize (or in very young babies with eyes open does not show any facial expression such as grimacing) to any stimulation

## **MEDICAL CONTROL AND MEDICAL DIRECTION**

### **I. DESCRIPTION**

On-line medical control is the medical advice and instruction that is verbally provided by qualified physicians to prehospital emergency medical personnel while providing emergency medical care. Typically, emergency medical personnel contact medical control to report the patient's chief complaint, assessment findings and request orders regarding patient treatment.

Off-line medical direction is the medical supervision that a qualified physician provides pre-hospital personnel and services, as evidenced by medical standing orders and protocols, to be used by emergency medical personnel within specific situations. Pre-hospital medical directors are additionally responsible for establishing and monitoring quality assurance programs and activities.

### **II. STANDARDS**

The New Hampshire Trauma System, as a component of the NH Division of Fire Standards and Training and EMS, provides for appropriate on-line medical control and standardized protocols for the pre-hospital management of major trauma patients.

Trauma teams at the trauma hospitals should be activated prior to patient arrival and should be based on uniformly adopted field triage criteria and guidelines as well as the judgment of emergency department staff. Prehospital providers are encouraged to suggest or request a trauma team activation as part of their prearrival report for those patients that meet the appropriate criteria.

Every NH EMS agency is required to have a medical resource hospital which agrees to provide medical direction. Pre-hospital medical direction should be provided by physicians qualified in emergency medical services in conjunction with approved EMS protocols. Pre-hospital medical directors should also be responsible – along with EMS agency leadership - for establishing and monitoring continuous quality improvement programs and activities.

## **HELICOPTER TRANSPORT**

### **I. DESCRIPTION**

Helicopter transport is the provision of advanced life support equipped helicopter services to major trauma victims. This service is appropriate when the time to definitive care for seriously injured patients is prolonged because of distance, or the appropriate level of prehospital resources is not available.

### **II. STANDARDS**

The provision of trauma helicopter services is a critical component of the New Hampshire Trauma System. Trauma helicopter services are necessary because of the large geographical area of the state, the adverse impact that long ground transport times have on major trauma patients and the benefit of direct access to definitive trauma care. In rural areas transporting patients to distant hospitals by ground ambulance reduces the number of rescue vehicles and personnel that would otherwise be available in their service area.

Transfers from ground ambulance to air ambulance shall occur at the closest appropriate landing site including hospital heliports, airports, or unimproved landing site at or near the incident location (if deemed safe per pilot discretion). In cases where a hospital heliport is used strictly as the ground to air ambulance transfer point, no transfer of care to the hospital is implied or should be assumed by hospital personnel, unless specifically requested by the providers.

The provision of scene helicopter response can, in the appropriate circumstance, significantly reduce the time from onset of injury to definitive surgical care. EMS agencies must ensure that their providers are competent in the procedures and protocols for appropriate identification of patients (as found in NH EMS protocols) needing helicopter transport. Pre-hospital services must also ensure the availability of personnel who are competent in assisting helicopter personnel in safe landings and take offs.

Air medical transport units will have a structured air medical safety educational program in place to train EMS personnel in safety practices when interfacing with air medical transport. Air medical transport programs will have a structured air medical education curriculum for medical crew members and an ongoing performance improvement and patient safety program.

In addition to helicopter scene flights for trauma, it must be emphasized that air medical transport also plays a significant role in the interfacility transport of trauma patients who are transferred from a community hospital to tertiary care.

## **HUMAN RESOURCES**

### **I. DESCRIPTION**

This section deals with the type, qualifications and number of pre-hospital personnel providing service to major trauma patients. This section also deals with the trauma related training of pre-hospital personnel. Pre-hospital trauma training programs generally use a standardized curriculum for each level of EMS personnel. Professional training of pre-hospital personnel involves initial training, continuing education and refresher courses that are regularly available to all emergency medical services personnel.

### **II. STANDARDS**

There are a variety of different models of providing prehospital care in New Hampshire. Emergency Medical Services are provided by full-time career EMS personnel in many areas, particularly urban, small cities and suburban areas, while there are a substantial number of volunteer providers in rural areas. There are also variations in the level of EMS providers: Medical First Responders, Emergency Medical Technician – Basic, EMT-Intermediate, and Paramedic. Decisions regarding the provision of EMS to a community are made at the local level. There is no statewide mechanism in New Hampshire to identify the optimal number and level of EMS providers in any given area, nor is there a mechanism to facilitate optimal staffing or positioning of vehicles.

Prehospital trauma training programs will use a national standardized curriculum for each level of EMS personnel. Professional training of pre-hospital personnel based on standardized curricula focuses on assessment, patient care and transportation, proper equipment use and maintenance, personal health and safety.

Stand-alone trauma courses such as Prehospital Trauma Life Support (PHTLS) and Basic Trauma Life Support (BTLS), and Pediatric Education for Prehospital Providers (PEPP) are a desirable addition to trauma education in NH. The NH Trauma System advocates for EMS personnel to participate in these educational programs and provides a mechanism for informing state providers about pending courses via the NH Division of Fire Standards and Training and EMS website – Course and Exam Schedule. These programs should be routinely monitored and evaluated and must be taught by qualified instructors.

All initial EMS education, refresher training and stand alone courses regarding trauma should include considerations for the assessment and treatment of injured children.

## **HOSPITAL TRAUMA SERVICES**

### **I. DESCRIPTION**

This section describes the role of New Hampshire hospitals in the New Hampshire Trauma System and the standards and process of participation. It is recognized that all NH acute care hospitals provide trauma care services to persons incurring a traumatic injury. It is expected that any hospital with emergency service capability will be capable of providing stabilization of adult and pediatric trauma patients during the acute and emergent course of their injury. Based on the patient's level of acuity and the capability of the hospital, the patient may need to be transferred to a facility with a more comprehensive capability of care. This transfer must be done in the timeliest manner possible.

The NH Trauma System encourages relationships between hospitals providing regional trauma care (i.e. a Level I trauma hospital) and community hospitals, particularly rural hospitals. Improved communications between hospitals can result in a quicker process for patient transfer.

### **II. STANDARDS**

#### **A. OVERALL SYSTEM DESIGN**

The design of the New Hampshire Trauma System is based on the concept of inclusion of all providers of care to trauma victims within the system. All of the hospitals in New Hampshire have historically provided care to major trauma victims – including children - although the volume of admissions varied from facility to facility. The design of the system is to encourage the active participation of all New Hampshire hospitals in the system.

The goal of the system is to facilitate the treatment and admission of severely injured trauma patients to Level I or Level II trauma hospitals and the stabilization, resuscitation and rapid transfer of severely injured trauma from the local and rural trauma hospitals. Pre-hospital service providers will be directed to transport severely injured trauma victims to those hospitals with the verified capability to provide the appropriate level of trauma service.

All hospitals regardless of the level of active participation in the NH Trauma System will be encouraged to participate in trauma system education and training programs.

Level I and Level II trauma hospitals should assume a leadership role and be prepared to support the other components of the trauma system through education, coordination and performance improvement activities, and medical direction of pre-hospital personnel.

#### **B. ROLE OF OUT-O-STATE TRAUMA CARE FACILITIES**

The current role of out-of-state specialty care facilities, such as Level I adult and pediatric trauma centers in Boston, Massachusetts and Portland, Maine, regional burn centers and re-implantation facilities will continue. The current volume of New Hampshire residents that incur significant burn injuries and re-implantation services is generally low.

When New Hampshire residents are transferred to out-of-state facilities for specialty trauma care, the out-of-state facilities should be requested to provide data and information detailing patient progress and outcome. This information should be provided to the referring facility and to the statewide trauma quality management program.

## **C. PROCESS OF PARTICIPATION**

The guidelines for hospital participation in the trauma system should encourage the active participation of the New Hampshire acute hospitals.

### **1. Guiding Principles**

- ◆ The first guiding principle is that major and severely injured adult and pediatric patients must be transported and treated at hospitals that have the clinical capability to effectively treat the full extent of their injuries. Severely injured trauma patients require the services of organized trauma teams composed of qualified physicians and health professionals having appropriate equipment and supplies.
- ◆ The second guiding principle is the concept of inclusion of all hospitals as active participants in the trauma system. Historically, all New Hampshire hospitals with an emergency department have provided care to trauma patients. Each hospital will be classified according to its capability to provide trauma services. This classification system should identify the capability and limitations of each acute care hospital in a manner appropriate for pre-hospital personnel.
- ◆ The third guiding principle is that hospitals should only admit trauma patients that are within the capability of the facility to provide definitive treatment. When this capability is exceeded by the patient's severity of injury, the hospital should transfer the patient to a higher level facility.
- ◆ The fourth guiding principle is that every acute care hospital should have, at a minimum, the capability to stabilize, resuscitate and rapidly transfer major or severely injured trauma patients.
- ◆ The fifth guiding principle is that all hospitals have the opportunity to increase or enhance their capability to provide trauma services.

## **REQUEST FOR PARTICIPATION**

### **1. Step One: Request for Participation**

Each acute care hospital not actively participating in the NH Trauma System will be periodically requested to identify their level of desired participation. This communication will include the following:

- A document explaining the trauma system and the participation process
- A copy of the hospital standards for each level of participation
- A statement for the requested level of participation
- A self-survey assessment tool

### **2. Step Two: Facility Assessment**

Each hospital requesting trauma system participation will be site-visited and assessed by one of the Trauma Medical Review Committee's Site Visitation Teams within one year of submission of the completed participation package.

The Site Visitation teams, to include at least a physician, trauma nurse and the NH Division of Fire Standards and Training & EMS Trauma Coordinator, will perform the following activities:

- Visit the hospital and verify the hospital's capability to provide trauma services at the level requested by the hospital.
- Compile the results of the on-site assessment
- Provide consultative assistance and information to the hospital and its medical staff

Hospitals seeking assignment as a trauma hospital must select a level of assignment for both adult trauma care and pediatric trauma care. The hospital can choose different levels for adult and pediatric assignment, but a hospital must meet at a minimum Level IV pediatric trauma standards.

Hospitals may voluntarily choose to pursue verification by the American College of Surgeons (ACS) Committee on Trauma. Hospitals successfully acquiring ACS verification may request assignment in the NH Trauma System at that level. The Trauma Medical Review Committee may waive the requirement for a site visit as part of the application process for hospitals meeting ACS criteria.

### **3. Step Three: Determination of Level of Participation**

Following the site visit at the hospital, the Trauma Medical Review Committee will review all documents submitted by the hospital and the site visitation team's reports, findings and recommendations and review any additional information or testimony provided by the hospital or its medical staff. The TMRC will consider the application and approve or advise the hospital of deficiencies identified. If deficiencies are resolved within one year, the TMRC may elect to hold a focused review instead of a full site visit, and pending a favorable report, the initial application may be reconsidered.

If approved, the TMRC will recommend to the Commissioner a level of participation for a period of up to five years. The Commissioner or his designee will issue a document to the hospital with notification to pre-hospital medical control physicians and pre-hospital providers identifying the hospital's level of assignment.

If the hospital subsequently wishes to change its assignment and participation status, the hospital can reapply at any time during its term.

### **4. Step Four: Appeal Process**

Any hospital that does not agree with and challenges the Committee's recommended level of classification and participation can, at its own expense, have its facility evaluated by the American College of Surgeon's (ACS) Committee on Trauma's representatives.

The hospital can submit the findings and recommendations of the ACS Committee on Trauma's site visit to the Trauma Medical Review Committee. The Trauma Medical Review Committee will consider the ACS findings in the Committee's recommendation to the Commissioner.

## **Pre-Hospital Impact**

Pre-hospital providers and their medical control physicians will be directed by the NH Division of Fire Standards and Training and EMS to preferentially transport major and severely injured trauma patients, in accordance with statewide protocol, to the hospitals with capability to provide the appropriate level of trauma service.

## **Revocation of Assignment**

Any hospital that is found to be out of compliance with the requirements of this plan will be notified of the deficiency. Failure to take corrective steps within six months to address the deficiency will risk the loss of assignment. Hospitals that lose their assignment for failure to correct deficiencies will be required to re-apply if active participation in the NH Trauma System is desired at a later date. Notice of the loss of assignment will be communicated in writing to the hospital, prehospital medical control physicians and prehospital providers.

## **Renewal of Assignment**

Prior to the expiration of the Trauma Hospital Assignment, the assigned hospital will communicate with the NH Department of Safety, Division of Fire Standards and Training and Emergency Medical Services as to its intentions of continuing as an assigned trauma hospital. If a hospital wishes to upgrade to a higher level, a full evaluation and site review will be required. For those hospitals seeking renewal at the same level, the Trauma Medical Review Committee may at their discretion require a full evaluation and site visit or a modified application and evaluation process.

## **III. INTERHOSPITAL TRAUMA PATIENT TRANSFER**

### **DESCRIPTION**

The interfacility transfer of major trauma patients will be necessary in those situations where the severity of the patient's injury exceeds the capacity of the initial receiving hospital and require expeditious transfer to a higher level trauma hospital. While NH EMS trauma and triage and air medical transport protocols are intended to route severely injured patients directly to the highest appropriate level of trauma hospital, this is not always feasible and patients are transported to the closest hospital.

### **STANDARDS**

Interfacility transfer is enhanced by each hospital adopting guidelines regarding (1) identification of patients who will benefit from transfer and (2) how and when a patient will be transferred. Identification of patients should be based on a defined set of criteria. The process of transfer will be in accordance with Federal EMTALA and COBRA requirements.

In addition to the prehospital triage criteria discussed earlier, hospital clinicians should consider the following list of examples of physiological, anatomical, and other criteria that identify patients at high risk of dying or permanent disability. Depending on the hospital's assigned level of capability, such trauma patients should be considered for PROMPT transfer.

#### ADULTS AND PEDIATRIC CRITERIA

- Torn thoracic vessel or suspected mediastinal vascular injury
- Penetrating wounds to the central chest area (i.e. cardiac injury)
- Bilateral pulmonary contusion with PaO<sub>2</sub> to FiO<sub>2</sub> ratio less than 200
- Major abdominal vascular or visceral injury
- Unstable pelvis fracture
- Fracture or dislocation with loss of distal pulses
- Penetrating injury or open fracture of the skull
- Glasgow Coma Score < 12 or lateralizing neurological signs
- Deterioration in GCS of 2 or more
- Significant spinal fracture or spinal cord deficit
- Severe blunt chest injury (i.e. flail segment)
- Open or multiple long bone fracture
- Significant torso injury with significant comorbid disease, such as:
  - Coronary artery disease
  - COPD
  - Type I diabetes mellitus
  - Immunosuppression
  - Extremes in age (pediatric and geriatric)

#### PEDIATRIC SPECIFIC CRITERIA

- Pediatric trauma score of <9
- Children requiring Intensive Care

#### IV. TELEMEDICINE

In consideration of telemedicine in specialty surgical care, it is recognized that trauma care and telemedicine are evolving. Some of the elements and technology are available now. The TMRC defines a trauma telemedicine program as one which addresses exceptions to the 24/7 accessibility to particular specialists (such as neurosurgeons or orthopedic surgeons) by activating a trauma telemedicine specialist. The process must be a collaboration between the trauma surgeon and the telemedicine consultant to determine whether the patient has an injury that requires transfer to another facility, or if it is safe to admit the patient to the originating hospital with observation by the telemedicine specialist in collaboration with medical staff at the originating hospital.

Elements to be considered would be:

- There is video technology and imaging transmission to enable a real-time consultation with an applicable specialist, such as a neurosurgeon.
- There is a formal trauma telemedicine program in which the hospital commits to the practice of admitting patients in consultation with the specialist as medically indicated.
- Trauma surgeons, intensivists, and hospitalists at the hospital fully cooperate with the telemedicine program.

- A performance improvement and patient safety process specific to the trauma telemedicine program is in place.
- A hospital wishing to implement a trauma telemedicine program must have the program approved by the Trauma Medical Review Committee.

## **V. ADULT FACILITY STANDARDS**

### **LEVELS OF PARTICIPATION**

In order to encourage maximum participation there will be four levels of assignment for adult trauma service hospitals. These four levels are the following:

**LEVEL I:** A hospital satisfying this level provides the highest level of care for patients with complex traumatic injuries that present directly to the hospital's emergency department or by interfacility transfer. The hospital is a regional resource that treats a significant number of seriously injured patients and is responsible for outreach, accredited education and is committed to research in trauma management.

**LEVEL II:** A hospital that has the resources to provide a high level of care for patients with complex injuries. The hospital has essentially all the surgical specialty providers as a Level I, on-call and promptly available 24/7. A Level II provides definitive care on a regional basis for complex trauma patients, but transfers the most specialized of trauma patients to a Level I or specialty facility (i.e. burn center).

**LEVEL III:** A hospital that provides trauma care for a local catchment area. Depending on the hospital's resources (such as neurosurgery) some Level III trauma hospitals are able to care for complex trauma patients, but the expectation of most Level III facilities for major trauma patients is stabilization and prompt transfer to a Level I trauma hospital.

**LEVEL IV:** A hospital that provides 24-hour emergency services. This level of trauma hospital is expected to resuscitate, stabilize, and transfer major trauma patients to a higher level facility. This facility will admit only those patients who are determined to have injuries that do not meet criteria for transfer.

**UNASSIGNED HOSPITAL:** A hospital that provides a 24-hour emergency department but has not voluntarily sought assessment or assignment as part of the NH Trauma System or has not successfully received approval following an application.

### **V. HOSPITAL STANDARDS REQUIREMENTS FOR ADULTS**

The following section is intended to serve as a checklist of the standards required for the different levels of adult trauma hospital. Active trauma hospitals within the NH trauma System may use this section to continually verify that they meet the requirements of the level of assignment currently held. Unassigned hospitals considering active participation in the NH Trauma System should use this section as a self-assessment of their ability to meet the requirements, or in which areas they need to improve to successfully meet the requirements.

Refer to the pediatric trauma hospital standards beginning on page 44 for pediatric requirements.

## DEFINITIONS FOR THE FOLLOWING TABLES

**Promptly Available** - For the highest level of trauma team activation, providers may respond on an on-call basis, but must meet the following conditions:

Trauma Surgeon - for a Level I and II the maximum allowable time for trauma surgeon arrival is 15 minutes (tracked from patient arrival in the ED) with 80% compliance tracked by the PIPS program. For Level III and IV the maximum allowable time is 30 minutes using the same measures.

For all other trauma team members - in all trauma hospital levels the maximum allowable time of arrival for members of the trauma team is 30 minutes from activation.

For other providers that are required by the hospital standards to be promptly available, but are not members of the trauma team, promptly available is defined as arrival within 30 minutes of consultation by the trauma team leader.

While the PIPS program is required to monitor timely arrival of the anesthesia provider, monitoring of other medical providers is not mandatory (but is encouraged). Recurring problems regarding prompt response of providers must be addressed in the PI process.

**E = Essential** – This is a mandatory requirement for the level of trauma hospital indicated.

**D = Desired** – This criteria is not mandatory, but is desirable for the level of hospital indicated.

<b>ADULT TRAUMA SERVICE</b>	<b>LEVELS</b>			
	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>
Hospital has the written commitment of the institutional governing body and the medical staff to be an assigned trauma hospital	E	E	E	E
There is a multidisciplinary peer review Trauma Performance Improvement and Patient Safety (PIPS) Program with participation from general surgery, orthopedic surgery, neurosurgery, emergency medicine, anesthesia, administration and nursing services.	E	E	E	E
Hospital has an organized trauma service that has formal responsibility for the management and coordination of the care of multiple-system or major injury patients	E	E	D	D
There are guidelines for the initial triage of trauma patients	E	E	E	E
There are policy and procedures for the pre-arrival activation of the trauma team based on prehospital report	E	E	E	E
Hospital has written, well defined guidelines for the transfer of trauma patients to other facilities			E	E
Decision to transfer an injured patient to a specialty care facility is based solely on the needs of the patient.	E	E	E	E
Published on-call schedules are maintained for surgeons, neurosurgeon ( <i>if applicable</i> ), orthopedic surgeons and other specialists	E	E	E	E
Hospital complies with NH EMS protocols regarding air medical transport	E	E	E	E

<b>ADULT TRAUMA PROGRAM DIRECTOR</b>	<b>LEVELS</b>			
	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>
There is a physician Trauma Service Director	E	E	E	E*
The director is a board certified general surgeon	E	E		
The director is a board certified physician with demonstrated competence in trauma care			E	E
The trauma service director is current in ATLS	E	E	E	E
The director participates in the instruction of trauma surgeons and other providers	E	E	E	E
The director is responsible for the trauma PIPS Program	E	E	E	E
The director has administrative authority to evaluate trauma team members and provide on- going education services.	E	E	E	E

<b>ADULT TRAUMA TEAMS</b>	<b>LEVELS</b>			
	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>
The trauma service has an organized trauma response	E	E	E	E
The trauma response team is directed by a general surgeon or emergency physician	E	E	E	E
Written guidelines for the composition and activation of the trauma team are in place	E	E	E	E
A log of trauma team activations is included in the trauma registry	E	E	E	E
Trauma team members will satisfy credentialing requirements as specified in each clinical specialty section	E	E	E	E
When a hospital uses a two-tiered trauma team activation policy, the criteria for graded activation are clearly defined by the hospital and continuously evaluated by the trauma PIPS program and the highest level of activation requires the participation of a general surgeon.	E	E	E	E

<b>ADULT TRAUMA COORDINATOR</b>	<b>LEVELS</b>			
	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>
There is a trauma coordinator	E	E	E	E
The trauma coordinator is actively involved in clinical activities-establishing protocols, monitoring care and assisting trauma staff	E	E	E	E
The trauma coordinator participates in the education of professional staff, continuing education and community education and injury prevention efforts	E	E	E	D
The trauma coordinator participates in research activities such as protocol design, data collection, analysis and reporting	E	E	D	D
The trauma coordinator participates in performance improvement activities, developing audit filters, audits and case reviews	E	E	E	E
The trauma coordinator is responsible for the trauma registry	E	E	E	E

<b>ADULT GENERAL SURGERY</b>	<b>LEVELS</b>			
	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>
The general surgeon who participates in the trauma team is board certified or eligible (1) or is an ACS fellow	E	E	E	E
The general surgeon is credentialed to practice in the facility and meets trauma credentials (note)	E	E	E	E
The general surgeon is in-house 24 hours-a-day	E*			
The general surgeon is on-call and promptly available (2)		E	E	E
The trauma surgeon on call is dedicated to the trauma hospital while on duty	E	E	E	D
** BY PGY4 or higher surgical residents (with attendings promptly available)				
(1) Board eligible surgeons must become board certified within five years				
(2) "Promptly available" means for a Level I and II the maximum allowable time of surgeon arrival is 15 minutes, tracked from patient arrival in the ED, with 80% compliance tracked by PIPS program. For Level III and IV the maximum allowable time is 30 minutes using the same measures.				

Note – “Appropriately credentialed” is defined as:  
 ATLS certified or,  
 Sixteen hours over a two year period of trauma focused CMEs.

<b>ADULT NEUROSURGERY</b>	<b>LEVELS</b>			
	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>
Neurosurgeons who care for trauma patients are board certified or eligible neurosurgeons (1)	E	E	E	E
There is a neurosurgeon in-house 24 hours a day	E*	D		
There is a neurosurgeon on-call and promptly available 24 hours a day		E	D	
The facility has a written plan on how traumatic brain injured patients are assessed, treated and/or transferred, with written transfer agreements in place			E	E
The neurosurgeon is credentialed to practice in the facility and meets trauma credentials (note)	E	E	E	
“*” By PGY4 or higher neurosurgical residents (with attendings promptly available)				
“(1)” The initial stabilization and diagnostic procedures may be performed by physicians with special competence in the care of patients with neuro-trauma				
<u>Note</u> – “Appropriately credentialed” is defined as: ATLS certified or, Sixteen hours over a two year period of trauma focused CMEs.				

<b>ADULT ORTHOPEDIC SURGERY</b>	<b>LEVELS</b>			
	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>
Orthopedic surgeons who care for trauma patients are board certified or eligible	E	E	E	
An orthopedic surgeon is on-call and promptly available	E*	E	E	D
An orthopedic surgery liaison to the PIPS program is designated	E	E	E	E
The orthopedic surgeon is credentialed to practice in the facility and meets trauma credentials (note)	E	E	E	E
“*” By PGY4 or higher orthopedic residents (with attendings promptly available)				
<u>Note</u> – “Appropriately credentialed” is defined as: ATLS certified or, Sixteen hours over a two year period of trauma focused CMEs.				

<b>ADULT EMERGENCY MEDICINE</b>	<b>LEVELS</b>			
	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>
The emergency department is staffed by board certified physicians with special competence in the care of the critically injured patient (Note *1)	E	E	E	D
The emergency physician is in-house 24 hours a day	E	E	E	D
The emergency department may be staffed in-house 24 hours a day by a physician or physician assistant or nurse practitioner with a full-time commitment to emergency medicine (Note *3)				E

<b>Note * 1</b> Definition of Emergency Physician with special competence in the care of the critically injured patient: 1. Board certified in emergency medicine OR 2. Board certified in a primary specialty, (family medicine, internal medicine, pediatrics or OB/GYN) with full-time commitment to emergency medicine and maintains current status as an ATLS provider.				
The emergency physician is appropriately credentialed to practice in the facility and meets trauma credentials (Note * 2)	E	E	E	E
<b>Note * 2</b> – “Appropriately credentialed” is defined as: ATLS certified or, Sixteen hours over a two year period of trauma focused CMEs.				
<b>Note * 3</b> – A midlevel provider (physician assistant, nurse practitioner) who provides care to trauma patients must practice under the supervision of the emergency physician and must meet physician trauma credentials.				
An emergency medicine liaison to the PIPS program is designated	E	E	E	E

<b>ADULT ANESTHESIOLOGY</b>	<b>LEVELS</b>			
	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>
Anesthesiologists who care for trauma patients are board certified or eligible	E	E	E	E
There is an anesthesiologist in-house 24 hours a day	E*	D	D	D
There is an anesthesiologist on-call and promptly available 24 hours a day.		E	E* *	E* *
An anesthesiology liaison to the PIPS program is designated	E	E	E	E
“*” By PGY4 or higher anesthesiology residents (with attendings promptly available)				
“**” May be performed by certified nurse anesthetist				

<b>ADULT SURGICAL SUBSPECIALTIES On Call and Promptly Available</b>	<b>LEVELS</b>			
	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>
There are signed agreements which commit the following surgical and medical specialties to be on-call and promptly available:				
Hand Surgery	E	D	D	
Microvascular Surgery (re-implantation/flaps)	E*	D		
Obstetric/Gynecologic Surgery	E	E	D	D
Ophthalmic Surgery	E	E	D	
Oral/Maxillofacial Surgery	E	E	D	
Plastic Surgery	E	E	D	
Thoracic Surgery	E	E	D	
Urologic Surgery	E	E	D	
There is an identified process utilized in the ER or by the trauma service to alert the above-listed physician specialties to respond	E	E	E	E
“*” If not available transfer guidelines must be in place				

<b>ADULT NON-SURGICAL SUBSPECIALTIES On-Call and Available for Consultation</b>	<b>LEVELS</b>			
	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>
Cardiology	E	E*	D	
Gastroenterology	E	E*	D	
Infectious Disease	E	E*	D	
Internal Medicine	E	E	E**	E**
Nephrology	E			
Pediatrics				
Pulmonary Medicine	E	E		
There is an identified process utilized in the ER or by the trauma service to alert the above-listed physician specialties to respond.	E	E	E	E
“*” The consultants may be from another hospital				
“**” Internal medicine or family practice physicians				

<b>ADULT EMERGENCY DEPARTMENT PERSONNEL</b>	<b>LEVELS</b>			
	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>
Designated physician director	E	E	E	E
Physicians with special competence in care of critically injured and a designated member of the trauma team	E	E	E	E
In-house 24 hours a day	E	E	E	E
Registered Nursing personnel must hold current TNCC certification or show evidence of an average of 2 hours of trauma education per year	E	E	E	E
In emergency department and immediately available	E	E	E	E
If paramedic providers are utilized, must hold current certification in PHTLS or BTLIS	E	E	E	E

<b>ADULT OPERATING ROOM STAFF AVAILABILITY</b>	<b>LEVELS</b>			
	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>
In-house operating room staff immediately available 24 hours a day	E			
On-call and promptly available		E	E	E
A documented method for prompt mobilization of consecutive OR teams for additional trauma patients	E	E	D	D
Registered nurse available in OR during surgery	E	E	E	E
Equipment for all ages				
Cardiopulmonary bypass capability	E			
Operating microscope	E			
Craniotomy instruments	E	E	D	

<b>ADULT POST ANESTHESIA RECOVERY UNIT</b>	<b>LEVELS</b>			
	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>
Registered nurses and other essential personnel				
Immediately available 24 hours a day	E	E		
On-call and promptly available			E	E

<b>ADULT ICU PERSONNEL</b>	<b>LEVELS</b>			
	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>
There is a designated surgical director of the ICU	E	E	D	D
The ICU is staffed by physicians board certified or board eligible in critical care, pulmonary medicine, cardiology or surgery	E	E	E	
An ICU physician is in house 24-hours a day	E*			
An ICU physician is on-call and promptly available 24 hours a day		E	E	D
There is an ICU physician liaison to the trauma PIPS program	E	E	E	E
The ICU is staffed by registered nurses with evidence of critical care training	E	E	E	D
ICU nurses who care for trauma patients must hold current TNCC certification or show evidence of an average of 2 hours of trauma education per year	E	E	E	D
“*” May be performed by PGY4 or higher residents with attendings promptly available				
A respiratory therapist is onsite 24 hours	E	E		
A respiratory therapist is on-call and promptly available			E	D
The hospital has patient and family services	E	E	E	E

<b>OTHER ADULT TRAUMA-RELATED PROGRAMS</b>	<b>LEVELS</b>			
	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>
The hospital has acute hemodialysis capability	E			
The hospital has acute hemodialysis capability or a transfer agreement with a dialysis center		E	E	D
The hospital has written guidelines for burn center referral and transfer criteria	E	E	E	E

<b>ADULT RADIOLOGICAL SPECIAL SERVICES</b>	<b>LEVELS</b>			
	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>
Radiologists are promptly available, in person or by teleradiology, when requested, for the interpretation of radiographs, performance of complex imaging studies.	E	E	E	E
An interventional radiologist is on-call and promptly available 24 hours a day	E	E		
The hospital has an in-house radiology technician 24-hours a day	E	E		
The hospital has a radiology technician on-call and promptly available 24 hours a day			E	E
Angiography is available 24 hours per day	E	E		
Sonography is available 24 hours per day	E	E		
Computed tomography and conventional radiography are available 24 hours a day	E	E	E	E
There is a CT Technician in-house 24-hours a day	E			
There is a CT Technician on-call & promptly available 24 hours a day		E	E	E
A radiology liaison to the PIPS program is designated	E	E	E	E
MRI capability is available 24 hours per day. MRI technician is on call and promptly available	E			

<b>ADULT REHABILITATION SERVICES</b>	<b>LEVELS</b>			
	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>
The hospital has acute rehabilitation services within its facility	E	E	E	E
The hospital has social services.	E	E	E	E
The hospital has occupational therapy services.	E	E	E	
The hospital has speech therapy services.	E	E	E	
The hospital has a mechanism in place to transfer patients to a freestanding rehabilitation hospital.	E	E	E	E

<b>ADULT CLINICAL LABORATORY SERVICES</b>	<b>LEVELS</b>			
	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>
Clinical laboratory services are available 24 hours a day	E	E	E	E
Able to conduct standard analyses of blood, urine, and other body fluids	E	E	E	E
Able to conduct blood typing and cross-matching	E	E	E	E
Able to conduct coagulation studies	E	E	E	E
The blood bank must have an adequate supply of red blood cells, fresh frozen plasma, platelets, cryoprecipitate, and appropriate coagulation factors to meet the needs of injured patients	E	E	E	E
Able to determine blood gases and PH determination	E	E	E	E
Able to conduct microbiology studies	E	E	E	E
Able to conduct drug and alcohol screening	E	E	E	E

<b>ADULT PERFORMANCE IMPROVEMENT &amp; PATIENT SAFETY (PIPS)</b>	<b>LEVELS</b>			
	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>
The facility demonstrates a clearly defined PIPS program for the trauma population	E	E	E	E
The PIPS program is supported by a reliable method of data collection that consistently gathers valid and objective information necessary to identify opportunities for improvement	E	E	E	E
Scheduled multi-disciplinary trauma review, to include case reviews and system process issues. Representatives of the NH Trauma Medical Review Committee may periodically participate in reviews.	E	E	E	E
The program is able to demonstrate that the trauma registry supports the PIPS process	E	E	E	E
The process of analysis includes multidisciplinary review	E	E	E	E
The process of analysis occurs at regular intervals to meet the needs of the program	E	E	E	E
The results of analysis define corrective strategies	E	E	E	E
The results of analysis and corrective strategies are documented	E	E	E	E
The trauma program is empowered to address issues that involve multiple disciplines	E	E	E	E
The hospital complies with all criteria/process measures for PIPS review as required by the NH Trauma Medical Review Committee	E	E	E	E

<b>TRAUMA REGISTRY</b>	<b>LEVELS</b>			
	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>
Trauma registry data are collected and analyzed	E	E	E	E
Data elements required by the NH Trauma Medical Review Committee are submitted	E	E	E	E
Data is submitted to the NTDB	E	E	D	D
The facility uses the registry to support the PIPS process	E	E	E	E
The trauma registry has at least 80% of the trauma cases entered within 60 days of discharge	E	E	E	E
The trauma program ensures that trauma registry confidentiality measures are in place	E	E	E	E
There are strategies for monitoring data validity for the trauma registry	E	E	E	E

<b>INJURY PREVENTION/ PUBLIC EDUCATION</b>	<b>LEVELS</b>			
	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>
The hospital participates in annual state or local injury prevention efforts involving public education, providing effective injury prevention devices and advocating for environmental and/or policy changes to reduce injuries	E	E	E	E
The hospital monitors patient data to determine areas in which to focus injury prevention efforts	E	E	E	E
The hospital monitors patient data to monitor progress of prevention programs	E	E	E	E
The hospital conducts injury prevention research	E			

<b>TRAUMA RESEARCH PROGRAM</b>	<b>LEVELS</b>			
	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>
Organized program with designated director	E			
Regular meeting of research group	E			
Evidence of productivity	E			
Proposals reviewed by IRB	E			
Presentations at local/regional/national meetings	E			
Publications in peer-reviewed journals	E			

<b>CONTINUING EDUCATION</b>	<b>LEVELS</b>			
	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>
Programs of continuing education provided by hospital for:				
Physicians	E	E	E	E
Nurses	E	E	E	E
Allied health care professionals / out of hospital providers	E	E	E	E
<b>OUTREACH PROGRAM</b>				
The hospital provides a process for two way communication with other	E	E		

hospitals for trauma consultations with physicians, and feedback regarding trauma transfers from community hospitals				
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<b>ORGAN PROCUREMENT PROGRAM</b>	<b>LEVELS</b>			
	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>
The hospital has active participation with the region's organ procurement organization	E	E	E	E

<b>DISASTER PLANNING AND MANAGEMENT</b>	<b>LEVELS</b>			
	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>
The hospital meets the disaster-related requirements of the Joint Commission or Centers for Medicare and Medicaid Services, and has a written disaster plan	E	E	E	E
A representative of the trauma committee is a member of the hospital's disaster committee.	E	E	E	E

## VII. PEDIATRIC FACILITY STANDARDS

### LEVELS OF PARTICIPATION

Seriously injured children present a physiological complexity that is different than that of adults. Medical providers must be diligent in preparations to effectively deal with seriously injured children, despite the infrequency of such events. A regionalized approach to pediatric trauma care is sensible, but geographical access to such resources in NH must be considered. Rural hospitals play an important role in the NH Trauma System. All hospitals including those with limited pediatric capability will be called upon to resuscitate severely injured children.

Although all acute care hospitals must be capable of resuscitation and stabilization, comprehensive pediatric services are limited to a few regional pediatric hospitals. As such, an important part of the pediatric trauma system is the development of well-defined written guidelines for the rapid identification of injured children exceeding a hospital's capability and for streamlining the process for transfer of pediatric trauma patients to facilities capable of providing comprehensive pediatric care.

### PEDIATRIC TRAUMA SERVICE COMPONENT

In order to encourage maximum participation there will be four levels of assignment for pediatric trauma service hospitals in New Hampshire. The following descriptions provide a global overview of the desired roles of the four levels. For more specific information regarding the resources required of the four levels refer to the pediatric hospital standards.

**Pediatric Level I** – This hospital provides the most comprehensive level of care and has a pediatric intensive care unit. The facility will be capable of providing comprehensive specialized pediatric medical and surgical care to all acutely ill and injured children. The Level I Pediatric Trauma Hospital will be responsible for serving as a regional referral center for the specialized care of pediatric patients, or in special circumstances will provide safe and timely transfer of children to other facilities for specialized care.

**Pediatric Level II** – This hospital will have a defined separate pediatric inpatient service and a department/division of pediatrics within the medical staff structure. A Level II facility will be capable of identifying those pediatric patients who are critically ill or injured, stabilizing pediatric patients (including the management of airway, breathing, circulation and disability), and will also provide ongoing inpatient care or appropriate transfer to a Level I pediatric critical care center

**Pediatric Level III** - This hospital will be capable of identifying those pediatric patients who are critically ill or injured, stabilizing pediatric patients (including the management of airway, breathing and circulation), and will have clearly defined capabilities for the management of minor to moderate pediatric inpatient problems.

**Pediatric Level IV** - This hospital will be capable of identifying those pediatric patients who are critically ill or injured, stabilizing pediatric patients (including the management of airway, breathing and circulation), and providing appropriate transfer to a definitive care facility. A Level IV hospital will have limited pediatric inpatient admission capability for pediatric trauma.

The **minimum** level of pediatric capability for any hospital assigned within the NH Trauma System is a Pediatric Level IV.

<b>PEDIATRIC TRAUMA SERVICE</b>	<b>LEVELS</b>			
	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>
The hospital has the written commitment of the institutional governing body and the medical staff to be an assigned pediatric trauma hospital	E	E	E	E
The multidisciplinary peer review Trauma Performance Improvement and Patient Safety (PIPS) Program includes participation of pediatric representation	E	E	E	E
The hospital has an organized pediatric trauma service that has formal responsibility for the management and coordination of the care of multiple-system or major injury patients	E	E		
There are guidelines for the initial triage of pediatric trauma patients	E	E	E	E
The hospital has written, well defined guidelines for the transfer of pediatric trauma patients to other facilities	E	E	E	E

<b>PEDIATRIC TRAUMA PROGRAM DIRECTOR</b>	<b>LEVELS</b>			
	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>
There is a physician Pediatric Trauma Director	E	E	E	E
The director is a board certified pediatric surgeon	E	E		
The director is a board certified physician with demonstrated competence in pediatric trauma care	E	E		
The pediatric trauma director is current in PALS or APLS	E	E	D	D
The pediatric trauma director is responsible for the pediatric PIPS Program	E	E	E	E

<b>PEDIATRIC TRAUMA COORDINATOR</b>	<b>LEVELS</b>			
	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>
There is a pediatric trauma coordinator	E	E*		
Pediatric trauma coordinator is actively involved in clinical activities-establishing protocols, monitoring care and assisting trauma staff	E	E		
Pediatric trauma coordinator participates in education of professional staff, continuing education and community education and injury prevention efforts	E	E		
Pediatric trauma coordinator participates in research activities such as protocol design, data collection, analysis and reporting	E	E		
Pediatric trauma coordinator participates in performance improvement activities, developing audit filters, audits and case reviews	E	E		
* For Level II may combine both adult and pediatric responsibilities				

<b>PEDIATRIC TRAUMA TEAMS</b>	<b>LEVELS</b>			
	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>
There is an organized pediatric trauma response	E	E	E	E
The highest pediatric trauma activation level should be directed by a surgeon with pediatric expertise, designated and credentialed by the pediatric trauma director	E	E		
Written guidelines for the composition of and activation of the pediatric trauma team are in place	E	E	E	E

<b>PEDIATRIC SURGERY</b>	<b>LEVELS</b>			
	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>
The hospital has two pediatric surgeons on staff who are board certified or eligible and with pediatric surgery fellowship training	E	D		
The hospital has one pediatric surgeon on staff who is board certified or eligible and with pediatric surgery fellowship training	-	E		
A surgeon who meets pediatric trauma credentials (see note) is on call and promptly available 24 hrs a day	E	E	D	D
A pediatric surgery liaison to the PIPS program is designated	E	E		
The pediatric surgeon is appropriately credentialed to practice in the facility and meets pediatric trauma credentials (see note)				
<u>Note</u> – “Pediatric trauma credentials” are defined as: ATLS and PALS or APLS certified				

<b>PEDIATRIC NEUROSURGERY</b>	<b>LEVELS</b>			
	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>
The hospital has one Neurosurgeon who is board certified or eligible and with pediatric fellowship training	E	D		
The hospital has one neurosurgeon who is board certified or eligible and has demonstrated interest in pediatric trauma care	E	E		
A neurosurgeon is on call and promptly available 24 hours a day	E	E		
A pediatric neurosurgery liaison to the PIPS program is designated	E	E		

<b>PEDIATRIC ORTHOPEDIC SURGERY</b>	<b>LEVELS</b>			
	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>
The hospital has one orthopedic surgeon who is board certified or eligible and with pediatric fellowship training	E	D		
The hospital has one orthopedic surgeon who is board certified or eligible and has demonstrated interest in pediatric trauma care	E	E		
An orthopedic surgeon is on call and promptly available 24 hrs a day	E	E	D	
A pediatric orthopedic surgery liaison to the PIPS program is designated	E	E		

<b>PEDIATRIC STANDARDS FOR EMERGENCY MEDICINE</b>	<b>LEVELS</b>			
	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>
The hospital has two pediatric emergency physicians who are board certified or eligible and with pediatric emergency medicine fellowship training	E	D		
The hospital has one pediatric emergency physician who is board certified or eligible and with pediatric emergency medicine fellowship training	---	E		
A pediatric emergency medicine liaison to the PIPS program is designated	E	E		
The emergency department is staffed by board certified physicians with special competence in the care of the critically injured child (Note *1)	E	E	E	D
The hospital has an emergency physician in-house 24 hours a day	E	E	E	D
The emergency department may be staffed in-house 24 hours a day by a physician or physician assistant or nurse practitioner with full-time commitment to emergency medicine (Note *3)				E
<p><u>Note</u> * 1 - Definition of Emergency Physician with special competence in the care of the critically injured child:</p> <p>3. Board certified in emergency medicine OR</p> <p>2. Board certified in a primary specialty, (family medicine, internal medicine, pediatrics or OB/GYN) with full-time commitment to emergency medicine and maintains current status as an ATLS and PALS provider.</p>				
The emergency physician is credentialed to practice in the facility and meets appropriate pediatric trauma credentials (Note *2)	E	E	E	
<p><u>Note</u>* 2 – “Appropriately credentialed” is defined as:</p> <p>ATLS and PALS certified or,</p> <p>Four hours over a two year period of pediatric trauma focused CMEs. May be combined with overall 16 hours of trauma focused CME.</p>				
<p><u>Note</u> * 3– A midlevel provider (physician assistant, nurse practitioner) who provides care to trauma patients must practice under the supervision of an emergency physician and must meet physician trauma credentials.</p>				

<b>Pediatric SUBSPECIALTIES On Call and Promptly Available</b>	<b>LEVELS</b>			
	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>
There are signed agreements which commit the following credentialed pediatric surgical and medical specialties to be on call and promptly available:				
Pediatric Trauma Surgeon	E	E		
Pediatric Neurosurgeon	E	E		
Pediatric Intensivist	E	E		
Pediatric Orthopedic Surgeon	E	E		
Pediatric Cardiologist	E	D		
Pediatric Neonatologist	E	D		

Pediatric Neurologist	E	D		
Pediatric Anesthesiologist	E	D		
Pediatric Otolaryngologist	E	D		
Pediatric Radiologist	E	D		
Pediatric Hospitalist / Pediatrician			E	

<b>PEDIATRIC STANDARDS FOR EMERGENCY DEPARTMENT</b>	<b>LEVELS</b>			
	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>
The hospital has two or more identified pediatric areas with capacity & equipment for pediatric resuscitation	E	D	D	D
The hospital has one identified area with capacity & equipment for pediatric resuscitation	--	E	E	E
Registered Nursing personnel must hold current ENPC or PALS certification or show evidence of an average of 2 hours of pedi. trauma ed. per year	E	E	E	E
If paramedic providers are utilized, must hold current certification in PALS	E	E	E	E
Appropriate resuscitation equipment is located in ED (See Appendix C)	E	E	E	E

<b>PEDIATRIC INTENSIVE CARE UNIT</b>	<b>LEVELS</b>			
	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>
The hospital has a Pediatric Intensive Care Unit	E	E		
The PICU has a Medical Director who is board certified in Pediatrics & Pediatric Critical Care Medicine and with pediatric intensive care fellowship training	E	E		
The PICU is staffed by pediatric intensivists who are board certified or board eligible and with pediatric intensive care fellowship training	E	E		
A PICU physician is on call and promptly available 24 hours a day	E*	E*		
The PICU is staffed with registered nurses with evidence of pediatric critical care training: ENPC, PALS, or 2 hours of pediatric trauma education per year	E	E		
“*” May be performed by PGY4 or higher residents with attendings promptly available				

<b>PEDIATRIC INPATIENT CARE SERVICE</b>	<b>LEVELS</b>			
	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>
The hospital has a Pediatric Inpatient Care Service	E	E	E	
There is a Pediatric Dept. Chair or Pediatric Inpatient Director who is board certified in Pediatrics	E	E	E	
There are Pediatric hospitalists / pediatricians who are board certified or eligible in Pediatrics, credentialed by hospital, and current in PALS	E	E	E	
Unit nurses who care for pediatric trauma patients must hold current ENPC or PALS certification, or show evidence of 2 hours of pediatric trauma education per year	E	E	E	

<b>PEDIATRIC SUPPORT &amp; REHABILITATION SERVICES</b>	<b>LEVELS</b>			
	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>
The hospital has acute pediatric rehabilitation services within facility	E	E		
There is a Child Life Specialist	E	E		
There is a child abuse policy & procedures	E	E	E	E

<b>PEDIATRIC TRIAGE, TRANSFER, AND TRANSPORT</b>	<b>LEVELS</b>			
	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>
The hospital has telephone consultation with a physician who is board certified/eligible in pediatrics or pediatric emergency medicine - available 24 hours per day	--	E	E	E
The hospital has written pediatric trauma transfer guidelines	E	E	E	E

## APPENDIX A

### **MANDATORY PERFORMANCE IMPROVEMENT AND PATIENT SAFETY (PIPS) CRITERIA**

The criteria for graded activation are clearly defined by the trauma center and continuously evaluated by the PIPS program.

For the highest level of activation the 80% compliance of the surgeon's presence in the emergency department is confirmed or monitored by PIPS (15 minutes for Level I and II; 30 minutes for Level III).

Trauma Deaths are systematically reviewed for quality of care, and assigned to one of the following categories: preventable, potentially preventable or non-preventable.

There is a PIPS review of all trauma patients who are transferred the appropriateness of the decision to transfer or retain major trauma.

The PIPS program documents the appropriate timeliness of the arrival of anesthesia services

The PIPS program evaluates operating room availability and delays  
Discrepancies in diagnostic imaging interpretation for trauma are monitored through the PIPS program.

Effective date: \_\_\_\_\_

Supercedes: \_\_\_\_\_

## APPENDIX B

Hospitals that are assigned within the NH Trauma System are required to collect and submit data to the state trauma registry. The following data must be submitted electronically to the NH Division of Fire Standards and Training and EMS as follows:

- Level I and Level II adult and pediatric trauma hospitals must submit the data noted below on a quarterly basis, beginning January 1, 2011
- Level III and Level IV adult and pediatric trauma hospitals must submit the data noted below on a quarterly basis, beginning date to be determined.

Each of the trauma facilities shall collect - at a minimum - the following data elements:

1. Patient Demographics:
  - name, address, sex, age, financial classification, race(optional)
  - patient identifier number
2. Injury Specific
  - date, time, location (city, zip, etc.) of injury
  - cause(s) of injury
  - site and circumstance of injury (industrial, recreational, vehicular, etc.) if motor vehicle incident, position in vehicle, use of safety equipment
  - traffic accident number
3. Referring hospital data (if appropriate)
  - identity of referring hospital
  - arrival and discharge dates and times
  - results of patient assessment and injury scoring at referring hospital
  - GCS, RTS, surgical procedure
4. Pre-hospital
  - EMS run number, condition of patient at scene
  - dispatch, scene and transport times,
  - triage criteria
  - etiology of injury
  - results of patient assessment, injury scoring
  - CPR and airway management (if appropriate)
5. Emergency Department General Information
  - mode of transport or arrival
  - time of trauma alert
  - date, time and time in ER
  - chief complaint and arrival condition
  - trauma team, surgeon, neurosurgeon response times
  - results of patient assessment and patient scoring (GCS, RTS, etc.)
6. Emergency Department Treatment
  - evaluation procedures: CT scans, peritoneal lavage, arteriogram, drug screens and blood alcohol level determinations, etc.
  - times to treatment

- treatments: airway management, CPR, blood given
  - ED disposition and admitting services
7. Hospital Diagnosis and Procedures
    - complete ICD-9-CM diagnosis codes
  
    - complete ICD-9-CM procedural codes with date and time of operations
    - ICU patient days
  8. If patient transferred to a higher level trauma facility
    - Reason for transfer
    - Date and time of transfer
    - Receiving facility
  9. Performance improvement Indicators
    - as recommended by ACEP, ACS, other
  10. Complications
    - related to treatment, injury
    - resulting from patient medical history
  11. Total charges, collections
  12. Outcome
    - organ/tissue donor

Effective date: \_\_\_\_\_

Supercedes: \_\_\_\_\_

**APPENDIX C**

**REQUIRED PEDIATRIC EQUIPMENT**

<b>PEDIATRIC EQUIPMENT</b>	<b>LEVELS</b>			
	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>
Organized pediatric emergency cart with sizes for all pediatric patients	E	E	E	E
Pediatric resuscitation drugs	E	E	E	E
Printed drug doses/length-based resuscitation tape	E	E	E	E
Pediatric ventilator	E	E	D	D
Heating source (for infant warming)	E	E	E	E
Specialized pediatric trays that are age specific – size specific	E	E	E	E
Fracture management devices and equipment suitable for pediatric immobilization	E	E	E	E
Intraosseus infusion equipment with appropriate size gauges for children	E	E	E	E

Effective date: \_\_\_\_\_

Supercedes: \_\_\_\_\_





# State of New Hampshire



# Emergency Medical Services Bulletins



# State of New Hampshire Department of Safety

John J. Barthelmes, Commissioner



Division of Fire Standards and Training and Emergency Medical Services  
Office of the EMS Bureau Chief  
Nick A. Mercuri, Bureau Chief

98 Smokey Bear Blvd, Concord, New Hampshire  
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## INFORMATIONAL BULLETIN

Bulletin #	Title			Date Issued
29	2015 Protocol Corrections			Sept. 15, 2015
Superseded	Released By	Approved By	Source	
	V. Blanchard	N. Mercuri		

This bulletin is to serve as notice to corrections made to the 2015 NH Patient Care Protocols.

We have received notice of various formatting errors in the protocols and typos in the Pediatric Color Coded Appendix 3. The specific corrections on the dosages are listed below. **PLEASE either replace the Pediatric Color Coded Appendix 3 pages in your current set of protocols or re-download.**

- Pediatric Color Coded Appendix Gray: corrected pralidoxime IV from 300 mg to 200mg
- Pediatric Color Coded Appendix Red: corrected epinephrine dose from 0.85mg to 0.085 mg
- Pediatric Color Coded Appendix Purple: corrected diazepam dose from 0.2.1mg to 2.1mg
- Pediatric Color Coded Appendix Purple: corrected fentanyl dose from 52.5mcg to 10.5mcg
- Pediatric Color Coded Appendix Yellow: corrected odansetron from 1.4 mg to 1.3 mg.

It is our plan to further update the Pediatric Color Coded Appendix to more rounded doses. We expect to have these changes done in the next few weeks and will then re-post the protocols, but due to the potential of an overdose error we are making these immediate changes today.

You can find the 2015 Patient Care Protocols at this link:

<http://www.nh.gov/safety/divisions/fstems/ems/advlifesup/patientcare.html>

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## SAFETY BULLETIN

Bulletin #	Title			Date Issued
28	Ambulance Security			July 30, 2015
Superseded	Released By	Approved By	Source	
	V. Blanchard	N. Mercuri		

The Bureau of EMS was notified of a recent attempt to steal narcotics from an ambulance parked at an ER in New Hampshire.

The alleged addict was caught going through compartments by an observant local police officer. After he was arrested law enforcement and the crew discovered that the individual had been inside the ambulance and admitted to looking for narcotics.

We would advise that you secure your ambulance appropriately, when not occupied.

Please continue to advise us of incidents you encounter so we can keep the entire system informed of challenges we all face.

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## CLINICAL BULLETIN

Bulletin #	Title			Date Issued
27	Counterfeit Combat Application Tourniquet (C-A-T)			Monday July 20, 2015
Superseded	Released By	Approved By	Source	
	N. Mercuri	Dr. Jim Suozzi		

### **ALERT!**

Recently a New Hampshire provider experienced a catastrophic failure of what is believed to be a *counterfeit* Combat Application Tourniquet (C-A-T) device. When applying the device the windlass failed by snapping in half. A second device was attempted and again the windlass failed. The provider was able to eventually control the hemorrhage through other improvised equipment.

The NH Bureau of Emergency Medical Services has reached out to North American Rescue Inc., the manufacturer of the Combat Application Tourniquet (C-A-T) device, and learned they have identified at least 6 (six) counterfeit devices for sale.

Here is North American Rescue’s warning:

**WARNING:** *There are counterfeit medical devices on the market which resemble the Combat Application Tourniquet® (C-A-T®) and are illegally using the C-A-T® trademarks – including online vendors on eBay® and Amazon®. Some of those counterfeits have catastrophically failed during actual life-saving applications.*

If you have purchased a Combat Application Tourniquet (C-A-T) please ensure you purchased it from North American Rescue or one of their authorized dealers.

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## CLINICAL BULLETIN

Bulletin #	Title			Date Issued
26	Spinal Motion Restriction and Positioning			February 17, 2015
Superseded	Released By	Approved By	Source	
	N. Mercuri	Dr. Jim Suozzi		

*Over the last several months the Bureau has received multiple reports of spinal trauma patients being transported in the upright or semi-fowler's position. While our spinal trauma protocol allows for this if a patient cannot tolerate being supine (e.g., shortness of breath, pain, vomiting), in general, patients should remain supine with a collar on the EMS stretcher and NOT upright or semi-fowler's.*

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## CLINICAL BULLETIN

Bulletin #	Title			Date Issued
25	Naloxone Dose Change			January 16, 2015
Superseded	Released By	Approved By	Source	
24	N. Mercuri	Dr. Jim Suozzi	MCB January 15, 2015 Meeting	

### Protocol Update Effective Immediately

Due to the reported need for increased doses of naloxone (Narcan) to reverse the effects of suspected opiate drug overdoses, the Medical Control Board voted on January 15, 2015 to change the naloxone dose in the Poisoning/Substance Abuse/Overdose - Adult protocol 2.15A as follows:

#### At the EMR/EMT level:

For suspected opiate overdose with severe respiratory depression consider:

- Naloxone 1mg (1mL) per nostril (IN) via prefilled syringe and atomizer for a total of 2mg.
- If no response, may repeat in 3-5 minutes.
- For additional doses call Medical Control.

#### At the ALS level (AEMTs and Paramedic):

For suspected opiate overdose with severe respiratory depression consider:

- Naloxone 0.4 – 2.0 mg IV/IM or 2mg IN.
- If no response, may repeat initial dose every 3 - 5 minutes to a total of 10mg.

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## CLINICAL BULLETIN

Bulletin #	Title			Date Issued
24	Opiate Overdoses and Naloxone			December 23, 2014
Superseded	Released By	Approved By	Source	
	N. Mercuri	Dr. Jim Suozzi		

Over the past several weeks EMS crews from different areas across the state have been reporting to their EMS Medical Directors the need for higher doses of naloxone (Narcan) to reverse the effects of suspected opiate drug overdoses.

We want all EMS crews to be aware of the need for increased doses of naloxone for overdose patients based on this information. While the information is more anecdotal at the moment, we want to raise your awareness of this potential need. The Bureau is working with TEMSIS data, information from the Medical Examiner’s office, as well as law enforcement to further clarify the situation.

The Medical Control Board will be discussing changes in the standing order dose of naloxone at their January 15, 2015 meeting. In the meantime, start with a 2mg IN dose, if there is not an appropriate effect, switch to an IV route (for ALS providers). If you would like to administer a dose greater than 0.4mg IV contact on-line medical control for additional dosing options.

Continue to use supportive airway interventions as necessary (oxygen, basic airway adjuncts and positioning, BVM, and advanced airway intervention if necessary), and be aware of the possibility of polypharmacy overdose.

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## INFORMATIONAL BULLETIN

Bulletin	Title			Date
23	Naloxone Dosing for AEMTs and Paramedics			October 17, 2014
Superseded	Released By	Approved By	Source	
	Vicki Blanchard	J Suozzi, DO Nick Mercuri, Chief	September 2014 MCB Mtg	

This Bulletin is to serve as a notice for naloxone dosing.

The 2013 Poisoning/Substance Abuse/Overdose – Adult Protocol at the AEMT level states:

For suspected opiate overdose with severe respiratory depression consider:

- Naloxone 0.4 mg IV/IM or 2mg IN.
- If no response, may repeat initial dose every 5 minutes to a total of 10mg.

Given there are different concentrations of naloxone (e.g., 2mg/2ml prefilled syringes) it is also acceptable to administer naloxone 0.5mg IV/IM; if no response may repeat every 5 minutes to a total of 10mg.

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## INFORMATIONAL BULLETIN

Bulletin	Title			Date
22	Non-emergent Transport of Vented Patients			October 17, 2014
Superseded	Released By	Approved By	Source	
	Vicki Blanchard	J Suozzi, DO Nick Mercuri, Chief	May 2013 MCB Mtg	

At the May 2013 Medical Control Board meeting the board was posed with the question, “can long-term stable vented patients be transported for non-emergent care (office visits) by an EMT when the patient’s usual caregiver is present in the ambulance?”

This question was asked as the Interfacility Transfer Protocol requires a paramedic provider for vented patients. However, the board did not regard a non-emergent transport for an office visit to be an interfacility transfer.

It was determined that long term vented patients can be transported for non-emergent care (office visits) by an EMT when the patient’s usual caregiver is present in the ambulance to manage the ventilator.

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# State of New Hampshire Department of Safety

John J. Barthelmes, Commissioner

Division of Fire Standards and Training and Emergency Medical Services  
Office of the EMS Bureau Chief  
Nick A. Mercuri, Bureau Chief



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## INFORMATIONAL BULLETIN

Bulletin	Title			Date
21	Synthetic Cannabinoid – “Smacked”			August 15, 2014
Superseded	Released By	Approved By	Source	
	Vicki Blanchard	Nick Mercuri	Attached	

Governor Hassan has declared a State of Emergency following a sudden spike in overdoses from a synthetic cannabinoid drug known as “spice” which is being packaged and sold as “Smacked”. The drug is usually smoked or brewed. The State of Emergency will last up to 21 days and allow officials to investigate and quarantine the drugs associated with this outbreak.

Spice is a synthetic material typically sold as “incense” and labeled “not for human consumption.” It has been found to be made of a compound that resembles a synthetic cannabinoid. Spice users typically experience effects similar to that of marijuana; elevated mood, relaxation, and altered perception. Some have psychotic effects such as extreme anxiety, paranoia, and hallucinations.

Spice users have presented with many symptoms including: rapid heart rate, vomiting, agitation, confusion, hallucinations, unresponsive, drooling, inability to speak coherently, and/or extremely lethargic. Follow your NH Patient Care Protocol 2.15 Poisoning/Substance Abuse/Overdose for appropriate treatment and call Medical Control for any needed advice.

SOURCE: National Institute on Drug Abuse. (December 2012). “DRUG FACTS: Spice.”

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# Drug Facts

[www.drugabuse.gov](http://www.drugabuse.gov)

## Spice (Synthetic Marijuana)

“Spice” refers to a wide variety of herbal mixtures that produce experiences similar to marijuana (cannabis) and that are marketed as “safe,” legal alternatives to that drug. Sold under many names, including K2, fake weed, Yucatan Fire, Skunk, Moon Rocks, and others—and labeled “not for human consumption”—these products contain dried, shredded plant material and chemical additives that are responsible for their psychoactive (mind-altering) effects.

### False Advertising

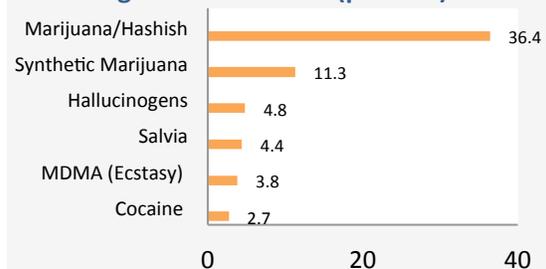
Labels on Spice products often claim that they contain “natural” psychoactive material taken from a variety of plants. Spice products do contain dried plant material, but chemical analyses show that their active ingredients are *synthetic* (or designer) cannabinoid compounds.

For several years, Spice mixtures have been easy to purchase in head shops and gas stations and via the Internet. Because the chemicals used in Spice have a high potential for abuse and no medical benefit, the Drug Enforcement Administration (DEA) has designated the five active chemicals most frequently

found in Spice as Schedule I controlled substances, making it illegal to sell, buy, or possess them. Manufacturers of Spice products attempt to evade these legal restrictions by substituting different chemicals in their mixtures, while the DEA continues to monitor the situation and evaluate the need for updating the list of banned cannabinoids.

Spice products are popular among young people; of the illicit drugs most used by high-school seniors, they are second only to marijuana. (They are more popular among boys than girls—in 2012, nearly twice as many male 12<sup>th</sup> graders reported past-year use of synthetic marijuana as females in the same age group.) Easy access and the misperception that Spice products are “natural” and therefore harmless have likely contributed to their popularity. Another selling point is that the chemicals used in Spice are not easily detected in standard drug tests.

**Past-Year Use of Illicit Drugs by High School Seniors (percent)**



SOURCE: University of Michigan, 2012 Monitoring the Future Study

## How Is Spice Abused?

Some Spice products are sold as “incense,” but they more closely resemble potpourri. Like marijuana, Spice is abused mainly by smoking. Sometimes Spice is mixed with marijuana or is prepared as an herbal infusion for drinking.



K2, a popular brand of “Spice” mixture.

## How Does Spice Affect the Brain?

Spice users report experiences similar to those produced by marijuana—elevated mood, relaxation, and altered perception—and in some cases the effects are even stronger than those of marijuana. Some users report psychotic effects like extreme anxiety, paranoia, and hallucinations.

So far, there have been no scientific studies of Spice’s effects on the human brain, but we do know that the cannabinoid compounds found in Spice products act on the same cell receptors as THC, the primary psychoactive component of marijuana. Some of the compounds found in

Spice, however, bind more strongly to those receptors, which could lead to a much more powerful and unpredictable effect. Because the chemical composition of many products sold as Spice is unknown, it is likely that some varieties also contain substances that could cause dramatically different effects than the user might expect.

## What Are the Other Health Effects of Spice?

Spice abusers who have been taken to Poison Control Centers report symptoms that include rapid heart rate, vomiting, agitation, confusion, and hallucinations. Spice can also raise blood pressure and cause reduced blood supply to the heart (myocardial ischemia), and in a few cases it has been associated with heart attacks. Regular users may experience withdrawal and addiction symptoms.

We still do not know all the ways Spice may affect human health or how toxic it may be, but one public health concern is that there may be harmful heavy metal residues in Spice mixtures. Without further analyses, it is difficult to determine whether this concern is justified.

## Learn More

For additional information on Spice, see [http://www.emcdda.europa.eu/attachements.cfm/att\\_80086\\_EN\\_Spice%20The%20matic%20paper%20—%20final%20version.pdf](http://www.emcdda.europa.eu/attachements.cfm/att_80086_EN_Spice%20The%20matic%20paper%20—%20final%20version.pdf)



John J. Barthelmes  
Commissioner

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Deborah A. Pendergast  
Director

## New Hampshire EMS Information Bulletin 20

DATE: January 31, 2014

SUBJECT: Normal Saline Shortage

TO: New Hampshire EMS Providers, Medical Directors, EMS Unit Leaders, and EMS Hospital Coordinators

FROM: Tom D'Aprix, MD - State EMS Medical Director

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We have received notification that some areas in NH are experiencing shortages of 0.9% Sodium Chloride (Normal Saline). This trend reflects a national shortage as well. Please see the attached fact sheet from the Emergency Nurses Association

Until Normal Saline returns to its usual availability, the NH Bureau of EMS endorses the following:

- With the **exceptions** listed below, Lactated Ringers can be used as a direct substitute with Normal Saline.
- **Exceptions** – there is either **no data**, or, **clear evidence** of incompatibility between Lactated Ringers and the following agents; they should **NOT** be combined.
  - Amiodarone
  - Atropine
  - Diltiazem
  - Fentanyl
  - Ganisetron
  - Ondaneston
  - Metoprolol
  - Midazolam
  - Nalonone
  - Vasopressin

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Perry E. Plummer  
Director

## New Hampshire EMS Information Bulletin 19

DATE: April 9, 2013

SUBJECT: Auvi-Q, Epinephrine Auto Injector

TO: New Hampshire EMS Providers, Medical Directors, EMS Unit Leaders,  
and EMS Hospital Coordinators

FROM: Vicki Blanchard, Advanced Life Support Coordinator

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I would like to make the NH EMS Community aware of a new epinephrine auto injector called the Auvi-Q.

The NH Patient Care Protocols allow for EMS providers to assist patients with the use of their prescribed epinephrine auto injectors; in which the EpiPen<sup>®</sup> is given as an example. Please note that the EpiPen<sup>®</sup> is not inclusive; the Auvi-Q would be a new example.

I make this particular notice because the Auvi-Q looks very different then the traditional pen-like auto-injectors. The Auvi-Q is more boxed shaped, like a cell phone, and has a built in recording of the instructions. Below you will find a link to the Auvi-Q website and a very short video.

Please follow this link to learn more about Auvi-Q:

<http://www.auvi-q.com/hcp/view-demonstration-videos>

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Perry E. Plummer  
Director

## New Hampshire EMS Information Bulletin 18

DATE: February 4, 2013

SUBJECT: Medication Shortage – Dextrose 50%

TO: New Hampshire EMS Providers, Medical Directors, EMS Unit Leaders,  
and EMS Hospital Coordinators

FROM: Tom D'Aprix, MD, Chair, Medical Control Board

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Recently some locations have begun to experience shortages of D50.

Below are several options to manage this shortage until supplies return to normal levels.

Please note that any method that supplies the same amount of dextrose that would normally be administered as D50 is acceptable, however, lower volume solutions are preferred. Local MRH's should determine which method will work best for their institution/agencies.

Examples include:

1. Local MRH could preload syringes with 25 grams of dextrose solution, creating a D50 syringe
2. Use 100ml D25 (D25 is typically packaged as 10ml syringes, thus 10 syringes would be administered)
3. Administer 250ml of D10W (via 250 ml sterile IV bag)

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Richard A. Mason  
*Director*

## New Hampshire EMS Information Bulletin 17

DATE: August 2, 2012

SUBJECT: Protocol Medication Changes – Effective Immediately  
Addition of midazolam as an alternative induction agent due to etomidate shortage

TO: New Hampshire EMT-Intermediates, Paramedics, Medical Directors, EMS Unit Leaders,  
and EMS Hospital Coordinators

FROM: The NH Bureau of EMS and NH Medical Control Board

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At a special Medical Control Board meeting dated August 2, 2012, we discussed and approved adding midazolam to the RSI protocol as an alternative induction agent in light of etomidate shortages.

Please note that when available, etomidate is still the preferred agent. If it is not available, then use the following regimen:

- Midazolam 0.2mg/kg IV ; 0.1mg/kg for patients in shock

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Perry E. Plummer  
Director

**New Hampshire EMS Information Bulletin 16**

DATE: July 27, 2012  
SUBJECT: Diltiazem Dosing & Management of Excited Delirium  
TO: NH EMS Providers, Medical Directors, EMS Unit Leaders, and EMS Hospital Coordinators  
FROM: Tom D'Aprix, MD, Chair, Medical Control Board

At the Medical Control Board meeting dated July 19, 2012 several urgent medication changes were discussed and agreed upon.

**Diltiazem:**

Problem:

Currently, there is **no** maximum dose for diltiazem in the 2011 protocols. There have been several cases of patients receiving doses of greater than 50mg as a bolus and consequently some of these patients have become transiently hypotensive.

Research:

There is no literature that clearly defines a maximum dose; however, there is clearly increased risk of adverse effect with higher doses. Most physicians agree that if a patient does not respond to a bolus dose of 20mg that they are unlikely to respond to higher bolus dose.

Solution:

For all protocols involving the use of diltiazem, the MCB has approved a maximum dose of 20mg IV per bolus. Caution should be used and lower doses should be considered in the elderly.

**Excited Delirium:**

Problem:

We are seeing increased numbers of patients exhibiting excited delirium and finding that current doses of medications listed in the Behavioral Emergencies protocols are not effective.

Research:

There are published protocols from various institutions that suggest various doses of benzodiazepines and atypical antipsychotics. None stand out as the "best."

Solution:

The MCB has chosen to adopt the following protocol as advised by the Northern New England Poison Center for cases of excited delirium:

- Midazolam 5mg IV/IM/IN every 10 minutes as needed.
- If agitation continues after the second dose of midazolam, then consider:
  - Haloperidol 10 mg IM every 10 minutes.
  - Contact medical control if more than 10 mg of midazolam or 20 mg of haloperidol is needed.

The 2013 edition of the NH EMS Protocols will reflect these changes.

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Perry E. Plummer  
Director

## New Hampshire EMS Information Bulletin 15

DATE: February 22, 2012

SUBJECT: Prehospital Medication Exchange

TO: New Hampshire EMS Providers, Medical Directors, EMS Unit Leaders,  
and EMS Hospital Coordinators

FROM: The NH Bureau of EMS and NH Medical Control Board

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Good News!

After several meetings with the NH Board of Pharmacy and helping them better understand the process of medication exchange between two agencies, review of the relevant rules, and recognizing that repeal of the process in place had created significant hardship for affected agencies and could potentially impact patient care, they agreed to reverse their earlier interpretation.

What that means to you: Medication exchange can resume amongst agencies that have written agreements to do so. Please be careful not to accept an expired medication and make sure you are giving /getting the right medication(s). Narcotic medications CAN NOT be exchanged.



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Perry E. Plummer  
Director

## New Hampshire EMS Information Bulletin 14

DATE: January 20, 2012

SUBJECT: IV Antiemetic Shortages

TO: New Hampshire EMS Providers, Medical Directors, EMS Unit Leaders, and EMS Hospital Coordinators

FROM: The NH Bureau of EMS and NH Medical Control Board

In addition to national shortages of fentanyl and diazepam, we have begun to experience shortages of antiemetics including:

- ondansetron (Zofran)
- prochlorperazine (Compazine)
- metoclopramide (Reglan)

Manufacturers have not released any estimates of when these agents will be available in their usual quantities.

At the NH EMS Medical Control Board Meeting yesterday, we agreed to make a formulary change that should help to address this issue.

The Medical Control Board approved the oral form of ondansetron (typically known as Zofran ODT) for use by EMS providers. Dosing will be as follows:

Adults/Pediatric patients – dissolve one 4mg tablet in the patient’s mouth every 10 minutes – maximum of two doses.

There is a very wide dosing range for oral ondansetron, so, 4mg falls within both the adult and pediatric therapeutic range.

For the 2013 edition of the NH EMS Protocols we will include oral ondansetron dosing.

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## New Hampshire EMS Information Bulletin 13

**DATE:** June 8, 2011

**SUBJECT:** Interfacility Transfers, LVADs, & Head Injury Care

**TO:** New Hampshire EMS Providers, Medical Directors, EMS Unit Leaders, and EMS Hospital Coordinators

**FROM:** The NH Bureau of EMS and NH Medical Control Board

At the May 2011 Medical Control Board (MCB) meeting two changes were made to the 2011 NH Patient Care Protocols and a Best Practice Head Injury Instructions were approved. The latest version of the protocols can be found at <http://www.nh.gov/safety/divisions/fstems/ems/advlifesup/patientcare.html>. Unless a major error or omission is found, there will be no further modifications to the 2011 protocols.

1. Special Resuscitation Situations and Exception - Protocol 6.11: Additional language added to address Left Ventricular Assist Devices:

LVAD patients are generally managed like everyone else with a few exceptions. Most patients can be electrically cardioverted if need be and should be treated with all of the usual ACLS algorithms for loss of consciousness, arrhythmia and hypotension management excluding CPR. CPR carries with it the risk of disrupting the connections between the VAD cannulae and the aorta or left ventricle which would be fatal. CPR should only be performed if the VAD is not functioning (no audible or auscultatable hum) and there is no immediate means of restarting the device. In this scenario, the potential benefit of CPR would seem to outweigh the risks. If there is any doubt about whether the VAD is functioning, the patient should be transported as rapidly as possible to the implanting facility for evaluation. Patients should almost never be pronounced dead at the scene, particularly if there is any doubt about whether the device is functioning or not.

The management of a given patient will depend, in part, on the type of device. Patients and families themselves are often a good resource for information. They should also have emergency contact numbers for on-call medical staff. Most devices will have a percutaneous driveline that exits through the upper or mid abdomen that then connects to a small computer known as a "system controller." This is powered by batteries or a power based unit that connects to electrical outlets. The pump itself does not affect the ECG; realize, however that patients with LVADs can often remain conscious during very fast VT or even ventricular fibrillation. Unlike earlier generation pulsatile devices, the newer axial flow

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pumps do not have the capability for "hand pumping." When transporting these patients to the emergency department, the patient's equipment should be transported with them. (For more information see the attached article, "Pumping Life Into Failing Hearts" following this bulletin.)

2. Interfacility Transfer - Protocol 7.0: Additional language was added to the Critical Care Transfer level to address situations where CCT level service is not available and the risk of delayed transfer would have a negative impact on patient outcome.

The MCB recognizes there could be circumstances where, in the best interest of the patient, it would be of less risk to transport the patient with a PIFT crew than to wait for a CCT crew. In these situations, the sending facility should exhaust all possible means to acquire additional hospital staff to accompany the EMS crew and ensure all orders are within the paramedic's scope of practice. Additionally, it will be required by BOTH the EMS Unit and the sending physician or hospital to report to the NH Bureau of EMS and the Unit's EMS Medical Director to file documentation of this breach in protocol within 48 hours.

3. Head Injury Care – A Best Practice: The MCB approved a head injury care form to be piloted as a best practice for EMS providers. The form is intended to be used for those patients who have possibly sustained head trauma and are refusing transport. In essence, the form instructs patients and their families to look for signs and symptoms of head injury, and, if present, that the patient should see a physician for evaluation. The form was made using evidence based practices consistent with CDC's recommendations. This form is attached at the end of this bulletin and will be available for download at <http://www.nh.gov/safety/divisions/fstems/ems/index.html>, under "Best Practices."

Minutes from the Medical Control Board meetings can be found at:

<http://www.nh.gov/safety/divisions/fstems/ems/boards/medicalcontrol/mbminutes.html>



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Richard A. Mason  
Director

## New Hampshire EMS Information Bulletin 12

**DATE:** August 6, 2010

**SUBJECT:** Medication Shortages – Epinephrine 1:10,000 & Dextrose 50%

**TO:** New Hampshire EMT-Intermediates, Paramedics, Medical Directors, EMS Unit Leaders, and EMS Hospital Coordinators

**FROM:** The NH Bureau of EMS and NH Medical Control Board

Please be advised epinephrine emergency syringes 1mg/10mL (0.1mg/mL) are currently on backorder from the sole manufacturer. This shortage is expected to resolve late August to early September.

If epinephrine 0.1 mg/mL syringes must be replaced or supplemented with epinephrine 1 mg/mL ampules or vials in code boxes or other locations during the shortage, apply auxiliary labels to the vials to alert staff of the epinephrine concentration in milligrams and to dilute before IV use. Create a dose conversion chart reflecting available epinephrine concentrations to keep in code boxes and post in areas where epinephrine is frequently used.

In the interim we advise making an equivalent solution, at the time of administration, by diluting 1 mL of 1:1,000 epinephrine solution in 9 mL of normal saline which will provide you with a 0.1 mg/ml solution (1:10,000).

Please see the American Society of Health Systems Pharmacists link below for important safety information regarding the use of alternate epinephrine injectables during the shortage:

[American Society of Health Systems Pharmacists](#)

Additionally, the FDA is reporting an unanticipated shortage of dextrose 50% in the 50 mL Abboject syringes, 50 mL Ansyr syringes, and 50 mL vials. This shortage is expected to be resolved mid to late September.

Consult your pharmacy for alternative packaging of dextrose 50%.

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Richard A. Mason  
*Director*

## New Hampshire EMS Information Bulletin 11

**DATE:** May 17, 2010

**SUBJECT:** Cricothyrotomy eliminated from 2011-2012 Protocols

**TO:** New Hampshire EMS Providers, EMS Unit Leaders, Medical Directors and EMS Hospital Coordinators, The NH Emergency Medical and Trauma Services Coordinating Board, The NH Medical Control Board

**FROM:** Douglas McVicar, MD, Chair, NH EMS Medical Control Board

At its 18 March 2010 meeting the New Hampshire EMS Medical Control Board voted to remove all forms of cricothyrotomy from the 2011-2012 Patient Care Protocols.

This decision means that early next year, when the next edition of the Protocols goes into effect, cricothyrotomy can no longer be practiced, and cricothyrotomy equipment should be removed from ambulances and jump kits. This applies to all types of cricothyrotomies, including percutaneous (needle) cricothyrotomy, commercial kit cricothyrotomy of all types, and "surgical" cricothyrotomy procedures, which are defined as those employing a scalpel or blade to make a skin incision. Tracheotomy – direct opening of the trachea itself – has never been part of New Hampshire Statewide EMS Protocols.

Our decision on cricothyrotomy was one of the most difficult we have had to make. Our review of this issue went on for over a year, and included discussion, debate and evaluation of large amounts of evidence from the literature, the field (nationally and in New Hampshire), the experience of Medical Control Board members, particularly our surgeons, and the experience of the New Hampshire EMS community. The final vote was 8 in favor of elimination and 3 against – reflecting the fact that although our discussion ultimately led to a clear majority consensus, the decision was not unanimous.

The Medical Control Board was unable to find any adequately designed study that demonstrated a survival advantage with cricothyrotomy over other types of airway management. Moreover, in New Hampshire, cricothyrotomy has only rarely been performed, averaging just once or twice per year. The cricothyrotomy complication rate in New Hampshire since 2005 has been

approximately 50%. We found no case where a life had been saved by cricothyrotomy.

There is a significant cost to cricothyrotomy. Commonly used commercial kits are quite expensive, and many are dated and need to be replaced periodically if not used. A more important cost is the time required for skill acquisition and maintenance. It is a long-standing policy of the Medical Control Board and NH EMS that EMS resources – both money and time – are limited and must be directed to provide the maximum benefit to patients and providers.

The Board also considered the dangers of cricothyrotomy. Invasive procedures in the neck are obviously fraught with hazard. One of our board members has for many years been responsible for teaching surgical residents operative techniques, including surgical airways. He stated that even surgical residents have difficulty mastering and maintaining cricothyrotomy skills. Other members with experience teaching this procedure expressed similar concerns. Although our review of prehospital cricothyrotomies in New Hampshire fortunately found no case in which a patient's death was caused by a cricothyrotomy, the Board agreed that severe patient harm could occur in the future.

Finally, although the Medical Control Board pays careful attention to national standards, we sometimes must make exceptions. This is particularly the case if national standards are changing, or if we face unique factors in New Hampshire that are not well reflected in the national experience. So while the *National EMS Scope of Practice Model* (NHTSA DOT HS 810 657 - September 2006) still does include percutaneous cricothyrotomy, it is important to note that the trend is away from this type of airway management. Not only has the literature on surgical and percutaneous airways trended less enthusiastic since the 1990s, but so have national guidelines. For example, the 1998 *EMT-Paramedic National Standard Curriculum* (DTNH22-95-C-05108) included open cricothyrotomy, whereas this procedure was removed from the 2006 *National EMS Scope of Practice Model*.

In summary: cricothyrotomy is a potentially dangerous procedure which does not save lives in New Hampshire. It draws resources away from other airway management skills which are more likely to be effective. The Board believes that the airway management skills of New Hampshire providers are excellent and that the record shows successful airway management is accomplished on a daily basis, even in the toughest cases, using the available non-cricothyrotomy airway modalities.

More detail about the Medical Control Board's deliberations on cricothyrotomy is available in the meeting minutes published on the New Hampshire Bureau of EMS website. ([www.nh.gov/safety/divisions/fstems/ems/index.html](http://www.nh.gov/safety/divisions/fstems/ems/index.html))

The Board would like to thank all the paramedics, hospital EMS coordinators, medical control physicians, and others who answered one or more of our calls for input on this issue.



John J. Barthelmes  
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## New Hampshire EMS Information Bulletin 10

**DATE:** March 22, 2010

**SUBJECT:** Cricothyrotomy

**TO:** New Hampshire EMS Providers, EMS Unit Leaders, Medical Directors and EMS Hospital Coordinators, The NH Emergency Medical and Trauma Services Coordinating Board, The NH Medical Control Board

**FROM:** Vicki Blanchard, ALS Coordinator, NH Bureau of EMS

On behalf of the NH Department of Safety, Division of Fire Standards and Training & Emergency Medical Services, I would like to take a moment to inform you of a decision made on March 18, 2010, at the Medical Control Board (MCB) meeting regarding cricothyrotomies, including needle cricothyrotomy, surgical cricothyrotomy, and commercially prepared cricothyrotomy kits.

On March 8, 2010, a notice was sent via our listserve that the Medical Control Board would be considering whether to continue to allow cricothyrotomy or allow the procedure to only be performed using the guidewire (Melker) device.

The MCB has spent more than two years researching and discussing cricothyrotomies in the prehospital setting. They have looked at the data and evidence which has proven that cricothyrotomies is a very infrequently used skill, specifically less than 0.0013% in our TEMSIS data since 2005. From both the literature available and the perspectives of the MCB members, cricothyrotomy is a difficult skill to maintain, and whether done by needle, surgically, or from a commercially prepared kit, does not have any impact on patient outcome. Based on these reasons the MCB voted on March 18, 2010 to remove all cricothyrotomies from the protocols and scope of practice effective with the 2011 protocols. Additionally, this action is in concert with the National Scope of Practice 4.0 model, as surgical airways in particular have been removed from the national skill set. A statement from the Medical Control Board will be forthcoming.

Again, thank you for your continued commitment to quality patient care to the citizens and visitors of New Hampshire.

If you have any questions, please do not hesitate to contact me.

Vicki Blanchard  
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John J. Barthelmes  
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# State of New Hampshire

## Department of Safety

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Richard A. Mason  
Director

## New Hampshire EMS Information Bulletin 9

**DATE:** December 8, 2009

**SUBJECT:** KING-LT-D Airways

**TO:** New Hampshire EMS Providers, EMS Unit Leaders, Medical Directors and EMS Hospital Coordinators, The NH Emergency Medical and Trauma Services Coordinating Board, The NH Medical Control Board

**FROM:** Douglas McVicar, MD, Chair, NH EMS Medical Control Board

New Hampshire providers may be aware of questions raised by the US FDA about the approval status and marketing of the King LT(S)-D™ Oropharyngeal Airway.

King Systems Corporation, which markets this device, and the FDA are working to resolve the questions raised. While the NH Bureau of EMS has been monitoring, and continues to monitor this evolving discussion, it is critically important that we do not lose track of our first responsibility – patient care.

Of all EMS patient care interventions, airway comes first. The 2009-2010 NH Patient Care Protocols provide excellent, carefully researched airway procedures that have been successfully used for years within the framework established in New Hampshire. Providers MUST NOT deny patients the airways they need.

NH Providers should continue to practice under protocol with the devices they have trained on, notwithstanding the current language of Protocol 5.5 *Blind Insertion Airway* that says “This protocol is intended for FDA-approved, commercial, blind airway devices”. The NH Bureau of EMS and the EMS Medical Control Board will follow this issue, and in the future may make appropriate changes, if indicated. But for now, protocols have not changed, so until further notice any concerns about the meaning of terms such as “FDA approved” should not change any provider's practice of airway management, including use of the King LT-D airway.

Douglas McVicar, MD  
Chair, NH EMS Medical Control Board

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## **New Hampshire EMS Information Bulletin # 8**

**DATE:** July 21, 2009

**SUBJECT:** 2009 NH Patient Care Protocol Changes

**TO:** New Hampshire EMS Providers, EMS Unit Leaders, Medical Directors and EMS Hospital Coordinators

**FROM:** The NH Bureau of EMS, NH Medical Control Board and NH Emergency Medical and Trauma Services Coordinating Board

Please be advised that on July 16, 2009 the Medical Control Board voted to make the following changes to the NH Patient Care Protocols:

Allergic Reaction/Anaphylaxis – Adult Protocol 2.0 and Asthma/COPD/RAD – Adult Protocol 2.1

Changed the dose of methylprednisolone (solumedrol) from 125 mg IV to 62.5 mg IV.

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## New Hampshire EMS Information Bulletin # 7

DATE: May 28, 2009

SUBJECT: 2009 NH Patient Care Protocol Changes

TO: New Hampshire EMS Providers, EMS Unit Leaders, Medical Directors and EMS Hospital Coordinators

FROM: The NH Bureau of EMS, NH Medical Control Board and NH Emergency Medical and Trauma Services Coordinating Board

Please be advised that on May 21, 2009 the Medical Control Board unanimously voted to make the following changes to the NH Patient Care Protocols:

### Pain Protocol 2.10 Paramedic Adult Standing Orders:

Strike the "OR" in the case of ketorolac and nitronox so the paramedic may now choose either morphine or fentanyl but not both opiates, and nitronox may be used only if the patient has not already received an opiate.

### Tachycardia Protocol 3.1 Paramedic Adult Standing Orders under Atrial Fibrillation, Atrial Flutter:

Added after the diltiazem bullet, "metoprolol 5 mg over 2 – 5 minutes; may repeat every five minutes to a maximum of 15 mg as needed to achieve a ventricular rate of 90-100,"

### Cricothyrotomy Protocol 5.6:

Change the type of device to read "age appropriate commercial device."

Please read the details of the May 21, 2009 minutes at:

<http://www.nh.gov/safety/divisions/fstems/ems/boards/medicalcontrol/documents/090521.pdf>

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## **New Hampshire EMS Information Bulletin 5**

**DATE:** November 12, 2008

**SUBJECT:** External Jugular Cannulation

**TO:** New Hampshire EMS Providers, EMS Unit Leaders, Medical Directors and EMS Hospital Coordinators

**FROM:** The NH Bureau of EMS, NH Medical Control Board and NH Emergency Medical and Trauma Services Coordinating Board

Please be advised that on March 16, 2006 the Medical Control Board unanimously voted to limited external jugular vein cannulation to a paramedic skill.

For more detail see the March 16, 2006 Medical Control Board Minutes at:  
<http://www.nh.gov/safety/divisions/fstems/ems/boards/medicalcontrol/documents/060316min.pdf>



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## **New Hampshire EMS Information Bulletin 4**

**DATE:** June 1, 2008

**SUBJECT:** Aspirin Administration Pre-Arrival

**TO:** New Hampshire EMS Providers, EMS Unit Leaders, Medical Directors and EMS Hospital Coordinators

**FROM:** The NH Bureau of EMS, NH Medical Control Board and NH Emergency Medical and Trauma Services Coordinating Board

Please be advised that New Hampshire E-911 communicators will now be advising chest pain patients, who have met certain criteria, to take aspirin. Therefore, EMS providers may encounter patients experiencing chest pain who have taken aspirin prior to their arrival at the advice of NH E-911.

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## New Hampshire EMS Information Bulletin 3

DATE: November 26, 2007

SUBJECT: Haloperidol (Haldol®) Protocol Change

TO: New Hampshire Paramedics, Medical Directors, EMS Unit Leaders, and EMS Hospital Coordinators

FROM: The NH Bureau of EMS and NH Medical Control Board

On November 15, 2007 the NH Medical Control Board voted unanimously to update the *NH Patient Care Protocol 2.2 Behavioral Emergencies Including Suicide Attempts and Threats – Adult & Pediatric*, by **changing the administration of haloperidol to IM only.**

This change reflects the recent notice from the FDA which informed healthcare professionals that haloperidol injection is approved for intramuscular use only.

You may find more information at:

<http://www.fda.gov/medwatch/safety/2007/safety07.htm#Haloperidol>

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## New Hampshire EMS Information Bulletin 2

**DATE:** September 18, 2007

**SUBJECT:** Gravity Flow Regulated Administration Set (Example: Dial-a-Flow)

**TO:** New Hampshire Paramedics, Medical Directors, EMS Unit Leaders, and EMS Hospital Coordinators

**FROM:** The NH Bureau of EMS, NH Medical Control Board and NH Emergency Medical and Trauma Services Coordinating Board

It is the decision of the Medical Control Board that the use of gravity flow regulated intravenous administration sets (example: Dial-a-Flow), cannot be an alternative for medication requiring IV pump infusions and therefore cannot be used in place of an IV pump.

For more detail see the May 17, 2007 Medical Control Board Minutes at:  
<http://www.nh.gov/safety/divisions/fstems/ems/boards/medicalcontrol/documents/mcbminutes051707.pdf>

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Director

## New Hampshire EMS Information Bulletin 1

DATE: September 18, 2007

SUBJECT: Medicated Assisted Intubations

TO: New Hampshire Paramedics, EMS Unit Leaders, Medical Directors and EMS Hospital Coordinators

FROM: The NH Bureau of EMS, NH Medical Control Board and NH Emergency Medical and Trauma Services Coordinating Board

At the September 21, 2006 Medical Control Board meeting, it was voted, "***to not change our protocols to include Medicated Assisted Intubation and to conclude it is not a prehospital option at this time.***"

At this time only Rapid Sequence Intubation is approved for medically altering a patient's mental status and neuromuscular response to facilitate intubation. RSI is a prerequisite protocol and requires the use of etomidate and succinylcholine. The RSI protocol use requires approval from the Division of Fire Standards and Training and Emergency Medical Services' Bureau of EMS and Medical Control Board.

For more detail see the September 21, 2006 Medical Control Board Minutes at:  
<http://www.nh.gov/safety/divisions/fstems/ems/boards/medicalcontrol/mbminutes.html>

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# State of New Hampshire



# Paramedic Interfacility Clinical Advisories

## ***NH Paramedic Interfacility Transport Clinical Advisories***

*An advisory opinion adopted by NH Medical Control Board, in its official capacity, is an interpretation of what the law requires. Facility/agency policies may restrict practice further in its setting and/or require additional expectations related to competency, validation, training, and supervision to assure safety of their client population and/or decrease risks.*

The Paramedic Interfacility Transfer (PIFT) prerequisite packet can be found at [www.nhoodle.nh.gov](http://www.nhoodle.nh.gov).

### **October 2013 Clinical Advisories**

**Question:** Can BLS transfer a patient with an Incisional Wound Infusion Pump?

**Answer:** The Incisional Wound Infusion Pump provides a continuous infusion of a localized analgesia to a surgical incision. The infusion is preset and does not require any interventions for EMS. A BLS crew may transfer a patient with an Incisional Wound Infusion Pump.

### **September 2012 Clinical Advisories**

**Question:** Is it within the PIFT paramedic's scope of practice to transport a stable long-term ventilated patient?

**Answer:** Yes, a PIFT paramedic may transport a stable long-term ventilated patient to or from a medical facility, long term care facility, and/or home, provided the patient is stable and the transport is not of an acute nature and the paramedic is familiar with the patient's ventilator and able to operate it.

### **November 2011 Clinical Advisories**

**Question:** Recently I was requested to transport a patient with an antibiotic running into a central line. I received orders to swap the line over to normal saline after the completion of the infusion. Should PIFT paramedics be swapping tubing over on central lines?

**Answer:** The correct thing to do in this situation is to ask the sending facility to piggy back the antibiotic onto the saline prior to transport. Changing tubing on central lines should be done using sterile techniques. Creating and maintaining a sterile environment in the back of a moving ambulance is extremely difficult. Should your transfer involve the management of infusions through central lines, the PIFT paramedic should work with sending staff, prior to transport, to alleviate any need to manipulate the line while transporting.

### **August 2011 Clinical Advisories**

**Question:** What are the options for a non-PIFT EMS unit when a request comes in to do a paramedic level interfacility transfer?

**Answer:** In the case where a sending hospital is requesting an EMS unit that is not PIFT qualified to transfer a patient at the paramedic level, the unit can assist with the transfer if the hospital is willing to send a member of the hospital staff, such as a nurse. The hospital staff will be responsible for the patient during the transport. The EMS Unit will be responsible for sending two licensed EMS providers.

#### **From the Interfacility Transfer Protocol 7.0:**

"As a measure of last resort, in cases where CCT paramedics are unavailable AND delay in transfer would have a significant negative impact on patient outcome, other transport arrangements may be initiated provided that:

1. The sending facility makes an exhaustive effort to send additional personnel.
2. The NH Bureau of EMS and Unit EMS Medical Director are notified within 48 hours and appropriated TEMSIS and IFT documentation is completed by the EMS Unit and the sending physician/institution.
3. All interventions are within the scope of practice of the transporting paramedic and vehicle."

### **June 2011 Clinical Advisories**

**Question:** Does a non-CCT level crew *have* to include a respiratory care practitioner when transporting a ventilated patient with advanced or complex vent settings, for example, pressure control or PEEP>10?

**Answer:** Yes. If the patient is on mechanical ventilation in the critical care setting, then it is the standard of care for the patient to remain on such during transport. It is necessary for a respiratory care practitioner to accompany the patient during transport in order to attend to the complexities of patient care as well as the ventilator equipment.

**Question:** Is a PIFT crew allowed to remove a ventilator from a vented patient and then manually ventilate during transport?

**Answer:** No. The role of the PIFT crew is to maintain the same standard of care during transport that the patient was receiving when the request for transfer was initially made. Manually ventilating a patient during an inter-facility transfer raises a concern regarding a loss of PEEP as well as the inability to maintain the following:

- consistent tidal volume
- consistent respiratory rate
- appropriate airway pressures
- proper FIO<sub>2</sub>

## April 2011 Clinical Advisories

**Question:** Can a PIFT paramedic transport a patient on BiPAP?

**Answer:** Yes, as long as the PIFT paramedic has proficiency in managing the device.

**Question:** Is it within the PIFT scope of practice to transport a stable patient on SIMV with pressure support, or pressure support only without additional personnel?

**Answer:** Yes, provided that PEEP is <10 (which would be considered a relatively basic setting) and the patient was going to a long term facility (thus implying stability) or to home (likewise stable). Such a situation would be considered a PIFT level transfer, but would not require additional personnel to accompany the patient.

**Question:** Can a PIFT paramedic transport a ST elevation myocardial infarction (STEMI) patient being transported from a hospital to a facility that is capable of percutaneous coronary intervention (PCI)?

**Answer:** A patient experiencing a STEMI, who is on such medical treatments as a nitroglycerin infusion, a heparin infusion, and a glycoprotein inhibitor infusion, and who is not experiencing significant complications, such as cardiogenic shock, would be considered a stable patient with medium risk for deterioration and may be transported by a PIFT provider.

**Question:** Can a PIFT service exempt administrative staff who are paramedics, but who will not participate in interfacility transport from the mandatory PIFT credentialing?

**Answer:** Yes, services in which the paramedic who is the administrator, who may respond to 91 calls but will never participate in either IFT or have clinical oversight to PIFT providers, may be exempt from the PIFT requirement.

