

New Haven Sponsor Hospital Program Protocols 2008

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Chapter 1: General Operating Guidelines

A. Purpose

The following are guidelines to be used by all EMS personnel holding medical authorization from the New Haven Sponsor Hospital Program, to ensure quality and standardized medical care, and to establish standards by which prehospital care may be audited for continuous quality improvement.

B. Guidelines

1. Treatment provided during transport, such as oxygen and cardiac monitoring, must be continued during the transfer from the ambulance into the emergency department (ED).
2. Without direct medical oversight (DMO), paramedics shall not deviate from these protocols relating to drug dosage, route of administration, or repetition. Licensed independent practitioners (defined by state regulations as physicians, PAs, and APRNs) may deviate from protocols in accordance with their clinical judgment, but must document and be prepared to justify such deviations.
3. The portions of the below protocols considered to be “standing orders” may be implemented prior to contacting medical oversight, exactly as referenced in the protocols. However, medical oversight may be used as a resource at any time.
4. The medical oversight options require that the provider contact medical oversight prior to their implementation. These give the medical oversight physician the latitude to intervene with the patient as he/she deems necessary.
5. There may be situations where one or more clinical impressions may exist. The provider should initiate routine care, and shall then contact the direct medical oversight physician in order to differentiate the most emergent clinical problem and define the most suitable therapy or therapies. Two sets of standing orders for dyspnea should not be implemented simultaneously without direct medical oversight.
6. Providers have the right to refuse to implement orders or procedures that are outside of the protocol, inappropriate for the patient’s condition, or outside the provider’s level of training.
7. There may be rare occasions when direct medical oversight cannot be contacted. Should this occur, the provider should follow standing orders and transport.
8. Once a hospital has been contacted regarding a patient, that hospital will routinely remain the source of medical oversight for the duration of the call. Direct medical oversight for a pediatric case should be obtained from the Yale Pediatric Emergency Department.

9. With the exception of intravenous fluids and drips that are already being infused, medications are not to be transferred from field personnel to emergency department personnel, even when only a single dose has been used from a multi-dose vial. Incompletely used multi-dose vials are to be discarded in appropriate waste containers in the ED. In the case of controlled substances, incompletely used doses are to be properly wasted, with wasting witnessed and documented by a registered nurse, physician assistant, or attending physician in the emergency department.

C. Professional Conduct

1. As medical professionals, it is expected that all EMS personnel will perform in a professional manner at all times. Interactions with patients, family members, bystanders, other emergency responders, and other medical professionals (both in the field and in the ED) are expected to be courteous and appropriate.
2. It is expected that field personnel shall manage their work schedules in order to allow adequate time off and rest. Excessive fatigue can jeopardize the safety of field personnel (e.g. driving emergency vehicles) and patients (e.g. clinical decision making and procedural skills). Working sequential shifts at one agency, or working a shift for one agency immediately after a shift at another agency without adequate rest, is strongly discouraged. Work hours will be examined when complaints or continuous quality improvement (CQI) efforts result in case investigation.
3. It is recognized that there are circumstances, particularly involving traumatic mechanisms of injury (as in the case of motor vehicle crashes or industrial accidents), when it is extremely helpful to the Emergency Department clinicians to see what the scene looked like. Polaroid photographs or digital photographs can become a part of the patient's hospital medical record. Whenever possible, no people should be included in the photograph. Other identifying information, such as license plates, should also be excluded if possible. Patient care and/or transport should not be delayed to obtain photographs. Discretion must be used in the storage and distribution of scene photographs to protect patient confidentiality.
4. In order to avoid on-scene confusion, only paramedics who have current NHSHP medical authorization should wear "paramedic" rockers and/or other items identifying themselves as paramedics.

D. Protocol Review and Revisions

1. These protocols will be reviewed at least annually in order to keep current with changing medical standards, treatment modalities, and local patient population needs based on the data obtained from quality improvement activities.
2. Any recommendations for revisions, deletions, or additions to the protocols should be made in writing to the New Haven Sponsor Hospital Program office.
3. Changes made to any protocols will require the notification of all paramedics and in certain cases applicable training.

E. Medical Authority at the Scene

1. The New Haven Sponsor Hospital Program Hospital is the sponsor hospital for Allington Fire Department; American Medical Response of CT, New Haven; Bethany Volunteer Fire Department Ambulance Corps; Branford Fire Department; East Haven Fire Department; Guilford Fire Department; Hamden Fire Department; Madison Ambulance Association; Madison Police Department; Nelson Ambulance Service; New Haven Fire Department; New Haven SHARP Team; North Branford Police Department; North Branford Volunteer Fire Department; North Haven Fire Department; North Madison Volunteer Fire Company; Orange Police Department; West Haven Fire Department; West Shore Fire Department; Woodbridge Police Department; and Yale Student EMS.
2. On advanced life support calls, the first paramedic to initiate patient care shall assume responsibility for the patient at the scene unless that paramedic makes a decision to turn patient care over to another appropriately trained person. If a first-responder paramedic wishes to continue responsibility for patient care after the transporting medic has assessed the patient and begun to assist with care, the first-responder paramedic must accompany the patient to the ED in the ambulance. In the absence of a paramedic, the provider with the highest level of certification shall assume responsibility for patient care.
3. According to CT Regulations Governing the Delivery of EMS, Section 19a-179-13, EMS personnel may release patient care responsibility to an on-scene physician only after:
 - a. The physician has been identified as a Connecticut licensed physician and has offered some form of identification, such as a copy of the physician license or a hospital ID tag, which confirms the credentials; and,
 - b. Obtaining from the physician a commitment to accompany the patient to the hospital in the vehicle transporting the patient; and,
 - c. Having the physician speak directly to the person responsible for medical direction (the direct medical oversight physician in the ED, or a SHARP Team physician) and receiving authority to release the patient.In the absence of any of the above factors, the patient may not be released and care will continue as if no physician were on the scene.
4. On-scene medical oversight may be provided by a member of the New Haven Sponsor Hospital Area Response Physician (SHARP) Team without securing permission from the direct medical oversight physician in the ED. SHARP Team members periodically audit field operations through unannounced observation for the purposes of continuous quality improvement, education, and research.
5. The SHARP Team provides immediate EMS physician field response to support emergency responders throughout the twelve-town greater New Haven area. The team holds an OEMS certificate of operation as an ALS agency, and operates two licensed response vehicles. The SHARP Team is available to respond to any type of emergency incident. Team members can assist with triage, treatment, logistics,

communications, and rehabilitation, as the needs of the incident and the incident command system dictate. A primary purpose of the team is to provide for the safety and medical needs of emergency personnel operating at incident scenes. The team is dispatched by South-Central CMED. Contact CMED by phone or on Med 10 to request a response. CMED policy requires that the Incident Commander authorize the request. The responding team member(s) will report to the IC upon arrival for assignment, accountability, and reporting responsibility, and will remain available at the scene until released through the command structure. Unless specifically requested by the paramedic in charge, SHARP Team members will not assume responsibility for patient care.

Chapter 2: Routine Paramedic Care

A. General

Routine paramedic care (including the “safety net” of supplemental oxygen, intravenous access, and ECG monitoring) should be instituted as appropriate for patients requiring ALS, after assessment and BLS have been performed. The following outlines the typical sequence of an ALS call, though individual circumstances may dictate variations.

- 1) Assess and support airway, breathing, and circulation as required. Maintain the patient’s airway if necessary utilizing an airway adjunct, and administer supplemental oxygen as appropriate to the patient’s condition.
- 2) Obtain the patient’s chief complaint.
- 3) Evaluate the associated signs and symptoms, and the pertinent review of systems.
- 4) Obtain vital signs and determine hemodynamic stability.
- 5) Obtain past medical history and a SAMPLE-format history.
- 6) Establish intravenous/intraosseous access and initiate cardiac monitoring as appropriate to the patient’s condition. Evaluate and document cardiac rhythm, and perform a 12-lead ECG when chest pain or dysrhythmia is present. A 12-lead ECG should also be performed any time the paramedic feels that a cardiac etiology for the presenting complaint is likely (e.g. syncope or dyspnea in an older patient).
- 7) Initiate pulse oximetry monitoring, as appropriate to the patient’s condition.
- 8) Initiate pharmacologic interventions as appropriate. Always inquire about allergies to medications before administering any drug.
- 9) Transport the patient as appropriate to patient’s condition. In general, scene times should be kept to a minimum and early transport initiated, especially in cases of major trauma.
- 10) Establish communication with the receiving ED early, as per the Sponsor Hospital Communications Policy.
- 11) Submit written documentation of call as per the Sponsor Hospital Documentation & Recordkeeping Policy.

B. Advanced Airway Management

1. Intubation is NOT recommended for the neonate, infant, or small child as a first airway management maneuver. Appropriate basic life support airway management should be initiated first and as soon as possible. It is often not necessary to intubate if bag-valve-mask ventilation proves to be adequate.
2. Demand valves and flow-restricted oxygen powered devices should NOT be used in children because of the tendency to cause barotrauma and/or provide inadequate ventilation. BVM ventilation of children should be performed with the pop-off valve de-activated.

3. The Combitube® is an approved rescue airway device, and shall be considered after two failed oral intubation attempts. It may also be used immediately in the circumstance of the need for a blind airway (e.g. extrication with difficult patient access), or if pre-intubation airway assessment indicates the likelihood of a very difficult airway (e.g. Mallampati Grade 4 airway, or micrognathia).
 - a. Indications:
 - 1) Any patient in whom a definitive airway is required and has not been successful after 2 (two) attempts at intubation, or sooner if deemed appropriate by the paramedic.
 - 2) Whenever a direct view of the vocal cords (due to edema, blood, tissue damage, patient access, etc) is difficult or impossible.
 - b. Contraindications:
 - 1) Oropharyngeal injury or resistance on tube placement
 - 2) Height less than 4 feet
 - 3) Intact gag reflex or clenched teeth
 - 4) Known esophageal pathology
 - 5) Ingestion of caustic substances
 - 6) Obstruction of upper airway (foreign body, tumor)

Note: The King LT airway and other dual-lumen advanced airway devices may be used in place of the Combitube® by services that obtain NHSHP approval and provide adequate training and oversight.

4. Needle cricothyrotomy and the use of invasive surgical airway devices (see item 6 below) are acceptable rescue techniques when intubation and Combitube® placement are impossible or unsuccessful, as may be the case with a foreign body in the airway, airway swelling from a burn or anaphylaxis, or anatomic distortion after hanging or other neck trauma. Contraindications to cricothyrotomy include:
 - 1) Possibility of establishing an easier and less invasive airway rapidly.
 - 2) Acute laryngeal disorders such as laryngeal fractures that cause landmark distortion or obliteration of landmarks.
 - 3) Children under 10 years of age.
 - 4) Bleeding disorders.
 - 5) Injury or obstruction below the level of the cricothyroid membrane.
5. Services that have elected to carry commercial invasive surgical airway devices (e.g. PerTrache, Nu-Trach, Quik-Trache) must ensure that all paramedics have received appropriate training, as approved by NHSHP, and periodic refresher training. No paramedic shall use any such device unless he or she has completed formal training on that specific device.
6. “Airway Paramedic” protocol:

A NHSHP paramedic shall utilize this policy during all attempts at advanced airway management, or when assuming responsibility for an airway already established by a non-NHSHP agency. The term “advanced airway” shall be applied to both the endotracheal tube and the Combitube device. A properly secured airway is a

lifesaving measure that has the potential for devastating harm if not performed or maintained correctly. The availability of objective methods of tube placement confirmation (quantitative electronic capnography) has given the paramedic a tool to continuously ensure that an advanced airway is positioned correctly. The following steps are designed to assist the paramedic in verifying initial airway placement, and to maintain a correctly positioned airway device until the Emergency Department staff assumes patient care.

- a. The paramedic that initially establishes an advanced airway shall assume the role of “Airway Paramedic” for the remainder of the call. The Airway Paramedic shall take responsibility for airway monitoring until the patient is transferred to the Emergency Department staff. Barring extraordinary circumstances, this responsibility will not be delegated to another EMS provider (e.g.- first responder paramedic handing off role to transport paramedic). While mechanical ventilation may be delegated to another provider, the Airway Paramedic shall be responsible for all aspects of tube placement (lung sounds, capnography, pulse oximetry, etc.). In those rare situations in which the Airway Paramedic is unable to transport, the transporting paramedic shall clearly document the initial Airway Paramedics name, agency, and reason for non-transport. The transporting paramedic should also re-confirm tube placement before assuming responsibility as Airway Paramedic. The initial paramedic shall still be responsible for completion of the Intubation Data Collection Form.
- b. End-tidal CO₂ confirmation and continuous monitoring is required for all field intubations (adult and pediatric, oral and nasal, endotracheal tube and Combitube®). End-tidal CO₂ shall be used to both confirm initial tube placement, and to continuously monitor tube placement until patient care is transferred to the ED staff or care is otherwise terminated including during patient transfer to and from the ambulance. Ideally the quantitative capnography should include continuous display of the ETCO₂ waveform. Mechanical esophageal detector devices (bulb or syringe types) may also be used to supplement end-tidal CO₂ in equivocal cases, but some form of end-tidal CO₂ detection is mandatory. Should the patient lose their ETCO₂ reading, the paramedic should immediately search for an explanation. Possible reasons include:
 - 1) Lack of perfusion
 - 2) Equipment sensor contamination due to body fluids
 - 3) Other equipment malfunction
 - 4) Inadvertent extubation due to tube movement

The paramedic should seek to correct the problem resulting in the loss of capnography reading. If after 30 seconds there is no return of ETCO₂ measurement, the patient should be extubated and ventilated with a BVM and

airway adjunct. The patient may be re-intubated, however the airway device will only be left in place as long as an ETCO₂ reading is measurable.

- c. Upon Emergency Department arrivals, the Airway Paramedic shall record a quantitative capnography reading. The Airway Paramedic should request confirmation of airway placement by the appropriate Emergency Department staff member, preferably before the patient is physically transferred from ambulance stretcher to hospital bed. New Haven Sponsor Hospital shall encourage local Emergency Department personnel to cooperate with this request. The ED staff member that confirms airway placement should also document verification on the NHSHP Intubation Data Collection Form.
- d. In the event that a NHSHP paramedic is questioned regarding correct airway placement, an airway debriefing shall be initiated immediately. The paramedic shall contact CMED and request notification of the on-call SHARP Team member and/or the hospital EMS Coordinator. The Sponsor Hospital representative performing the debriefing shall either respond directly to the Emergency Department, or speak with the involved parties by telephone. A Code Summary should be printed for the call in question, and provided to the Sponsor Hospital personnel performing the debriefing. If system status allows, the involved crew should remain at the hospital until the debriefing is complete.
- e. Documentation is a key component in protecting a paramedic against claims of a misplaced airway device. The documentation should include initial and final assessment of airway placement, regardless of transportation decision (hospital transport or field termination). Documentation should also reflect a re-assessment performed after each patient movement. The mnemonic “EMS BREATH” may be used as a memory aid for the components of airway verification. The components are:

E= End Tidal CO₂ reading
M= Measure (size/depth of tube)
S= SaO₂ reading

B= Bilateral breath sounds
R= Rise/fall of chest
E= Esophageal detection
A= Absent gastric sounds
T= Tube misting
H= Hospital confirmation

Documentation should be made on both the EMSIRS form and the Intubation Data Collection Form. Copies of both should be left in the Emergency Department prior to leaving the hospital.

C. Intravenous/Intraosseous Access and Fluid Therapy

1. Only 0.9% saline solution and Ringer's lactate solution may be administered. No colloidal solutions or other crystalloid solutions may be administered.
2. Catheter-over-the-needle and scalp vein needles may be used in conjunction with solution administration and IV maintenance apparatus appropriate to the patient's condition. Catheter sizes may range from fourteen gauge to twenty-four gauge.
3. If no fluid infusion is indicated, intravenous access may be maintained via a saline flushed injection adapter.
4. Acceptable peripheral intravenous sites include hands, arms, feet, legs, neck (external jugular), and scalp.
5. Central venous access may not be initiated by paramedics. Existing central lines, such as PICC lines or external dialysis catheters, may be utilized in extreme circumstances, if other vascular access cannot be secured. Approval from the medical oversight physician is required except in cases of cardiac arrest.
6. No more than three attempts at IV access may be made on a patient without contacting medical oversight.
7. When IV access is unsuccessful, IO access is often an acceptable alternative. All approved pre-hospital medications and fluids may be administered via this route. IO is always approved for use in cardiac arrest (both adult and pediatric) when IV access is unsuccessful or clearly unobtainable. IO is not a substitute for routine IV therapy in non-life threatening situations.
8. No paramedic shall use the EZ-IO device unless he or she has completed formal training as approved by NHSHP. Each service shall ensure that refresher training is provided at least every two years.

8a. Indications for EZ-IO:

- 1) Cardiac arrest or impending arrest
- 2) Major burns
- 3) Anaphylaxis with shock, if no response to IM epinephrine
- 4) Unstable arrhythmias requiring parenteral medications

8b. Contraindications to EZ-IO:

- 1) Evidence of infection at planned puncture site.
- 2) Suspected fracture of the extremity to be used for intraosseous infusion.
- 3) Significant peripheral vascular disease or compromise.
- 4) History of major orthopedic procedure in lower extremity (e.g. knee replacement, hip prosthesis).
- 5) Absence of anatomical landmarks such as excessive soft tissue over the

target insertion.

6) Osteogenesis Imperfecta (Brittle Bone Disease)

9. In addition to documentation on the patient care report, the MIC Medical Director must be notified of all IO use. When calling CMED for times and numbers, ask to have the medical director paged to your phone number for a short debriefing with the paramedic who placed the device – this will take less than five minutes.

D. Pulse Oximetry

1. Pulse oximetry provides continuous, accurate, non-invasive measurement of oxygen saturation levels, as an early warning for respiratory or circulatory deterioration. However, pulse oximetry is not a substitute for patient assessment. Results may be affected by excessive motion, hypotension, hypothermia, vasoconstrictive drugs, nail polish, severe jaundice, IV dyes, dyshemoglobinemias, carbon monoxide exposure, smoke inhalation, optical interference (ambient light) and other problems.
2. Pre- and post- respiratory intervention saturation levels must be documented on the patient care record.
3. Treat the patient, NOT the device or the numbers obtained . BLS assessment (respiratory rate, effort, effectiveness, skin color, etc.) is paramount and the results of pulse oximetry should not be the determining factor for the initiation or the withholding of ALS services.
4. Do not delay critical patient care interventions to apply and/or interpret the pulse oximeter.

E. Communications

1. Timely and appropriate communications can allow field EMS personnel to obtain medical oversight from sponsor hospital based clinicians, and can allow hospital staff to plan for appropriate distribution of resources, activate clinical response protocols, and improve overall hospital patient flow management.
2. In complex incidents or those involving one or more critical patients, early notification to receiving facilities with limited pertinent information is more important than a complete report just prior to arrival at the hospital.
3. Any incident involving three or more patients should be considered for implementation of an Incident Management System (IMS). Communication to the hospital(s) in these instances should be centralized through one person.
4. While early notification and clinical communication between the field and the receiving trauma center is always useful, field personnel should communicate the nature of the injuries and mechanism, and should NOT request a specific type of

trauma activation (modified vs full). The criteria for “full” vs “modified” vary among the three EDs in New Haven, and often the level of activation requested by the reporting EMS provider doesn’t match the trauma activation criteria used at the receiving hospital, causing much confusion for the ED staff. Communicating the nature of the injuries and the mechanism of injury (paying close attention to those criteria triggering a trauma response such as height of the fall, or the amount of MVC interior intrusion) will allow the ED staff to activate the trauma team according to that facility’s criteria.

5. Communications Procedures

- a. Evaluate the scene for consideration as a multiple casualty, hazardous materials, or other special incident and follow appropriate communication procedures through C-MED.
- b. Contact C-MED by radio or phone and request a “patch”:
 - (1) identify the hospital by name
 - (2) request a triage patch or medical oversight patch
 - (3) use special case identification as indicated
(e.g., trauma, pediatrics, chest pain alert, stroke alert, hazmat)
- c. For the Priority 1 patient (any patient transported with lights and siren – see Section 7/E), provide a patient report to include the following:
 - (1) age and sex of patient
 - (2) immediate pertinent history
 - (3) current chief complaint (in the patient's own words if appropriate)
 - (4) medications and medication allergies only if pertinent to this event
 - (5) vital signs and pertinent positive and negative physical exam findings
 - (6) treatment provided and patient response
 - (7) estimated time of arrival
 - (8) any specific needs (e.g. security) or problems (e.g. hazmat)
- d. For the Priority 2 patient (any patient transported without lights and siren – see Section 7/E), patches are required to HSR and Yale Pediatrics, but are optional to the Yale Adult ED. Provide only the following: (Priority 2 patches should rarely exceed 15 seconds)
 - (1) age and sex of patient
 - (2) chief complaint or summary of problem (e.g. “ankle sprain”)
 - (3) vital signs
 - (4) estimated time of arrival
 - (5) any specific needs (e.g. security) or problems (e.g. hazmat)
- e. When requesting medical oversight, verify that the physician is on the line and obtain identification prior to initiating report. Begin the patch with the question you have or the information you need. This will help the physician know what to listen for. When an order is given by medical oversight, repeat the order to verify its accuracy. Do not hesitate to ask the physician to repeat or clarify an order if there is any doubt.
- f. Identifying information such as patient names, dates of birth, full or partial Social Security Numbers, and other protected health information may not be transmitted by radio. It is acceptable to provide the last four digits of the

patient's Social Security Number and the first letter of the patient's last name (NOT the entire last name) to the West Haven VA ED.

F. Documentation and Recordkeeping

1. An EMS Incident Reporting System (EMSIRS) run form or an authorized equivalent will be used to document each time any EMS unit participates in an incident, or when basic or advanced life support assessment is provided on any patient. No EMSIRS is needed if a unit is cancelled while responding, or if no patient contact of any type is made, as long as appropriate response information (e.g. times and unit identifiers) is captured and stored by the unit's agency (e.g. CAD records).
2. Crews that transport a patient to the hospital will complete an EMSIRS run form or an authorized equivalent at the time the patient is delivered to the receiving facility, and will leave a paper copy at the facility as in 7. below. In the event that the EMSIRS run form or authorized equivalent cannot be completed prior to the unit being dispatched to another call, the run form will be completed and delivered as soon as possible, always before the end of the crew's shift. Units that do not accompany the patient to the hospital must complete an EMSIRS or an authorized equivalent prior to completion of the shift, but at the present time are not required to submit it to the hospital. It is anticipated that once the electronic trips sheet system matures, it may be feasible for these units to submit an EMSIRS to the hospital electronically, but this is not required at present.
3. An ECG rhythm strip should be obtained on all patients who are monitored, and this strip or a photocopy should be attached to the hospital copy. If a 12-lead ECG is performed, the ECG or a photocopy should be attached to the hospital copy of the EMSIRS or authorized equivalent, using the NHSHP 12-lead ECG form.
4. Documentation on the patient care report for each intubated patient (ETT or Combitube®) shall include the method used to confirm placement and the initial ETCO₂ value, and a repeat ETCO₂ value documented each time repeat vital signs are taken. Documentation shall also include completing and submitting the South-Central Regional Airway Data Collection Form (copies must be carried on every ALS unit).
5. After administration of any medication, the following must be documented on the EMSIRS form or authorized equivalent:
 1. Dose, route, and time of administration.
 2. Effect of medication on patient's condition.
 3. Name of physician and medical oversight facility authorizing implementation (if applicable). In those instances where a request for medication is denied by a medical oversight physician, the paramedic is to document the fact that the request was denied, along with the physician's name and facility. Under no

circumstances are paramedics allowed to contact an alternate facility or another medical oversight physician with the same request.

6. If a paramedic performs a patient assessment and then releases the patient to a BLS unit, that paramedic must document his or her assessment on an EMSIRS or authorized equivalent. These forms must be delivered to the receiving hospital as outlined in 2. above.
7. In those unusual circumstances where a paramedic elects to have an EMT-B partner provide patient care, that paramedic must review the EMT-B's documentation, and correct or clarify any information that the paramedic disagrees with, and co-sign the PCR.
8. Disposition of EMSIRS form or authorized equivalent:
 - a. The hospital copy will be left with the ED staff in the patient area to which the patient is triaged at the time the receiving facility signature is obtained. If a patient is awaiting registration without going to a specific patient care area, the hospital copy should be left with the triage nurse or designee.
 - b. The data processing copy will be left in the locked box provided for this purpose in the EMS area of each ED.
 - c. The service copy will be taken by the EMS crew and handled in accordance with the EMS agency's policies and procedures.

Note: Changes to the above will likely result from the transition to electronic run forms over the next year. Changes in NHSHP policy will be clearly communicated.

Chapter 3: Cardiac Protocols

A. Cardiac Arrest

1. Initiate BLS care with CPR.
 - a. Push hard and fast (100/min, 30:2 ration until advance airway secured)
 - b. Ensure full chest recoil
 - c. Minimize interruptions in chest compressions
 - d. For services utilizing the LUCAS device: Apply the LUCAS as early as possible, interrupting chest compressions for no more than 20 seconds to do so. Once it is applied, DO NOT stop the LUCAS to deliver shocks, DO NOT stop the LUCAS for intubation (unless the patient movement prevents intubation, in which case stopping the device for no more than 10 seconds is permitted), and DO NOT stop the LUCAS more than 5 seconds for rhythm checks.
2. Use high-flow oxygen for ventilation when available. During CPR, secure airway and confirm placement (see 2B3). Avoid hyperventilation.
3. Attach monitor/defibrillator when available. Check rhythm. If not shockable, proceed to asystole/PEA algorithm below (5).
4. **SHOCKABLE RHYTHM (VF/VT):**
 - a. Give one shock, 200J biphasic preferred. Resume CPR immediately, without a rhythm check.
 - b. After five cycles of CPR (roughly two minutes), check pulse and rhythm. If asystole or PEA, proceed to asystole/PEA algorithm at 6. below. If no pulse and shockable, continue here.
 - c. Give one shock at an equal or higher dose. Resume CPR immediately, without a rhythm check.
 - d. **Epinephrine 1 mg IV/IO**, repeat every 3 to 5 minutes
 - e. After five cycles of CPR (roughly two minutes), check pulse and rhythm. If asystole or PEA, proceed to asystole/PEA algorithm at 6. below. If no pulse and shockable, continue here.
 - f. Give one shock at an equal or higher dose. Resume CPR immediately, without a rhythm check.
 - g. Give an antiarrhythmic during CPR, without a rhythm check:
 - (1) **amiodarone 300 mg IV/IO**, then consider additional 150 mg
 - OR
 - (2) **lidocaine 1 to 1.5 mg/kg** first dose, then 0.5-0.75 mg/kg, max 3 doses or 3 mg/kg total
 - (3) **Magnesium sulfate 1-2 gm IV/IO** for torsades de pointes
 - h. After five cycles of CPR, return to item b. above. Continue cycles of CPR with epinephrine, shock, CPR with antiarrhythmic, shock.
 - i. Once an advanced airway is in place, do not deliver “cycles” of CPR. Instead, give continuous chest compressions, with 8-10 breaths per minute without pausing compressions. Placing an advanced airway is of relatively lower priority, and should not significantly interrupt chest compressions. Check rhythm every two minutes.

B. Bradycardia

1. Bradycardia is defined as heart rate <60 beats per minute. Intervention may or may not be necessary: treat the patient, not the heart rate.
2. Assess and support ABC's as needed.
3. Give supplemental oxygen.
4. Monitor ECG (identify rhythm), blood pressure, and pulse oximetry.
5. Establish IV access if clinically indicated.
6. Assess rhythm and look for signs and symptoms of hypoperfusion: altered mental status, ongoing chest pain, hypotension, or other signs of shock.
 - a. If adequate perfusion and asymptomatic, monitor and transport.
 - b. If adequate perfusion but symptomatic (e.g. orthostatic dizziness)
 - 1) consider **Atropine 0.5 mg IV**, may repeat to a total of 3 mg.
 - 2) prepare for transcutaneous pacing for 3rd degree or Type II 2nd degree block. **Midazolam 2 mg slow IVP** for sedation if needed during pacing: , repeat dose of 2 mg as needed.
 - c. If inadequate perfusion:
 - 1) prepare for transcutaneous pacing; use pacing without delay for 3rd degree or Type II 2nd degree block Provide **midazolam 2 mg slow IVP** for sedation if needed during pacing: repeat dose of 2 mg as needed.
 - 2) Consider **atropine 0.5 mg IV** while awaiting/preparing pacer. May repeat to a total dose of 3 mg. If ineffective, begin pacing.
 - 3) If pacing is ineffective consider:
epinephrine (2 to 10 µg/min)
OR
dopamine (2-10 µg/kg per minute)
 - 4) Search for and treat possible contributing factors (Hs and Ts)

C. Tachycardia

1. Tachycardia is defined as heart rate >120 beats per minute. Intervention may or may not be necessary: treat the patient, not the heart rate.
2. Provide routine paramedic care. Identify and treat reversible causes (H's and T's). Determine stability. Signs of instability include altered mental status, ongoing chest pain, hypotension or other signs of shock. (note: rate-related symptoms are *rare* at HR<150)
3. Unstable patients:
 - a. If unstable perform immediate synchronized cardioversion
 - (1) **Midazolam 2mg slow IVP** for sedation if time permits: repeat dose of 2 mg as needed.
 - (2) atrial flutter and SVT, begin at 50J
 - (3) atrial fibrillation or ventricular tachycardia, begin at 100J
4. Obtain 12-lead ECG. Is QRS narrow (<0.12 sec)? Is rhythm regular?
5. Stable patient with **narrow QRS, regular rhythm:**
 - a. Attempt vagal maneuvers.
 - b. **Adenosine 6 mg rapid IVP** with 5-10 cc flush. If no conversion, give **Adenosine 12 mg rapid IVP** with flush; may repeat 12 mg dose once.
 - c. If rhythm converts with adenosine, it is likely re-entry SVT. Observe for recurrence; if rhythm recurs, treat with adenosine.
 - d. If rhythm does not convert with adenosine, it may be atrial fibrillation, ectopic atrial tachycardia, or junctional tachycardia. If rate control is needed:
Diltiazem 10 mg slow IVP.
OR
Metoprolol 5 mg slow IVP (if patient is already taking a beta-blocker)
If no response after 5-10 minutes, may repeat either drug at same dose. Do not give either diltiazem or metoprolol if Wolff-Parkinson-White (WPW) is known or suspected.
6. Stable patient with **narrow QRS, irregular rhythm:** probably atrial fibrillation or atrial flutter or MAT. If rate control is needed, give **diltiazem** or **metoprolol** as in 6d above.
7. Stable patient with **wide QRS, regular rhythm:**
 - a. Consider **amiodarone 150 mg IV** over 10 minutes.
 - b. Prepare for elective synchronized cardioversion.
8. Stable patient with **wide QRS, irregular rhythm:**
 - a. If atrial fibrillation with WPW, avoid adenosine, and diltiazem.
 - b. Consider **amiodarone 150 mg IV** over 10 minutes
 - c. If torsades de pointes, give **Magnesium Sulfate 2gm IV** over 5 minutes

D. Acute Chest Pain/Acute Coronary Syndrome

1. Patients with chest pain should receive the treatment outlined below if any of the following are noted:
 - a. over the age of 35 (males) or 45 (females) with ongoing chest pain suggestive of ischemia. It should be EXTREMELY RARE to treat patients under these ages as ischemic chest pain. (Exception: patients with chest pain within four hours of cocaine use should be treated for possible ischemia, regardless of age.)
 - b. a prior history of MI, angina, hypertension, or diabetes with chest pain now or in the last two hours.
 - c. chest pain and associated signs of congestive heart failure, dysrhythmia, or hemodynamic instability.
 - d. chest pain and a change in mental status.
2. Provide routine paramedic care, including immediate acquisition of a 12-lead ECG.
 - 2a. For the patient with active chest pain and a 12-lead ECG showing STEMI (either read by the LIFEPAK-12 as “***acute MI suspected***” or “ACI-TIPI Predicted Probability of Acute Cardiac Ischemia” of 75% or greater), contact C-MED and request a STEMI ALERT. Also give C-MED the name of the patient’s cardiologist, or primary care physician if the patient has no cardiologist. This information is crucial to the prompt activation of the cardiac catheterization lab at the receiving hospital. For the patient with ongoing pain but no ECG evidence of STEMI, contact C-MED and request a CHEST PAIN ALERT.
 - 2b. If the ECG is suggestive of an inferior myocardial infarction (ST elevation in leads II, III, aVF with reciprocal depressions), do not give nitroglycerin, consider right-sided leads if this can be accomplished without delaying transport, and monitor blood pressure very closely. Give IV fluids as needed for hypotension as long as there are no signs of congestive heart failure.
3. **Aspirin 324 mg PO** unless the patient already took aspirin within the prior 24 hours, or reports true allergy/intolerance. (If not giving aspirin, document the reason.)
4. For active pain only, with systolic blood pressure 100 mmHg or greater with IV in place, or 130 mmHg or greater if IV access has been unsuccessful:
 - a. **Nitroglycerin 0.4 mg SL/metered dose spray.** Repeat every five minutes
 - b. **Nitroglycerin paste 1”** to anterior chest wall if pain resolves with sublingual nitroglycerin.
5. If pain persists after three doses of nitroglycerin consider **morphine sulfate 2-4mg IV.** Repeat as needed (maximum dose 10mg).

E. IMMEDIATE Trial

1. Patients who may be enrolled in the IMMEDIATE trial require that a 12-lead EKG and screening form be completed, and that YNHH or HSR are the receiving hospitals.
2. If after the 12-lead EKG is completed, the patient meets inclusion criteria, and does not meet any exclusion criteria, the paramedic will then begin the consent process.
3. The paramedic will inform the patient (and/or family member if available) of the study, and the patient may inform the paramedic that he or she does not want to participate (opt out) prior to the initiation of the study drug infusion. If the patient is willing to proceed (does not opt out), the following should take place:
 - a. Prepare study drug IV bags by adding the contents of each syringe to each bag. Document the patient's name, your initials, and the time the syringe contents were added on the IV bag.
 - b. Begin study drug at appropriate rate based on patient's stated weight.
 - c. Contact CMED:
 - i. Notify CMED that study drug was started, and which hospital will be receiving the patient. For example, "study drug started, going to Yale (or HSR)".
 - ii. CMED will then notify the research staff, who will meet the transporting unit at the hospital,
 - iii. Contact CMED if there are any questions regarding whether or not to enroll a patient; they will then page out for a medical oversight for an IMMEDIATE Trial physician. Do not contact the receiving hospital for medical oversight regarding the IMMEDIATE Trial.
 - d. Complete preparation of all three IV study drug bags.
 - e. When the ED nurse is ready, transfer with the patient's Study Drug Packet containing two remaining 1-liter IV bags to the ED nurse. Discontinue the prehospital 1-liter study drug IV bag retaining the pump for future use. Dispose of the 1-liter study drug bag per hospital policy (any IV bags or tubing that may potentially contain insulin must be disposed of in specific locations).
 - f. The nurse will confirm the IV infusion rate and start a new 1-liter bag of the study drug on the ED's IV pump.
 - g. Complete preparation of the Study Subject Booklet.
 - h. The Study Subject Booklet will be transferred to the ED nurse and both the nurse and paramedic will sign in the space provided on the bottom of the Prehospital Checklist to confirm the hand-off from the paramedic to nurse and the transfer of the Study Drug Packet and Study Subject Booklet.
 - i. Initial 12-lead EKG done by transporting unit:
 - i. Download 12-lead EKG at the receiving hospital.
 - ii. Attach printed version of the 12-lead EKG to the screening form and leave in the hospital's EMS room. In addition, print out two more copies (one for the hospital/ED PCR, and one for the agency's PCR).

- j. Initial 12-lead EKG done by non-transporting unit:
 - i. Print the 12-lead EKG and attach to the screening form. This should be left in a pre-designated location at the agency. An IMMEDIATE Trial Research Staff member will download the EKGs from each LP 12 and collect screening forms with attached EKGs weekly.
 - 1. if the patient is enrolled and the study drug was started, a copy of the initial 12-lead EKG should accompany the patient to the hospital.
- k. Document on the PCR that the patient is “enrolled in the IMMEDIATE Trial”, and write “study drug” (with time infusion begun) in the medication section. This is necessary because their PCR is part of the ED medical record.

F. Acute Pulmonary Edema

1. If the systolic blood pressure is 100 mmHg or greater and there are signs and symptoms of acute pulmonary edema:
 - a. **Nitroglycerin 0.4 mg SL or one metered dose spray.** Repeat every five minutes if SBP >100 mmHg.
 - b. **Nitroglycerin paste 1”** to anterior chest wall in addition to repeated sublingual doses as blood pressure tolerates.

ONLY if significant dyspnea persists after an adequate trial of nitroglycerin:

 - c. **Furosemide 40 mg IV** OR twice the patient’s single (not daily total) prescribed dose (Maximum 200mg)
 - d. If trained and equipped, consider CPAP (see Appendix 10)

In general, more nitroglycerin is preferred to a diuretic.
2. Monitor vital signs at least every five minutes. Assisted ventilations or intubation may be required if status continues to deteriorate.

G. Cardiogenic Shock (also for non-hemorrhagic, non-hypovolemic shock of unknown origin)

1. **Normal Saline 250 cc IV bolus**, unless there are rales or other signs of pulmonary edema. May repeat as needed.
2. **Dopamine 5 mcg/kg/min IV**, titrating gradually to achieve a systolic blood pressure of 90 mmHg.

Chapter 4: Medical Protocols

A. Altered Mental Status / Hypoglycemia

1. Consider trauma as a primary or contributing factor.
2. If the patient has an altered mental status of unknown etiology, is unresponsive, or if hypoglycemia is suspected, obtain blood sample for serum glucose level determination. If the history and exam suggest hypoglycemia, it is permissible to administer IV dextrose if unable to test serum glucose.

If glucose < 70:

- a. **Thiamine 100 mg IV/IM** (if malnutrition or chronic alcohol dependence are suspected)
 - b. **Dextrose 50% 25 gm IV bolus.**
 - c. **Glucagon 1.0 mg IM** if IV access unavailable.
 - d. If no IV access and no response to glucagon, contact medical oversight for consideration of IO access for administration of dextrose 50% 25 gm IO (depending on glucose level, presence of seizures, transport time, etc).
3. If the history and exam suggest opiate toxicity, follow protocol G (Overdose) below.
 4. If the patient has evidence of focal neurological deficit such as sudden weakness or numbness of the face, arm, or leg on one side of the body; sudden trouble speaking or understanding speech; sudden trouble walking, dizziness, or loss of balance, follow protocol B (Focal Neurological Deficit/Stroke) below.

B. Focal Neurological Deficit (Stroke)

For the patient with evidence of a new focal neurological deficit such as:

- Sudden weakness or numbness of the face, arm, or leg on one side of the body
- Sudden trouble speaking or understanding speech
- Sudden trouble walking, dizziness, or loss of balance

1. Initiate two peripheral IV's using no more than three total attempts, utilizing 18 gauge catheters if possible, and determining blood glucose level. If two lines are established, administer 125cc/hour of normal saline through one line, and either cap the other line using a saline lock, or run saline KVO if no lock is available.
2. Complete the EMS Stroke Screen (copies must be carried on every ALS unit). When possible, identify witnesses of stroke onset and encourage them to accompany the patient to the ED in the ambulance to answer the physician's questions related to the patient's condition. If a witness cannot go to the ED, attempt to secure a phone number that the ED physician can use to contact him or her.
3. Contact C-MED and request a STROKE ALERT. The paramedic should be prepared to relay the following:
 - a. Brief history.
 - b. Time of onset of symptoms (crucial to eligibility for thrombolysis)
 - c. Neurological deficit consistent with stroke.
 - d. Initial therapy.
 - e. EKG findings.
 - f. Blood glucose level (crucial to eligibility for thrombolysis)

NOTE: Early notification to the hospital is extremely important to ensure the earliest notification of the hospital stroke team. Every effort should be made to patch as soon as possible after a stroke is suspected.

C. Acute Respiratory Distress (Bronchospasm/Asthma/COPD)

1. Asthma / COPD / Emphysema:

- a. **Albuterol 2.5 mg/3cc** solution via nebulizer. Repeat as needed.
- b. **Ipratropium bromide 0.5mg/3cc** via nebulizer. May mix with albuterol to give simultaneously.

If severe respiratory distress, or unable to tolerate nebulized medications:

- c. **Epinephrine 1:1,000 0.3 mg IM.**

Contact medical oversight prior to administration if any relative contraindications exist such as history of MI, or chest pain indicative of ischemia.

If needed, contact medical oversight for consideration of:

- d. **Magnesium Sulfate 1-2 gm IV** over 5-10 minutes.
- e. **Epinephrine 1:1,000 0.3mg IM** repeat dosing.

For the patient who is already using levalbuterol (Xopenex) and reports inability to tolerate albuterol, the patient's supply of levalbuterol may be used in place of albuterol.

D. Seizure / Status Epilepticus

1. Initiate treatment based on history and clinical presentation. Not all seizures require emergent intervention. Consider possible causes (e.g. trauma, drug overdose, hypoglycemia) and follow appropriate protocol. Always provide supplemental oxygen, and check blood glucose level. If the patient is unresponsive or exhibits an altered mental status other than a transient postictal state, follow Altered Mental Status/Hypoglycemia Protocol.
2. For patients in status epilepticus (Two or more general motor seizures without a lucid interval witnessed by EMS personnel, or continuous seizure activity lasting for greater than 10 minutes)
 - a. **Midazolam 5 mg IV/IM/IN**. Repeat **Midazolam 5mg IV/IM/IN** after 3-4 minutes for continued seizure activity.

E. Pregnancy Induced Hypertension with Seizures (Eclampsia)

1. Assess central nervous system and cardiorespiratory function. Support airway, breathing, and circulation as needed. Verify, by observation or history, the presence of tonic-clonic activity. Determine the approximate gestational age of the fetus and previous history of pregnancy induced hypertension. Preeclampsia/eclampsia generally does not develop before 20 weeks gestation. Consider other etiologies in patients earlier than 20 weeks pregnant.
2. If hypoglycemia or drug overdose induced status epilepticus is suspected, treat according to appropriate protocol. Check blood sugar in all seizing patients.
3. **Magnesium sulfate, 4 gm/250cc NS, rapid IV.**
4. **Midazolam 5 mg IV/IM/IN** for continued seizures. Repeat **midazolam 5mg IV/IM/IN** after 3-4 minutes for continued seizures.
5. If seizures recur or continue, contact medical oversight for additional treatment.

F. Allergy / Anaphylaxis

1. Significant allergic reaction with stable airway and hemodynamics:
 - a. **Albuterol 2.5 mg/3cc** via nebulizer. Repeat as needed.
 - b. **Diphenhydramine 25-50 mg IVP** over one minute, or IM if IV access cannot be obtained.
 - c. If no significant improvement, **epinephrine 1:1,000 0.3 mg IM**.

2. Anaphylaxis with unstable hemodynamics or severe respiratory distress:
 - a. **Epinephrine 1:1,000 0.3 mg IM**. May be repeated in five minutes if needed.
(Epinephrine is the mainstay treatment for true anaphylaxis.)
 - b. **Albuterol 2.5 mg/3cc** via nebulizer. Repeat as needed.
 - c. **Diphenhydramine 25-50 mg IVP** over one minute, or IM if IV access cannot be obtained.

3. Medical oversight options:
 - a. **Epinephrine 1:1,000 0.3 mg IM**.
 - b. **Epinephrine 1:10,000 0.3 mg slow IVP**, if systolic blood pressure remains less than 90 mmHg.
 - c. **Glucagon 1-2mg IV**
 - d. MAST / PASG.

G. Overdose / Toxic Exposure

1. Evaluate the mechanism and exposure route of the overdose/poisoning. Evaluate the scene for consideration as a hazardous materials incident, and determine whether decontamination is needed. Notify C-MED as appropriate and obtain MSDS sheet if available. Contact Emergency Department as soon as possible to allow for appropriate preparation (e.g. hazmat decontamination room). All empty medicine containers, drug paraphernalia, bottles of alcohol, etc. are to be transported to the hospital with the patient and turned over to ED personnel.
2. If the history and exam suggest opiate toxicity:
 - a. **Naloxone 0.4-2.0 mg IV/IM** in 0.4 mg increments. Titrate based on level of responsiveness and respiratory status
OR
 - b. **Naloxone 2 mg IN** (1 mg per nostril). If no response within five minutes, initiate intravenous access and proceed as above.
3. For patients displaying signs or symptoms of a dystonic reaction:
 - a. **Diphenhydramine 25-50 mg IV/IM.**
4. For other overdoses or toxic exposures, contact medical oversight for treatment options:
 - a. **Atropine 1-2 mg IV.** Repeat as needed.
 - b. **Sodium bicarbonate 1-2 Meq/kg slow IVP.**
 - c. **Calcium chloride 250-1000 mg slow IVP.**
 - d. **Naloxone 0.4 mg-2.0 mg IV/IM/IN.**
 - e. **Glucagon 1 mg IV.** Repeat as needed.
 - f. **Tetracaine 2 drops in affected eye.** Follow with irrigation using at least 1000 cc NS.
 - g. **Activated charcoal, 25-50 grams PO.**
 - h. Other treatment modalities.
5. Consider SHARP Team dispatch for multiple-patient incidents or significant chemical exposures.

H. Hypothermia

1. Generalized hypothermia
 - a. Avoid endotracheal intubation if BVM ventilation is effective.
 - b. Remove all wet clothing unless frozen to the skin.
 - c. Cover patient with blanket – do not attempt active external rewarming.
 - d. Handle the patient gently, and monitor the EKG carefully for dysrhythmia.
 - e. Transport.

2. If pulse is absent and EKG monitor shows ventricular fibrillation:
 - a. Defibrillate at 200 joules.
 - b. If no conversion, initiate CPR and contact medical oversight for consideration of any further orders, including additional defibrillation attempts.
 - c. Transport.

3. If pulse is absent and EKG monitor shows asystole:
 - a. Initiate CPR.
 - b. Contact medical oversight for consideration of any further orders.
 - c. Transport.

4. If pulse is absent and EKG monitor shows an organized rhythm:
 - a. Ventilate slowly, but do not initiate cardiac compressions.
(Compressions may initiate ventricular fibrillation).
 - b. Contact medical oversight for consideration of any further orders.
 - c. Transport.

I. Pain Relief

1. **Morphine Sulfate 4-8 mg IV/IM.** Repeat as needed to maximum of 20 mg. In the frail, elderly or chronically ill, use caution. Consider starting at 2mg and titrating slowly to effect.

Direct medical oversight should be contacted prior to administration in the following situations:

- a. Head trauma
 - b. Decreased respirations
 - c. Altered mental status
 - d. Active labor
 - e. Systolic blood pressure <90 mmHg (or below normal limits for children, based on length-based resuscitation tape)
 - f. Multi-system trauma
 - g. Traumatic abdominal pain
 - h. Additional morphine dosing beyond the maximum standing order dosages.
2. **Lidocaine 2% 20-40mg IO.** Consider for alert patients to prevent pain due to fluid or medication administration via intraosseous route.

- | |
|---|
| <ol style="list-style-type: none">1. Morphine <u>should</u> be given to any patient with a complaint of significant pain and a total prehospital time (including packaging, movement to the ambulance, and transport) of ≥ 10 minutes, including:<ol style="list-style-type: none">a. Significant extremity injuriesb. Burnsc. Crush injuriesd. Prolonged extricationse. Immobilizationf. Severe back paing. Non-traumatic abdominal pain |
|---|

J. Anxiety Relief

1. Sedation prior to synchronized cardioversion or transcutaneous pacing:

-**Midazolam 2 mg slow IVP/IN**. Repeat 2 mg if needed.

AND/OR

-**Morphine 4mg IV**. Repeat 4mg if needed.

-Contact medical oversight for additional dosing if needed

- Remember that patients who receive both midazolam and morphine may be more likely to drop their blood pressure, so monitor BP and heart rate closely.

2. Sedation of the intubated patient:

- **Midazolam 2 mg slow IVP**. Repeat 2 mg, titrating to effect.

3. Significant anxiety due to psychological stressors:

- Contact medical oversight for consideration of **midazolam 2 mg IV/IM/IN**, and repeat doses as needed.

K. Carbon Monoxide Poisoning

The following care should be provided after the patient is removed from the hazardous environment:

1. Administer 100% oxygen via tight fitting non-rebreather mask, with humidification if available, as soon as possible.
2. Draw a lavender top tube of venous blood as soon as possible, and label it with the patient's name and date, for lab determination of carboxyhemoglobin level. Note the time of the blood drawing, time since patient was removed from toxic environment, and number of minutes of oxygen treatment prior to blood sample being taken.
NOTE: This is the only pre-hospital blood draw being used in the system at present.
3. Obtain and document the carbon monoxide (CO) level from appropriate personnel at scene if available.
4. Fire and EMS services may use CO screening devices, such as the Scott/Bacharach CO Sniffer, the Masimo RAD-57, or the FSP Carbon Monoxide Breathalyzer for screening of emergency personnel and civilians. A COHb level of 10% or higher (or an SpCO of 10% or higher, in the case of the RAD-57) should prompt transport of the patient(s) to the emergency department. The FSP COB reports ppm, which must be converted to %COHb using the formula $[(0.16 \times \text{ppm}) + 0.5]$. The SHARP Team carries a CO Sniffer on one of its vehicles, and an FSP COB on the other.

L. Near-Drowning

1. While protecting the cervical spine, establish a patent airway appropriate to the clinical situation.
2. If the patient is or might be hypothermic, follow Hypothermia Protocol.
3. Provide supplemental high-flow oxygen. Administer nebulized albuterol if required for bronchospasm as described in Acute Respiratory Distress Protocol.
4. All near-drowning patients must be transported to a hospital for evaluation due to the significant possibility of delayed (hours) pulmonary edema.

M. Nausea / Vomiting

Patients with persistent nausea and vomiting, significant discomfort from nausea and vomiting, or clinical signs of dehydration

1. Transport with head elevated or in lateral recumbent position, unless otherwise clinically contraindicated.
2. Consider IV access for a normal saline bolus if patient appears fluid depleted (e.g. hypotension, lightheadedness, orthostatic vital sign changes, history of significant vomiting or diarrhea)
3. **Ondansetron 4 mg IVP/IM.** Contact medical oversight for consideration of repeat dosing if needed.

Note: The previous protocol for metoclopramide (10 mg slow IV push, or IM if IV access cannot be obtained) may be used until services exhaust their supply.

N. Syncope of Unknown Etiology

1. Syncope is a transient loss of consciousness, usually caused by inadequate perfusion to the brain. It may be caused by a variety of underlying medical conditions, and may or may not represent a medical emergency.
2. If the patient continues to have an altered level of consciousness, proceed to the Altered Mental Status / Hypoglycemia protocol.
3. Establish IV access if unstable vital signs, age greater than 50 years, or pregnant. If there is evidence of fluid deficit (e.g. hypotension, orthostatic vital signs, history of significant vomiting or diarrhea), bolus with 250cc of normal saline or lactated Ringers. Re-assess and repeat bolus if indicated.
4. Measure blood glucose level. For blood glucose <70mg/dl, proceed to Altered Mental Status / Hypoglycemia protocol.
5. Monitor EKG rhythm, and perform a 12-lead EKG if there is any chest pain or dysrhythmia. Follow the Acute Chest Pain protocol as indicated. Treat dysrhythmia according to appropriate protocol.

Chapter 5: Trauma Protocols

A. Burns

1. Evaluate the causative agent before initiating treatment. Stop the burning process by removing the patient from the source of the exposure, or eliminating the source as below. Evaluate the degree and the extent (Total Body Surface Area) of the burn.
2. Thermal / Electrical Burns
 - a. Ensure scene safety. For electrical burns, ensure the patient has been removed from the source of current, the current has been turned off, etc.
 - b. Remove clothing that is not adhering to the patient's skin. Remove jewelry and other constricting hazards from the affected areas, and areas distal to extremity burns.
 - c. Apply cool water or saline to reduce pain and the burning process.
 - d. Apply dry sterile dressings, sterile burn sheets, or WaterJel burn dressings to the affected areas.
 - e. Manage pain with morphine as per the Pain Relief protocol above.
 - f. Transport as per the Major Field Trauma Field Triage Protocol below.
3. Chemical Burns
 - a. Evaluate the scene for consideration as a hazardous materials incident. Notify CMED as appropriate. Obtain a material safety data sheet if available.
 - b. Contact medical oversight for treatment specific to the chemical. Consider using CT Poison Control (1-800-343-2722) as another source of information for treatment of poisoning caused by chemicals.
 - c. Notify the hospital of decontamination that has been performed prior to transport. Early notification of the receiving hospital also maximizes the time available for the hospital to set up its decontamination facilities, if this is needed.

B. Spinal Cord Injury

1. Evaluate movement and sensation in all four extremities, and re-evaluate after immobilization with collar, head immobilization device, long spine board, tape and straps, and/or Kendrick Extrication Device as appropriate.
2. Carefully monitor respiratory status, as spinal injury above the level of C-3/4/5 can impair diaphragmatic effort leading to inadequate respiratory effort.
3. If the patient is hypotensive without tachycardia and without signs of other trauma that might cause hypovolemia (such as abdominal trauma), consider spinal shock. Provide a fluid challenge of 250 to 500 cc of saline. If still hypotensive, consider **dopamine 5-20 mcg/kg/min IV**, titrating to a systolic blood pressure of 90 mmHg.

C. Severe Head Injury

1. Suspect associated cervical spine injury based on mechanism, and treat appropriately.
2. The airway and respiratory status of all unconscious patients (trauma or not) should be closely monitored.
3. Patients with clinical evidence of cerebral herniation (e.g. extensor posturing, asymmetric unreactive pupils) should be mildly hyperventilated at 15-20/min for adults, 20-25/min for children, and 24-28 for infants. Hyperventilation of head injured patients with no evidence of herniation is no longer recommended.
4. Evaluate and document the initial Glasgow Coma Score as a basis for comparison as the exam changes over time (in the field and in the ED).
5. Limit intravenous fluids unless clinical signs of shock are present. As brain injury does not cause hypotension, look for systemic or hidden causes of blood loss if shock is present.

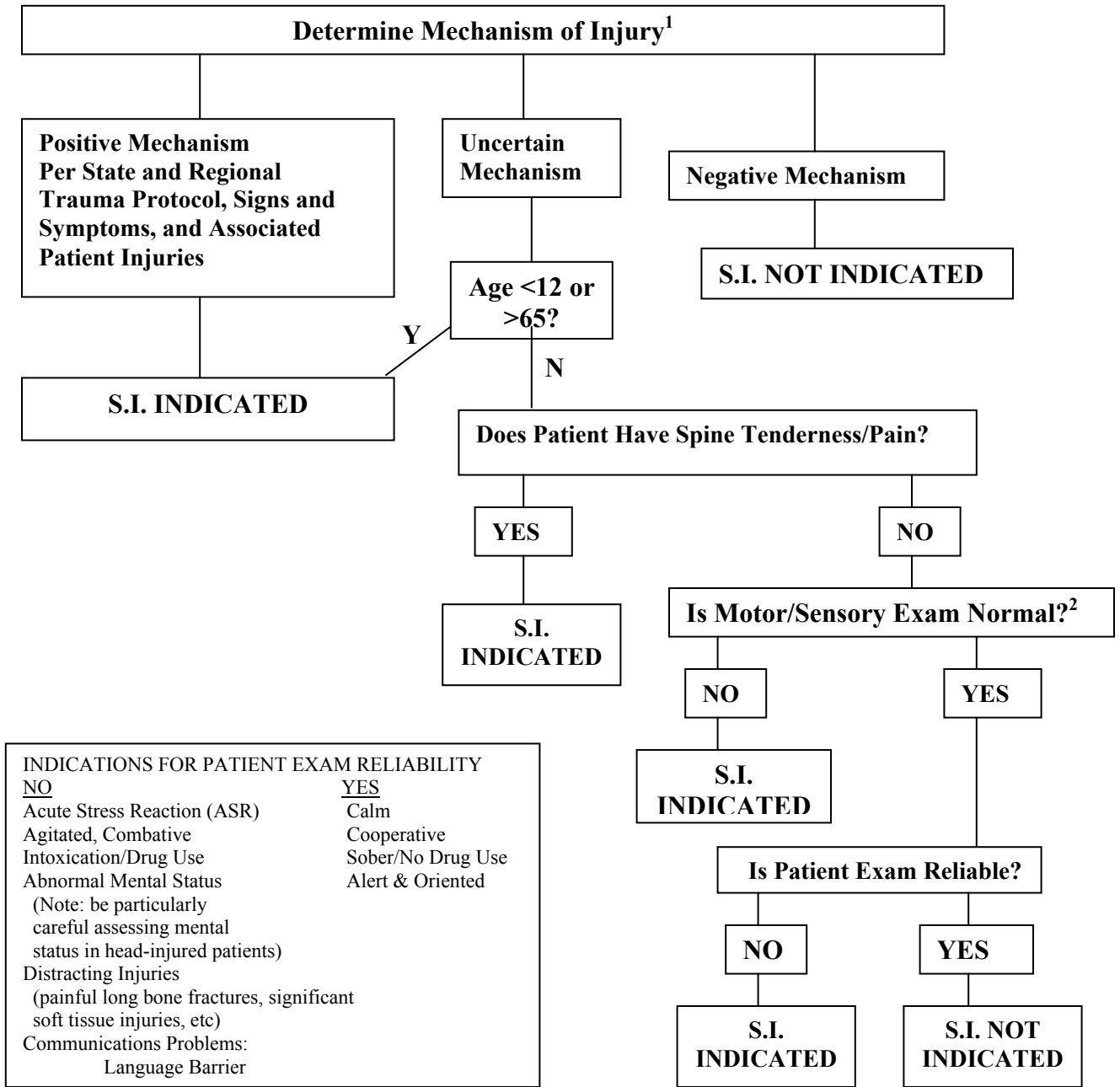
D. Multi-system Trauma / Hypovolemia / Traumatic Cardiac Arrest

1. Field time for multi-system trauma patients and hypovolemic patients must be kept to a minimum. Airway and cervical spine control are the primary goals of pre-hospital care for the multi-system trauma patient. All other treatments (including vascular access) should be performed while en route to the hospital. Notify the receiving facility as early as possible. Destination selection should be in accordance with the NHSHP Major Trauma Field Protocol below.
2. Resuscitative efforts may be withheld from adult patients in the event of traumatic cardiac arrest with direct medical oversight as per Appendix 3.
3. Establish vascular access with one or preferably two large-bore catheters, and infuse saline to maintain a systolic blood pressure of 90 mmHg for adults, and signs of adequate perfusion for children.
4. Consider application of MAST/PASG if pelvic fracture is suspected in the hypotensive trauma patient.

E. Tension Pneumothorax

1. Needle chest decompression may be performed if the patient has unstable vital signs consistent with shock, and signs or symptoms of tension pneumothorax such as:
 - a. Absent breath sounds on the affected side
 - b. Tracheal deviation away from the affected side
 - c. Distended neck veins
 - d. Affected side of chest hyper-resonant to percussion
 - e. Massive subcutaneous emphysema

F. Selective Spine Immobilization



INDICATIONS FOR PATIENT EXAM RELIABILITY	
<u>NO</u>	<u>YES</u>
Acute Stress Reaction (ASR)	Calm
Agitated, Combative	Cooperative
Intoxication/Drug Use	Sober/No Drug Use
Abnormal Mental Status	Alert & Oriented
(Note: be particularly careful assessing mental status in head-injured patients)	
Distracting Injuries (painful long bone fractures, significant soft tissue injuries, etc)	
Communications Problems: Language Barrier	

¹ See Basic Mechanism Principles on next page
² See Motor/Severity Assessment Guideline on next page

1. MECHANISM PRINCIPLES

POSITIVE: “Positive mechanism” is determined following the State of Connecticut Trauma Protocols and Regulations. (Example: Fall of 25 feet)

NEGATIVE: “Negative mechanism” exists when no reasonable possibility of spinal injury is present. (Example: Knee/ankle injury while running with no fall, GSW to arm/leg)

UNCERTAIN: “Uncertain mechanism” exists where the mechanism of injury is unclear regarding impact and forces involved. (Examples: Minor MVC with minimal vehicle damage; simple fall of less than 5 feet)

NOTE: These are only baseline principles. All factors, including patient vital signs and symptoms, should be evaluated prior to final determination of need for S.I.

NOTE: As per Connecticut state BLS guidelines, procedure #19, patients with head injuries require SI. No definition of “head injury” is provided, and EMS personnel must exercise their best judgment when assessing a patient who may have a head injury.

2. MOTOR/SENSORY ASSESSMENT GUIDELINES

A. MOTOR EXAM

1) Upper Extremities:

- a) Finger Abduction/Adduction: This tests the interosseous muscle function, controlled by the T -2 nerve root.
- b) Finger/Hand Extension: This tests the extensors of the hand and fingers, both which are controlled by the C-7 nerve root.

2) Lower Extremities:

- a) Foot Plantar Flexion: This tests the plantar (downward) flexors of the foot controlled by the S-1,2 nerve root.
- b) Foot/Great Toe Dorsiflexion: This tests the dorsal (upward) flexors of the foot, controlled by the L-5 nerve root.

B. SENSORY EXAM

- 1) Abnormal Sensation: If patient reports weakness, numbness, paresthesia (tingling), or radicular ("electric" or "shooting") pain in one or more of the extremities, the sensory exam is considered to be abnormal and S.I. is indicated, unless the symptoms are localized to an obvious local injury (Ex: broken finger/wrist).
- 2) Pain Sensation (Upper and Lower Extremities): This tests sensation to pain (pinprick), which is controlled by the spinothalamic tracts of the anterior cord. Comparison is done between right and left sides to show signs/symptoms of a possible incomplete cord injury, such as the Anterior Cord Syndrome, or Brown-Sequard injury. Impaired or asymmetric sensation at the extremities is considered to be abnormal and S.I. is indicated.

Chapter 6: Pediatric Protocols

A. General Guidelines for Pediatric Care

1. Unless otherwise stated, these protocols apply to patients who have not reached puberty defined by the presence of secondary sex characteristics. (Note: This is the new AHA definition for deciding whether to use adult or pediatric resuscitation protocols.)
2. Remember that children are not small adults. Treatments and physiologic principles vary, as do drug dosages and fluid administration rates.
3. Cardiac arrest in children is generally not a sudden event. It is almost always due to a respiratory problem, which leads to hypoxia, bradycardia, and eventually asystole. Initial treatment should be directed at establishment of an airway, administration of supplemental oxygen, and mechanical ventilation.
4. Do not use BP as the only indication of shock. Blood pressure is a late sign of shock in children. Instead, evaluate end-organ perfusion using capillary refill, pulses, skin color/temperature, and mental status. Do not assess blood pressure in children 3 years of age or younger.

B. Anticipating Cardiopulmonary Arrest

1. All sick children should undergo a rapid cardiopulmonary assessment. The goal is to answer the question, “Does this child have pulmonary or circulatory failure that may lead to cardiopulmonary arrest?”
2. Respiratory Assessment
 - a. Assessment of a child’s respiratory status is crucial to preventing cardiopulmonary arrest.
 - b. Identify signs of respiratory distress early, including tripodding, nasal flaring, retractions, grunting, wheezes, rhonchi, and stridor.
 - c. Identify and rapidly treat signs of respiratory failure. Look for changes in mental status, cyanosis, delayed capillary refill, loss of peripheral pulses and cold/mottled extremities.
 - d. Treatment should be focused on:
 - 1) Ensuring patency of the airway by suctioning secretions from oral and nasal passages and utilizing airway adjuncts.
 - 2) Positioning of the child, which is critical to maintaining an airway. Padding is needed under the torso of all children, even those being immobilized for c-spine injuries.
 - 3) Providing supplemental oxygen, which is needed to prevent progression to arrest. Consider use of blow-by oxygen to decrease anxiety produced by mask oxygen. Do not hesitate to assist ventilations with signs of respiratory failure. Remember that a calm child uses less oxygen than an anxious child.

C. Circulatory / Cardiovascular Assessment

1. Heart rate: Tachycardia is an early sign of shock. Bradycardia in a distressed infant or child may indicate hypoxia and is an ominous sign of impending cardiac arrest.
2. Peripheral circulation: The presence of peripheral pulses is a good indicator of the adequacy of an end-organ perfusion. Loss of central pulses is an ominous sign.
3. End-organ perfusion: The end-organ perfusion is most evident in the skin, kidneys, and brain. Decreased perfusion of the skin is an early sign of shock. A capillary refill time of greater than two seconds is indicative of low cardiac output. Impairment of brain perfusion is usually evidenced by a change in mental status. The child may become confused or lethargic. Failure of the child to recognize familiar faces is often an ominous sign. Urine output is directly related to kidney perfusion.
4. Blood pressure is the last and least important vital sign to obtain in children and should not be obtained in children under three years old. Hypotension is a late and often sudden sign of cardiovascular decompensation. The presence of a normal BP does not rule out shock and should not be used to evaluate children over three years old with other signs and symptoms of shock.

D. Pediatric Cardiac Arrest

NOTE: For neonates refer to Newborn Resuscitation (protocol M).

1. Initiate BLS care with CPR.
 - a. Push hard and fast (100/min)
 - b. Ensure full chest recoil
 - c. Minimize interruptions in chest compressions
2. Use high-flow oxygen for ventilation when available, and manage the airway as needed. Appropriate basic life support airway management should be initiated first – it may not be necessary to intubate if bag-valve-mask ventilation proves to be adequate. Avoid hyperventilation.
3. Attach monitor/defibrillator when available.
4. Check rhythm. If not shockable, proceed to asystole/PEA algorithm below (6.).
5. **FOR SHOCKABLE RHYTHM (VF/VT):**
 - a. Give one shock at 2 J/kg. Resume CPR immediately.
 - b. **Epinephrine: 0.01 mg/kg IV/IO** (0.1 cc/kg of 1:10,000), or **0.1 mg/kg ET** (0.1 cc/kg of 1:1,000) if unable to place IV/IO; repeat every 3 to 5 minutes
 - c. After five cycles of CPR (roughly two minutes), check rhythm.
 - (1) If asystole or PEA, proceed to asystole/PEA algorithm below.
 - (2) If pulse present, begin postresuscitation care
 - (3) If shockable, continue here.
 - f. Give one shock of 4 J/kg. Resume CPR immediately.
 - g. Consider antiarrhythmics; give during CPR without a rhythm check:
 - (1) **amiodarone 5 mg/kg IV/IO**
 - OR
 - (2) **lidocaine 1 mg/kg IV/IO**
 - (3) **Magnesium Sulfate 25-50 mg/kg IV/IO**, max 2 gm for torsades de pointes
 - h. After five cycles of CPR, return to item 4. above. Continue cycles of CPR with epinephrine, shock, CPR with antiarrhythmic, shock.
 - i. Once an advanced airway is in place, do not deliver “cycles” of CPR. Instead, give continuous chest compressions, with 8-10 breaths per minute without pausing compression. Check rhythm every two minutes.

6. NOT SHOCKABLE RHYTHM(ASYSTOLE/PEA)

- a. Continue CPR.
- b. **Epinephrine: 0.01 mg/kg IV/IO** (0.1 cc/kg of 1:10,000) or **0.1 mg/kg ET** (0.1 cc/kg of 1:1,000) if unable to place IV/IO; repeat every 3 to 5 minutes
- c. Give 5 cycles of CPR (approximately 2 minutes)
- d. Check rhythm.
 - (1) If shockable, go to 5. above.
 - (2) If pulse present, begin postresuscitation care.
 - (3) If asystole/PEA, go to 6a. Search for and treat possible causes (Hs and Ts)

E. Pediatric Bradycardia

1. Support ABCs as needed.
2. Give oxygen. During evaluation, secure and verify airway if needed, and secure vascular access.
3. Attach monitor/defibrillator
4. Perform CPR if HR remains <60 with poor perfusion despite oxygenation and ventilation
5. **Epinephrine, 0.01 mg/kg IV/IO** (0.1 cc/kg of 1:10,000) or **0.1 mg/kg ET** (0.1 cc/kg of 1:1,000) if unable to place IV/IO; repeat every 3 to 5 minutes

If increased vagal tone or primary AV block:

6. **Atropine 0.02 mg/kg IV/IO**, repeat as needed. (Minimum dose 0.1 mg, maximum total dose 1 mg for adolescents and 0.5 mg for children)
7. Search for and treat possible contributing factors (Hs and Ts).

F. Pediatric Tachycardia

1. Assess and support ABCs as needed. Need for active intervention (medications and/or electrical cardioversion) depends on stability of patient (see C above).
2. Give oxygen. During evaluation, secure and verify airway if needed, and secure vascular access. Prepare for cardioversion. Treat possible contributing factors (Hs and Ts)
3. Attach monitor/defibrillator and evaluate QRS duration, then follow 4. or 5. below:
4. **Narrow QRS (≤ 0.08 sec):** evaluate with 12-lead ECG, then follow a. or b. below.
 - a. **Sinus tachycardia** (compatible history consistent with known cause, P waves present and normal, variable R-R with constant P-R, rate usually < 220 for infants and < 180 for children):
 - 1) Search for and treat cause.
 - b. **Supraventricular tachycardia** (P waves absent/abnormal, heart rate not variable, history of abrupt rate changes, rate usually > 220 for infants and > 180 for children):
 - 1) Consider vagal maneuvers, then:

If IV access is readily available:

 - 2) **Adenosine 0.1 mg/kg IVP** (max first dose 6 mg) with flush.
Adenosine 0.2 mg/kg IVP (max second dose 12 mg) if first dose unsuccessful

If no IV access readily available:

 - 3) Synchronized cardioversion 0.5-1 J/kg; if not effective increase to 2 J/kg. Sedate with **midazolam 0.02 mg/kg IV/IO** if possible (with a repeat dose if needed), but do not delay cardioversion in critically ill patients.
 - 4) If all of the above are unsuccessful, contact medical oversight for consideration of **amiodarone 5 mg/kg IV/IO** over 20-60 minutes, or additional attempts at electrical cardioversion.
5. **Wide complex tachycardia (QRS > 0.08 sec.)**
 - a. Synchronized cardioversion 0.5-1 J/kg. if not effective, increase to 2 J/kg. Sedate if possible with **midazolam 0.02 mg/kg IV** (with a repeat dose if needed), but do not delay cardioversion. May attempt adenosine as in 4b2 above if this does not delay electrical cardioversion.
 - b. If unsuccessful, contact medical oversight for consideration of **amiodarone 5 mg/kg IV/IO** over 20 to 60 minutes, or additional attempts at cardioversion.

G. Pediatric Altered Mental Status / Hypoglycemia

1. Consider hypoxia and/or trauma as primary or contributing factor.
2. Establish one peripheral IV to run at KVO rate.
3. Obtain a blood sample for serum glucose level. If glucose is less than 70 mg/dl:
 - a. Administer **dextrose 0.5 gm/kg IV**.
 - 1) If <10 yrs old, use **D25**. Administer 2 cc/kg of D25 solution.
 - 2) If \geq 10 yrs old, use **D50**. Administer 1 cc/kg of D50 solution.
 - b. If no response, contact medical oversight for consideration of the following:
 - 1) Repeat dextrose at above noted doses.
 - 2) If IV access has been unsuccessful, permission to establish IO access.
4. If narcotic overdose is suspected:
 - a. **Naloxone 0.1 mg/kg slow IV/IN/IM**, titrating to respiratory rate and mental status.
 - 1) < 5 years old: 0.1 mg/kg (max 1mg)
 - 2) > 5 years old: 0.1 mg/kg (max 2mg)
 - b. Repeat above dose one time if limited response, or depression returns.
 - c. Contact medical oversight for consideration of the following as needed:
 - 1) Additional naloxone.
 - 2) If IV access has been unsuccessful, permission to establish IO access.

H. Pediatric Acute Respiratory Distress

1. Initiate treatment based on history and clinical presentation. If respirations begin to decrease in rate or depth with change in mental status or cyanosis, begin to assist ventilations immediately. Always consider the possibility of a foreign body airway obstruction.
2. **Bronchial asthma (acute reversible bronchospasm)**
 - a. **Albuterol 2.5 mg/3cc** via nebulizer, not to exceed 3 treatments. Consider blow-by technique if patient does not tolerate mask.
 - b. Optional: **Ipratropium bromide 0.25 mg/3cc** via nebulizer. May mix with albuterol and administer simultaneously.
 - b. Consider **epinephrine 1:1,000, 0.01 mg/kg IM** (Max. 0.3 mg).
3. **Croup / Epiglottitis**
 - a. In the conscious child patient with suspected croup (e.g. stridor, barking cough, retractions of intercostal and suprasternal muscles, history of upper respiratory infection) or epiglottitis (e.g. high fever, stridor, muffled voice, drooling):
 - 1) Begin transport. **DO NOT EXAMINE THE OROPHARYNX**. Avoid agitating the patient. Allow a parent to accompany the patient. Allow the patient to be transported in a sitting position.
 - 2) Nebulized saline, via blow-by technique as not to agitate patient.
 - 3) Contact medical oversight for consideration of **epinephrine (1:1000), 0.5 ml diluted in 2.5 ml saline** by nebulizer.
 - b. If the child is unconscious and you have reason to believe this is secondary to complications of croup or epiglottitis, provide ventilations with BVM as appropriate to the patient's respiratory status. **DO NOT ATTEMPT TO INTUBATE**. If unable to ventilate with BVM, contact medical oversight.
4. **Respiratory distress of unknown etiology/ bronchospasm without history of asthma:**
 - a. Humidified oxygen or nebulized saline.
 - b. Contact medical oversight for consideration of **albuterol 2.5 mg/3cc** via nebulizer or other treatment options.

I. Pediatric Seizure / Status Epilepticus

1. Initiate treatment based on history and clinical presentation. It is essential to make the distinction between focal motor, general motor seizures, and status epilepticus. Most seizures do not require emergent intervention.

2. General Motor Seizures (Grand Mal)

- a. Consider trauma, drug overdose, and hypoglycemia as etiologies and treat appropriately.
- b. Consider sepsis/meningitis as etiology and treat appropriately. If suspected, mask, gloves, gown and early notification of ED.
- c. Transport.

3. Status Epilepticus

(Two or more general motor seizures without a lucid interval witnessed by EMS personnel, or continuous seizure activity lasting for greater than 10 minutes).

- a. Consider trauma, drug overdose, and hypoglycemia as etiologies and treat appropriately.
- b. Consider sepsis/meningitis as cause. If suspected, mask, gloves, gowns and early notification of ED.
- c. Establish IV Access.
- d. Determine blood glucose level. If <70 mg/dl, treat per protocol G above.
- e. **Midazolam 0.1 mg/kg IN/IM/IV** over 3 minutes.
- f. Contact medical oversight for consideration of the following:
 - 1) If intravenous access has been unsuccessful, permission to establish intraosseous access.
 - 2) Additional midazolam if seizure continues or recurs
 - 3) Additional dextrose depending on serum glucose level.

J. Pediatric Anaphylaxis

1. Establish IV access. Administer a 20 cc/kg bolus of NS.
2. Begin transport while continuing assessment and resuscitation.
3. For patients who have severe respiratory distress and present with acute bronchospasm, administer:
 - a. **Albuterol 2.5 mg/3cc** via nebulizer, not to exceed 3 treatments.
 - b. **Diphenhydramine 1 mg/kg IV, IO, or IM** up to a maximum of 50 mg.
4. For patients with severe cardiopulmonary compromise (impending upper airway obstruction with stridor, poor perfusion, hypotension, or respiratory distress)
 - a. **Epinephrine 1:1,000, 0.01 mg/kg IM**, not to exceed 0.3 mg (can be administered without IV access).
5. If very poor peripheral perfusion, lack of peripheral pulses, and patient *in extremis*:
 - a. **Epinephrine 1:10,000, 0.01 mg/kg IV/IO** instead of IM.

K. Pediatric Multi-System Trauma / Hypovolemia

1. Field time for multi-system trauma patients and hypovolemic patients must be kept to a minimum. Airway and cervical spine control are the primary goals of pre-hospital care for the multi-system trauma patient. All other treatments (including vascular access) should be performed while en route to the hospital. Notify the receiving facility as early as possible.
2. Establish one or more peripheral IV lines as appropriate with large bore catheters and infuse fluid (20 cc/kg as quickly as possible) to maintain adequate perfusion and pulse. If intravenous access has been unsuccessful, contact medical oversight for permission to establish intraosseous access. Signs of inadequate perfusion include:
 - a. Lack of peripheral pulses.
 - b. Delayed capillary refill.
 - c. Cold, mottled extremities.(Note that hypothermia can also cause these symptoms.)
3. For pediatric traumatic cardiac arrest, administer **0.01 mg/kg epinephrine 1:10,000 IV/IO**. Repeat every 3-5 minutes.

L. Sepsis and Dehydration

1. Signs and symptoms of sepsis may include:
 - a. Hyper- or hypothermia.
 - b. Nonspecific respiratory distress.
 - c. Vomiting, diarrhea, abdominal distress.
 - d. Poor feeding.
 - e. Cyanosis, pallor, mottled skin.
 - f. Poor general appearance with altered mental status, irritability, seizures.

2. If meningitis is suspected, protection of care givers with surgical mask, gloves, and gown is required. The receiving facility should be notified of the possibility of meningitis to protect staff and other children in the ED. Additional signs and symptoms of meningitis may include:
 - a. Stiff neck, head ache.
 - b. Bulging fontanelle.
 - c. Petechial rash.

3. Dehydration is common in ill children. Document any prolonged vomiting, diarrhea, dry mucous membranes, and poor urinary output.

4. Establish one or more peripheral IV lines as appropriate with large bore catheters and infuse fluid (NS 20 cc/kg as quickly as possible) to maintain adequate perfusion.

5. Contact medical oversight for consideration of the following:
 - a. Repeat/continue rapid infusion 20 cc/kg.
 - b. If intravenous access has been unsuccessful, permission to establish intraosseous access.

M. Newborn Resuscitation

1. Assist in delivery in accordance with BLS guidelines. Ensure adequate care for the mother as resuscitation continues. Suction, dry, warm, and stimulate if no meconium is present. Clamp and cut the umbilical cord according to BLS guidelines as soon as possible. Assess APGAR score (1 and 5 minutes) for all newborns.
2. For newborns requiring resuscitation whose amniotic fluid contains thick meconium:
 - a. Do NOT dry, warm or stimulate until airway is clear.
 - b. Perform ET intubation and direct suction the ET tube via a meconium aspirator/adaptor while slowly withdrawing ET tube.
 - c. Repeat with new ET tubes until clear of meconium.
 - d. Do NOT replace ETT once airway has been cleared of meconium unless newborn remains limp, apneic or pulseless.
 - e. Continue with drying, warming and stimulating. Clamp and cut the umbilical cord.
 - f. Give high flow oxygen via mask or blow-by.
 - g. If signs of adequate ventilation and perfusion do not improve with high flow oxygen, provide assisted ventilation via BVM with 100% oxygen.
 - h. If signs of adequate ventilation and perfusion do not improve with BVM assist within 30 seconds: reassess cardiorespiratory status (heart rate, capillary refill, skin color and respirations) and consider cardiac compressions (if heart rate is below 60 bpm) and endotracheal intubation. Administer epinephrine 1:1000 0.1 mg/kg via endotracheal tube.
 - i. Contact medical oversight for consideration of the following:
 - a) Establish vascular access (peripheral, or intraosseous) for **epinephrine 1:10,000 0.01 mg/kg IV/IO** or **epinephrine 1:1000 0.1mg/kg ET endotracheal tube**.
 - b) Obtain blood sample for serum glucose level. Determine blood glucose level by rapid method. If glucose less than 70 mg/dl, administer **dextrose 0.5 gm/kg IV**.

N. Pediatric Pain Relief

1. Morphine Sulfate 0.1mg/kg IV/IM. Maximum dosage of 5mg.

Direct medical oversight should be contacted prior to administration in the following situations:

- a. Head trauma
 - b. Decreased respirations
 - c. Altered mental status
 - d. Active labor
 - e. Systolic blood pressure <90 mmHg (or below normal limits for children, based on length-based resuscitation tape)
 - f. Multi-system trauma
 - g. Traumatic abdominal pain
 - h. Additional morphine dosing beyond the maximum standing order dosages.
- ### **2. Lidocaine 2% 0.5 mg/kg IO.** Consider for alert patients to prevent pain due to fluid or medication administration via intraosseous route.

1. Morphine should be given to any patient with a complaint of significant pain and a total prehospital time (including packaging, movement to the ambulance, and transport) of ≥ 10 minutes, including:

- a. Significant extremity injuries
- b. Burns
- c. Crush injuries
- d. Prolonged extrications
- e. Immobilization
- f. Severe back pain
- g. Non-traumatic abdominal pain

Chapter 7: Triage and Transport Protocols

A. Major Field Trauma Triage Criteria

These guidelines are based on the State of Connecticut Statewide Trauma System regulations and shall provide criteria to categorize trauma patients and determine destination hospitals with resources appropriate to meet the patient's needs.

1. Assess the physiologic signs. Trauma patients with any of the following physiologic signs shall be taken to a Level I/II trauma facility:
 - a. Glasgow Coma Scale of 12 or less
 - b. Systolic blood pressure of less than 90 mmHg
 - c. Respiratory rate of less than 10 or more than 29 breaths per minute

2. Assess the anatomy of the injury. Trauma patients with any of the following injuries shall be taken to a Level I/II trauma facility:
 - a. Gunshot wound to chest, head, neck, abdomen or groin
 - b. Third degree burns covering more than 15% of the body, or third degree burns of face or airway involvement
 - c. Evidence of spinal cord injury
 - d. Amputation, other than digits
 - e. Two or more obvious proximal long bone fractures

3. Assess the mechanism of injury and other facts and, if any of the following is present, determination of destination hospital shall be in accordance with medical oversight:
 - a. Mechanism of injury:
 - 1) Falls from over 20 feet
 - 2) Apparent high speed impact
 - 3) Ejection of patient from vehicle
 - 4) Death of same car occupant
 - 5) Pedestrian hit by car going faster than 20 miles per hour
 - 6) Rollover, or
 - 7) Significant vehicle deformity - especially steering wheel
 - b. Other factors:
 - 1) Age less than 5 or greater than 55 years;
 - 2) Known cardiac or respiratory disease;
 - 3) Penetrating injury to thorax, abdomen, neck, or groin other than gunshot wound.

4. Patients who meet triage criteria for Major Trauma according to the above State of Connecticut Statewide Trauma System regulations will be transported to the Hospital of Saint Raphael or Yale-New Haven Hospital.
 - a. Patients who are alert and oriented may choose the destination hospital, as long as the hospital of their choice is not on trauma diversion. If a patient insists on being transported to other than a Level I/II trauma facility, or a facility that is on trauma diversion, medical oversight must be contacted immediately.
 - b. Children less than thirteen (13) years of age with major trauma or burns will be transported to Yale-New Haven Hospital.

- c. Patients who sustain an amputation will be transported to Yale-New Haven Hospital if the amputated part is found and appears viable.
 - d. Except as in a-c above, an ambulance should not drive past one facility to go to another.
 - e. In instances where more than two patients at a scene meet State of Connecticut triage criteria for major trauma, patient transports will be divided among appropriate receiving facilities to avoid over-burdening any one facility. This distribution should apply to both numbers of patients and apparent severity of injuries. This policy includes all multi-victim trauma incidents except for injured children and their parents, in which case one parent (or both if Y-NHH can accept two trauma patients simultaneously) will be transported to YNHH to accompany the child(ren).
 - f. At scenes being managed by local emergency responders according to the New England Triage and Mass Casualty Scene Management plan or other mass casualty protocol, the Loading Officer (sometimes known as the Transport Sector Officer) on scene shall be responsible for assigning a destination hospital for each patient transported from that scene. This officer, with assistance from C-MED, will keep in contact with the available receiving facilities regarding their ability to receive patients. Out-of-area facilities such as the Burn Center at Bridgeport Hospital, and non-trauma centers for patients not meeting trauma triage criteria, should be utilized to avoid overburdening the New Haven trauma centers.
4. When transport to a Level I/II trauma facility is indicated but the ground transport time to that hospital is judged to be greater than 20 minutes, or if despite therapy the trauma patient's carotid or femoral pulses can not be palpated, airway cannot be managed, or external bleeding cannot be controlled, determination of destination hospital shall be in accordance with local medical oversight.
 5. When in doubt regarding determination of destination hospital, contact medical oversight.
 6. All EMS providers transporting trauma patients to hospitals shall provide receiving hospitals with a completed EMSIRS run form or authorized equivalent prior to departing from the hospital.

B. Substance abuse field triage protocol

PURPOSE: To provide a field triage protocol which will be in place 24 hours a day, seven days a week to be used by EMS personnel for individuals seeking or in need of assessment and substance abuse treatment. Note: SCRC should be considered open unless notified by C-MED that they are on diversion. Any difficulties which arise in determining destination should result in medical consultation by radio.

1. The South Central Rehabilitation Center (SCRC) will be the primary referral source for acutely intoxicated persons. The Hospital of Saint Raphael, Yale-New Haven Hospital, and the West Haven Veterans Administration Hospital (for VA eligible patients only)

will be the secondary referral source when space is unavailable at SCRC. Patients may be brought to SCRC as follows:

- a. Acutely intoxicated persons with no other acute medical or surgical problems, unless described in Part II of this protocol.
 - b. Patients who have ingested alcohol containing substances such as mouthwash and cologne.
2. The Hospital of Saint Raphael, the West Haven Veterans Administration Hospital (for VA eligible patients), and Yale-New Haven Hospital will be the primary referral source for the acutely intoxicated persons with concomitant acute medical or surgical problems. These patients as well as patients diverted from SCRC will be distributed between the hospitals according to current practice. The following patients must be brought to a hospital:
- a. Patients under 18 years of age.
 - b. Patients with obvious signs of recent injury including but not limited to bleeding, suspected fractures/dislocations, lacerations requiring sutures and severe burns or a mechanism of injury suggesting the need for hospital intervention.
 - c. Patients who are unconscious/unresponsive; patients who are actively seizing or have had a seizure within the past hour and witnessed by a reliable source; patients who have medical complications in addition to substance abuse such as respiratory distress, chest pain, active GI bleeding or an escalating neurological impairment; patients with hypothermia/hyperthermia or patients requiring/receiving ALS care in the field.
 - d. Patients who are suicidal, homicidal, restrained in the field or are physically unmanageable.
 - e. Patients who are under arrest or placed under protective custody, in which case the patient must be accompanied by the arresting officer or a Police Emergency Evaluation Request.
 - f. Patients who have ingested or have suspected ingestion of methanol (wood alcohol) or ethylene glycol (antifreeze).
3. All perceived non-compliance with the protocol and other problems should be referred in writing to the New Haven Sponsor Hospital Program.
4. When in doubt, triage patients to the hospital emergency department.

C. Yale-New Haven Shoreline ED Destination Guidelines

The Yale-New Haven Shoreline Medical Center ED, known by its CMED designation as “Yale Guilford,” operates as a regular ED, and is staffed by the same attending emergency physicians, physician assistants, and nurses that staff the YNHH Emergency Department. The facility is equipped and staffed to offer the full range of emergency medicine for patients of all ages.

There are several general categories of patients who typically should not be transported to the Yale Guilford ED:

1. Trauma: Patients meeting trauma triage criteria shall be transported to a designated trauma center, as per state regulations. Major burns and amputations should be transported directly to a hospital. When in doubt regarding a given trauma patient (e.g. whether or not the mechanism meets trauma criteria), call the Yale Guilford ED for direct medical oversight.
2. Myocardial Infarction: Patients whose 12-lead ECG shows an acute ST-segment elevation myocardial infarction (STEMI) should generally be transported to a facility offering 24-hour percutaneous coronary intervention. These cases should be discussed with a direct medical oversight physician if there are any destination issues.
3. Acute Stroke: Patients being cared for under the Focal Neurological Deficit protocol who meet the EMS Stroke Screen criteria should generally be transported to a facility capable of rapid screening and treatment of stroke. The Yale Guilford ED will be unable to provide this level of rapid treatment.
4. Active Labor: Women in active labor should generally be transported to a facility with labor and delivery facilities. The Guilford ED will be staffed and equipped to deliver babies, and if delivery is imminent, will be an acceptable destination.
5. Psychiatric Emergencies, including alcohol or drug incapacitation: The Yale Guilford ED will generally not have the resources for prolonged monitoring of restrained patients. Patients who will need an evaluation by a psychiatrist or prolonged observation for substance intoxication should typically be transported to a hospital-based ED.
6. Patients requiring admission: In general, if it is known with certainty that a patient will require hospital admission, it is preferable to transport the patient directly to the hospital of his or her choice, rather than Yale Guilford.

D. Yale-New Haven Hospital Pediatric/Adult Destination Guidelines

For patients meeting state trauma triage criteria:

<16 y/o: to pediatric ED

16 or greater y/o: to adult ED

All other patients:

<18 y/o: to pediatric ED

21 or greater y/o: to adult ED

18, 19, or 20 y/o: whichever the patient wants

E. Transport Guidelines – Lights & Sirens

(From the guidelines approved by the state by the Connecticut EMS Advisory Council)
Response Guidelines for Authorized Emergency Medical Vehicles (Including Lights and Siren Use)

(From the Connecticut EMS Medical Advisory Committee)

The highest level certified/licensed EMS provider responsible for the patient's care will advise the driver of the appropriate mode of transportation based upon the medical condition of the patient.

When transporting the patient utilizing lights and sirens, the need for immediate medical intervention should be beyond the capabilities of the ambulance crew using available supplies and equipment and the reasons must be documented on the patient care report.

Such conditions include, but are not limited to:

1. Unstable airway or severe respiratory distress
2. Shock without vascular access.
3. Patient with anatomic or physiologic criteria for field triage to a Trauma Center
4. Status epilepticus that persists after administration of benzodiazepines.
5. Cardiac arrest with persistent ventricular fibrillation, hypothermia, overdose or poisoning.

However, should traffic be so congested that significant delays in transport may occur, L&S transport may be considered for conditions other than the above such as an acute CVA or STEMI, for example.

The mode of transport for emergency interfacility transfers should be based upon the directions of the referring physician or medical control physician who provides the orders for patient care during the transport. Generally, emergency interfacility transport patients have been stabilized to a point where the minimal time saved by L&S transport is not of importance to patient outcome (unless the patient's condition has deteriorated en route).

Lights and sirens use should be documented and justified on the patient care report (e.g., "flail chest", "systolic BP<90", etc.).

Exceptions to these policies can be made under extraordinary circumstances (e.g., disaster conditions or a back log of high priority calls where the demand for EMS ambulances exceeds available resources).

Appendix

Appendix 1a: Paramedic Formulary

The following medications are found in these protocols and are approved for use by paramedics holding current medical authorization. The minimum amount required to be stocked in each vehicle is shown for each medication. Paramedics have medical authorization to function under these protocols only if all items shown in **bold** are on the vehicle at the start of each shift. Temporary supply shortages of items not in bold are acceptable.

Activated charcoal	50 gm
Adenosine (IV)	30 mg
Albuterol (nebulized)	6 neb doses
Amiodarone (IV/IO)	450 mg
Aspirin (po)	972 mg
Atropine (IV/IO)	3 mg
Calcium chloride (IV)	2 gm
Dextrose D50 (IV/IO)	2 amps
Dextrose D25 (IV/IO)	2 amps
Diltiazem (IV)	40 mg
Diphenhydramine (IV, IM)	100 mg
Dopamine (IV)	1 premixed
Epinephrine 1:10,000 (IV/IO)	6 mg
Epinephrine 1:1,000 (IM)	2 mg
Furosemide (IV/IO)	200 mg
Glucagon (IM)	1 mg
Ipratropium bromide	6 neb doses
Lidocaine (IV/IO)	300 mg
Magnesium sulfate (IV/IO)	4 gm
Metoclopramide (IV - optional)#	20 mg
Metoprolol (IV/IO)	15 mg
Midazolam (IV/IO, IM, IN)	10mg
Morphine Sulfate (IV/IO, IM)	20mg
Naloxone (IV/IO, IN)	6 mg
Nitroglycerin (SL)	12 doses
Nitroglycerin (paste - optional)	1 tube
Ondansetron (IV/IO/IM)*	8 mg
Sodium bicarbonate 8.4% (IV/IO)	2 amps
Tetracaine ophthalmic drops (optional)	1 bottle
Thiamine (IV, IM)	200 mg

* New medications in this edition of the protocols.

May use metoclopramide in place of ondansetron as per prior NHSHP protocols until supplies are depleted.

Appendix 1b: Transport Medications

Any NHSHP-authorized paramedic may transport any patient who is already on an intravenous infusion of any of the following medications:

Amiodarone
Antibiotics
Bumetanide
Cardizem
Lidocaine
Lorazepam
Morphine
Naloxone
Nitroglycerin

Appendix 2: Refusal of Medical Assistance or Transport

1. Policy: EMS personnel will make every reasonable effort, in cooperation with the assistance of direct medical oversight when necessary, to convince reluctant patients to accept treatment and transport. Patients refusing treatment or transport presenting with an altered mental status or diminished mental capacity, or who present a threat to themselves, require the involvement of medical oversight to effect any disposition.
2. Procedure: Any patient contact by New Haven Sponsor Hospital MIC personnel must result in complete documentation of EMSIRS form. When dealing with patients who are refusing treatment and/or transportation, the importance of thorough documentation is even more critical in avoiding significant liability. Several specific items must be secured and documented:
 - a. Accurate patient information, times, and date.
 - b. Chief complaint and history of present illness.
 - c. Complete prehospital exam including vital signs, oxygen saturation, and mental status.
 - d. Signature of patient and witness (police officer or other reliable person if possible). If the patient refuses to sign the appropriate form, document this carefully.
3. Direct medical oversight is a resource that may be accessed at any time to assist in preventing an RMA or in determining the need for protective custody as an option. However, several situations require the use of direct medical oversight to determine disposition:
 - a. Have had advanced life support initiated or would require advanced life support intervention based on their chief complaint and assessment. (see exception below)
 - b. Have suicidal ideation resulting in any gesture or attempt at self harm, or any verbal or written expression of suicidal ideation regardless of any apparent ability to complete a suicide. The paramedic must obtain a police emergency examination request (PEER) to transport such a patient.
 - c. Are minors (below 18 years of age).
 - d. Have an altered mental status due to any cause and may be impaired from making informed decisions, or are hypoxic (oxygen saturation less than 92%).

In these cases, the direct medical oversight physician must be provided with all relevant information and should converse directly with the patient by radio or telephone if possible. The physician will determine if PEER is to be pursued via police department. If the patient is allowed to refuse medical assistance, the paramedic will secure the signatures of the patient and a witness on the EMSIRS form. A copy of the run form with all relevant documents must be forwarded within seven days to the EMS coordinator at the hospital contacted for medical oversight. Itemized refusals (e.g. refusing an IV, but accepting transport and oxygen) should be documented clearly on the EMSIRS form.

Exception to the requirement for direct medical oversight:

Insulin-dependent diabetics who are initially hypoglycemic but who regain normal mental status after administration of IV D50, with a re-check fingerstick glucose reading of 100 mg/dl or greater. This exception does not apply to patients who are on oral anti-hypoglycemic agents (and are thus a very high risk for repeat hypoglycemia), or patients who get glucagon instead of D50. A call to the direct medical oversight physician is required when such a patient refuses further care and transport.

Appendix 3: Terminating / Withholding Resuscitation Efforts

Connecticut EMS Medical Advisory Committee

Guidelines for paramedic personnel determination of death / discontinuation of prehospital resuscitation for adults age 18 and over, non-mass casualty situations

Procedure for determination of death

Local emergency responders and EMS personnel in Connecticut who are trained in any of the National Standard curricula are instructed to follow the most recent national guidelines of the American Heart Association.

All clinically dead patients will receive all available resuscitative measures including cardiopulmonary resuscitation (CPR) unless contraindicated by one of the exceptions defined below. A clinically dead patient is defined as any unresponsive patient found without respirations and without a palpable carotid pulse.

The person who has the highest level of currently valid EMS certification, and who has direct voice communication for medical orders, who is affiliated with an EMS organization present at the scene will be responsible for, and have the authority to direct, resuscitative activities.

In the event there is a personal physician present at the scene, who has an ongoing relationship with the patient, that physician may decide if resuscitation is to be initiated. In the event there is a Registered Nurse from a home health care or hospice agency present at the scene, who has an ongoing relationship with the patient, and who is operating under orders from the patient's private physician, that nurse (authorized nurse) may decide if resuscitation is to be initiated. If the physician or nurse decides resuscitation is to be initiated, usual Medical Control procedures will be followed.

Resuscitation must be started on all patients who are found apneic and pulseless **Unless:**

1. The patient has a valid Do Not Resuscitate Order (DNR).
2. The patient shows signs of decomposition putrefaction, decapitation, hemicorporectomy, or incineration.
3. Dependent Lividity and/or Rigor Mortis require additional assessment:

NOTE: THIS SECTION (3) DOES NOT APPLY IN CASES OF HYPOTHERMIA, LIGHTNING STRIKES, OR DROWNING

- Reposition the airway and look, listen, and feel for at least 30 seconds for spontaneous respirations or auscultate for lung sounds; respiration is absent.
- Palpate the carotid pulse for at least 30 seconds or auscultate for heart sounds; pulse or heart sound is absent.
- Examine the pupils of both eyes with a light; both pupils are non-reactive.

- Cardiac monitor (in at least 2 leads) for at least 30 seconds to further document lack of cardiac activity.
4. Injuries incompatible with life (such as massive crush injury, complete exsanguination, severe displacement of brain matter) require additional assessment as in #3 above

Termination of resuscitation efforts

Nontraumatic Cardiac Arrest

Discontinuation of CPR and ALS intervention may be implemented after contact with direct medical oversight if all of the following criteria have been met.

1. Patient must be least 18 years of age.
2. Patient is in cardiac arrest at the time of arrival of advanced life support, no pulse, no respirations, and no heart tones.
3. ACLS is administered for at least twenty (20) minutes, according to AHA/ACLS Guidelines
4. There is no return of spontaneous pulse and no evidence of neurological function.
5. Patient is asystolic in two (2) leads
6. No evidence or suspicion of any of the following: drug/toxin overdose, hypothermic, active internal bleeding, preceding trauma.
7. All paramedic personnel involved in the patient's care agree that discontinuation of the resuscitation is appropriate.

All seven items must be clearly documented in the ambulance patient care report (PCR).

Direct medical oversight should be established prior to termination of resuscitation in the field. The final decision to terminate resuscitative efforts should be a consensus between the on-scene paramedic and the direct medical oversight physician. CONTACT MEDICAL OVERSIGHT for confirmation of terminating resuscitation efforts.

If any of the above criteria are not met and there are special circumstances whereby discontinuation of pre-hospital resuscitation is desired, contact Direct Medical Oversight.

Logistical factors should be considered, such as collapse in a public place, family wishes, and safety of the crew and public.

Examples: Patient too large to extricate, significant physical environmental barriers, unified family wishes with presence of a living will.

Patients who arrest after arrival of EMS should be transported.

Special circumstances:

A private physician at the scene who has an on-going relationship with the patient must produce identification showing the name and license number (MD/DO). That physician may pronounce death on a clinically dead patient in the presence of EMS personnel. This physician pronouncement relieves the EMS personnel at the scene of responsibility to begin or continue resuscitative measures. The information will be documented on the EMS patient care form.

A registered nurse from a home health care or hospice agency at the scene must produce identification showing the name and license number, who has an ongoing relationship with the patient, and who is operating under orders from the patient's private physician and is authorized by law to pronounce death, may pronounce a clinically dead patient dead even if EMS personnel are present. The nurse's pronouncement relieves the emergency personnel of the responsibility to begin or continue resuscitative measures. The information will be documented on the EMS patient care form.

Traumatic Cardiac Arrest

1. Patients must be at least 18 years of age.
2. Resuscitation efforts may be terminated with approval of the medical oversight physician in any blunt trauma patient who, based on thorough primary assessment, is found apneic, pulseless, and without organized electrocardiographic (ECG) activity upon arrival of emergency medical services at the scene.
3. Victims of penetrating trauma found apneic and pulseless by EMS, based on their patient assessment, should be rapidly assessed for the presence of other signs of life, such as pupillary reflexes, spontaneous movement, or organized ECG activity. Resuscitation may be terminated with permission of medical control if these signs of life are absent. If not terminated, transport.
4. Do not delay initiating proper BLS resuscitation to contact medical control.
5. Victims of drowning and lightning strike and in situations where significant hypothermia may alter the prognosis, should have ALS resuscitative efforts begun and be transported to the hospital. Hypothermic patients should be treated per the hypothermic protocol.
6. Cardiopulmonary arrest patients in whom mechanism of injury does not correlate with clinical condition, suggesting a non-traumatic cause of arrest, should have standard ALS resuscitation initiated.
7. Logistical factors should be considered, such as collapse in a public place, family wishes, and safety of the crew and public.

Determination of Death/Discontinuation of Resuscitation Notes:

Consider the needs of survivors when considering the discontinuation of a resuscitation, especially if crisis management services may be needed.

Scene management may prevent withholding/discontinuation of resuscitation. In general, do not cease resuscitation in public places/establishments.

Tubes and IV lines may be removed if patient is being picked up by a funeral home. If the patient is deemed a medical examiner's case, leave tubes and lines in place. In all cases of trauma, tubes and IV lines must be left in place.

Documentation of all encounters with the patient's family, personal physician, medical examiner, law enforcement, and medical control should be on the PCR.

Appendix 4: Restraint of the Violent / Agitated Patient

1. Use of a physical restraint is permissible if the patient poses a clear and immediate physical danger to himself or others. Only reasonable force is allowed. Reasonable force is defined as the minimum amount of force necessary to control the patient and prevent harm to the patient and those in the presence of the patient. The use of chemical restraints is indicated when there is failure of the initial physical restraint attempt, or when the patient remains violent and agitated despite physical restraint, and may be administered by a paramedic, with direct medical oversight. In all situations where restraint is required, EMS personnel must involve law enforcement personnel, and must avoid transporting potentially dangerous patients without law enforcement presence.
2. Physical restraint devices
 - a. Indications: Restraints are to be applied to patients only in limited circumstances:
 - 1) Prehospital patient, not in custody: A patient whose medical or mental condition warrants immediate ambulance transport and who is exhibiting behavior that the pre-hospital provider feels may or will endanger the patient or others. The pre-hospital provider reasonably believes the patient's life or imminent health is in danger and that the delay in the treatment and transport of this patient would further endanger the patient's life.
 - 2) Prehospital patient, in custody: The patient is being transported in the custody of the police department, judicial marshals, or other law enforcement officer, and a law enforcement officer is in the presence of the patient throughout patient care and transport.
 - 3) Interfacility patient: The patient is being transferred with a medical order for restraint. This order must be a written order by the physician or other LIP (Physician Assistant or APRN) ordering the transfer.
 - b. Precautions
 - 1) Restraints shall be used only when necessary to prevent a patient from seriously injuring him/herself or others. Restraints **MUST NOT** be used as a punishment or for the convenience of the ambulance crew, but only for the provision of safe transportation and treatment.
 - 2) Any attempt to restrain a patient involves risk to the patient and the prehospital provider. Efforts to restrain a patient shall be made only when there is adequate assistance present. Ideally there should be one person controlling each limb, and an additional person at the patient's head.
 - 3) Verbal de-escalation techniques should be attempted prior to implementing physical restraint. Examples of de-escalation techniques include talking with the patient in a calm, respectful manner, offering empathy, and avoidance of aggressive body language.

- 4) Patients must have a physical examination performed (if permitted) prior to applying restraints, to assess for extremity injury and for any neurological, metabolic, or traumatic injury that could explain the patient's agitated state.
 - 5) Whenever possible, the patient should be searched for weapons (preferably by a law enforcement officer) prior to restraint.
 - 6) In the case of a violent or threatening patient, immediately contact the local police department for assistance. If necessary, remove yourself from the area until the police can secure the scene. DO NOT place yourself in danger.
- c. Acceptable physical restraints are soft in nature and pose no threat to the patient's extremities and/or physical presentation: medical soft restraints (recommended), or a tied pillowcase, triangular bandage, or towel.
 - d. Unacceptable means of restraint are oxygen tubing, tape, string/rope/cord, and handcuffs (unless in the custody of an accompanying law enforcement officer), as well as any restraint tied around the head, neck, or chest.
 - e. Complications of physical restraints:
 - 1) Aspiration can occur, particularly if the patient is supine. It is the responsibility of the EMS provider to continually monitor the patient's airway and level of consciousness.
 - 2) Nerve injury or soft tissue damage may occur from restraints that are applied tightly
 - f. Patient Approach: The EMS provider should assess the scene and request the dispatch other resources as necessary. If a patient is volatile and requires physical restraint, contact the police department and do not attempt to restrain. When you approach a volatile patient, you should:
 - 1) Ensure sufficient personnel are available to control the patient.
 - 2) Approach at a 45-degree angle from the front, rear, or side.
 - 3) Keep your body towards an escape route. DO NOT GET TRAPPED.
 - 4) Keep your arms in a defensive position.
 - g. Documentation shall include restraint device(s) attempted, patient's reaction to the initial attempt, motor and sensory evaluation of extremity parts distal to the area restrained, and ongoing assessment with vital signs findings every 5 minutes. Capillary refill and palpable distal pulses must be diligently documented.
3. Chemical restraint
- a. Chemical restraint refers to the use of medication to assist in the sedation of a violent patient, and is only to be used when the patient is refractory to physical restraint application **or** if the patient continues to pose a physical threat to him/herself or others. The use of chemical restraints in the field should be extremely rare.
 - b. With direct medical oversight, the paramedic provider may administer an initial IM, IV, or IN dose of midazolam (typically 2 mg slow IV push, with repeat dose of 2 mg as needed). If the patient does not respond or has a limited

response to the initial dose, then contact medical oversight for consideration of additional medication for sedation.

- c. After chemical restraint, the patient **MUST** be assessed for hemodynamic and respiratory stability. Assess the patient's vital signs including pulse oximetry frequently (at least every five minutes), and attempt to physically restrain him/her as above once her/she is adequately chemically sedated.
- d. Documentation shall include decision justification for the use of chemical restraint, dose(s) given, effects of chemical restraint, ongoing assessment with vital signs and pulse oximetry every five minutes, and the name of the direct oversight physician authorizing the use of chemical restraint.

Appendix 5: Emergency Incident Rehabilitation

A: Recommended Practices for Fire/EMS agencies

NOTE: These recommendations are based primarily on the DRAFT (November 2002) NFPA 1584 document entitled “Recommended practice on rehabilitation for members operating at incident scene operations and training exercises, 2003 edition.” These are not NHSHP policy, but are instead recommendations based upon current national trends.

1. Responsibilities:

- a. Incident Commander: Implementation of formal emergency incident rehabilitation (EIR) is at the discretion of the Incident Commander (IC). The IC should consider the circumstances of each incident, and make adequate provisions early in the incident for the rest and rehabilitation of all members operating at the scene. These provisions may include: physical and mental rest; fluid and food replenishment; relief from extreme climatic conditions and other environmental parameters of the incident; and medical evaluation, treatment, and monitoring.
- b. Rehab Officer: An EMT-B, EMT-P, or SHARP Team member should be assigned to the rehab area, and if appropriate may be designated by the IC as the Rehab Officer (RO). If available and practical, it is preferred that ALS-level personnel and equipment be present, as indicated in NFPA 1500. Rehab sector medical personnel and other assets should be dedicated to support of firefighters and other operational emergency responders, and should be assigned no other responsibilities.
- c. Rehab Team: should include sufficient personnel to perform rehab sector functions for the maximum number of personnel anticipated to be in the Rehab Area at any given time. A ratio of one Rehab Team member for every ten personnel on scene is recommended. The team should include sufficient EMS personnel to perform medical monitoring tasks, but may include non-EMS personnel also.
- d. Supervisors / Company Officers: All supervisors and company officers should maintain their awareness of the condition of each member operating within their span of control, and ensure that adequate steps are taken to provide for each member’s safety and health. The ICS structure should be utilized to request relief and/or reassignment of fatigued crews.
- e. Personnel: Any member who believes that his or her level of fatigue or exposure to heat or cold is approaching a level that could affect his or her performance or the operation in which he or she is involved should advise his or her supervisor or company officer. Personnel should also remain aware of the health and safety of other members of the crew.

2. Establishing the Rehabilitation Sector

- a. The IC should establish a Rehab Sector or Group when conditions indicate that rest and rehabilitation is needed for personnel operating at an incident scene or training exercise. This determination should be made based upon the

anticipated duration of the operation, level of physical exertion, and environmental conditions, including temperature, humidity, and wind-chill. Guidelines to consider include:

- 1) Heat stress index >90 degrees F
 - 2) Wind chill index <10 degrees F
 - 3) Personnel have completed (or will complete) exertional work with second SCBA cylinder
 - 4) Personnel have utilized (or will utilize) SCBA for >45 minutes of exertional work
- b. It is recommended that an EMS vehicle not otherwise involved in emergency operations at the scene be posted at the Rehab Area. If required, an additional ambulance should be requested to the scene for this purpose. Except under extreme circumstances, this ambulance should not be used for transport of civilian patients.
- c. The location of the Rehab Area will be designated by the IC and/or the RO, and should:
- 1) Be far enough from the scene to allow personnel to safely remove (and leave outside the area) SCBA and turnout gear, and remove personnel from the urgency of the scene, yet close enough to allow prompt re-entry into the operation on completion of rehab.
 - 2) Provide adequate protection from environmental conditions and exhaust fumes
 - 3) Be easily accessible by EMS units
 - 4) Be large enough to accommodate several crews.
 - 5) For extreme heat conditions, have shaded areas, misting systems and/or fans, and an area to sit down.
 - 6) For extreme cold and/or wet conditions, have dry protected areas, heated areas, and dry clothing
 - 7) Be integrated with departmental system for personnel accountability, utilizing a single entry and exit point when feasible. Examples of sites that have been utilized include a nearby building, garage, or lobby; a school bus or large van; or an open, shaded area.

3. Rehab Operations

- a. Resources: The RO should secure, through the IC or Logistics Officer, all necessary resources to properly supply the sector. These may include oral fluids, foods, medical supplies, paperwork, lighting, heaters, fans, a means of access to toilet facilities, and other assets as appropriate to the incident.
- b. Rotation of Personnel/Accountability: Companies and units will be assigned to the Rehab Sector by the IC, or his/her designee e.g. Operations Officer. Whenever possible, the entire company or unit should be assigned to the Rehab Sector as a group. The crew designation, names of members, times of entry and exit, and appropriate medical information should be documented by the Rehab Officer or designee on the EMSIRs form or similar document. Personnel rotated to the Rehab Sector shall not leave until directed by the RO. If any

member requires transport to a medical facility, the IC shall be notified immediately.

- c. Hydration: During exertional activity, in both hot and cold weather, personnel should consume at least one quart per hour of water, activity beverage, or combination. Carbonated and caffeinated beverages should be avoided. During a typical 20-minute rehab cycle, 12 to 32 oz of fluids are recommended.
- d. Nutrition: Food should be provided whenever operations exceed three hours. Fatty and salty foods should be avoided.

B: Protocol for EMS personnel operating in the rehab sector

NOTE: This section constitutes NHSHP policy/protocol for any member of any NSHSP-sponsored service who is assigned by an Incident Commander to assume a rehab function.

1. Medical Evaluation

- a. EMS personnel shall ask members arriving at the Rehab Area if they have any symptoms of dehydration, heat/cold stress, physical exhaustion, cardiopulmonary abnormalities, or emotional/mental stress. EMS personnel shall complete a medical evaluation, and appropriate treatment and/or transport, for all members who report such symptoms.
- b. A medical evaluation, with appropriate treatment and/or transport, shall also be completed for any member meeting any of the following criteria:
 - 1) The RO or Rehab Sector EMS staff observe evidence of one of the above conditions displayed by a member.
 - 2) Another member, officer, or supervisor indicates he/she does not appear well.
 - 3) The member had to leave an evolution for reasons of excessive fatigue or symptoms.

2. Medical Treatment: Standard treatment and/or transport shall be provided in accordance with New Haven Sponsor Hospital Program (NHSHP) protocols.

3. When treating a member with signs or symptoms of dehydration or fatigue (such as vomiting without evidence of toxic exposure or climate conditions producing multiple cases of mild heat stress), with absence of chest pain, change in mental status, or other indicators of a medical condition requiring emergent care, a paramedic or SHARP Team member working in the Rehab Sector may elect to perform a trial of intravenous rehydration if the following resources are available:

- a. 12-lead ECG, with appropriate interpretation training
- b. Tympanic thermometer, with appropriate training

The member may be considered a candidate for non-transport if, following the intravenous infusion of at least one liter of crystalloid, he/she has all of the following:

- a. Complete resolution of symptoms
- b. Vitals signs within the following ranges:
 - 1) Systolic blood pressure >90 and <200 mmHg

- 2) Pulse rate >50 and <100 beats per minute
- 3) Respirations >12 and <24 per minute
- 4) Temperature < 100.5 F

Even if the member is not transported to the hospital, he/she may not return to active duty for the duration of that duty cycle or 24 hours, whichever is longer. If the member's condition does not improve, or worsens at any time during the trial of rehydration, the member shall be transported to the hospital.

Appendix 6: Mucosal Atomizer Device

Indications:

1. Emergency administration of drugs via the nasal mucosa.

Contraindications:

1. Active epistaxis.
2. Deviated septum.
3. Nasal trauma.

Procedure:

1. Draw the medication into the M.A.D.
2. Purge all air from syringe.
3. Remove and discard the needle into an appropriate sharp proof container.
4. Attach the MAD to the syringe.
5. Place the tip of the MAD into the nostril and deliver half of the dose.
6. Place the tip of the MAD into the other nostril and deliver the second half of the dose.

Appendix 7: Drip Calculations

DOPAMINE INFUSION

(Mix 400mg in a 250ml solution to make a 1600mcg/ml concentration)

Weight (Kg)	5 Mcg gtts/min	10 Mcg gtts/min	15 Mcg gtts/min	20 Mcg gtts/min
40	8	16	24	36
50	10	20	30	40
60	12	24	36	48
70	14	28	42	56
80	16	32	48	64
90	18	36	54	72
100	20	40	60	80
110	22	44	66	88
120	24	48	72	96
130	26	52	78	104
140	28	56	84	112
150	30	60	90	120
160	32	64	96	128
170	34	68	102	136
180	36	72	108	144
190	38	76	114	152
200	40	80	120	160

EPINEPHRINE INFUSION

(Mix 1.0mg in 250ml solution to make a 4mcg/ml concentration)

MCG/MIN	2	4	6	8	10
<i>gtts/min</i>	<i>30</i>	<i>60</i>	<i>90</i>	<i>120</i>	<i>150</i>

TO MIX D25 USING D50

How to mix D25 if >10 cc needed or no D25 carried:

Mix 25cc of dextrose 50% with 25cc of NS or sterile water. Administer 2cc/kg IVP.

Appendix 8: Taser Protocol

In general, if EMS is called to the scene for a patient who has been Tased, that patient should be transported to the Emergency Department.

Scene Safety Consideration:

Before touching any patient who has been subdued using a Taser, ensure that the officer has disconnected the wires from the hand-held unit.

Taser and Probe:



Taser X-26



Taser M-26

Assessment of a patient who has been Tasered:

1. Identify the location of the probes on the patient's body. If any of the probes are embedded in the face (including eyes), neck, groin, or spine, do not remove them; transport the patient to an emergency department.
2. Confer with the officer and determine the patient's condition from the time of the Taser discharge until EMS arrival.
3. Assess vital signs.
4. Determine from the patient:
 - a. Any cardiac history (perform a 12-lead ECG as appropriate)

- b. Any ingestion of a mind-altering stimulant (Phencyclidine (PCP), meth, cocaine, etc.)

All of these assessment findings should be documented thoroughly in the patient care report.

5. Removal of probes by EMS personnel:

If the probes are located in an area not specified above, they can be removed. To remove the probes:

Place one hand on the patient in the area where the first probe is embedded to stabilize the skin around the puncture site. Place the other hand or pliers firmly around the probe. In one fluid motion, pull the probe straight out from the puncture site. Repeat procedure with second probe.

6. Removed probes should be handled like contaminated sharps, and should be placed in a urine specimen container or another acceptable receptacle to be provided by the officer/deputy, who will likely log the probes into evidence.

7. Treatment and follow-up instructions:

- a. Cleanse the puncture sites and bandage as appropriate.
- b. Transport the patient to the emergency department for further evaluation. If the patient wishes to make an informed refusal of transport, contact direct medical oversight.

8. Other Considerations:

There have been some recent reports of deaths involving the use of a Taser on combative patients. When closely reviewed, these deaths have almost always involved improper or prone restraint, agitated delirium, hyperdynamic drugs (such as cocaine or PCP), or hyperthermia as major co-morbid factors. Therefore, it is imperative that all Tasered patients receive a thorough assessment for these risk factors, and are not restrained in an improper position. If a patient remains combative, or has other priority signs and symptoms (including altered level of consciousness or chest pain), then further treatment and transport is called for. Documentation should address not only Taser probe removal, but all co-morbid factors as well.

Appendix 9: Paramedic Intercept Guidelines

PURPOSE: To define the circumstances in which a paramedic should be requested to intercept with an ambulance not staffed with a paramedic, and to provide guidance for the intercept process.

Considerations: If a paramedic intercept has been requested but the paramedic's estimated time of arrival is longer than the time it would take to transport the patient to the hospital via BLS ambulance, the patient should be transported without delay. In general, BLS should not wait on scene for ALS.

Types of Patient Problems Requiring Paramedic Intercept:

- a. Cardiopulmonary arrest
- b. Unconsciousness/syncope
- c. Difficulty breathing/compromised airway
- d. Multi-system trauma
- e. Chest pain – suspected cardiac
- f. Diabetic with altered level of consciousness
- g. Patients with unstable or deteriorating vital signs
- h. Active seizures, first seizure, or seizure following head trauma
- i. Significant allergic reaction
- j. Any other situation that would benefit from advanced level care

EMS Provider – Paramedic Interface:

- a. While awaiting the arrival of the paramedic, BLS personnel must provide patient care according to the standard of care. An effort should be made to package and transport the patient to an appropriate intercept location, thereby minimizing the time it will take for the patient to receive paramedic care.
- b. Continuous radio communication between the BLS and paramedic intercept units and C-MED must be maintained to apprise needs and circumstances and to confirm intercept location and estimated time of arrival.
- c. If the paramedic intercept is not at or near the intercept point upon arrival of the transporting unit, the transporting unit will continue to the hospital unless another intercept point can be identified rapidly. C-MED must be notified immediately.
- d. Upon intercept, the paramedic assumes medical responsibility for the patient(s). Other EMS providers should assist the paramedic as appropriate to their level of training.

- e. In cases when an intercepting paramedic determines that paramedic level care is not needed, this must be documented on the paramedic's patient care report, with adequate supporting information.
- f. Once requested by BLS personnel, a paramedic intercept may not be canceled prior to the paramedic's arrival at the scene unless it is deemed that the transporting unit can proceed to an appropriate tertiary care facility in less time. The paramedic must assess the patient, and only the paramedic may determine whether paramedic level care is needed or not.
- g. Except in extraordinary circumstances, the paramedic should transfer his/her ALS equipment to the BLS ambulance and continue to transport as soon as possible. In general, the transporting ambulance should continue en route as soon as the paramedic and his/her equipment are on board. Circumstances in which the patient should be transferred to the intercepting paramedic's ambulance might include mechanical failure of the transporting ambulance, a multi-patient event, or any other circumstance requiring that the transporting ambulance return to service as soon as possible.

Appendix 10: Continuous Positive Airway Pressure (CPAP)

Continuous positive airway pressure ventilation provides rapid, effective therapy for acute pulmonary edema/congestive heart failure by distending the airways and alveoli, which increases gas exchange and reduces the patients work of breathing.

Services that have elected to carry CPAP devices must ensure that all paramedics have received appropriate training, as approved by NHSHP, and periodic refresher training. No paramedic shall use any such device unless he or she has completed formal training on that specific device. There are significant differences between devices, so paramedics who work for more than one service may need to receive complete training on more than one device.

Indications

- Congestive heart failure
- Acute pulmonary edema
- Submersion/near-drowning

Contraindications

- Respiratory or cardiac arrest
- Inability to maintain patent airway
- Altered level of consciousness
- Cardiogenic shock
- Head injury with increased intracranial pressure
- Significant chest trauma
- Vomiting/ upper GI bleeding
- Signs and symptoms of pneumothorax

Procedure

- 1) Assure patent airway
- 2) Administer 100% oxygen
- 3) Perform patient assessment, including vital signs, pulse oximetry, and 12-lead EKG.
- 4) Explain procedure to patient
- 5) Have patient hold mask to face and instruct him/her to take deep, slow breaths
- 6) Attach CPAP device to patient and adjust size per manufacturer's instructions
- 7) Begin at 0-2 cmH₂O, and gradually increase pressure to desired cmH₂O, to a maximum of 10cmH₂O for CHF, 5cmH₂O for other respiratory conditions
- 8) Continuously monitor pulse oximetry, vital signs, and patient condition
- 9) Continue treatment of underlying condition in accordance with protocols
- 10) Make early notification to receiving facility to allow for ED preparation.

If the patient does not improve, or worsens despite CPAP and/or medical therapy, remove CPAP and perform BVM ventilation and endotracheal intubation as indicated.