

Seneca County Emergency Medical Services  
Medical Protocols

**Index**

<u>SECTION / TOPIC</u>	<u>PAGE</u>
<b>GENERAL STANDARDS</b>	<b>5</b>
Scope and Purpose	
Communications	
Transport Procedures	
Legal Considerations	
Refusal Policy	
Life Flight Policy	
DOA Policy	
Physician on Scene	
Direct Admission Policy	
Universal Standard of Care	
Needleless System	
Haz-Mat Situations	
DNR Comfort Care	
<b>MEDICAL PROCEDURES / EQUIPMENT</b>	
Oropharyngeal Airway	21
Nasopharyngeal Airway	22
Tracheal Suctioning	24
Advanced Airway Management	
King LTSD	25
Intubation	27
Pediatric Intubation	29
Visualized Intubation	30
Nasotracheal Intubation	31
Needle Thoracentesis	32
Surgical Cricothyroidotomy	33
Pediatric Cricothyroidotomy	34
Nebulizer	36
KED	36
Respiratory Mask	38
Auto Vent 3000	40
Pulse Oximeter	42
Traction Splint	42
External Cardiac Pacing	46
Intraosseous Needle	46
<b>CPAP</b>	<b>51</b>
<b>ECG Transmission</b>	<b>53</b>

Seneca County Emergency Medical Services  
Medical Protocols

**EZ-IO  
ReQPod (Thoracic Impedance Device)  
Post Intubation Management**

**Appendix  
Appendix  
49**

SECTION / TOPIC

PAGE

**TRAUMA EMERGENCIES**

**54**

Transport  
Life Threatening Adult Trauma  
Major Trauma  
Abdominal Trauma  
Amputations  
Chest Trauma  
Tension Pneumothorax  
Eye Injuries  
Extremity Trauma  
Face and Neck Trauma  
Head Trauma  
Shock – Traumatic  
Spinal Trauma  
Burns  
Pain Management (Non-cardiac)  
Crush Injury Management

**MEDICAL EMERGENCIES**

**76**

Abdominal Pain  
Altered Mental States  
CVA  
Coma / Unconscious  
Diabetic  
Hypertension  
Hyperthermia  
Hypothermia  
Poisons and Overdose  
Seizures  
Shock – Medical  
Vomiting and Diarrhea  
Syncope  
Sepsis Alert (Septic Shock)

**CARDIAC EMERGENCIES**

**102**

Cardiac Arrest  
Acute Pulmonary Edema  
Ventricular Fibrillation/Pulseless Ventricular Tachyarrhythmia  
Pulseless Electrical Activity  
Asystole

Seneca County Emergency Medical Services  
Medical Protocols

Automatic Implantable Cardioverter Defibrillator  
Traumatic Cardiac Arrest  
Hypothermic Cardiac Arrest  
Bradycardia  
Third Degree Heart Block/Type II Second Degree AV Block  
Unstable Tachycardia  
Narrow Complex Tachycardia & Paroxysmal Supraventricular Tachycardia  
Monomorphic or Polymorphic Ventricular Tachycardia  
Wide Complex Tachycardia  
Atrial Fibrillation / Flutter Tachycardia  
Cardiogenic Shock  
Acute Coronary Syndromes  
12 Lead ECG  
ICE Protocol (modified)

**RESPIRATORY EMERGENCIES 125**

Anaphylaxis  
Asthma  
COPD  
Drowning / Near Drowning

**PEDIATRIC EMERGENCIES 132**

**Pediatric Tables**

Respiratory Distress  
Asthma  
Allergy / Anaphylaxis  
Cardiac Arrest  
    Ventricular Fibrillation/Pulseless V-tach  
    Pulseless Electrical Activity  
    Asystole  
    Traumatic Cardiac Arrest  
    Hypothermic Cardiac Arrest  
    Bradycardia  
    Symptomatic Tachycardia  
    Premature Ventricular Contractions  
IV / IO  
Seizures  
Poisoning and Overdose

Seneca County Emergency Medical Services  
Medical Protocols

**OBSTETRICAL EMERGENCIES** **155**

Deliveries & Neonate Resuscitation  
Normal Delivery  
Infant Abandonment  
Abdominal Pain – Third Trimester  
Sexual Assault  
Vaginal Bleeding

**PHARMACOLOGY**

Adenocard	162
Amiodarone	162
Aspirin	164
Atropine	164
Benadryl	165
Dextrose	166
Diazepam (Valium)	172
Epinephrine	166
Fentanyl	171
Glucagon	167
Lasix	167
Lidocaine	168
Morphine Sulfate	168
Narcan	169
Nitroglycerin	169
Sodium Bicarbonate	170
Ventolin	170
Versed	172
Fentanyl	171
Zofran	172
Instant Glucose	172
Cardizem	173
Solu-Medrol	175
Magnesium Sulfate	176

Seneca County Emergency Medical Services  
Medical Protocols

# GENERAL STANDARDS

## *SCOPE AND PURPOSE*

The purpose of the protocols in the Seneca County system is to establish guidelines for the Paramedic, EMT-Intermediate, EMT-Basic, and Medical Control for the management, treatment and transport of specific medical emergencies.

The protocols set forth are not designed nor intended to limit the Paramedic, EMT-Intermediate, or EMT-Basic in the exercise of good judgment or initiative in taking responsible action in extraordinary circumstances. These protocols are intended to assist in achieving excellent consistent pre-hospital care for the patient.

Pre-hospital care is a shared responsibility between the Physician and the Emergency Medical Technician. The services which the Emergency Medical Technicians are authorized to perform pursuant to the Ohio Revised Code shall be performed by the Emergency Medical Technician to his/her training level only pursuant to the written or verbal authorization of the Medical Director or Medical Control. The Department of Transportation (DOT) National Standard Curriculum approved by the National Highway Traffic and Safety Administration shall constitute the standard of care and procedures in the Seneca County EMS system, in all cases where written protocols, directives, and policies do not address patient care or disposition.

Our objective is not only to serve the people of our community, but also to give them our best possible services. We will measure up to the high standard required of emergency medical service only by coordinating our operations, working together, and maintaining a high degree of professionalism.

**EMS personnel are expected to use the protocols up to their level of training. The fact that there is a protocol for a given procedure/treatment does not imply that an individual without training in that procedure/ treatment is authorized to do the procedure/treatment. When in doubt concerning the performance of a procedure/treatment the EMS professional must contact Medical Control.**

## **COMMUNICATIONS**

### A. Medical Control Notification

It is the responsibility of the squad personnel to contact Medical Control and report your patient assessment to the Emergency Department staff. Your verbal report should start with the age, sex, and Chief Complaint of the patient. Next, you should give the vital signs, level of consciousness, and a brief history of present illness. Third, you should describe the skin's color, temperature and moisture; lung sounds and effort; heart sounds; and abdominal exam. Fourth, you should report all treatment being provided to the patient. Fifth, your E.T.A. And last, allergies, if medication is being requested.

### B. Communications Failure

Pursuant to Ohio Revised Code 4765.40, if there is a communications failure that prevents contact with Medical Control, the Paramedic may proceed with the Medical Protocols past the point in the Standing Orders where contacting Medical Control is indicated, if the life of the patient is in immediate danger. Such a communication failure should be documented and forwarded to the Seneca County EMS Director.

**Seneca County Emergency Medical Services  
Medical Protocols**

Utilize the EMS Charts SPECIAL REPORT to document any field communications failures. If you are unable to utilize the EMS Charts Special Report – please complete the following form to report any failure of the Seneca County Communications system.

SENECA COUNTY EMS  
COMMUNICATION FAILURE INCIDENT REPORT

SQUAD \_\_\_\_\_

INCIDENT# \_\_\_\_\_

**DATE** \_\_\_\_\_

**TIME OF OCCURANCE** \_\_\_\_\_

**DESCRIBE THE COMMUNICATION FAILURE** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**WHAT ATTEMPTS WERE MADE TO CORRECT THE PROBLEM?**  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

DID YOU HAVE TO GO BEYOND STANDING ORDERS DUE TO THE FAILURE?

YES \_\_\_\_\_ NO \_\_\_\_\_

WHAT PROTOCOLS DID YOU INSTITUTE AND WHY? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

PATIENT NAME \_\_\_\_\_

NATURE OF CALL \_\_\_\_\_

SIGNED \_\_\_\_\_ Medic/Intermediate/Basic  
\_\_\_\_\_ Medic/Intermediate/Basic  
\_\_\_\_\_ Medic/Intermediate/Basic  
\_\_\_\_\_ EMS Coordinator

\_\_\_\_\_ EMS Director      DATE \_\_\_\_\_

\_\_\_\_\_ Medical Director      DATE \_\_\_\_\_

# Seneca County Emergency Medical Services Medical Protocols

## **TRANSPORT PROCEDURES**

All patients that are assessed by Seneca County EMS Personnel will be transported to area hospitals based upon location and patient condition. A patient may not wish to be transported to the closest medical facility, but the EMT must decide the appropriate hospital based upon what condition the patient presents to them.

An ill or injured patient may refuse care from Seneca County EMS personnel. The EMT must deem the patient competent and of legal age to make said decision. All patients not competent to refuse care will be transported by Seneca County EMS to an appropriate hospital. The patient who is not of legal age, age 18, will be transported to a medical facility if a parent or legal guardian is not available.

### **SPECIAL NOTE:**

(The emergency physician or medical control may also ask that you transport the patient to another hospital when overcrowding occurs or when local emergency department resources dictate such a diversion to benefit/facilitate patient care. Example: During a disaster and the hospital is operating under disaster protocol.)

In the event you are directed to transport to another hospital, contact Seneca County Sheriff's Dispatch and notify them that you have been directed to transport to another hospital.

## **LEGAL CONSIDERATIONS**

### **I. CONSENT**

- A. A mentally competent patient has the right to consider or refuse treatment and/or transport.
- B. Consent is "implied" when the patient is unable to consent to treatment do to:
  1. Age
  2. Mental Status
  3. Medical Condition
- C. In no event should legal consent procedures be allowed to delay treatment. If the time delay is due to obtaining lawful consent from an authorized person, that would present a:
  1. Serious risk of death
  2. Serious impairment of health
  3. Would prolong pain or suffering
- D. Age of consent is 18 years of age or between 15 and 18 years in an emancipated minor (living apart from his/her parents).
- E. If the patient is a minor, consent should be from a:
  1. Competent natural parent
  2. Adopted parent
  3. Legal guardian

### **II. MENTAL COMPETENCE**

- A. A patient is mentally competent if he/she:
  1. Is able to understand the nature and consequences of his/her illness or injury.
  2. Is able to understand the nature and consequences of the proposed treatment.
  3. Has sufficient emotional control, judgment, and discretion to manage his/her own affairs.

\*The patient should be continually assessed to establish that they are oriented X3 and have an understanding of what has happened. They must also understand what may

## Seneca County Emergency Medical Services Medical Protocols

possibly happen if treated or not treated and have a plan of action, such as how to get home from a scene if refusing treatment.

B. If the patient is not mentally competent under these guidelines, consent should be obtained from another responsible party who must also be mentally competent and legally “of age”, such as a:

1. Spouse
2. Adult son or daughter
3. Parent
4. Adult brother or sister
5. Legal guardian

C. If the patient is not mentally competent, and none of the above persons can be reached, the person should be treated and transported to the hospital. It may be preferable to enlist support in this course of action from a law enforcement agency.

### **III. DUTY TO ACT**

- A. The pre-hospital care provider has an obligation to treat the patient in accordance with the standard of care to be expected from other medical care providers of the same training and skill level. If the provider does not act in accordance with those accepted standards of care and the patient suffers injury because of this, the provider may be liable for negligence.
- B. Once treatment has been rendered, the pre-hospital care provider has a duty to care for the patient until care can be transferred to a competent health care provider (of equal or higher qualification) who accepts responsibility for the patient (either at the scene, en-route, or at the hospital).

### **IV. SPECIAL CONSIDERATIONS**

- A. Failure to treat someone who needs care is a far “riskier” course than to treat in good faith with less than full legal permission. Do not let fear of legal consequences keep you from rendering such responsible and competent care as your patient has a right to expect from your medical training.
- B. The best defense against any legal question of consent and the need for care is a well-written medical record. Your written account of the patient and care rendered will be invaluable to you if legal questions are raised months later as this will convey your competence and adherence to standards of care.



## Seneca County Emergency Medical Services Medical Protocols

### **REFUSAL OF TREATMENT OR TRANSPORT POLICY**

Patients REFUSING TREATMENT or TRANSPORT should be made fully aware of the nature of the problem and the possible consequences of their specific condition. The patient must be considered alert and oriented and not under the influence of alcohol, drugs, or a medical condition that can impede his/her decision-making ability. When diligent, repeated efforts to reason with the patient fail, then a release for the refusal of treatment/transport shall be signed and witnessed. In the event of refusal to sign by the patient, a family member's signature is acceptable as long as the family member is aware of the consequences of the patient's action. In the event a patient refuses care, refuses to sign, and there are no relatives present, witness of the refusal by two (2) persons (preferably **not** EMS crew) and clear documentation of all information must be placed on the run report.

If the patient is under the influence of alcohol, drugs, or a medical condition that can impede his/her decision-making ability, neither the patient nor a family member can refuse treatment. The patient must be treated and transported as medically appropriate. Police assistance and/or transportation to the hospital is to be a consideration if needed. The patient who has attempted suicide or who has suicidal ideation may not refuse treatment/transport. Police assistance and/or transportation to the hospital should be considered if needed.

### **Special Notes**

- A. Be certain that the mentally competent patient understands not only the nature and consequences of his/her illness or injury, but also understands the nature and consequences of the proposed treatment and of refusing this treatment before you obtain his/her signature refusing treatment/transport. The best way to assure understanding is to have the patient repeat back to you the nature and consequences of treatment and withholding treatment.
- B. It is also appropriate to have on-line *Medical Control* talk directly to the patient via the radio. \* These conversations are recorded for legal record\* Phone conversations are not recorded and should not be used unless radio communication isn't available.
- C. You should also read out loud to the patient the refusal portion of the run report and ask them if they understand what has been read to them.

### **LIFE FLIGHT POLICY**

In this document, Life Flight is used as a synonymous term for any rapid air medical transport system. The use of the name "Life Flight" does not in any way imply that any given air transport service is to be used

The squad should notify Dispatch as soon as it is known of the potential need for Life Flight services. The squad may call the Life Flight to the scene when felt appropriate. Also, the squad must notify Medical Control when Life Flight is called.

If Life Flight has not arrived by the time the patient(s) are ready for transport, the decision to wait or divert them to the hospital should be based on which choice will bring the patient and a doctor together the quickest.

For Example: If the Life Flight is 5 minutes from the scene, and the ground transport to the hospital is 15 minutes, then wait for Life Flight to get to the scene.

## Seneca County Emergency Medical Services Medical Protocols

If the Life Flight is 10 minutes from the scene and ground transport time to the hospital is less than 10 minutes, divert Life Flight to the hospital and transport the patient to the hospital.

At the Hospital: If Life Flight is awaiting the ground squad at the hospital and the patient is stable or can be easily stabilized without entering the ED and the patient needs the services of a Trauma Center, the patient may proceed directly into Life Flight with the Life Flight doctor for immediate transport. The Medical Control/ECC/ED physician must OK this. If the patient is too unstable for further transport, the patient is to be brought into the ED without delay.

Seneca County EMS will use the following guidelines for setting up a LZ (Landing Zone) for Air Ambulances.

- A. During daylight hours, a LZ is required to be 60'x60'. At dusk this changes to 100'x100'. Double Check for overhead wires or any other obstructions. It should be far away from the scene as not to blow loose items such as medical equipment or destabilizing hazards, such as partially downed poles.
- B. It is preferred that the landing surface be flat and hard such as a roadway.
- C. One person should be in charge of the LZ and establish direct communication with the Air Ambulance pilot using "Air Ambulance" frequency on a portable or mobile radio.

### **DOA Policy**

- A. When a DOA is encountered, the squad members should avoid disturbing the scene or the body as much as possible, unless it is necessary to do so in order to care for and assist other victims.
- B. Once determined that the victim is, in fact, dead, the EMS crew should move as rapidly as possible to transfer the responsibility or management of the scene to law enforcement and/or the coroner's office.  
  
\*It is the responsibility of the EMS crew to notify the coroner's office directly, or to ensure that someone else, such as another rescuer, the dispatcher, or a law enforcement officer on the scene, has notified the coroner's office.
- C. The EMS crew should not leave the scene until responsibility for management of the scene has been transferred to an appropriate agency.
- D. A determination that the victim is dead rests with the EMS crew.

### **The following may be used as Guidelines to support the determination that a victim is DOA:**

- 1. There is an injury, which is incompatible with life, e.g., decapitated or burned beyond recognition.
- 2. The victim shows signs of decomposition, rigor mortis, or extreme dependent lividity (purple discoloration of the dependent parts of the body caused by pooling of blood due to gravity).

## Seneca County Emergency Medical Services Medical Protocols

3. If a reliable history indicates that the patient has been without vital signs for longer than 20 minutes without any resuscitative measures, being instituted and the patient is cold.

Caution: This does not include circumstances in which environmental cold would be responsible for the victim being cold. Any victim who appears dead, but is hypothermic from environmental cold should be given benefit of the doubt and be provided with resuscitative measures immediately!

4. The reasons to withhold CPR should be sufficiently firm so that, should it later be subject to question, a decision can be effectively supported.

**CAUTION: IF ANY DOUBT EXISTS THAT THE VICTIM IS DEAD AT THE TIME OF ARRIVAL OF THE SQUAD, RESUSCITATIVE MEASURES SHOULD BE INSTITUTED IMMEDIATELY. WHENEVER RESUSCITATIVE MEASURES ARE INSTITUTED, THEY MUST BE CONTINUED UNTIL ARRIVAL AT A HOSPITAL OR UNTIL A PHYSICIAN HAS PRONOUNCED THE VICTIM DEAD.**

### Precautions

- A. Death cannot be judged in the hypothermic patient who may be asystolic, apneic, and stiff and still survive intact. Transport for rewarming in all instances.
- B. Do not attempt to guess future outcomes based on appearance of patient (e.g., shotgun blast to face of suicide victim).  
Failure to act because of mistaken notions of outcome is a self-fulfilling prophecy.
- C. Do not allow suicide to prejudice the decision to resuscitate. No matter how psychiatrically serious, a patient may, after therapy, resume the desire to live. It is inappropriate to agree with the patient that death would be preferable and therefore, fail to act.
- D. Do not delay action to find out facts about patient's history. If summoned, one must respond. If the patient has a chronic disease (for instance, Cancer), the time to educate relatives as to the inevitability of death (if indeed that is appropriate) is at the hospital, not in the field.

### Special Notes

- A. Be careful to avoid discussion of the mechanism of death in the presence of relatives. In early grief, it is easy to misinterpret even well meaning expressions of concern. Moreover, because a patient is doing well in the field does not mean that survival is assured. Misguided optimism in the field will make grieving more difficult.
- B. When you, as an EMS responder are summoned, you should assume that you are summoned for those skills, and initiate resuscitation. In these days when we are becoming more concerned with the right to die with dignity, do not allow premature judgment to delay or withhold life-saving skills. Despite

## Seneca County Emergency Medical Services Medical Protocols

much press to the contrary, BLS and even ALS measures are extremely unlikely to “bring back” an otherwise unsalvageable person.

- C. Remember both the living will and durable power of attorney for health care documents are not effective until the patient is either terminal or in a permanent unconscious state. A terminal state can only be determined by two physicians examining the patient individually and both concluding that the patient is in a terminal state.
- D. BLS and ALS measures should be withheld if and only if the patient is felt to be competent and refuses these measures, there is a document signed by two physicians stating that the patient is in a terminal state along with a living will stating that these measures should be withheld, and/or there is a DNR identification as adopted in rules 3701-62-01 through 3701-62-14 of the Ohio Administrative Code.

### **PHYSICIAN ON SCENE (Intervening Physician)**

Any EMT/Paramedic functioning with Seneca County EMS operates under the Seneca County Medical Director’s authority and obtains their immediate direction for patient care from the Base Station Physician. Where the Base Station Physician is the physician on duty at Mercy Hospital of Tiffin a Doctor/Patient relationship has been established between the patient and the Base station Physician through any of the above-mentioned personnel attending the patient.

If the patient’s private physician is present and willing to assume responsibility for the patient’s care, then the EMT should defer to the orders of the private physician. If this should occur, Medical control will be contacted and made aware of the private physician’s actions. If at any time the private physician is no longer in attendance, the patient care will automatically revert back to the control of the Physician at Medical Control at Mercy Hospital of Tiffin.

If an intervening physician is present and willing to assume responsibility for the patient’s care, then that physician may request medical control of the scene from the Medical Control Physician via the radio contact established with Medical Control. The Medical Control Physician may then transfer medical control to the intervener physician if they so choose. The Base Station Physician maintains the right of managing the case entirely, working with the intervener physician, or allowing them to assume responsibility. In the event the intervener physician is granted the responsibility, all orders to the EMS and rescue personnel should be repeated over the radio to Medical Control for recording purposes.

### **DIRECT ADMISSION POLICY**

In certain rare instances, it may be advantageous for a patient to be directly admitted to the hospital bypassing the emergency department. An example is the OB patient whose delivery is imminent or the patient who requires immediate surgery. The following is the protocol for bypassing the emergency department **on hospital request.**

The receiving hospital in advance via the radio, informs the squad they would like to bypass the emergency center. Upon the arrival of the squad at the emergency department, a physician and/or nurse should meet the squad at the door and accompany the patient with one of the EMTs/Paramedics to the appropriate location. The receiving

## Seneca County Emergency Medical Services Medical Protocols

hospital assumes medical responsibility of the patient after its personnel accept the patient after arrival at the emergency department door.

An exception to the requirement that a physician or nurse meet the EMS personal at the emergency center is when the patient is a direct admission to the hospital and the EMS personal have determined that the patient is in a state that does not require immediate delivery of an infant and/or immediate life preserving treatment. If these exceptions are met, the EMS personal may take the patient to the unit for admission. A nurse or physician must be present in the unit to accept responsibility for the patient. If no one is available in the unit to accept the patient, the patient will be brought back to the emergency center for treatment.

### **UNIVERSAL STANDARDS OF CARE**

The U.S. Department of Transport and National registry of Emergency Medical Technicians has developed minimum standards for basic life support training. The following guidelines are derived from these standards.

#### **A. Routine Treatment Procedures**

1. Scene survey and safety.
2. Universal Precautions, including Body substance Isolation (BSI).
3. Cervical spine protection (in trauma that indicates the need), reassure patient and avoid agitation.
4. ABC's.
5. Vital signs, obtain medical history and allergies, pulse ox, and administer oxygen if necessary (Oxygen saturation less than 95%)
6. Exposure and examination when appropriate.
7. Neuro examination.
8. Secure patient to cot with at least three (3) straps.
9. Establish and maintain Medical Control.
10. Repeat vital signs and re-assessment enroute to closest hospital

#### **B. Standards for Cervical Spine Immobilization (C-spine Protection)**

**\*Not all Patients require this but if the decision is made to immobilize a patient – every effort to do it properly must be made – utilize vacuum mattresses when possible, and make every effort to pad void areas to stabilize all patients that require Spinal Immobilization.\***

1. Establish neutral, in line, gentle manual immobilization.
2. Evaluate distal Pulses, Motor and Sensory (PMS) of extremities.
3. Apply a cervical collar.
4. Position patient on a long backboard via log roll or long axis without compromise of spinal integrity.
5. Apply padding to fill voids due to natural curvature of the spine.
6. Secure torso and the legs to backboard by appropriate measures (i.e. tape or straps).
7. Immobilize head to the backboard with C.I.D. or towel rolls and tape.
8. Secure arms as needed.
9. Reassess distal Pulses, Motor and Sensory after immobilization.

## Seneca County Emergency Medical Services Medical Protocols

### **C. Kendrick Extrication Device (KED)**

Establish neutral in line manual traction.

1. Evaluate distal Pulses, Motor, Sensory of extremities.
2. Apply cervical collar.
3. Prepare KED for use.
4. Position device behind patient.
5. Secure chest straps and tighten snugly.
6. Secure groin straps and tighten snugly.
7. Apply occipital head padding to fill void without compromising spinal integrity.
8. Immobilize head to device.
9. Place patient on long backboard using established guidelines.

### **D. Traction Splint**

1. Manually immobilize lower leg.
2. Assess distal Pulses, Motor, Sensory.
3. Apply in line traction.
4. Prepare traction splint for use.
5. Place splint under leg and slide under buttock and attach groin straps.
6. Fasten ankle or leg harness and connect to tension adjuster.
7. Adjust tension to patient comfort.
8. Reassess distal Pulses, Motor, sensory.
9. Secure leg to device with velcro straps.
10. Place patient on long backboard using established guidelines.

## **NEEDLELESS SYSTEM**

In accordance with the Ohio Revised Code 4167.25 through 4167.28, Seneca County EMS are all moving toward a needleless medication system. This project will occur based on availability and attrition. Every effort should be made by EMTs, Paramedics and first responders to use caution when handling uncapped needles or scalpels. If a needle stick does occur, the EMS Director and receiving hospital are to be notified immediately.

Almost all of Seneca County EMS needles are “safety needles” that have engineered safety mechanisms – but Needle sticks can still and DO occur. Ensure that all Sharps (needles or otherwise) are disposed of immediately after use.

## **HAZARDOUS MATERIAL SITUATIONS**

This policy will serve as a guideline for an ambulance response to a hazardous materials incident. It’s intent is not to be all-inclusive, and personnel should remember that scene safety is paramount. It should also be realized that the ambulance’s role is not that of setting up zones or decontamination of patients. These tasks should be left to personnel specifically trained and equipped for these incidents. All responders, however, should have a basic knowledge of hazardous materials, hazardous material equipment, and safety policies.

## Seneca County Emergency Medical Services Medical Protocols

This protocol and our current training, resources, and equipment are directed toward the chemical haz-mat incident. Biological and nuclear/radiological events require an entirely different level of training, resources, and equipment. A great difficulty with such events is simply the identification/recognition of such an event. Unfortunately, these patients already have passed through the pre-hospital care services and into the hospital before recognition of an event has occurred and, subsequently, large amounts of resources, personnel, and equipment may already have been contaminated.

### I. PRIORITIES AT HAZ-MAT INCIDENT

- A. Recognition – recognizing the incident, dangers of the substance, and need for isolation.
- B. Scene Safe – back up to 1000 ft. upwind of incident.
- C. Identification – begin identifying substance(s) involved.
- D. Communication – initiation of NIMS and/or coordinated haz-mat response (per FD protocol).
- E. Isolation of Area/Event – initiate/assist with isolation of area; this is to prevent further contamination of personnel and equipment, communication with safety officers.
- F. Medical Treatment – knowledge and ability to reference treatment modalities for identified agent.

### II. ZONES

- A. Hot Zone – (Restricted Area) this zone is only for personnel with the appropriate protective clothing and appropriate training, typically EMS personnel do not enter this zone.
- B. Warm Zone – this zone is where decontamination occurs and also is a limited access area. This may be a large zone depending on what material is involved.
- C. Cold Zone – this zone is also known as the clean zone. Transport lines would form in this zone. Incident Command personnel and the ambulance will be in this location.

NOTE: EMS units/personnel are **not** to enter incident beyond the cold zone.

### III. ROLES OF THE EMT/PARAMEDIC

These roles may vary from department to department as training levels may vary, i.e. a paramedic who is also a haz-mat technician.

- A. To transport grossly decontaminated patients from the cold zone to an appropriate emergency facility.
- B. To provide medical care to patients/safety personnel in the cold zone including, but not limited to, triage.
- C. To monitor members of the Haz-Mat team (rehab).

### IV. EQUIPMENT PROTECTION

**Whenever possible, a front line vehicle should not transport patients to a medical facility due to the risk of contamination of the vehicle, it's equipment, and the medical facility receiving the patient.**

## Seneca County Emergency Medical Services Medical Protocols

The EMT/Paramedic should use their *portable* supplies on the patient and not supplies from the front line vehicle. Do not use the equipment (i.e. BP cuff) from the vehicle on a patient and then return it to the vehicle, as a potential for cross-contamination exists. Portable equipment should remain in the zone it is used in until properly decontaminated. Patients transported should be wrapped in cotton sheets to further reduce the risk of cross-contamination to the vehicle and personnel.

### V. HOSPITALS

Medical facilities should expect the patients transported to their facility will have had gross decontamination performed by the on-scene Hazardous Materials Team. Gross decontamination means an attempt has been made to remove the majority of the agent the patient was exposed to by washing with soap and water. No assumption should be made that all of the agent was removed.

## DNR COMFORT CARE

### *Cessation of CPR*

#### **Specific Considerations**

- A. For patients who have had CPR initiated prior to the squad's arrival, and it is determined by the EMT/Paramedic the patient meets the criteria set forth by the Seneca County EMS DOA Policy, CPR will be discontinued.
- B. If the EMT/Paramedic is unsure if the patient meets the exact criteria set forth by the DOA Policy, ***On-Line Medical Control*** should be contacted and the case discussed. Basic Life Support is to be carried on during this time.
- C. For patients who have had CPR initiated prior to the squad's arrival, and it is determined that the patient has a State of Ohio DNR in place, CPR will be discontinued.
- D. For Patients who meet "cessation of resuscitation efforts" in the field following a complete AHA/ACLS protocol driven treatment effort – ***On-Line Medical Control*** – shall be contacted via Radio/Phone and the situation discussed with the physician in charge – A time of death will be declared if the following criteria has been met:
  - 1. Pulseless & Apneic and ASYSTOLE on Monitor
  - 2. IV or IO access that is flowing well
  - 3. Positive Airway Control – ET or King with a WORKING ETCO2 waveform less than 10mm/hg with effective CPR
  - 4. CPR has been ongoing with no rhythm change from Asystole for 5 rounds (2 minutes/ each) of effective CPR
  - 5. Patient is at home or in a controlled environment (not in the street).



# Seneca County Emergency Medical Services Medical Protocols

## **DNR Types**

The State of Ohio has enacted legislation that provides guidelines to manage the class of patients designated as Do Not Resuscitate, or DNR. There are two official types of DNR orders:

- A. DNR Comfort Care (activated immediately when DNR order is issued)
- B. DNR Comfort Care – Arrest (activated only when patient experiences a cardiac or respiratory arrest)

The following explanations contain descriptions of the two types, variances allowed by law, and a description of the acceptable methods to identify patients to whom the DNR law applies.

### **A. DNR COMFORT CARE**

- 1. Terminally ill patients have the right to die with dignity, in comfort, and with their wishes respected.

- 1. Comfort Care means a dying person receives care which eases pain and suffering during the final days or hours of life, but no resuscitative measures to sustain life are implemented.
- 2. DNR Comfort Care does not mean “do not treat”.
- 3. DNR Comfort Care protocols are activated when an order is issued or when an appropriate living will specifies no CPR.
- 4. For patients that have a valid DNR Comfort Care order the EMT/Paramedic will:
  - 1. Suction the airway
  - 2. Administer oxygen
- 5. Place in a position of comfort
- 6. Control bleeding
- 7. Provide pain medication
- 8. Provide emotional support
- 9. Contact other appropriate health care providers such as hospice, home health, attending physician, certified nurse practitioner (CNS), certified nurse specialist (CNS).
  - a. The EMT/ Paramedic will NOT
    - 1. Administer chest compressions
    - 2. Insert artificial airway
    - 3. Administer resuscitative drugs
    - 4. Defibrillate
    - 5. Provide respiratory assistance (other than listed above)
    - 6. Initiate resuscitative IV
    - 7. Initiate cardiac monitoring

### **B. DNR COMFORT CARE – ARREST**

## Seneca County Emergency Medical Services Medical Protocols

- 1 Unlike DNR Comfort Care, which is effective at the time the order is effective, DNR Comfort Care – Arrest applies when the cardiac or respiratory arrest occurs.
- 2 “Cardiac Arrest” { means absence of palpable pulse and/or absence of spontaneous respirations and/or presence of agonal breathing.
- 3 DNR Comfort Care – Arrest allows for interventions to forestall cardiac and/or respiratory arrest

### C. IDENTIFICATION OF STATUS

Patient’s DNR Comfort Care – Arrest or DNR Comfort Care status is confirmed when the patient has one of the following:

- a. A DNR Comfort Care card (Appendix D) or form (Appendix A) completed for the patient.
  - b. A completed State of Ohio Living Will (declaration) form that states that the patient does not want CPR (only in the case of a patient who has been determined by two doctors to be in a terminal or permanently unconscious state). Note: Need to contact med-control via radio for a patient with a living will, as life saving measures may need to be performed.
  - c. A DNR Comfort Care necklace or bracelet bearing the DNR Comfort Care official logo  
(Appendix B/C).
  - d. A DNR order signed by the patient’s attending physician, a certified nurse practitioner (CNP), or clinical nurse specialist (CNS).
  - e. A verbal DNR order issued by the patient’s attending physician, CNP, or CNS.
- . \*Copies of these are sufficient

### D. EMS workers are not required to search a person to see if they have DNR identification. If an EMS or other health-care worker discovers one of these items in the possession of a patient, the worker must make a reasonable effort to establish identity of patient, in appropriate circumstances. Examples of ways to verify are:

1. The patient or family member, caregiver or friend gives the patient’s name.
  2. The health care worker knows the patient personally.
  3. Institution identification band.
  4. Driver’s license, passport, or other picture I.D.
- E. If you cannot verify the identity of a patient with DNR identification after reasonable efforts, you still should follow this protocol. Verification of identity is not required for patients or residents of health care facilities when a DNR order is present on the patient’s chart.

A DNR order for a patient of a health care facility shall be considered current in accordance with the facilities policy.

## Seneca County Emergency Medical Services Medical Protocols

A DNR order for a patient outside a health care facility shall be considered current unless discontinued by the patients attending physician/CNP/CNS, or revoked by the patient. EMS personnel are not required to research whether a DNR order that appears to be current has been discontinued.

### **F. INTERACTION WITH THE PATIENT, FAMILY MEMBERS, BYSTANDERS**

1. The patient always may request resuscitation even if he or she is a DNR Comfort Care patient and this protocol has been activated. The request for resuscitation amounts to a revocation of DNR Comfort Care status.
2. If family or bystanders request or demand resuscitation for a person for whom the DNR Comfort Care Protocol has been activated, **DO NOT** proceed with resuscitation. Provide comfort measures as outlined above and try to help the family understand the dying process and the patient's choice not to be resuscitated.

### **G. DOCUMENTATION**

EMS or other health care personnel who implement the DNR protocol for a DNR Comfort Care patient shall document the following on the run form and/or attach electronically to the EMS record:

1. The item that identified the person as DNR Comfort Care (as listed in the identification section of this protocol). Attach a copy to the run form.
2. The method of verifying the person's identity, if any, was found through reasonable efforts.
3. Whether the person was a DNR Comfort care or DNR Comfort Care Arrest patient.
4. The actions taken to implement the DNR protocol.
5. All EMS Documentation will be done in accordance with Seneca County EMS Policy #20 – Electronic Patient Care Reporting

CPR is defined as cardiopulmonary resuscitation or a component of cardiopulmonary resuscitation, but it does not include clearing a person's airway for a purpose other than as a component of CPR. (You should clear the airway) "Component of CPR" means any of the following:

1. Administration of chest compressions
  2. Insertion of an artificial airway
  3. Administration of resuscitative drugs
  4. Defibrillation or cardioversion
  5. Provision of respiratory assistance
  6. Initiation of a resuscitative intravenous line; and
  7. Initiation of cardiac monitoring
- A. The DNR law does not govern all DNR orders: it applies only to DNR orders which specify the Comfort Care protocol. Physicians and CNSs or CNPs may write DNR orders which use a different protocol and which may better meet a patient's needs.

Seneca County Emergency Medical Services  
Medical Protocols

- B. Paramedics and EMTs are protected under Ohio law from the following resulting from withholding or withdrawals of CPR after a DNR is discovered and after reasonable efforts have been made to determine that the DNR applies to their patient.

Criminal Prosecution

Professional disciplinary action

Liability damages in a tort or other civil action

Seneca County Emergency Medical Services  
Medical Protocols

**Medical**  
**PROCEDURES/EQUIPMENT**

Seneca County Emergency Medical Services  
Medical Protocols

**OROPHARYNGEAL AIRWAY**

**A. PROCEDURE**

1. Select oropharyngeal airway.
2. Measure oropharyngeal airway for proper size (i.e. measure from angle of jaw to just beyond the lips or earlobes)
3. Insert airway:
  - a. Follow curvature of pharynx, or
  - b. “Upside down” and rotate 180 degrees, or
  - c. Perform jaw lift and use tongue blade prior to insertion of airway (preferred)
4. Select proper size bag valve mask. Identify the proper liter flow for supplemental oxygen with the bag valve mask.
5. Identify liter flow as 12 LPM and connect bag to oxygen source.
6. Position self at patient’s head.
7. Seal mask and ventilate patient.

**NASOPHARYNGEAL AIRWAY**

**A. INDICATIONS**

1. Oral injury / trauma / mandible fracture.
2. Inability of patient to open mouth.
3. Patients that are “more conscious”, who have a higher level of consciousness, some gag reflex is still present, but the patient requires assistance with maintaining an open airway, i.e. head injury patient with suspected cervical spine injury.

**B. CONTRAINDICATIONS**

1. Severe head injury, a basal skull fracture may be present.
2. Nasal or maxillofacial fractures, nares may be occluded with blood or deformities from nasal fractures.
3. Deformities of the nasal passages due to chronic abnormalities of the internal nasal structures.

**C. COMPLICATIONS**

1. In smaller sizes that would be used on infants, these airways; sizes 14Fr., 16Fr., 18Fr., may not allow adequate air to flow through them.
2. If inserted incorrectly, the possibility exists of traumatizing the inside of the nasal cavity, i.e. lacerating or abrading a varicose vein or a nasal polyp. Even when proper technique is followed, the possibility still exists for injury of the internal structures of the nose.

**D. REQUIRED EQUIPMENT**

1. Water soluble lubricant, i.e. surgilube, KY jelly, or 2% xylocaine jelly.
2. Nasopharyngeal airways in an assortment of sizes. Select nasopharyngeal airway made of latex rubber or silicone compounds. Avoid the airways that are made of stiffer

## Seneca County Emergency Medical Services Medical Protocols

plastic. These have a much greater chance of traumatizing the nasal cavity.

### 3. Sizes of Airways

Nasopharyngeal airways are manufactured in sizes for infants through adults. Depending on the manufacturer of the airway, they may be sized according to two different scales; French Gauge sizing or Metric sizing.

#### A. French Gauge Sizing

Measure the outer diameter of the airway. Sizes for nasopharyngeal airways start at 14Fr. for infants and end at 36Fr. For adults. These airways increase in increments of two, from the smallest to the largest. A typical selection would consist of the following sizes: 20Fr., 24Fr., 28Fr., 32Fr., and 36Fr.

#### B. Metric Sizing

Nasopharyngeal airways are available in sizes that are measured by their internal diameter in millimeters. The most common adult sizes being 6.0mm, 7.0mm, and 8.0mm inside diameter.

#### 1. Selecting the Proper Size

The largest size airway that will fit in the nares should be used. A rule of thumb is to use the diameter of the patient's little finger as a gauge, or estimate the size of the nasal opening and choose the airway that is the closest in size.

#### A. Length is Important

If the nasal airway is too long, it may extend down the posterior pharyngeal wall and into the top of the esophagus. If the patient is being ventilated with a bag valve resuscitator, or by mouth to mask ventilation, air may pass into the stomach causing gastric distention and possible vomiting and aspiration.

#### B. To Measure the Proper Length

Hold the nasopharyngeal airway with the flared end at the nasal opening with the natural curve of the airway leading down toward the angle of the mandible. The beveled tip of the airway should extend to this point, If your nasopharyngeal airway does not have an adjustable flange, you can cut the distal end of the airway to the proper length. It is important that if you cut the airway to length, make sure to cut it with a bevel that matches the original angle and be certain no small pieces of rubber remain in the airway

### 2. Inserting the Airway

After determining the proper airway diameter, length, and ruling out the contraindications, the next step is to lubricate the length of the airway on all surfaces with your water-soluble lubricant. The airways bevel must face the nasal septum during insertion.

#### A. Why Must the Bevel face the Nasal Septum?

Because the lateral walls of both nasal cavities have three turbinates on them. The turbinates are similar to "mountain ridges". Their purpose is to increase the surface area inside the nasal cavity and cause the inspired air to flow in a turbulent manner. This allows the inspired air to come in contact with more surface area and increase the

## Seneca County Emergency Medical Services Medical Protocols

humidification and filtering of the inspired air. These nasal turbinates are often covered with varicose veins or fleshy nasal polyps. If the bevel of the nasopharyngeal is “run across” the turbinates, a varicose vein or polyp may be lacerated causing hemorrhaging in the nasal cavity.

If the left nare is chosen, the airway will curve up toward the top of the head. While inserting the airway, it is important to aim the tip along the floor of the nasal cavity, not up. When you reach the posterior wall of the nasal cavity, you will feel a slight resistance. You must now rotate the airway 180 degrees so the curve in the airway will follow the natural path of the posterior pharyngeal wall downward.

If the right nare is chosen, you still place the bevel against the nasal septum. You will “aim the tip” along the *floor* of the nasal cavity, but when the posterior pharyngeal wall is met, the airway will usually slip by, following the natural curve of the pharyngeal wall. The airway should be inserted until the bevel is laying against the outer portion of the nose.

### B. What if I Can't Pass the Airway?

There will, at times, be obstruction in the nasal cavity that will not allow passage of a nasopharyngeal airway. If it does not pass, **DO NOT FORCE IT**, withdraw the airway and attempt the other nares. If neither will allow passage, it will be necessary to utilize another airway adjunct or technique to maintain the airway patency.

- **A WORD OF CAUTION! – WATCH YOUR PATIENT CLOSELY**

Are the desired effects being obtained? Or is there blood running down the patients throat? Possibly being aspirated? **HAVE SUCTION READY!** With head and facial trauma, there is the possibility of a basal skull fracture, which means a fracture of the base of the skull in the nasal cavity. There could be open access to the cranial cavity.

You do not want to introduce a nasopharyngeal airway into the brain!

### **PROCEDURE TO INSERT NASOPHARYNGEAL AIRWAY**

1. Rule out contraindications.
2. Select proper tube diameter and length.
3. Choose right or left nares.
4. Lubricate the outside of the nasopharyngeal liberally prior to insertion.
5. Insert the airway with bevel against the nasal septum. (Avoid the turbinates)
6. Direct the tip toward the floor of the nasal cavity.
7. If the nare chosen requires insertion of the airway with the curve pointing up, the airway will have to be rotated 180 degrees when the posterior nasopharyngeal wall is reached.
8. Insert the entire length of the nares.
9. Observe the patient for the desired effect, i.e. airway open, can pass air to patient easier. Also look for hemorrhaging into posterior pharynx, aspiration of blood, or air passing into stomach – have suction ready!



# Seneca County Emergency Medical Services Medical Protocols

## **TRACHEAL SUCTIONING**

### **A. PROCEDURE**

1. Select suction equipment (sterile gloves, sterile soft suction catheter, and sterile saline).
2. Explain the procedure to the patient.
3. Hyperventilate the patient using supplemental oxygen and Ambu bag for three minutes prior to procedure.
4. Open and prepare suction equipment using aseptic technique:
  - a. Place glove on dominant hand.
  - b. Open sterile normal saline solution.
  - c. Pick up sterile suction catheter in gloved hand.
5. Lubricate catheter tip with sterile saline solution.
6. Ask partner to remove Ambu bag from endotracheal tube.
7. Hold suction catheter in gloved hand while inserting into endotracheal tube.
8. Insert catheter to carina (until resistance is met).
9. Slowly withdraw catheter using a rotating motion and applying negative pressure.
10. Suction procedure should not extend longer than 10 seconds.
11. Oral suction is performed after endotracheal suction.
12. Endotracheal tube cannot be re-entered with same catheter once oral suctioning has been performed.
13. After suctioning is complete, patient should be hyperventilated with Ambu bag and supplemental oxygen for three minutes.

## **KING LTS-D AIRWAY – (Primary Advanced Airway for EMT/EMT-I & EMT-P)**

### **Indications**

- A. An alternative to endotracheal intubation for airway management in patients greater than 3 feet tall to secure a patent airway and deliver ventilations in the unconscious/unresponsive patient
- B. Emergency airway for failed endotracheal intubation
- C. EMT insertion in patients in full cardiopulmonary arrest/agonal respiration with NO gag reflex.
- D. EMT-I/P insertion in patients in respiratory arrest with no gag reflex
- E. To replace the Combitube

### **Contraindications**

- A. Responsive patients with an intact gag reflex.
- B. Patients with known esophageal disease.
- C. Any patients that have ingested caustic substances.
- D. Patients who are less than 3 feet tall.

# Seneca County Emergency Medical Services Medical Protocols

## Technique

- A. Use BSI including gloves, mask, and eye protection. Assemble the equipment while continuing ventilations.
  1. Choose the correct tube size based on the patient's height. (See chart)
    - a. +/- 5kg – Infant = Size 0 (in peds bag)
    - b. 5kg – 12kg Infant = Size 1 (in peds bag)
    - c. 35-45 inches tall = size 2 (in peds bag)
    - d. 41-51 inches tall = size 2.5 (in peds bag)
    - e. 4 to 5 feet tall = size 3
    - f. 5 to 6 feet tall = size 4
    - g. > than 6 feet tall = size 5
  2. Check inflatable cuffs for leaks.
  3. Apply water soluble lubrication to the tip.
  4. Prepare and turn on suction.
- B. Apply chin lift and introduce the King airway in to the corner of the mouth.
- C. Advance tip under the base of the tongue while rotating the tube back to midline.
- D. Without excessive force, advance the tube until the base of the connector is aligned with the patient's teeth or gums.
- E. Inflate cuff based on tube size.
  1. Size 0 & 1 = 15-20ml
  2. Size 2 = 25-35 ml
  3. Size 2.5 = 30-40ml
  4. Size 3 = 45-60ml
  5. Size 4 = 70 ml
  6. Size 5 = 80 ml
- F. Attach the BVM. While gently bagging slowly withdraw the tube until ventilation is easy to administer a large tidal volume with minimal airway pressure.
- G. Adjust cuff inflation, if necessary, to obtain an airway seal at peak ventilation pressure.
- H. Assess for proper tube placement.
  1. Assess breath sounds.
  2. Assure chest rise and fall
  3. **ALS Providers** attach patient to continuous end tidal CO2 monitoring.
  4. Continue to reassess that tube is properly placed and that patient ventilation is easy and free flowing with chest rise and adequate breath sounds.
  5. **If at anytime the provider is unsure of proper placement – deflate cuff, remove and use BVM for ventilation.**
- I. Secure King Airway using a commercially designed tube holder (Thomas tube holder), and secure the patient in full c-spine immobilization to avoid dislodging the airway inadvertently.

# Seneca County Emergency Medical Services Medical Protocols

## Notes

- A. The key to insertion is to get the distal tip of the King airway around the corner in the posterior pharynx under the base of the tongue. A chin lift along with the lateral approach has been shown to help facilitate tube placement.
  - 1. Alternatively, a laryngoscope or tongue depressor can be used to lift the tongue to the anterior to allow easy advancement of the King tube into the proper position.
  - 2. Insertion can also be accomplished using a midline approach by applying a chin lift and sliding the distal tip along the palate and into position in the hypopharynx. In this instance, head extension may also be helpful.
- B. It is important to maintain the tube midline after it is advanced around the corner in the posterior pharynx. Keeping the tip at the midline assures the distal tip is properly placed in the hypopharynx/upper esophagus.
- C. Depth of insertion is key to proper tube placement.
  - 1. With deeper initial insertion only withdrawal is required to accomplish a patent airway. A shallow inflation requires cuff deflation to advance the tube deeper.
  - 2. As the tube is withdrawn the proximal opening will be the first align with the laryngeal inlet. Since the proximal opening is closest to the proximal cuff there is less chance of airway obstruction.
  - 3. Withdrawal of the airway with the cuffs inflated results in retraction of tissues away from the laryngeal opening encouraging a more patent airway.
- D. During ventilation the epiglottis or other tissue can be drawn into the distal ventilatory opening resulting in obstruction. Advancing the tube 1-2 cm or initiating deeper placement normally eliminates the obstruction.
- E. Ensure the cuff is not over inflated. Cuff pressure should be adjusted to ensure air does not leak around the cuff at peak inspiratory pressure.
- F. Medications cannot be administered directly through this airway.
- G. To remove the King airway:
  - 1. Suction above the cuff in the oral cavity if indicated.
  - 2. Fully deflate both cuffs before removal
  - 3. Remove the tube when the gag reflex has returned.

## **ADVANCED AIRWAY MANAGEMENT – INTUBATION (Paramedic ONLY)**

### **1. ADULT ENDOTRACHEAL INTUBATION**

#### **A. INDICATIONS**

- 1. Patients in deep coma, respiratory arrest or cardiopulmonary arrest.
- 2. Patients where complete obstruction of the airway appears imminent – respiratory burns, acute anaphylaxis, upper airway foreign body obstruction.

#### **B. CONTRAINDICATIONS**

- 1. Patients with an intact gag reflex.

## Seneca County Emergency Medical Services Medical Protocols

2. Patients where irritation of the pharynx might cause laryngeal spasm – croup or epiglottitis.

### C. PRECAUTIONS

1. It is important not to take longer than 15 seconds per attempt. If it takes longer than 15 seconds, you

Should stop and hyperventilate the patient before trying again.

2. Other techniques of airway management may be indicated if there is a suspected injury to the cervical 3. The importance of verifying successful endotracheal intubation by auscultation of the chest following

The procedure cannot be over emphasized. Accidental intubation of the esophagus, resulting in prolonged hypoxia is usually always fatal if not quickly reversed.

### D. COMPLICATIONS

1. Accidental intubation of the esophagus.
2. Insertion of the endotracheal tube too deep into the trachea or right main stem bronchus.
3. Oropharyngeal trauma.
4. Fractured teeth or dentures.
5. Spasm of the vocal cords.

### E. REQUIRED EQUIPMENT

Endotracheal tube

Lubricant

Stylet

10ml syringe

King Vision Video LaryngoScope

Laryngoscope blade

Laryngoscope handle

McGill Forceps

Tape

Stethoscope

Suction

ETCO2 Waveform Capnography (Zoll X-series Monitor)

### F. PROCEDURE

1. Request partner to hyperventilate patient while assembling equipment and order auscultation of breath sounds prior to intubation.
2. Assemble and check equipment.
  - a. Select appropriate size laryngoscope blade and handle.
  - b. Check light on laryngoscope to be certain it works and bulb is tight.
  - c. Select appropriate size endotracheal tube, i.e., measure size to little finger or nares.

## Seneca County Emergency Medical Services Medical Protocols

- d. Check cuff of endotracheal tube, leave inflated for approximately 10 seconds. Use the maximum amount of cc's recommended by manufacturer. Leave syringe attached.
- e. Tube should be lubricated.
- f. Prepare tape, put on stethoscope.
3. Place patients head in sniffing position (maintain c-spine control if indicated). Hold laryngoscope in Left hand. Hold ET in right hand. Move ventilator to side, interrupt bagging.
4. Insert laryngoscope while directly visualizing:
  - a. Insert blade in right side of mouth moving the tongue to the left, or
  - b. Use mid-line technique following palate  $\frac{1}{4}$  to  $\frac{1}{2}$  inch beyond uvula.
5. Landmarks for insertion; epiglottis, vocal cords, and arytenoid cartilage.
6. Do not use teeth as fulcrum, elevate laryngoscope, advance ET tube through cords, withdraw laryngoscope and hold onto tube.
7. Inflate cuff by feeling pilot balloon tension. Look at syringe and visualize exact amount of air injected. Use only enough air to create an effective seal (usually 4-6 ml of air).
8. Ventilate with BVM, assess effectiveness with stethoscope – apices, mid-axillary line, and epigastrium.
9. Secure with tape or ET strap.
10. Attach ETCO<sub>2</sub> adapter between tube and BVM – ventilate to achieve ETCO<sub>2</sub> of 35-45mm/hg.

### **PEDIATRIC ENDOTRACHEAL INTUBATION (Paramedic ONLY)**

#### **A. INDICATIONS**

1. Patients in deep coma, respiratory arrest, or cardiopulmonary arrest.
2. Patients where complete obstruction of the airway appears imminent – respiratory burns.

#### **CONTRAINDICATIONS**

1. Patients with an intact gag reflex.
2. Patients where irritation of the pharynx might cause laryngeal spasm.
3. Croup or epiglottitis.

#### **C. COMPLICATIONS**

1. Accidental intubation of the esophagus.
2. Insertion of the ET tube too far.
3. Oropharyngeal trauma.
4. Fractured teeth.
5. Spasm of the vocal cords.

#### **D. REQUIRED EQUIPMENT**

Pediatric non-cuffed ET tube

Lubricant

Stylet

## Seneca County Emergency Medical Services Medical Protocols

Laryngoscope blade  
Laryngoscope handle  
Tape  
Stethoscope  
King Vision Video Laryngoscope with Pediatric Track blade  
ETCO<sub>2</sub> waveform capnography – Zoll X-series

### E. PROCEDURE

1. Check laryngoscope and light.
2. Select appropriate blade size for age of infant/child.
3. Hyperventilate child.
4. Insert laryngoscope blade properly.
5. Do not use teeth as fulcrum.
6. Insert Et tube while maintaining visualization of the vocal cords.
7. Check tube placement following insertion.
8. Ventilate infant/child.
9. Auscultate chest.
10. Secure tube.
11. Take no longer than 15 seconds to attempt to re-ventilate.
12. Attach ETCO<sub>2</sub> adapter between tube and BVM – ventilate to achieve ETCO<sub>2</sub> of 35-45mm/hg

### **VISUALIZED OROTRACHEAL INTUBATION WITH C-SPINE IMMOBILIZATION**

#### **(Paramedic ONLY)**

#### A. PROCEDURE

1. Need for c-spine control from scene/situation.
2. Direct one EMT to provide manual in-line support from above patient's head (c-spine log roll if semi-prone).
3. Perform global assessment – indicate need for ventilation.
4. Perform visual scan of mouth performed with tongue-jaw lift.
5. Insert oropharyngeal or nasopharyngeal airway.
6. Provide ventilation with BVM.
7. Connect reservoir and high flow oxygen to BVM.
8. Complete rest of ABCs.
9. Auscultate left and right lung fields.
10. Select proper size ET tube, test cuff with 10cc syringe. Leave syringe fixed to bulb.
11. Select laryngoscope blade of choice, test bulb -white, tight, bright.
12. Place pads under patient's head, as needed.
13. Direct second EMT to take manual in-line support from forward presenting position, facing patient on opposite side from EMT ventilating. EMT at head releases his/her hold and moves away – BVM ventilation continues from side.
14. Instruct EMT ventilating to hyperventilate and then clear airway, removing oropharyngeal airway.

Seneca County Emergency Medical Services  
Medical Protocols

15. Press patient's head with thighs, using tongue-jaw lift, insert laryngoscope blade in manner suitable for blade. Without moving patient's head, lean back and visualize arytenoid cartilage and 1/3 to 1/2 of vocal cords.
16. Insert ET tube, proper depth 21cm.
17. Inflate cuff – remove syringe.
18. Order EMT to remove mask, connect bag to ET tube and hyperventilate for two minutes, then continue ventilating.
19. Auscultate left and right lung fields and over epigastrium without releasing hold on ET tube.
20. Tape tube in place if sounds are proper.
21. Monitor ventilation and periodically check breath sounds and seek signs of respiratory improvement. (skin, mucosa, etc.)
22. Using King Vision Video Laryngoscope makes all this much easier
23. Ensure Waveform capnography is attached inline – maintain ETCO<sub>2</sub> of 34-45mm/hg

4. **NASOTRACHEAL INTUBATION (Paramedic ONLY)**

A. INDICATIONS

1. Patients in deep coma with imminent respiratory arrest where oral tracheal intubation cannot be accomplished.
2. Where trauma to the mouth is apparent and there is no trauma to the face above the lips.
4. Patient in status epilepticus with clenched teeth.

B. CONTRAINDICATIONS

1. Irritation of the pharynx might cause laryngeal spasm (croup or epiglottitis).
2. Nasal bleed or clear fluid (CSF).
3. Patient with basal skull fracture.

C. PRECAUTIONS

1. If a basal skull fracture is suspected, nasotracheal intubation is best performed in the Emergency dept.

D. COMPLICATIONS

1. Intubation of esophagus.
2. Insertion of the endotracheal tube too far.
3. Oropharyngeal trauma; laryngopharyngeal trauma.
4. Fractured teeth or dentures.
5. Spasm of the vocal cords.

E. REQUIRED EQUIPMENT

Endotracheal Tube (appropriate size)  
Lubricant 10ml syringe  
McGill Forceps  
Laryngoscope Blade – Miller/ McIntosh  
Laryngoscope handle

## Seneca County Emergency Medical Services Medical Protocols

1” Tape – using a commercial tube holder is ineffective on nasal tubes.  
Gloves Goggles & Stethoscope

### F. PROCEDURE

1. Test cuff.
2. Check Laryngoscope and light.
3. Select appropriate tube.
4. Apply lubricant to tube.
5. Inspect nose and select site.
6. Hyperventilate patient.
7. Insert tube in nose.
8. Advance tube to oropharynx – listen for inspiration on blind intubation.
9. Observe for bulging and anterior displacement of the laryngeal prominence.
10. Holding of ear over the opening of the Et tube will detect airflow.
11. Ventilate patient – auscultate chest.
12. Cuff may be inflated and secure Et tube properly.
13. Check tube placement.
14. Ventilate patient.
15. Perform steps 7-14 in 25 seconds or less.
16. Reassess airway.
17. Attach inline ETCO<sub>2</sub> adapter – Zoll X-series select on ETCO<sub>2</sub> – ventilate to achieve ETCO<sub>2</sub> between 35-45mm/hg

### **NEEDLE THORACENTESIS (RELIEF OF TENSION PNEUMOTHORAX)** **(Paramedic ONLY)**

#### A. INDICATIONS

1. Suspected Tension Pneumothorax displaying dyspnea.
2. Cyanosis, shallow respirations, jugular venous distension, and tracheal deviation.

#### B. CONTRAINDICATIONS

1. None when used in the setting of Tension Pneumothorax.

#### C. PRECAUTIONS

1. When making the puncture, **DO NOT PENETRATE** any further than the pleura.
2. Quite often you will feel a “pop” as the needle is advanced through the pleura. Too deep of an insertion of the needle may result in penetration of the lung, especially if the lung is not totally collapsed.
3. The puncture must also be made close to the superior border of the lateral ribs so to avoid the intercostal artery, vein, and nerve.

#### D. COMPLICATIONS

1. Puncture of the lung.
2. Hemorrhage from puncture of the intercostal vessels.



## Seneca County Emergency Medical Services Medical Protocols

3. Hemorrhage from puncture of a pulmonary vessel.
4. Severe pain if patient is conscious.

### E. REQUIRED EQUIPMENT

#10, 12, or 14 gauge angio cath at least 2" long  
Gloves  
Prep – Betadine  
1" Tape  
4x4 dressing  
Stethoscope

### F. PROCEDURE

1. Assess the patient's chest and respiratory excursions and vital signs.
  - a. Bare chest and observe chest wall movement, ventilatory effort, accessory muscles, and agitation/anxiety.
  - b. Obtain blood pressure baseline.
  - c. Auscultate breath sounds, right and left, at apices and mid-axillary line (one hand width below axilla).
  - d. Palpate chest wall.
  - e. Check for symmetry of chest wall movement.
  - f. Check for jugular venous distension.
  - g. Determine if there is resistance to bagging (if this is progress).
  - h. Check for tracheal deviation.
2. Apply oxygen 15L per mask, or administer oxygen under positive pressure with a bag-valve device if patient is not breathing on own.
3. Identify the second intercostal space, in the mid-clavicular line on the side of the pneumothorax.
4. Cleanse site with betadine.
5. Place the patient in an upright position (only if c-spine injury has been ruled out).
6. Insert the 14-gauge catheter-over-needle device into the second intercostal space in the midclavicular line just above the top of the third rib.
7. Puncture the pleural space. Air will be heard escaping through the open needle.
8. Advance the catheter and remove the needle. Attach a flutter valve if one is available.
9. Secure the plastic catheter in place and apply a bandage or small dressing.
10. Reassess chest, respiratory excursions, and vital signs:
  - a. Observe chest wall movement, ventilatory effort, accessory muscles, and agitation/anxiety.
  - b. Reassess blood pressure. Identify significance of BP changes.
  - c. Auscultate breath sounds, right and left, at apices and mid-axillary line (one hand width below axilla).
  - d. Check for symmetry.
11. Ventilate with 100% oxygen, assisting ventilations as needed.

Seneca County Emergency Medical Services  
Medical Protocols

**SURGICAL CRICOTHYROIDOTOMY (Paramedic ONLY)**

**A. CONSIDERATIONS**

The Paramedic considering a cricothyroidotomy must make a careful airway assessment focused on:

1. Determining the patient's ability to maintain their own airway without further interventions.
2. Need for non-surgical interventions such as obstructed airway procedures, manual airway maneuvers, oral or nasal airways with positive pressure ventilation, medication (Epinephrine, Benadryl) administration.
3. A need for surgical cricothyroidotomy.

\*This decision will be affected by; extrication time, transport time, distance to transport hospital, paramedic personal airway skills, and on-line **Medical Control**.

**B. INDICATIONS**

Surgical Cricothyroidotomy is a traumatic emergency procedure and should only be attempted when total airway obstruction is present and other airway maneuvers have failed or are not feasible (i.e., facial trauma, foreign body obstruction, edema of the trachea or posterior oropharynx). The urgency for this procedure may preclude contact with on-line **Medical Control**, however, on-line **Medical Control** may be contacted for guidance when time permits and if no delay in ventilating the patient will occur.

**C. PROCEDURE**

1. Safe scene, infection control, gloves (sterile if possible).
2. Try to establish an airway using less invasive airway maneuvers.
3. Patient must be in supine position with neck in a neutral position, c-spine control if indicated.
4. Palpate the thyroid notch, cricothyroid interval, and sternal notch for orientation.
5. Use aseptic technique, as time and conditions will allow. In ideal situations, the site should be prepared with Betadine.
6. Stabilize the thyroid cartilage with the left hand.
7. Using a #11 scalpel, make an incision over the lower half of the cricothyroid membrane, approximately 1" to 1- ½" in length. This should expose the cricothyroid membrane.
8. Carefully incise through the membrane, up to 1 cm in length.
9. Using the scalpel handle, insert it into the incision area and rotate it 90 degrees to open the incision into the airway.
10. Insert a cuffed 5.0 or 6.0 endotracheal tube through the cricothyroid membrane incision. Direct the tube distally into the trachea.
11. Inflate the cuff approximately 10ml and ventilate the patient, auscultating the chest for adequate ventilations.
12. Secure the ET tube to prevent dislodging. Care should be taken not to cut or remove the cricothyroid cartilage.
13. Attach to 100% oxygen by Ambu bag or Auto Vent using ETCO<sub>2</sub> inline to ensure ETCO<sub>2</sub> waveform of 35-45mm/hg.

Seneca County Emergency Medical Services  
Medical Protocols

D. COMPLICATIONS

- |   |                                |
|---|--------------------------------|
| 1. Asphyxia                                 | 6. Aspiration                  |
| 2. Creation of a false passage into tissues | 7. Subglottic stenosis/edema   |
| 3. Hemorrhage                               | 8. Laryngeal stenosis          |
| 4. Mediastinal emphysema                    | 9. Laceration of the esophagus |
| 5. Vocal cord paralysis                     | 10. Laceration of the trachea  |

**PEDIATRIC NEEDLE CRICOTHYROIDOTOMY (Paramedic ONLY)**

A. CONSIDERATIONS

Under most circumstances, an adequate airway is provided by repositioning of the head and jaw, an oropharyngeal airway, or endotracheal intubation. Rarely, a child with an upper airway foreign body, severe oral/facial injuries, anaphylaxis, or a laryngeal fracture will require this procedure. **On-Line Medical Control** will be notified at the earliest possible time if this procedure is done.

B. INDICATIONS

**THIS PROCEDURE TO BE USED ONLY IN A CHILD WHO HAS A TOTALLY OBSTRUCTED AIRWAY IN WHOM ALL OTHER EFFORTS HAVE FAILED!**

C. EQUIPMENT NEEDED

- 1-1/4" - 14-16gauge IV catheter with flexible over the needle catheter
- Auto Vent or pediatric Ambu bag
- 3ml syringe
- 15mm adapter from 2.5 or 3.0 pediatric endotracheal tube
- Providine iodine wipes

D. PROCEDURE

1. Safe scene, universal precautions
2. Try to establish an airway using less invasive airway maneuvers.
3. Patient must be in supine position with neck in a neutral position, c-spine control if indicated.
4. Palpate the cricothyroid membrane anteriorly, between the thyroid cartilage and cricoid cartilage. If time allows, prep the area with Betadine swabs.
5. Use a 1-1/4" #14 gauge needle, 3ml syringe attached. Puncture the skin midline and directly over the cricothyroid membrane.
6. Direct the needle at a 45-degree angle distally. Insert the needle through the lower half of the cricothyroid membrane. Aspiration of air confirms entry into the tracheal lumen.
7. Remove the syringe and withdraw the metal stylet while advancing the synthetic catheter distally.

## Seneca County Emergency Medical Services Medical Protocols

8. Attach the 15mm adapter to the proximal end of the catheter and then to the pediatric BVM device. Ventilate.
9. Auscultate the chest for adequate ventilation.
10. The catheter should be held by hand until the airway is turned over to the ED staff. You should maintain a grip on the catheter at all times during transport to avoid dislodging. Different methods of taping and immobilization of the catheter may be necessary depending on circumstances, but under no situation should the paramedic relinquish their grip on the surgical airway catheter.
11. Make sure the system is attached to Auto Vent or 100% oxygen using a pediatric Ambu bag.
12. Using an IV extension tubing connected to IV catheter, once it is in place, may make it easier to manage.
13. Ensure ETCO<sub>2</sub> waveform is maintained between 35-45mm/hg – this is a temporary solution – the CO<sub>2</sub> will increase due to lack of expiration of gases and prolong expiratory times.

### E. COMPLICATIONS

- |  |                                   |
|--|-----------------------------------|
| 1. Incorrect placement, missing the airway | 7. Asphyxia                       |
| 2. Aspiration                              | 8. Creation of False passage      |
| 3. Subglottic stenosis or edema            | 9. Laryngeal stenosis or trauma   |
| 4. Hemorrhage                              | 10. Laceration of the esophagus   |
| 5. Laceration of the trachea               | 11. Mediastinal emphysema         |
| 6. Vocal cord trauma or paralysis          | 12. Delayed soft tissue infection |

### NEBULIZER – (EMT setup with Intermediate or Medic present)

The oxygen powered hand-held nebulizer is a method of administering Albuterol by aerosol. The most ideal method of administration is by using the T-mouth piece that comes with the unit. If the patient is too symptomatic to utilize the “T” device, an alternative method of administration is using the aero mist oxygen mask. It should be noted that the aero mist oxygen mask is not an oxygen delivery system. When the treatment is complete the patient should be switched over to a standard oxygen delivery system, i.e. nasal cannula. It is acceptable to have the patient on nasal cannula oxygen simultaneously during the breathing treatment.

#### A. PROCEDURE

1. Explain procedure to patient.
  - a. Instruct patient to create a seal around the T-device.
  - b. Instruct patient to inhale through their mouth and exhale through their nose as much as possible.
2. Open nebulizer and hook up oxygen supply tubing to the unit and the oxygen delivery device.
3. Pour the medication (**single unit dose**) into the chamber by either unscrewing the top or by removing the “T” mouthpiece.
4. Set liter flow at 6LPM. Range of 4 to 8 LPM can be used as long as the medication is vaporized.

## Seneca County Emergency Medical Services Medical Protocols

5. The procedure should last approximately 10 minutes. Upon nearing the end of the treatment, the condensate will need to be moved down to the bottom of the bowl so it can be drawn up the siphon tube. To do this, shake the chamber or strike the chamber with your fingertip.
6. Monitor patient pulse rate, EKG, oximeter, color, and respiratory effort for improvement or deterioration.
7. Dosing of an aerosol treatment is **a single dose**, reassess treatment response after completion of aerosol and administer a second dose if indicated. Any further doses are only after contact with on-line *Medical Control*.

### **KED (KENDRICK EXTRICATION DEVICE)**

The KED is the device used to immobilize patients with suspected cervical spine injuries. This device should be applied according to manufacturers recommended application. KED application should be practiced often to become proficient in rapid application if indicated. The KED requires a minimum of three (3) rescuers to apply.

#### **A. APPLICATION**

1. Safe scene, infection control, gloves.
2. Direct personnel to take c-spine control.
3. Evaluate c-spine control.
4. Explain procedure to patient.
5. Check P.M.S. (pulse, motor, sensory).
6. Choose appropriate size collar.
7. Apply collar (evaluate neck before application).
8. Maintain c-spine control. Slightly lean patient forward and slip KED behind patient.(evaluate The back while patient is leaned forward).
9. Maintain c-spine control, lean patient back
10. Pull leg straps down to patient's side.
11. Wrap sides of board around patient and couple the bottom strap (leave loose).
12. Couple the middle strap (leave loose).
13. Adjust the board up under the armpits by using the adjusting handles.
14. Maintain neutral spinal alignment and gradually tighten the two lower straps.
15. Couple and tighten the leg straps. This is done by passing the leg straps under the patient's legs and coupling to the receiver on the opposite side of the KED. (If groin injury is suspected, the straps should be coupled to the same side of the KED.)
16. If indicated, pad behind the patient's head.
17. Apply forehead strap.
18. Apply chinstrap.
19. Couple top torso strap and tighten.
20. Check P.M.S.
21. Move patient onto long board by sliding on long axis.
22. Uncouple leg straps and lower legs.
23. Recouple leg straps and leave loose.
24. Secure patient to long board.
25. Check PMS

## Seneca County Emergency Medical Services Medical Protocols

### B. POINTS TO REMEMBER

1. KED should be checked before and after use.
2. KED should be cleaned after every use.
3. KED should be packaged ready to use (i.e. accordion-roll straps).
4. Remember to assess before you cover.

### C. SPECIALIZED USES

#### 1. **Pregnant patients:**

The chest straps may be folded inward, leaving the patient's abdomen exposed. Use caution in placement and tightening of the straps.

#### 2. **Pediatric patients:**

Adjustments may be made by placing blankets or towels on the patient's chest and securing the KED.

#### 3. **Fractured Hip:**

Invert the KED, allowing equal space above and below the hip. Use existing straps to secure the KED to body and leg.

#### 4. **Use with Cardiac Monitor:**

Folding the chest straps inward provides more chest exposure for use of EKG electrodes or for chest compressions. Defibrillation may be performed by loosening the two upper chest restraints.

## RESPIRATORY MASK PROTOCOL

It is realized that the EMT/Paramedic is at risk of contracting communicable diseases due to the constant and repeated exposures to the sick and injured. Seneca County EMS mandates the use of an OSHA approved respiratory mask (N95) when indicated. It is the responsibility of the EMT/Paramedic's employer/squad to ensure enforcement of the use of the mask at appropriate times. It is also the responsibility of the employer/squad to ensure that appropriate follow-up has taken place after a confirmed exposure.

A. To ensure a proper fit, each EMT/Paramedic is to check the fit using the appropriate method for the device.

B. Several Sizes of N95 Masks are available to ensure a proper fit at all times.

Note: If at any time the structure of the individual's face changes, i.e. weight loss, they may need to be refitted.

1. Conditions that may affect the fit of the respiratory mask are:
  - a. Long Moustache
  - b. Beard
  - c. Glasses
  - d. Facial Scars
  - e. Long Side Burns
  - f.

## Seneca County Emergency Medical Services Medical Protocols

### I. REFUSAL

- A. EMTs/Paramedics who cannot achieve a proper fit, cannot wear the mask or decline to wear the mask, must sign the Respiratory Mask Declination Form.
- B. Seneca County EMS will maintain the Declination Form.

### II. MASK APPLICATION

- A. To Apply The Mask:
  - 1. Cup the respiratory in either hand with the nose section away from you, the straps freely draped below your hand.
  - 2. Position mask on your face. Be certain that the narrow formed section rests comfortably on the bridge of your nose.
  - 3. With the other hand, draw the top strap over and position on the crown of your head. Next, draw the bottom strap over your head.
  - 4. Adjust top and bottom straps as necessary to achieve a tight, comfortable fit.
  - 5. The respiratory mask seal should be checked using the check cup. Being careful not to disturb the fit, place check cup over the mask and inhale deeply. A negative pressure should be felt if an appropriate seal has been accomplished.

### III. MAINTENANCE

- A. The respiratory mask is disposable. If the mask's configuration has been altered, it should be exchanged.
- B. Do not store the masks without a covering or where it can get bent or damaged.
- C. Each vehicle will have a full set of masks of varying sizes

### IV. HIGH RISK GROUPS

- A. Listed below are groups that are at high risk for disease transmission. If the EMT/Paramedic feels that the patient falls into one of these categories, the mask should be worn.
  - 1. HIV positive persons.
  - 2. Travel to High Disease prevalent countries. (Western Africa, Central Asia)
  - 3. Sheltered or homeless persons.
  - 4. Alcoholics.
  - 5. IV drug users.
  - 6. Inmates.
  - 6. Nursing home residents.
  - 7. SARS/CoV2 – or variants of COVID-19
- B. Settings that these high risk groups may be found are:
  - 1. Medical facilities.
  - 2. Hospices.
  - 3. Correctional facilities.

Seneca County Emergency Medical Services  
Medical Protocols

4. Homeless shelters.
  5. Long-term care facilities.
  6. Drug treatment centers.
- C. Signs and symptoms of concern:
1. Productive cough.
  2. Coughing up blood.
  3. Weight loss.
  4. Loss of appetite.
  5. Weakness.
  6. Night sweats.
  7. Fever.

VI. MEDICAL PROCEDURES

- A. The procedures listed below increase the risk of transmission of disease to the EMT/Paramedic. Strict infection control precautions should be followed when performing:
1. Aerosolized medications.
  1. Endotracheal intubation.
  2. Suctioning
  3. Transporting in a closed vehicle.
  4. Surgical cricothyroidotomy
  5. Chest decompression.

**AUTO VENT 3000 – Located in Echo Unit**

The Auto Vent 3000 is a pneumatic device intended for the ventilatory assistance of patients following respiratory/cardiac arrest, near drowning, trauma, paramedical transport, and other circumstances requiring ventilatory assistance in the adult and pediatric patient.

***Properly used, the Auto Vent 3000 is an alternate method of ventilation to manual ventilating. Below are methods for utilizing the Auto Vent 3000 with:***

***1) Mask***

***2) Intubation.***

Seneca County EMS mandates that the Auto Vent 3000 and oxygen tank be carried in the ambulance at all times. Seneca County EMS uses quick disconnect fittings for the Auto Vent 3000, and first responder oxygen regulators do not always have compatible fittings.

- A. ADVANTAGES OF THE AUTOMATIC TRANSPORT VENTILATOR (ATV)
1. Recommended by the American Heart association over bag-mask ventilation.
  2. Gastric insufflation significantly reduced in non-intubated patients due to decrease in ventilation pressures.
  3. Consistent minute ventilation maintained throughout movement of patient and transport without interruption.



## Seneca County Emergency Medical Services Medical Protocols

4. Uniform ventilation and oxygenation during chest compressions.
5. Synchronization of ventilation to pause in compressions is not necessary with use of ATV (AHA recommendation 1980)
6. Even though this device produces excellent controlled ventilation, the EMT/Paramedic must continue to monitor the airway and effectiveness of ventilation relative to total patient condition.
7. Pediatric as well as adult settings.
8. Ease of training and application of use.
9. Allows spontaneous breathing upon demand if the patient makes an inspiratory effort (of  $\geq 2$  cm H<sub>2</sub>O).

### B. INDICATIONS

1. Respiratory arrest.
2. Cardiac arrest
3. Patients able to tolerate endotracheal intubation.
4. Patients in need of ventilatory assistance for pre-oxygenation prior to intubation (use with appropriate size resuscitation mask and adjunct).
5. Patients with tracheostomy tube in need of ventilatory assistance.

### C. CONTRAINDICATIONS

1. Patients not in need of ventilatory assistance.
2. Not for use with patients less than 20kg. (44 lbs.).

### D. PROCEDURE

1. Patients in Respiratory Arrest or Profoundly Hypoxic with a pulse:
  - a. Perform primary patient assessment and treat per appropriate protocol.
  - b. If patient is breathing, administer high flow supplemental oxygen via non-rebreather mask. If patient is not breathing or profoundly hypoxic, ventilate with a bag valve mask and >85% oxygen or the Auto Vent 3000 with a mask.
  - c. Auscultate chest for positive bilateral air exchange sounds and epigastric areas for lack of abdominal air sounds.
  - d. Intubate patient by appropriate method.
  - e. Auscultate for proper placement of endotracheal tube and secure with ET strap.
  - f. Connect the Auto Vent patient valve to endotracheal tube using flexible non-rebreathing valve.
  - g. Set tidal volume to equal 8 to 10 ml for every kg of body weight (ex: 70kg = 700ml volume). In the event of a known or suspected past medical history of a pulmonary disease, decrease initial volume setting by 100ml for patients below 175lbs (79kg) lean body weight, and by 200ml for patients above 175lbs (79kg) lean body weight.
  - h. Set BPM (ventilatory rate) at 12-20bpm.
  - i. Observe for chest rise/lung expansion.
  - j. If clinical signs of hypoxia persist or SaO<sub>2</sub> remains below 90%, increase first BPM (ventilatory rate) to maximum setting the, if

## Seneca County Emergency Medical Services Medical Protocols

necessary, increase tidal volume in 100ml increments titrated to SaO<sub>2</sub> > 90%.

- k. Should patient begin breathing spontaneously (an effort of 2cm H<sub>2</sub>O will activate the demand valve) it may be advisable to decrease or turn down the ventilator rate (BPM) to the “0” position. This will allow the patient to breathe more spontaneously. Warning: Monitor the patients closely while using the demand valve. Should the patient’s respirations slow, become shallow or labored, return to the initial automatic ventilator settings immediately.

### 2. Patients in Cardiac Arrest

- a. Follow appropriate cardiac arrest protocol and intubate when indicated.
- b. Connect the Auto Vent patient valve to endotracheal tube using flexible, non-rebreathing valve.
- c. Set the tidal volume to equal 8 – 10ml for every kg of body weight (ex: 70kg = 700 ml volume).
- d. Set the Inspiratory Time Control sector to the desired adult or child position.
- e. Set BPM (ventilatory rate) at 10-14 breaths per minute.
- f. Observe for chest rise/lung expansion.
- g. Auscultate chest for positive bilateral air exchange and epigastric area for lack of abdominal air exchange.
- h. Continuous chest compressions at 80 – 100 per minute between ventilation as determined by chest rise and green breath indicator.
- i. When utilizing an Auto-Pulse – ensure ETCO<sub>2</sub> Waveform is captured and respirations are effective – MAY NEED TO MANUALLY VENTILATE WITH BVM

### 3. Patients with Tracheostomy Tube in Need of ventilatory Assistance

- a. After initial Auto Vent 3000 settings have been made, connect the patient valve assembly directly to the endotracheal or tracheostomy tube adapter (15mm inside diameter / 22mm outside diameter dimensions allow this connection).

### E. COMPLICATIONS

1. In the event of any suspected failure as revealed by the Audible Alarm Alert or by diminished and/or cessation of chest rise or air exchange, perform the following:
  - a. Immediately auscultate the chest for positive bilateral air exchange and epigastric area for lack of abdominal air exchange.
  - b. Check ET tube for correct placement, blockage, kinks, and pilot balloon inflation.
  - c. Check patient valve for foreign material or obstruction.
  - d. Check green breath indicator on delivery valve for positive function.
  - e. Check hose assembly to Control Box.

## Seneca County Emergency Medical Services Medical Protocols

- f. Check Tidal Volume and BPM control settings.
- g. Check oxygen supply line attachment.
- h. Check oxygen supply source and regulator.
- i. If unable to promptly (30 seconds) resolve suspected difficulty, disconnect Auto Vent 3000 and ventilate via bag valve tube with 100% oxygen. Recheck by auscultation for positive bilateral air or lack of, and negative abdominal air exchange.

### **PULSE OXIMETER**

The pulse oximeter is an instrument used to ascertain a patient's arterial oxyhemoglobin saturation. (% spO<sub>2</sub>). This is done by measuring the absorption of red and infrared light passing through the tissue.

#### **A. ADVANTAGES**

1. Early warning system. (May alert the EMT/Paramedic *before* cardiac monitors.)
2. The pulse oximeter will enhance the EMT/Paramedic's ability to identify, assess, and treat hypoxemia for any reason (i.e. drug overdose).
3. The pulse oximeter will assist in monitoring the effectiveness of other treatments (i.e. bronchodilator therapy).
4. The pulse oximeter will assist in monitoring oxygen saturation during suctioning and intubation.
5. The pulse oximeter will assist in the assessment of perfusion in patients with orthopedic injuries.

#### **B. RANGES**

1. 95% - 100%, ideal range.
2. 90% to 95%, mild to moderate hypoxemia. Check airway and increase oxygen support. Use Supplemental Oxygen
3. 85% - 90%, severe hypoxemia. If the patient is symptomatic, aggressive airway intervention and hyperventilation is indicated. Remember to treat underlying causes (i.e. pulmonary edema).
4. Below 85%. If the patient is symptomatic, intubate and ventilate.

#### **C. FACTORS AFFECTING READING**

1. Excessive ambient light, especially sunlight.
2. Excessive motion.
3. Nail polish, especially green, black or red.
4. Moisture in sensor.
5. Improper sensor attachment.
6. Poor patient perfusion.
7. Venous pulsations.
8. Anemia or low hemoglobin.
9. Sensor not at heart level.
10. Pierced ears (when using earlobe sensor).

#### **D. APPLICATION**

## Seneca County Emergency Medical Services Medical Protocols

1. Safe scene, infection control, gloves.
2. Explain procedure to patient.
3. Attach sensor.
4. Turn the unit on. Unit will give a read out after ten (10) seconds or eight (8) green flashes of the LED light.
5. Shut the unit off when the monitoring is complete.

### E. POINTS TO REMEMBER

1. Treat your patient, not the monitor.
2. Clean unit after each use, especially the sensors.
3. LED light flashes with each pulse beat. Green is good, yellow is marginal, red is inadequate.
4. Do not use finger clip on thumb.
5. Use ear clip for peripheral shut down or cold extremities
6. It may be helpful to use an alcohol prep on the index finger or ear lobe before applying sensor.

### **TRACTION SPLINT – HARE Traction or STS Traction splint**

The traction splint is the equipment used to immobilize specific leg injuries. Guidelines set forth by the manufacturer should be followed when applying this device. This equipment requires two rescuers for application. Splint application should be practiced often to become proficient in rapid application.

### A. APPLICATION

1. Safe scene, infection control, gloves.
2. Explain procedure to patient.
3. Check P.M.S. (Pulse, Motor, Sensory)
4. Place splint alongside of patient and adjust length and straps. Length should be from belt-line to several inches below heel.
5. One rescuer stabilizes the leg while another rescuer wraps the ankle hitch around the ankle.
6. One rescuer continues to stabilize the leg while the other rescuer gently pulls longitudinal traction supporting the heel with the other hand and maintains traction.
7. Check P.M.S.
8. The splint is now placed under the injured leg, placing the rubber thigh pad against the ischial tuberosity
9. Attach top groin strap and securely fasten.
10. Attach “S” hook of splint to ankle hitch.
11. Turn the traction knob, applying mechanical traction until it equals the manual traction.
12. Manual traction may now be released and the heel stand adjusted.
13. Check P.M.S.
14. Secure velcro leg straps, two above the knee, and two below.
15. Secure patient to long board.
16. Secure traction splint to long board.
17. Check P.M.S.

## Seneca County Emergency Medical Services Medical Protocols

### B. POINTS TO REMEMBER

1. Splint should be checked before and after each use.
2. Splint should be cleaned after each use.
3. Check P.M.S. often.
4. If splint application is delayed, manual traction should be applied.
5. Do not release traction once applied, unless repositioning required due to loss of circulation.

### EXTERNAL CARDIAC PACING

#### A. PURPOSE

Deliver an electrical stimulus to the heart, causing cardiac depolarization and, ultimately, myocardial contraction.

#### B. ADVANTAGES

Easy to perform and requires minimal training.

#### C. DISADVANTAGES

Temporary external pacing cannot be used as a permanent treatment for conduction problems.

#### D. SPECIFIC INDICATIONS

1. Bradycardia
2. Asystole

#### E. CONTRAINDICATIONS

Flammable environment

#### F. SETUP

1. Cardiac Monitor/Defibrillator/Pacer
2. Self-adhesive pacing electrodes
3. Advanced cardiac life support supplies

#### G. PROCEDURE

1. Notify Medical Control of your patient's assessment. Request the use of external pacing and analgesic or sedation if indicated.
2. Connect patient to cardiac monitor and obtain rhythm.
3. Obtain baseline vital signs.
4. Explain procedure to patient and family, if appropriate. Include explanation of possible discomfort and use of deep breathing or other relaxation techniques as needed.
  
5. Apply adhesive pacing electrodes to clean, dry skin in the left anterior / left posterior position. Place negative (-) electrode on left anterior chest, halfway between the xyphoid process and left nipple, with the upper edge of the electrode below the nipple line. This corresponds to the V 2-3 ECG electrode position. Place positive (+) electrode on left posterior chest beneath the scapula and lateral to the spine.

## Seneca County Emergency Medical Services Medical Protocols

*NOTE: If the anterior/posterior position is contraindicated, the anterior/anterior position may be used.*

Apply adhesive pacing electrodes to clean, dry skin in the right anterior / left anterior position. Place negative (-) electrode on the left chest, midaxillary over fourth intercostal space. Place positive (+) electrode on anterior right chest, subclavicular area. Anterior/anterior positioning should only be used if anterior/posterior cannot be used.

6. Attach pacing cable to electrodes.
7. Select pacing mode – this minimizes risk of triggering ventricular fibrillation.
8. Assure proper sensing of intrinsic QRS complexes. This is usually done by adjusting the ECG gain or sensitivity control.
9. Set original rate at 80 BPM.
10. Set current at minimum current. In an unconscious patient, increase the mA at 20mA increments until you obtain and assess a captured configuration. Electrical capture is usually noted by a wide QRS and a tall, broad T-wave; mechanical or ventricular capture is evidenced by signs of improving cardiac output. Palpate for carotid or femoral pulse and check the color and temperature of the skin. Check for improving blood pressure and level of consciousness. In a conscious patient, the mA is to be increased at 5mA increments until you obtain and assess a captured configuration.
11. Activate pacemaker. Adjust current upward, observing patient and ECG.
12. Obtain rhythm strips as appropriate.
13. Assess patient's comfort level.
14. Anticipate further therapy as indicated.

### H. DOCUMENTATION

1. Date and time pacing initiated; baseline and pacing rhythm strips.
2. Current required to capture.
3. Pacing rate and mode.
4. Evaluation of patient's response to pacing; electrical/mechanical capture.
5. Medications used. – document any sedation or meds administered
6. Date and time pacing terminated.
7. Zoll X-series will automatically capture pacing when chart is pushed to cloud

Seneca County Emergency Medical Services  
Medical Protocols

**INTRAOSSEOUS NEEDLE – See EZ-IO Addendum**

Intraosseous access should be accomplished in life-threatening situations when peripheral cannulation is impractical or cannot be accomplished. The EZIO Drill driver and needle sets are in all Seneca County EMS ALS equipped units for this procedure. This procedure is acceptable for adults and pediatrics **after** less invasive procedures have been attempted. (The rule of thumb is that if peripheral cannulation cannot be accomplished within 90 seconds or three attempts, an IO shall be established.) It cannot be stressed enough that this is a very painful procedure and the patient must be unconscious, unresponsive, and in a life threatening situation. It should also be realized that in the pediatric arrest scenario, the IO should be attempted first as it can be accomplished quicker and other routes may be attempted as necessary after establishment of IO.

Pediatric resuscitation skills must be practiced to be ready when needed. Procedures with poor likelihood of success should be left to the hospital setting if simpler support and transport will suffice to maintain the patient.

Other Intraosseous devices may be utilized as approved by the EMS Director/Medical Director.

**A. INTRAOSSEOUS INFUSION**

1. Safe scene, infection control, gloves.
2. Try to establish vascular access using less invasive techniques.
3. Use aseptic technique as time and conditions permit. In an ideal situation, the site should be prepared with betadine.
4. Using the EZIO drill driver and appropriate needle set, insert the needle at least one finger width distal to the tibial tuberosity on the medial flat surface of the bone. Angle the penetration at least 10 degrees distal to avoid the epiphyseal (growth) plate.
5. Let the EZIO Drill do the work. Push the needle through skin and activate the driver and insert to marked depth on needle set. Do not penetrate a bone more than one (1) time, fluid or medication may leak out of extra puncture sites, negating reasons for the procedure.
6. Remove stylet.
7. Infuse saline using a syringe to ensure placement. (You may attempt to aspirate bone marrow into syringe, however, sometimes this will not occur, even with correct placement.)
8. A quick flush is imperative to achieve good flow using any IO device
9. Secure needle, if needed, with tape. (The IO needle should be self supporting)
10. Put 0.9% Normal Saline IV solution in pressure infuser bag and attach to IV tubing. Be sure to inflate the pressure bag to achieve good flow rates. Monitor flow rates carefully especially in pediatric patients. It is very easy to overload a patient using a pressure bag.
11. Infuse appropriate medication or fluid amount. Remember to flush with saline if administering medications.

# Seneca County Emergency Medical Services Medical Protocols

## COMPLICATIONS

1. Fracture of bone.
2. Subperiosteal infusion (improper placement).
3. Soft tissue infusion (improper placement).
4. Slow infusion from marrow clotting.
5. Leakage out of bone, due to more than one (1) bone puncture.

## **PROTOCOL POST INTUBATION MANAGEMENT (Adult and Peds)**

### I. Confirmation of correct ETT position

- a. No single technique is 100% reliable for ETT confirmation
- b. Pre-hospital EMS providers should use all available means to determine correct ETT position
- c. A minimum of two clinical and one instrumental method of determination is recommended
- d. The following methods may be used to confirm correct ETT placement
  1. Direct visualization of the ETT passing through the vocal cords into the trachea
  2. Auscultation of all lung fields to confirm adequate air exchange
  3. Auscultation of the epigastrium to confirm the absence of disturbance of the gastric fluids during ventilation
  4. Observation of bilateral expansion of the thorax during ventilation
  5. Use of end tidal CO<sub>2</sub> detection

1. **Colorimetric devices – no longer used by Seneca County** - EasyCap
2. Capnometry device that provides a numeric value for end tidal CO<sub>2</sub> – utilize Zoll Monitor ETCO<sub>2</sub> device – Normal Values 35-45mmhg if tube is in trachea
3. Capnography device that provides a continuous waveform and digital readout of end tidal CO<sub>2</sub> – The Zoll Monitor will NOT automatically do this upon connection of ETCO<sub>2</sub> device you must SELECT it and turn it ON.
  - a. Zoll Monitor Capnography is continuous and has the capability to electronically download and print data and is the preferred device
  - b. Normal values for end tidal CO<sub>2</sub> is equivalent to 35-45 mmHg  
End tidal CO<sub>2</sub> (ETCO<sub>2</sub>) closely reflects arterial CO<sub>2</sub> (PaCO<sub>2</sub>), but is not equal  
With normal physiology, due to ventilation / perfusion mismatching, the ETCO<sub>2</sub> will be 5-10 mmHg lower than PaCO<sub>2</sub>  
Lung disease and low perfusion states will result in greater variation between ETCO<sub>2</sub> and PaCO<sub>2</sub>

### **Depth of ETT placement**

Correct depth avoids right mainstem bronchus intubation and inadvertent extubation

General rules of placement

1. Adult male: 21-23 cm



## Seneca County Emergency Medical Services Medical Protocols

2. Adult female: 19-21 cm

3. Pediatrics:

a. Infant: 10-11 cm

b. Child over 1 y/o:  $(12\text{cm} + \text{Age}/2)$  or (ETT size X 3)

Direct visualization of cuff of ETT below the vocal cords

Inflated cuff of the ETT can be palpated in the sternal notch when the pilot balloon is compressed

### **Securing the ETT**

a. Initially manually secure ETT in place with your thumb and forefinger

b. A commercial ETT securing device with an incorporated bite block is recommended

c. At a minimum, place an oral airway and tape the ETT in place.

i. If circumferential taping is utilized, use care not to occlude venous blood flow from the head

ii. To avoid excess motion, tape the ETT to the maxilla, not the mandible

d. To further minimize head movement, place a cervical collar, immobilize with a cervical spine immobilization device and secure patient to a long spine board

In an adult, 3-5 cm of ETT movement may occur with neck flexion or extension resulting in extubation or right mainstem bronchus intubation

e. Following the securing of the ETT, note and document the depth of ETT placement

### **Ventilation**

a. With an ETT and 100% oxygen, large tidal volumes and hyperventilation are not necessary and have been shown in recent studies to be detrimental to patient outcome

b. Use care to avoid hyperventilation. The exception is the head injured patient with signs of herniation and then only modest hyperventilation is necessary (see below)

c. Ventilate with a tidal volume of approximately 6-10 cc/kg or clinically, just enough ventilation to see the chest rise with each administered breath

d. Rate of ventilation:

i. Adult: 10-12 / min

ii. Child: 20 / min

iii. Infant / Toddler: 30 / min

e. Use continuous ETCO<sub>2</sub> monitoring and maintain an ETCO<sub>2</sub> of 35-40 mmHg

i. If the patient has a head injury and signs of herniation, modestly hyperventilate to an ETCO<sub>2</sub> of approximately 30 mmHg

Seneca County Emergency Medical Services  
Medical Protocols

**CPAP - Pulmodyne 3-set or O2 Max**

1. Place patient in a seated position
2. Monitor ECG, Vital signs (BP, HR, RR , SPO2, ETCO2) if available
3. While one member of the team is setting up the CPAP equipment, the second team member should treat the patient according to EMS treatment protocols.
4. The patient must be reassessed (every 5 minutes) for;
  - Level of Consciousness
  - Heart rate
  - Respiratory Rate, (including breath sounds)
  - Blood Pressure
5. Normally, the patient should improve in the first 5-10 minutes with CPAP as evidenced by:

- A Decreased heart rate
- B Decreased respiratory rate
- C Increased pulse oximetry readings
- D Decreased work of respiration
- E Decrease work of respiration
- F Patient comfort improved

**\*\*Intubation should be considered should the patient fail to show improvement with CPAP as evidenced by\*\*:**

- A Sustained or increased heart rate – it should DECREASE
- B Sustained or increased respiratory rate – Should DECREASE
- C Sustained or increased blood pressure – SHOULD DECREASE
- D Sustained or decreasing pulse oximetry readings – SHOULD INCREASE
- E Decrease in level of consciousness –

**Success is Highly Dependant Upon the Patient Tolerance & Paramedics Ability to Coach – the patient should show improvement**

**Setting up the O2-RESQ System (O2 MAX)**

1. Connect generator directly to a 50 psi oxygen source on a flow meter at 15lpm or to a DISS fitting on an O2 tank regulator
2. Remove the mask from the inner bag and attach the circuit to the mask. Attach Capnoline Nasal Cannula and turn on ETCO2 Waveform monitoring on Zoll Monitor
3. Turn on the oxygen. Hand mask to patient for them to place on their face to get used to the flow. Then proceed to put the head strap on the patient.
4. For all mask styles, flip head strap forward and place mask on the patients face. If using the Pulmodyne mask, pinch the omniclip, slid it up or down to find the best position on the patients forehead.

## Seneca County Emergency Medical Services Medical Protocols

5. For all mask styles, flip head strap over the patients head, bring tabs forward on the top head strap and adjust equally to proper fit. Fold straps back to attach. Next attach bottom 2 clips for proper fit. Fold straps back to attach. Next attach bottom 2 clips and repeat above sequence
6. Finally if using the Pulmodyne mask, adjust the omnclip in and out on head strap and mask for best fit. Do Not Over Tighten the Head Strap. Monitor the patient.
7. If the patient seems anxious, 2mg Morphine IVP may be given. May be repeated 1 time. -\*AEMT or PARAMEDIC ONLY\*

### Documentation

1. The use of CPAP must be documented and reassessed.
2. Vital Signs (BP, HR, RR, SPO2, ETCO2) must be documented every 5 minutes.
3. Narrative documentation should include a description of the patient's **response** to CPAP.
4. Additional narrative documentation should include if the patient does not respond to CPAP and endotracheal intubation is required.

### Special notes

1. Do not Remove CPAP once applied unless patient decompensates
2. Watch for gastric distention which can result in vomiting
3. Due to changes in preload and after load of the heart during CPAP therapy. A complete set of vitals must be obtained every 5 minutes.

## Seneca County Emergency Medical Services Medical Protocols

### **EKG Data Transmission**

Whether you want to send a standard 5 Lead EKG or 12 Lead the following applies:

**\*THE WIFI JETPACK MUST BE POWERED ON PRIOR TO TRANSMISSION\***

1. On the soft keys, labeled “12 Lead” press to activate
2. Press Start Acquire
  - a. Enter only Age and Gender (*Absolutely no name, as EKG transmission goes through an unsecured server and would become a HIPAA infraction*)
3. Once acquisition has been acquired. Press “Menu” key,
  - a. Scroll up to Send, press checkmark to confirm
  - b. Select respective hospital and confirm
  - c. Screen will then automatically connect up to the wifi, network and server and will send within a minute

Note: The Wifi Jetpack and Zoll X Series monitor can be up to 10 yards away from each other and still work.

Remember though what type of building or terrain is around you, it may not work as expected

4. During your radio assessment to the local hospital, advise them that you did send an EKG.
5. Repeat as necessary with further EKG acquisitions during the transport

**If the EMS unit is a Squad\*\* that answered a call for a possible unattended death, and an EKG is acquired to confirm, then the above procedure MUST be completed by the basic EMT squad with an assessment to the local hospital follow the EMT’s scope of practice within the State of Ohio.**

\*Ensure that the Wifi Jetpack is POWERED ON prior to attempting to transmit a 12 Lead\*\*

Seneca County Emergency Medical Services  
Medical Protocols

**TRAUMA**  
**EMERGENCIES**

## Seneca County Emergency Medical Services Medical Protocols

### **URGENT TRANSPORT OF CRITICAL TRAUMA PATIENTS**

The following orders take place over **ALL** other standing orders, policy and training.

They apply to the following traumatic conditions:

1. Cardiac arrest secondary to trauma.
2. Pericardial tamponade.
3. Major chest injury
  - a. Tension Pneumothorax
  - b. Open or sucking chest wounds
  - c. Obvious flail chest
4. Major blood loss or signs of hypovolemia.
5. Head injury with evidence of increasing ICP.

As soon as any of the above conditions are recognized in the major trauma patient, urgent transport to the nearest hospital or consider transport by air ambulance. The *only* field treatment initiated prior to, or during transport are the following:

1. MANAGEMENT OF THE AIRWAY
  - a. Oropharyngeal or nasopharyngeal airway with a bag valve mask.
  - b. King LTS-D, or other approved device.
  - c. Intubation – **preferred!**
  - d. Ventilate patient with 100% oxygen.
2. CHEST WOUND MANAGEMENT
  - a. Apply an appropriate dressing for an open or sucking chest wound.
  - b. Initiate appropriate stabilization for any flail segments.
3. **BASIC CPR IN CASE OF TRAUMATIC ARREST – NO RESQ CPR, AUTOPULSE or RESQPOD IS TO BE USED IN TRAUMATIC ARREST!!**
  - a. **Do not delay transport!** Follow established ACLS guidelines.
4. ADJUNCTS
  - a. Rigid cervical collar, backboard and three straps, CID, and towel rolls.

### **LIFE THREATENING ADULT TRAUMA**

It may be apparent from the mechanism of injury or from the scene that the patient may have potentially serious injuries. Any incident listed below has the potential for the patient to have serious traumatic injuries and should be treated accordingly.

1. Fall from a height greater than ten (10) feet.
2. Penetrating wound, including gunshot wound or stabbing.
3. Accident at high rate of speed, or severely damaged vehicle.
4. Entrapment requiring extrication, bent steering wheel, starburst windshield, etc.
5. Fatality in the same accident.
6. Loss of consciousness.

Perform a rapid primary assessment of the patient and check vital signs. Check for:

1. Traumatic cardiac arrest.
2. Pulse greater than 130/min.

## Seneca County Emergency Medical Services Medical Protocols

3. Blood pressure less than 100 systolic.
4. Presence of severe injury noted on primary exam, such as: Tension pneumothorax, pneumothorax, flail chest, open chest wound, upper airway trauma, shock, cervical spine injury, head injury, blunt chest trauma, abdominal trauma, open fractures, etc.

If any of the scene criteria or exam criteria are present during primary exam, *limit time at the scene* and *rapidly* transport to the closest hospital.

### **MAJOR TRAUMA**

#### **I. TREATMENT**

1. Safe scene, protective clothing, gloves.
2. Universal standards of care.
3. Immobilize on long backboard with cervical collar as appropriate for mechanism of injury.
4. Airway control: nasal, oral, King LTSD, or ET tube.
5. High flow oxygen with assistance as necessary if pulse ox less than 94%
6. Control obvious external hemorrhage by direct pressure.
7. Chest wound management as applicable, see appropriate protocol.
8. Vital signs, maintain BP of 90 systolic or greater.
9. Secondary exam: application of cardiac monitor, pulse oximeter, and other treatment can be done enroute to the hospital.
10. Two large bore IVs, one IV 0.9% NaCl set up on blood tubing, second IV line set up with regular gts. Tubing infusing Normal Saline. IVs should be regulated according to BP, fluid boluses of 500ml, recheck vital signs. Assess lung sounds before and after bolus.
11. Contact Medical Control, report treatment and patient status, advise mechanism of injury, the extent of vehicle damage, including intrusion into passenger compartment, window damage, speed of vehicle on impact, and advise Medical Control of any fatalities at accident scene.
12. Tranexamic Acid (TXA) Infusion (PARAMEDIC ONLY) – Mix 1 gram in 50ml bag of D5W and run to gravity over 10 minutes – piggy back on to one of the Large Bore Saline lines.
13. In the case of severe pain, utilize 50-100ug Fentanyl Citrate IV push
14. Continuous Monitoring of all parameters while enroute.

#### **II. TRANSPORT**

**RAPID TRANSPORT – DO NOT DELAY TRANSPORT FOR TREATMENT  
STOP ALL EXTERNAL HEMORRHAGE- MANAGE THE AIRWAY- GO TO  
CLOSEST HOSPITAL IMMEDIATELY**

#### **III. ENTRAPMENT**

If the patient is trapped and requires a *lengthy* extrication, try to initiate whatever treatment that is feasible while awaiting final extrication (c-collar, oxygen, IV etc.)

## Seneca County Emergency Medical Services Medical Protocols

### ASSESSMENT FOR ALL TRAUMA EMERGENCIES

**NOTE:** This information is to be transmitted to Medical Control and Emergency Department Physician for ALL patients evaluated and/or transported to the Emergency Department by Seneca County EMS. Call Early so preparations can be made

- A. OBTAIN A GENERAL HISTORY TO INCLUDE THE FOLLOWING:
1. Age, sex, and level of consciousness.
  2. The patient's chief complaint
  3. Mechanism of injury.
  4. *Significant* past medical history – injuries, medications, allergies).
  5. Physical examination
    - a. Vital Signs
      1. Blood Pressure
      2. Pulse (rate, regularity, fullness).
      3. Respiratory (rate, pattern & **lung sounds**).
      4. Pulse oximetry.
    - b. Patient's general appearance.
    - c. Pertinent physical findings, from head to toe exam.
  6. Cardiac rhythm strip findings, if monitored. Transmit if possible
  7. Care and treatments that have already been instituted.  
How Much Fluid? Pain Meds? TXA?
  8. Estimated time of arrival to hospital.
  9. Repeat all orders received from Medical Control.

### ABDOMINAL TRAUMA

- I. SPECIFIC INFORMATION NEEDED
- A. Patient's complaints.
  - B. For penetrating trauma: weapon, trajectory.
  - C. For auto: condition of steering wheel, dash, vehicle, speed, patient trajectory, seatbelt?, what type?
  - D. Past history: medical problems, medications.
- II. SPECIFIC OBJECTIVE FINDINGS
- A. Observe: distention, bruising, entrance, exit wounds.
  - B. Palpate: areas of tenderness, guarding, pelvis stability to lateral and suprapubic compression.
  - C. Condition of vehicle and steering wheel.
- III. TREATMENT
- A. Safe scene, infection control, gloves.
  - B. Follow universal standard of care.
  - C. Stabilize life-threatening airway and circulatory problems first. Obtain vital signs. – monitor all parameters (NIBP, SpO<sub>2</sub>, ETCO<sub>2</sub>, RR, HR, 4lead)
  - D. IV: volume expander (NS or LR), large bore, TKO if patient stable.
  - E. For penetrating injuries: cover wounds and eviscerations with moist saline gauze to prevent further contamination and drying.



## Seneca County Emergency Medical Services Medical Protocols

- F. Observe carefully for signs of blood loss. If BP , 90 systolic or signs of hypovolemia:
  - 1. Second IV, large bore, volume expander if possible. Administer fluid bolus, 1000ml volume expander (20ml/Kg), further fluids as directed by Medical Control.
  - 2. TXA – 1gram/50ml – run in over 10 minutes if hypovolemia due to blood loss is suspected (GI Bleed, Pelvic fx,etc..)
- G. Attach cardiac monitor.
- H. Contact Medical Control: report patient status, and treatment given. Monitor vitals during transport.

#### IV. SPECIAL PRECAUTIONS

- A. The extent of abdominal injury is difficult to assess in the field. Be very suspicious with: significant blunt trauma, injuries to multiple organs are the rule.
- B. Patients with spinal cord injury or altered sensorium due to drugs, alcohol, or head injury may not complain of tenderness and may lack guarding in the face of significant intra-abdominal injury.
- C. Seat belts, steering wheels, and other blunt objects may cause occult intra-abdominal injury, which is not apparent until several hours after the trauma. You must consider forces involved in order to properly treat a trauma patient. (This does not mean seatbelts should not be worn; trajectory injuries are much more lethal!)

### AMPUTATED PARTS

#### I. SPECIFIC INFORMATION NEEDED

- A. History: time and mechanism of amputation, what care was given to severed part prior to rescuer arrival.
- B. Past history: medications, bleeding tendencies, medical problems.

#### II. SPECIFIC OBJECTIVE FINDINGS

- A. Vital signs.
- B. Other injuries.
- C. Blood loss at scene.
- D. Structural attachments in partial amputations, if identifiable.

#### III. TREATMENT

- A. Safe scene, infection control, gloves.
- B. Follow universal standard of care.
- C. Control hemorrhage with direct pressure, elevation.
- D. Resuscitate and treat other, more urgent injuries.
- E. If hypotension or significant blood loss present:

IV: volume expander, NS or LR 1000ml (20ml/Kg) then TKO or as directed by Medical Control.

## Seneca County Emergency Medical Services Medical Protocols

- F. Patient: gently cover stump with sterile dressing. Saturate with sterile saline. Cover with dry dressing. Elevate.
  - G. Severed Part: wrap in sterile gauze, preserving all amputated material. Moisten with sterile saline. Place in watertight container (specimen cup, plastic bag, etc.). Place between two disposable ice packs. Do not freeze.
  - H. Consult Medical Control of instructions to optimum transport destination.
- IV. SPECIFIC PRECAUTIONS
- A. Partial amputations should be dressed and splinted in alignment with extremity to ensure optimum blood flow. Avoid torsion in handling and splinting.
  - B. Do not use DRY ice to preserve body part.
  - C. Control all bleeding by direct pressure only to preserve tissues. The most profuse bleeding may occur in partial amputations, where cut vessel ends cannot retract to stop bleeding. Avoid tourniquet if at all possible. Never clamp bleeding vessels.
  - D. Many factors enter into the decision to attempt reimplantation (age, location, condition of tissues, other options). A decision regarding treatment cannot be made until the patient and part have been examined by a physician—and may not be made at the primary care hospital. Try to help the family and patient understand this and don't falsely elevate hopes.

### CHEST TRAUMA

- I. SPECIFIC INFORMATION NEEDED
- A. Patient complaints: Chest pain (type), respiratory distress, neck pain, and other areas of injury.
  - B. Mechanism: amount of force involved, particularly deceleration; speed of impact; seatbelt use (type).
  - C. Penetrating trauma: size of object, caliber of bullet.
  - D. Past medical history: medications, prior medical problems.
- II. SPECIFIC OBJECTIVE FINDINGS
- A. Observe: wounds, air leaks, chest wall movement, neck veins.
  - B. Palpate: tenderness, crepitus, trachea position, tenderness on sternal or rib cage compression.
  - C. Auscultate: lung sounds, heart sounds (quality).
  - D. Surroundings: vehicle, steering wheel condition.
- III. TREATMENT
- A. Scene safe. Infection control, gloves.
  - C. Follow Universal standard of Care.
  - D. Clear and open airway, stabilize neck.
  - E. Assist breathing if patient is apneic or respirations depressed.
  - F. Apply oxygen, high flow (10-15 LPM), by non-rebreather mask.

Seneca County Emergency Medical Services  
Medical Protocols

- G. If penetrating injury present, **transport rapidly** with further stabilization enroute.
- H. For open chest wound with air leak, use vaseline-type gauze occlusive dressing or plastic wrap or aluminum foil taped on three sides only, to allow air to escape but not to enter the chest.
- I. Observe chest for paradoxical movements. Treat flail segment with splinting by hand pressure to the sternum or chest wall to minimize abnormal movement.
- J. Control exsanguinating hemorrhage with direct pressure. (If needed, add elevation or pressure points; tourniquet only if extreme situation.)
- K. Obtain baseline vital signs, neurological assessment.
- L. Evaluate neck veins and blood pressure:
  - a. If neck veins are flat and the patient's BP , 90, transport rapidly and treat hypovolemia enroute:
  - b. IV: volume expander (NS or LR), large bore, bolus of 1000ml (20ml/Kg), further fluids as directed by Medical Control.
  - c. Monitor all parameters (4lead, NIBP, SpO2, ETCO2, RR)
  - d. Consider TXA – Call for order if unsure – 1 gram/50ml over 10 minutes IV bolus
- 1. If patient's BP ,90, neck veins distended, also transport rapidly and consider:
  - a. Tension pneumothorax if respiratory status markedly deteriorating with clinical findings of pneumothorax:
    - 1. release occlusive dressings on open chest wounds
    - 2. consider needle decompression per protocols
  - b. Pericardial Tamponade if wound suspect (may have distant heart sounds, narrow pulse pressure):
    - 1. Consider fluid challenge (20 ml/Kg) per Medical Control
  - c. Cardiac Contusion with typical ischemic chest pain or severe chest wall contusion
    - 1. monitor cardiac rhythm
    - 2. Consider requesting order for Amiodarone 150mg to control PVCs
- 3. If BP >90:
  - a. complete secondary survey
  - b. if significant injury present:
    - 1. IV; volume expander (NS or LR), large bore, TKO
    - 2. Monitor cardiac rhythm enroute
  - c. Bandage and splint if appropriate.
- M. Immobilize impaled objects in place with dressings to prevent movement. If necessary, transport sitting up or prone.
- N. Monitor vitals and level of consciousness every five (5) minutes with significant injury.

Seneca County Emergency Medical Services  
Medical Protocols

IV. SPECIFIC PRECAUTIONS

- A. Chest trauma is treated with difficulty in the field and prolonged treatment before transport is NOT indicated if significant injury is suspected. If patient is critical, transport rapidly and avoid treatment of non-emergent problems at the scene. Penetrating injury particularly should receive immediate transport with minimal intervention in the field.
- B. Consider medical causes of respiratory distress such as asthma, pulmonary edema, or COPD that have either caused trauma or been aggravated by it.
- C. Chest injuries sufficient to cause respiratory distress are commonly associated with significant blood loss. Look for hypovolemia.
- D. Myocardial contusion can occur, particularly with anterior chest wall injury, as from a steering wheel. Pain is similar to myocardial infarct pain; monitor your patient and treat arrhythmias as you would in a medical patient – but think first of hypoxia and hypovolemia as potential causes of arrhythmias.

**CHEST DECOMPRESSION (OF TENSION PNEUMOTHORAX)**

A. SIGNS AND SYMPTOMS

- 1. Tracheal deviation away from affected side.
- 2. Extreme dyspnea, absence of breath sounds on one side.
- 3. Restlessness and anxiety.
- 4. Rapid and weak pulse.
- 5. Jugular vein distension.
- 6. Hyperresonance on the affected side.
- 7. Paradoxical chest wall movement
- 8. Subcutaneous emphysema

B. TREATMENT

- 1. Follow Universal Standard of Care
  - 2. Administer 100% high flow oxygen.
  - 3. Establish two (2) large bore IVs – one (1) 0.9% NaCl with blood tubing
  - 4. Attach cardiac monitor, lead II.
  - 5. **UNDER DIRECT PHYSICIAN ORDER: Perform chest decompression using the following procedure: PARAMEDIC LEVEL ONLY**
- a. On the affected side, the area for the catheter insertion should be mid-clavicular and at the second to third intercostal space. Use a LARGE BORE (at least 14g) 3” IV needle catheter.
  - b. Quickly clean the area first with alcohol or betadine. Use an exam glove to create flutter valve by cutting finger from glove and inserting catheter through the glove.
  - c. Take the catheter with flutter valve secured to the catheter, and introduce the needle just above the rib margin. NOTE: A pop should be felt as the needle passes through the pleura sac, and air under pressure should escape through the flutter valve.

Seneca County Emergency Medical Services  
Medical Protocols

- d. Advance the catheter over the needle and into the chest and remove the needle.
- e. Tape the catheter securely in place, not allowing it to kink. NOTE: Keep monitoring the flutter valve to ensure that it does not become obstructed; if it does, call Medical Control for further orders.

## EYE INJURIES

### I. CHEMICAL BURNS

- A. Universal Standard of Care
- B. Irrigate the eye continuously with copious amounts of LR or Normal Saline throughout transport.
- C. Vital signs
- D. Identify the chemical agent if at all possible:  
**Remember** alkali burns are of particular importance.
- E. Contact Medical Control, report treatment.

### II FOREIGN BODIES IN THE EYE

- A. Universal Standard of Care
- B. Immobilize as indicated utilizing a metal eye shield or other adjuncts as indicated.
- C. Cover both eyes to prevent consensual movement.
- D. Reassure patient, and transport in position of comfort.
- E. Contact Medical Control, report treatment.

### III. FLASH BURNS

- A. Universal Standard of Care
- B. Transport, contact Medical Control.

## EXTREMITY TRAUMA

### I. SPECIFIC INFORMATION NEEDED

- A. Mechanism of injury, direction of forces, if known.
- B. Areas of pain or limited movement.
- C. Treatment prior to arrival; reduction of open or closed fracture; movement of patient.
- D. Past medical history; medications, medical illness.

### II. SPECIFIC OBJECTIVE FINDINGS

- A. Vital signs.
- B. Observe: localized swelling, discoloration, angulation, lacerations, exposed bone fragments, loss of function, guarding.
- C. Palpate: tenderness, crepitus, instability, quality of distal pulses, sensation.
- D. Note estimated blood loss at scene.

## Seneca County Emergency Medical Services Medical Protocols

### III. TREATMENT

- A. Treat Airway, Breathing, and Hypotension as first priorities.
- B. Immobilize cervical spine, *when appropriate*.
- C. Examine for additional injuries to head, face, chest, and abdomen; treat those problems with higher priority first.
- D. If patient is unstable, transport rapidly, treating life-threatening problems enroute. Splint patient by securing to long board to minimize fracture movement.
- E. If patient is stable, or isolated injury exists:
  - 1. Check distal pulses and sensation prior to immobilization of injured extremity.
  - 2. Apply sterile dressing to open fractures. Carefully note wounds that appear to communicate with bone and initial position of bone in wound.
  - 3. Splint areas of tenderness or deformity: apply gentle traction throughout treatment and try to immobilize the joint above and below the injury in the splint.
  - 4. Reduce fractures (including open fractures) by applying gentle axial traction if indicated:
    - a. Provide traction to provide pain relief.
    - b. To restore circulation distally.
    - c. To immobilize adequately.
  - 5. Check distal pulses and sensation after reduction and splinting.
  - 6. Elevate simple extremity injuries. Apply padded ice if time and extent of injuries allow.
  - 7. Monitor circulation (pulse and skin temperature), sensation, and motor function distal to site of injury during transport.
  - 8. Do not reduce fractures unless there is an indication for the reduction. Splint in position found.

### IV. SPECIAL PRECAUTIONS

- A. Patients with multiple injuries have a limited capacity to recognize areas which have been injured. A patient with a femur fracture may be unable to recognize that he has other areas of pain. Be particularly aware of missing injuries proximal to the obvious ones (e.g. a hip dislocation with a femur fracture, or a humerus fracture with a forearm fracture).
- B. Do not use ice or cold packs directly on skin or under air splints; pad with towels or leave cooling for hospital setting.
- C. Do not attempt to replace dislocations in the field. Splint in position of comfort.
- D. Fractures do not necessarily lead to loss of function: impacted fractures any cause pain but little or no loss of function.
- E. It is better to splint compound fractures as they are. Cover wounds and exposed bone with sterile dressing.

Seneca County Emergency Medical Services  
Medical Protocols

- F. Do not allow severely angulated, bloody, open fractures to distract you from a less obvious pneumothorax with respiratory distress. Extremity injuries benefit from appropriate care, but are of low priority in a multiple-injured patient. Quick stabilization with a long board and generous taping is ample for the seriously injured patient.
- G. Injuries around joints may become more painful and circulation may be lost with attempted reduction. If this occurs, stabilize the limb in the position of most comfort and with the best distal circulation.
- H. For suspected pelvic or femur shaft fractures, start large bore IV with NS or LR. (Follow shock protocol.)

**FACE AND NECK TRAUMA**

**I. SPECIFIC INFORMATION NEEDED**

- A. Mechanism of injury: impact to steering wheel, windshield, or other objects. Clothesline \_\_\_\_\_ type injury to face or neck.
- B. Management before arrival by bystanders, first responders.
- C. Patient complaints: areas of pain; trouble with vision, hearing; neck pain; abnormal bite.
- D. Past medical history: medications, medical illness.

**II. SPECIFIC OBJECTIVE FINDINGS**

- A. Vital signs.
  - I. Airway: jaw or tongue instability; loose teeth, vomitus, or blood in airway; other evidence of impairment or obstruction.
  - J. Neck: tenderness, crepitus, hoarseness, bruising, swelling, drooling.
  - K. Blood or drainage from ears, nose.
  - L. Level of consciousness, evidence of head trauma.
  - M. Injury to eye: lid laceration, blood anterior to pupil, abnormal pupil, abnormal glove position or softness.

**III. TREATMENT**

- A. Use Universal Precautions.
- B. Control Airway:
  - 1. Open airway using jaw thrust, keeping neck in alignment with manual traction.
  - 2. Use finger sweep to remove teeth and other solid obstructions.
  - 3. Suction blood and other debris.
  - 4. Stabilize tongue and mandible with chin lift or manual traction to tongue to keep posterior pharynx open as needed.
  - 5. Note evidence of laryngeal injury and transport immediately if signs present.

## Seneca County Emergency Medical Services Medical Protocols

6. With isolated facial injury, place patient prone or sitting up and leaning forward to ensure airway as needed.
  7. Intubate if bleeding is severe or airway cannot be maintained otherwise. (perform after further assessment and management if not life threatening.) Use Nasotracheal intubation unless mid-face fractures are suspected; in that case, use orotracheal approach with axial traction to prevent neck extension. (see protocol.)
  8. If intubation cannot be performed due to severe facial injury, attempt to manage with suctioning and supportive care.
  9. If necessary, consider cricothyroid stick (see protocol).
- C. Support breathing as needed. If mask fit cannot be maintained because of trauma, consider intubation.
- D. Apply high flow oxygen (10-15 LPM), by non-rebreather mask if sPO2 less than 94%
- E. Stop hemorrhage; check pulse and respiration.
- F. IV: volume expander (NS or LR), large bore:
1. TKO, if stable.
  2. With signs of hypovolemia, 1000ml (20ml/Kg.) fluid bolus, further fluids as directed by Medical Control.
- G. Immobilize cervical spine (relieve assistant applying manual traction).
- H. Obtain vital signs, assess neurological status.
- I. Complete secondary survey if no life-threatening injuries present.
- J. Cover injured eyes with protective shield or cup – Avoid pressure on eye
- K. Do not attempt to stop free drainage from ears & nose. Cover lightly with dressing to avoid further contamination.
- L. Bring avulsed teeth with you. Keep moist in saline, soaked gauze.
- N. If airway secured and patient stable, splint fractures and manage non-emergent injuries enroute.
- O. Monitor airway closely during transport for development. Of obstruction or respiratory distress: suction and treat as needed.

### SPECIFIC PRECAUTIONS

- A. Fracture of the larynx should be suspected in patients with respiratory distress, abnormal voice and history of direct blow to neck from steering wheel, rope, fence, wire, etc. Both intubation and needle cricothyroidotomy may be unsuccessful in the patient with a fractured larynx and attempts may precipitate respiratory arrest. Transport rapidly for definitive treatment if you suspect this potentially lethal injury. Do not attempt intubation or cricothyroidotomy unless the patient arrests.
- B. Airway obstruction is the primary cause of death in persons sustaining head and face trauma. Meticulous attention to suctioning and stabilization of tongue and mandible may be the most important treatment rendered.



Seneca County Emergency Medical Services  
Medical Protocols

- C. Remember that the apex of the lung extends into the lower neck and may be injured in penetrating injuries of the lower neck, resulting in pneumothorax or hemothorax.
- D. Do not be concerned with contact lens removal in the field. The safest place for lenses is in the eye. Remind the Emergency Department of their presence. If they have broken, irrigate with normal saline or sterile water and IV tubing, just as you would for any foreign body.

**HEAD TRAUMA**

**I. SPECIFIC INFORMATION NEEDED**

- A. History: mechanism of injury, estimate of force involved with motorcycle or bicycle, was helmet worn?
- B. History since injury: loss of consciousness (duration), change in level of consciousness, memory loss for events before and after trauma, movement (spontaneous or by bystanders).
- C. Past medical history: medications (esp. insulin), medical problems, seizures, and seizure history.

**II. SPECIFIC OBJECTIVE FINDINGS**

- A. Vital signs (note respiratory pattern and rate).
- B. Neurological assessment including pupils, response to stimuli and Glasgow Coma scale observations:

**Glasgow Coma Scale**

**Eye Opening:**

None	1
To Pain	2
To Speech	3
Spontaneously	4
<b>Best Verbal Response:</b>	
None	1
Garbled sound	2
Inappropriate words	3
Disoriented sentences	4
Oriented	5
<b>Best Motor Response</b>	
None	1
Abnormal extension	2
Abnormal flexion	3
Withdrawal to pain	4
Localizes pain	5
Obeys commands	<u>6</u>
<b>TOTAL</b>	<b>= (15 points possible)</b>

Seneca County Emergency Medical Services  
Medical Protocols

- C. External evidence of trauma: contusions, abrasions, lacerations, bleeding from nose, ears.
- D. Pupil position and response to light stimulation.

III. TREATMENT

- A. Use Universal Precautions.
  - B. Assess airway and breathing; treat life-threatening difficulties: see trauma overview. Use assistant to provide axial traction while managing respiratory difficulty.
  - C. Control hemorrhage. Stop scalp bleeding with direct pressure if possible. Continued manual pressure may be needed.
  - D. Apply oxygen, moderate flow (4-6 LPM), by mask or 4LPM nasal cannula (high flow for seriously injured patients) for sPO2 less than 94%
  - E. Assist ventilations and hyperventilate if appropriate.
  - F. Obtain initial vital signs, neurological assessment, including Glasgow Coma scale.
  - G. Immobilize cervical spine (relieve assistant applying manual traction).
  - H. Immobilize patient on spine board (or other firm surface). Move patient as little as possible and always move as a unit.
  - I. Secure patient to board with tape following transfer. Be prepared to tilt for vomiting.
  - J. TRANSPORT RAPIDLY if patient has multiple injuries or unstable neurological, respiratory, or circulatory status.
  - K. If BP 90 Hg systolic and signs of hypovolemic shock are present, initiate treatment enroute:
    - 1. Elevate legs, keep patient warm.
    - 2. IV: volume expander (NS or LR), large bore:
      - a. TKO if patient appears stable and systolic >90.
      - b. Wide-open if BP, 90 or signs of shock, 1000ml (20 ml/Kg), then TKO or as directed by Medical Control.
    - 3. Look carefully for possible sources of bleeding (abdomen, pelvis, chest).
    - 4. Stabilize and splint fractures and dress wounds if time allows.
  - L. If patient unconscious and showing signs of neurological deterioration (e.g. dilated pupils, rising BP, slowing pulse, posturing, or decreasing GCS):
    - 1. Ventilate at 12 to 20 breaths per minute.
    - 2. Do NOT Hyperventilate unless signs of brainstem herniation develop
    - 3. Bradycardia
    - 4. Abnormal respiratory pattern
    - 5. Pupillary Dilation
- \*\*Utilize ETCO2 Monitoring and ventilate to achieve ETCO2 of no less than 30\*\*
- 6. Consider Furosemide 40mg IV. (PER MEDICAL CONTROL).

## Seneca County Emergency Medical Services Medical Protocols

If patient stable respiratory, circulatory, neurologically:

1. IV: volume expander (NS or LR), large bore, TKO.
  2. Complete secondary survey.
  3. Splint fractures and dress wounds if time permits.
- M. Monitor airway, vitals and level of consciousness repeatedly at scene and during transport. STATUS CHANGES ARE IMPORTANT!

### IV. SPECIFIC PRECAUTIONS

- A. When head injury patients deteriorate, check first for airway, oxygenation, and blood pressure. These are the most common causes of “neurologic” deterioration. If the patient has tachycardia or hypotension, look for hidden hypovolemia from associated injuries and do not blame the head injury.
- B. Oxygen administration if Room Air Pulse Ox less than 94% .
- C. The most important information you can provide for medical control is level of consciousness and its changes. Is the patient stable, deteriorating, or improving?
- D. Assume cervical spine injury in all patients with head trauma.
- E. Restlessness can be a sign of hypoxia. Cerebral anoxia is the most frequent cause of death in head injury.
- F. If active airway ventilation is needed, intubate and ventilate to achieve ETCO<sub>2</sub> 35-45. Do not ventilate faster than 20 bpm unless s/s of brainstem herniation are present. Maintain ETCO<sub>2</sub> of no less than 30mm/hg
- G. Hypoventilation aggravates cerebral edema.
- H. Do not try to stop bleeding from nose and ears. Cover with clean gauze if needed to prevent further contamination.
- I. Scalp lacerations can cause profuse bleeding and are difficult to define and control in the field. If direct local pressure is insufficient to control the bleeding, evacuate any large clots from flaps and large lacerations with sterile gauze and use direct hand pressure to provide hemostasis. If the underlying skull is unstable, pressure should be applied to the periphery of the laceration over intact bone.

### SHOCK: TRAUMATIC

#### I. SPECIFIC INFORMATION NEEDED

- A. Mechanism of injury: forces, speed, and trajectory.
- B. Patient complaints: thirst, dizziness, weakness, chest pain, trouble breathing.
- C. Car: steering wheel and vehicle condition; seatbelts, use and type?
- D. Past medical history: medications, medical illnesses.

#### II. SPECIFIC OBJECTIVE FINDINGS

- A. Vital signs; pulse greater than 120 (bradycardia or normal pulse may occur in some patients); BP <90 systolic.

Seneca County Emergency Medical Services  
Medical Protocols

- B. Mental status: apathy, confusion, restlessness, and mania.
- C. Skin: flushed, constricted, sweaty, cool or warm, color.
- D. Signs of blunt injury or bleeding: flank hematoma, chest or abdominal wall contusion.
- E. Jugular veins; flat or distended.

III. TREATMENT

- A. Use assistant to provide axial traction while managing ABCs.
- B. Control hemorrhage by direct pressure with clean dressing to wound. If needed, add elevation, pressure points; tourniquet only in extreme situations.
- C. Obtain initial vital signs, neurological assessment, including Glasgow Coma score.
- D. Immobilize cervical spine as appropriate, relieve assistant applying manual traction.
- E. Oxygen, high flow to maintain Pulse Ox above 94%.
- F. Transfer patient to long spine board.
- G. IV: Normal Saline, large bore. Start two (2) IVs.
- H. If BP <90 systolic and neck veins flat, transport rapidly and treat hypovolemia enroute:
  - 1. Keep patient warm with blankets to prevent heat loss.
  - 2. Raise legs 10-12 inches.
  - 3. IV: volume expander, NS or LR, large bore, bolus of 1000ml (20 ml/Kg), further fluids as directed by Medical Control.
  - 4. Monitor cardiac rhythm.
  - 5. Look carefully for possible sources of bleeding (abdomen, pelvis, chest, scalp, back).
- I. If BP <90 systolic and signs of cardiogenic shock (distended neck veins), transport rapidly and consider:
  - 1. Tension pneumothorax if respiratory status markedly deteriorating, clinical findings of pneumothorax:
    - a. release occlusive dressings on open chest wounds
    - b. consider needle decompression per protocol
  - 2. Pericardial tamponade. (MAY have distant heart sounds, narrow pulse pressure). Notify Medical Control, transport immediately and discuss;
    - a. Fluid bolus (20 ml/Kg) enroute
  - 3. Cardiac contusion with typical ischemic chest pain or severe chest wall contusion:  
Monitor cardiac rhythm
- J. If BP is >90, observe closely and transport. IV at TKO.
  - 1. Perform secondary survey and record list of patient's problems.
  - 2. Stabilize and splint fractures.
  - 3. Dress wounds as time allows.
- K. Recheck vital signs, neurological status enroute; at least every five (5) minutes with stable patient.

## Seneca County Emergency Medical Services Medical Protocols

### IV. SPECIFIC PRECAUTIONS

- A. Hypotension itself is a late sign of hypovolemia. You must anticipate blood loss from the mechanism of injury and be ready to treat. Often, a patient may suddenly “go bad” if the subtle clues aren’t noticed beforehand.
- B. Hypertensive and elderly patients can have significant hypotension at higher pressures than 90 systolic. Look for the adrenergic signs: vasoconstriction, sweating, mental alterations, and agitation. Treat the entire picture and not just the blood pressure.
- C. Neurogenic shock is caused by relative hypovolemia as blood vessels lose tone from spinal cord injury. Treat as for hypovolemia and, if hypotension persists, consider occult blood loss as an additional cause of shock.
- D. While most shock in the trauma setting is hypovolemic, assessment and treatment priorities should be organized to include a check for the possible “cardiogenic” causes, which should be managed differently. Pericardial tamponade, tension pneumothorax, myocardial contusion are rare but should be looked for!
- E. Scalp lacerations can cause profuse bleeding and are difficult to define and control in the field. Expose the wound if bleeding cannot be controlled easily, evacuate any large clots from flaps and large lacerations with sterile gauze and use direct hand pressure to provide hemostasis.
- F. Occasionally pain or cardiac contusion will cause inappropriate bradycardia. Consider also if a MI may have caused the trauma as well as the bradycardia. Fluid resuscitation should be cautious.
- G. Another important and increasingly frequent cause of “relative” bradycardia (P less than 100) in the face of hypovolemic shock is the patient on beta-blocker drugs (e.g. propranolol), who cannot respond to blood loss with a tachycardia. Use of these drugs has greatly increased over the past few years and patients with angina, prior MI, migraine, hypertension, arrhythmias, and other medical illnesses may be taking beta-blockers. Treatments are the same, but do not wait for the tachycardia!!!
- H. Testing for orthostatic changes in vital signs should only be done in patients with normal supine vital signs who are otherwise stable and in whom spinal immobilization is not indicated. Check supine pulse/BP, then sit the patient up and dangle legs if possible. Recheck pulse? BP after 1-2 minutes. An increase in pulse rate of 30 beats/min. or more or a systolic BP drop of 15mm or more is significant for occult hypovolemia. Be ready to lay the patient down promptly if he or she becomes dizzy or syncopal from a very positive test!
- I. Tranexamic Acid (TXA) is a useful drug for treatment of sudden blood loss and Hemorrhagic Shock when given within 3 hours of injury by a Paramedic (1 gram/50ml IV bolus over 10 minutes).

Seneca County Emergency Medical Services  
Medical Protocols

**SPINAL TRAUMA**

**I. SPECIFIC INFORMATION NEEDED**

- A. Mechanism of injury and forces involved: be suspicious with falls, airplane crashes, decelerations, and diving accidents.
- B. Past medical problems and medications.

**II. SPECIFIC OBJECTIVE FINDINGS**

- A. Vital signs, including neurological assessment.
- B. Level of sensory deficit. Presence of any evidence of neurological dysfunction below level of injury.
- C. Physical exam with careful attention to organs or limbs which may not have sensation.

**III. TREATMENT**

- A. Assess airway and breathing; treat life-threatening difficulties. Use controlled ventilation for high cervical cord injury associated with abdominal breathing. Use assistant to provide axial traction while managing ABCs.
- B. Control hemorrhage. Stop scalp bleeding with direct pressure if possible.
- C. Obtain initial vital signs, neurologic assessment, including Glasgow Coma Scale.
- D. Immobilize cervical spine (relieve assistant). Use firm cervical collar or cervical immobilization device, tape, and spine board.
- E. Apply oxygen, moderate flow 6-10 LPM, by mask or 4 LPM nasal cannula (high flow for seriously injured patients).
- F. Immobilize thoracic and lumbosacral spine with spine board. Move patient as little as possible and always move as a unit.
- G. Secure patient to board with tape following transfer.
- H. IV: volume expander (NS or LR), TKO.
- I. If patient's BP <90mm systolic and signs of hypovolemia:
  - 1. Keep patient warm with blankets to prevent heat loss.
  - 2. Raise legs (or foot of spine board) 10-12 inches.
  - 3. Examine for possible sources of bleeding (abdomen, pelvis, chest, scalp, back).
  - 4. Administer fluid bolus 1000ml rapidly (20 ml/Kg), further fluids as directed by Medical Control.
- B. Mark level of sensory deficit gently with pen on patient's skin to facilitate monitoring.
- C. Monitor airway, vitals, and neurologic status frequently at scene and during transport.

**IV. SPECIFIC PRECAUTIONS**

- A. Be prepared to tip entire board on side if patients vomits (patient must be secured to spine board or scoop stretcher – wide tape anchored to both sides of board preferred.) Consider Zofran for nausea/vomiting.

## Seneca County Emergency Medical Services Medical Protocols

- B. Neurogenic shock is likely with significant spinal cord injury. Raise the foot of the spine board or legs only, whichever is easier logistically. Be sure respirations remain adequate.
- C. If hypotension is unresponsive to simple measures, it is likely due to other injuries. Neurologic deficits make these other injuries hard to evaluate. Cord injury above the level of T-8 removes tenderness, rigidity, and guarding as clues to abdominal injury.
- D. The patient with spinal trauma and normal neurologic function or only a partial deficit should not be treated more casually than the patient with a complete deficit. This is the patient who can benefit most from your conscientious splinting efforts and protection from further injury.

### **BURNS**

#### **I. SPECIFIC INFORMATION NEEDED**

- A. History of injury: time elapsed since burn. Was patient in a closed space with steam or smoke? Electrical contact? Loss of consciousness? Accompanying explosion, toxic fumes?
- B. Past history: prior cardiac or pulmonary disease, medications?

#### **II. SPECIFIC OBJECTIVE FINDINGS**

- A. Vital signs.
- B. Extent of burns: superficial, erythema only.
- C. Depth of burns: Significant, blistered or charred areas. (Call in description should include extent of significant burn only: one patient palm = 1% burn area).
- D. Evidence of CO poisoning or other toxic inhalation: altered mental state, headache, vomiting, seizure, and coma.
- E. Evidence of inhalation burns: respiratory distress, cough, hoarseness, singed nasal or facial hair, soot or erythema of mouth.
- F. Associated trauma.

### **THERMAL BURNS**

- A. Remove clothing that is smoldering or which is non-adherent to the patient.
- B. Oxygen, high flow (10-15 LPM), non-rebreather mask if indications from history, or physical of respiratory burns, toxic inhalation, or significant flame or smoke exposure.
- C. Assess and treat for associated trauma (blast or fall).
- D. Remove rings, bracelets and other constricting items.
- E. Cover wounds with clean, dry dressings.
- F. If more than 20% significant burn, contact Medical Control to consider:
  - 1. Optimum destination hospital.
  - 2. IV: volume expander (NS), 250 ml/hr. Contact Medical Control for rate adjustments. Treat hypotension per shock protocol.

Seneca County Emergency Medical Services  
Medical Protocols

3. Fentanyl) 50-100 mcg IVP SLOW (Maximum allowable dose = 100 mcg (<12 years of age 1 mcg/kg may repeat x1 IVP  
Or  
Morphine Sulfate, 2-4 mg for pain relief. May repeat every 5 minutes, not to exceed 0.2 mg/Kg.
- G. Transport, monitoring vital signs.

**INHALATION INJURY**

- A. Oxygen, high flow (10-15 LPM), using non-rebreather mask during full time of transport.
- B. Be prepared to ventilate or assist if respirations inadequate.
- C. Monitor cardiac rhythm.

**CHEMICAL BURNS**

- A. Protect rescuer from contamination. Wear appropriate gloves and clothing.
- B. Remove all clothing and any solid chemical, which might provide chemical contamination.
- C. Assess and treat for associated injuries.
- D. Decontaminate patient using running water for 15 minutes prior to transport if patient stable.
- E. Check eyes for exposure and rinse with free flowing water for 5 minutes.
- F. Evaluate for systemic symptoms that might be caused by chemical contamination.
- G. Remove rings, bracelets, constricting bands.
- H. Wrap burned area in clean, dry clothes for transport. Keep patient as warm as possible after decontamination.

**ELECTRICAL INJURY**

- A. Protect rescuers from continued live electrical wires.
- B. Separate patient from electrical source when area safe for rescuers.
- C. Initiate CPR as needed. Defibrillation (treat as usual), **PROLONGED** respiratory support may be needed.
- D. Immobilize cervical spine, assess for other injuries.
- E. Monitor patient for possible arrhythmias. Treat as per arrhythmia protocol.
- F. IV: volume expander, NS or LR, TKO or as directed by Medical Control.
- G. Apply sterile dressings to entry and exit burns.

**III. SPECIFIC PRECAUTIONS**

- A. Leave blisters intact when possible.



## Seneca County Emergency Medical Services Medical Protocols

- B. Suspect airway burns in any facial burns or burns received in closed places. Edema may become severe, but not usually in the first hour. Avoid unnecessary trauma to the airway.
- C. Death in the first 24 hours after burn injury is due to airway burns, fluid loss, or toxic inhalants (esp. carbon monoxide or cyanide). Fluids are calculated on the basis of extent of significant burns; i.e., those in which there are skin disruption.
- D. Assume carbon monoxide poisoning in all closed space burns. Treatment is 100% oxygen continued for several hours. In addition, other toxic products of combustion are more commonly encountered than we realize. Call Medical Control for special instructions if other toxic inhalations are suspected.
- E. Consider MI as a cause of injury in firefighters who are burned. Consider suicide attempts as cause of burn and child abuse in pediatric burns.
- F. Lightning injuries can cause prolonged respiratory arrest. Prompt, continuous respiratory assistance (sometimes for hours to days) can result in full recovery.
- G. Field decontamination of chemical exposure has been shown to significantly reduce extent of burn. It is rare to encounter a chemical that is not properly decontaminated by copious amounts of water. Unless a specific contraindication is known, do not waste time before initiating treatment to find out the specific culprit. Brush off dry chemicals before flushing.
- H. Avoid starting IVs in burned areas if possible.
- I. Emphasis is placed on immediate transportation of the significantly burned patient. Do not delay transportation for the sake of fluid administration.

### **RULE OF NINES** (a useful approximation of body surface burns)

	ADULTS	Children
1. Head	9%	18%
2. Arm	9% each	9% each
3. Chest & Abdomen	18%	18%
4. Back & Buttocks	18%	18%
5. Leg	18% each	13.5% each
6. Genitalia	1%	1%

Seneca County Emergency Medical Services  
Medical Protocols

**Pain Management (Non-Cardiac)**

**SUBJECT: PAIN MANAGEMENT (NON-CARDIAC)**

**PURPOSE:** To provide guidelines for the EMS Crew in the management of non-cardiac pain.

1. In the transport of the Traumatic Brain Injured, acute abdomen, or neurologically impaired patient every effort shall be taken **NOT** to alter the neurological or abdominal exam for the receiving institution. Keep in mind that the administration of pain medication to these patients may change the patient presentation.
  - a. Note: These diagnoses' do not disqualify ALL patients from pain management. **Fentanyl** will be the drug of choice for these patients, as it is relatively short acting.
2. Fentanyl 50-100 mcg IVP SLOW (Maximum allowable dose = 100 mcg (<12 years of age 1 mcg/kg may repeat x1 IVP) – **contact medical control for further dosing, if needed**)
3. Morphine Sulfate 2-4 mg IVP q 10 minutes PRN pain to a max. of 10 mg. Hold for SBP <110 mmHg, Respiratory Rate < 12, or decline in GCS  $\geq$  2 points. (<12 years of age 0.1 mg/kg may repeat x1 IVP or IM)
4. Hold for Respiratory Rate <12, or decline in GCS  $\geq$  2 points.
5. ***Always Consider Zofran 4mg IV/IM/IN; < 40kg (0.1mg /kg) IV/IM/IN (Contact Medical Control) Whenever giving narcotic pain medication – consider Zofran – if using Oral Dissolving Tablet advise patient to let medication dissolve – and to not swallow the Zofran – the onset is much quicker than if swallowed***

**Crush Injury Management & Field Treatment (added 4/2021)**

**ACTION/TREATMENT:**

1. ABCs/monitor cardiac rhythm/spinal immobilization/control hemorrhage.
2. Protect the airway/oxygen via facemask for dust inhalation protection.
3. Wipe out mouth with damp cloth or flush and suction if possible.
4. Provide a barrier protection mask, if O2 is not safe to administer, to act as a dust filter.
5. Advanced airway prn.
6. IV access in unaffected limb:
7. Normal saline 20 mL/kg up to 2 liters for fluid resuscitation, prior to release of compression force.

Seneca County Emergency Medical Services  
Medical Protocols

8. Psychological support.
9. Consider Albuterol for possible hyperkalemia (peaked T-waves or wide QRS > 0.12 seconds), wheezing or bronchospasm:
10. Initiate 3 ml (2.5 mg) of a 0.083% Albuterol solution nebulized (Unit Dose) May repeat.
11. Sodium bicarbonate (NaHCO<sub>3</sub>) 1 mEq/kg IVP. (FOR CRUSH SYNDROME)
12. Fentanyl Citrate for pain: 50-100mcg IVP titrated to pain. Or Morphine Sulfate 4-8mg titrated to pain.
13. Limit Pain narcotics to isolated Extremity trauma. Not recommended for multi-system injury or systolic BP less than 100mm/hg
14. Release compression and extricate patient.
15. Non-compressive splints/dressings prn.
16. Keep affected limb at level of the heart.

**Pediatric:**

1. IV access in unaffected limb:
2. Normal saline 20 ml/kg for fluid resuscitation, prior to release of compression force.
3. Consider Albuterol for possible hyperkalemia, wheezing or bronchospasm:
4. 3 ml (2.5 mg) of a 0.083% Albuterol solution nebulized. May repeat.
5. Sodium bicarbonate (NaHCO<sub>3</sub>) 1 mEq/kg IVP. (FOR CRUSH SYNDROME)
6. Morphine sulfate for pain: 0.1 mg/kg slow IVP or SQ one time, or Fentanyl Citrate 0.5-1.0mcg/kg titrated for pain management of isolated extremity crush/fractures – extreme caution in multi-system injury due to hypotension/hypovolemia.

**Note:**

- Confined space and a MVA situation may compromise treatment. Ideally, treatment should be started prior to release of compression.
- Hydrate prior to release of compression to combat hypovolemia and to dilute cellular toxins.
- Contact hospital for determination; consider trauma receiving center. Utilize Lifelight for extended extrication times or complicated crush cases that may require field amputation.

# **MEDICAL EMERGENCIES**

Seneca County Emergency Medical Services  
Medical Protocols

**ABDOMINAL PAIN**

**I. SPECIFIC INFORMATION NEEDED**

- A. Pain: nature (crampy or constant), duration, location; radiating to back groin, chest, shoulder.
- B. Associated symptoms: nausea, vomiting (bloody or coffee-ground), diarrhea, constipation, black or tarry stools.
- C. Past history: previous trauma, abnormal ingestions, medications, known diseases, surgery.

**II. SPECIFIC OBJECTIVE FINDINGS**

- A. Vital signs.
- B. General appearance: restless, quiet, sweaty, pale.
- C. Abdomen: tenderness, guarding, distention, pulsatile mass, rigidity, rebound.
- D. Emesis: describe, amount.

**III. TREATMENT**

- A. Position of comfort.
- B. NPO
- C. If BP  $\geq 90$  systolic and signs of shock:
  - 1. Oxygen, high flow.
  - 2. IV: NS or LR, large bore, 1000ml wide open (20ml/Kg), further fluids as directed by Medical Control.
- D. IV: NS or LR, TKO, large bore, if vital signs normal but pain severe.
- E. Monitor vitals frequently during transport.
- F. If age  $>40$ , cardiac monitor.
- G. For Nausea/Vomiting Always  
Consider Zofran 4mg IV/IM,  $< 40$ kg (0.1mg /kg) IV/IM/IN or ODT

**IV. SPECIFIC PRECAUTIONS**

- A. Causes of abdominal pain can rarely be determined in the field. Pain medication is seldom indicated and may change details of the physical exam necessary to diagnose patient in the Emergency Department.
- B. The most important diagnoses to consider are those associated with catastrophic internal bleeding: ruptured aneurysm, liver, spleen, ectopic pregnancy, etc. Since the bleeding is not apparent, you must think of the volume depletion and monitor patient closely to recognize shock.
- C. Elderly patients may have significant hypovolemic shock with systolic blood pressures above 90mmHg. With signs of hypovolemia (see medical shock protocol) contact Medical Control to consider treatment.
- D. Consider the use of Fentanyl 50-100mcg IV push – **ONLY WITH ORDER FROM MEDICAL CONTROL**
- E. Utilize TXA (PARAMEDIC) if true Hemorrhagic Shock is suspected and within 3 hours of onset – 1gram/50ml D5W or Saline – infuse over 10 minutes.

Seneca County Emergency Medical Services  
Medical Protocols

**ALTERED MENTAL STATES (PSYCHIATRIC DISORDERS)**

**I. SPECIFIC INFORMATION NEEDED**

- A. History
  - 1. recent crisis
  - 2. emotional trauma
  - 3. changes in behavior patterns
  - 4. suicidal tendencies
  - 5. alcohol abuse
  - 6. drug abuse
  - 7. toxic exposures
  - 8. exposure to environment (heat exposure)
- B. Medical History
  - 1. previous psychiatric disorders
  - 2. diseases
  - 3. medications: i.e. depressants
  - 4. establish known allergies
- C. Environment
  - 1. evidence of trauma
  - 2. evidence of drug ingestion
  - 3. evidence of alcohol ingestion
  - 4. note unusual presentations

**II. OBJECTIVE FINDINGS**

- A. Vital Signs
  - 1. respirations
  - 2. pulse
  - 3. blood pressure
  - 4. pupils – note size, symmetry
  - 5. EKG
  - 6. Pulse oximetry
  - 7. Skin temperature vs. environment
  - 8. Blood sugar level
- B. Mental Status
- C. Characteristic of Breath
  - 1. alcohol-type odor
  - 2. sweet/fruity odor
- D. Medic Alert Tags

**III. SPECIFIC CONSIDERATIONS**

- A. It is important not to lose your objectivity and remember this is a patient, not an adversary. Try not to escalate verbal violence to physical violence. Proceed with calm, reassuring directions to the patient. If the situation appears threatening, a show of force involving the police may be necessary before an attempt to restrain the patient is made. If the patient

## Seneca County Emergency Medical Services Medical Protocols

requires restraint, they should be restrained in the lateral recumbent position if possible. Consider your own safety and limitations. Use enough back up to be confident and forthright. Never leave your patient unattended.

\*Always utilize soft-restraints that are designed for this specific purpose

- B. Remember the organic causes for altered mental states. Psychiatric disorders must be at the bottom of your list, or you may forget important treatable conditions:
  - 1. hypoxia
  - 2. hypoglycemia
  - 3. head injury
  - 4. hyperthermia
  - 5. postictal states
  - 6. drug overdose
  - 7. toxic exposure
  - 8. hypothermia
  
- C. An odor of alcohol is very common in emergency patients, and often is not the primary problem. Do not blame alcohol without first looking carefully for other potential problems. If the patient is medically stable and emergency treatment is not needed, do not unnecessarily invade the patient's privacy.
  
- E. Psychiatric patients can be difficult to manage with concern, especially repeat callers. Don't succumb to the temptation to ignore new complaints. You may miss any acute change.

#### IV. TREATMENT

- A. Safe scene, infection control, gloves.
  
- B. Establish responsiveness.
- C. Reassure patient (explain all procedures).
- D. Take vital signs: respirations, pulse, BP
- E. Attach pulse oximeter.
- F. Attach cardiac monitor.
- G. Consider underlying causes and treat according to appropriate protocol.
- H. If the patient is symptomatic neurologically:
  - 1. start oxygen therapy as indicated
  - 2. Establish an IV of 1000ml NS using a regular drip tubing to keep open (TKO).
  - 3. Perform blood sugar test using glucometer.
  - 4. If the blood sugar reading is <60 mg/dl (milligrams per deciliter), administer 50ml of 50% Dextrose. If >60 mg/dl, go to #6.
  - 5. If unable to establish an IV, and blood sugar reading is <60 mg/dl from a capillary sample, administer 1 unit of Glucagon IM.
  - 6. Repeat set of vitals.
  - 7. If no change, administer 2 mg Naloxone IV or IN.

Seneca County Emergency Medical Services  
Medical Protocols

8. Repeat set of vitals. The AEMT or Paramedic should contact on-line *Medical Control* and notify of treatments done thus far. It should be considered that while the AEMT/Paramedic is giving the assessment, other responders should ready the patient for transport and move patient to vehicle.

**CVA**

**I. SPECIFIC INFORMATION NEEDED**

- A. History
  1. When's the last time the patient was well?
  2. Onset and progression of state.
  3. Antecedent symptoms:
    - a. headaches
    - b. seizures
    - c. confusion
  4. Where patient found
  5. New deficits

**F.A.S.T. Exam - Facial Droop, Arm Drift, Speech, Time of Onset**

- B. Medical History
  1. Cardiovascular diseases
  2. Diabetes
  3. Medications
  4. Establish known allergies
  5. Medic alert tag
  6. Hypertension
- C. Environment
  1. Evidence of trauma
  2. Evidence of drug ingestion
  3. Evidence of alcohol ingestion
  4. Note unusual presentations

**II. OBJECTIVE FINDINGS**

- A. Vital Signs
  1. Respirations
  2. Pulse
  3. Blood Pressure
  4. Lung sounds
  5. Pupils (size, symmetry)
  6. EKG
  7. Pulse oximetry
  8. Skin Temperature vs. environment
  9. Blood sugar level
  10. Dehydration
- B. Mental Status
  1. Level of consciousness (appropriate response)



Seneca County Emergency Medical Services  
Medical Protocols

2. Lateralizing signs
3. Deficits

III. SPECIFIC CONSIDERATIONS

- A. Not all neurological deficits are caused by a stroke. Look for other treatable medical conditions such as:
  1. Hypoglycemia
  2. Hypothermia
  3. Hypoxia
  4. Hyperthermia
  5. Hypotension
- B. A patient with a stroke can present with aphasia and still be completely alert. Talk to the patient, explain everything that you are doing and avoid comments that you would not want to hear yourself. This patient needs a tremendous amount of reassurance.
- C. Pay particular attention to changing levels of consciousness and airway control, secretions may become a problem.

IV. TREATMENT

- A. Safe scene, infection control, gloves, gown, mask, and eye protection.
- B. Establish unresponsiveness
- C. Evaluate airway (nasopharyngeal may be useful)
- D. Take vitals: respirations, pulse, blood pressure, lung sounds
- E. Attach pulse oximeter
- F. Attach cardiac monitor
- G. Administer high flow oxygen using non-rebreather mask (support ventilations if necessary).
- H. Establish IV 1000ml NS using a regular tubing at TKO.
- I. Test blood sugar using glucometer.
- J. If blood sugar reading is <60mg/dl, administer 50ml of 50% Dextrose. If >60mg/dl go to L.
- K. If unable to establish an IV and blood sugar reading is <60mg/dl from a capillary sample, administer 1 unit of Glucagon IM.
- L. Repeat set of vitals. The EMT/Paramedic should contact on-line **Medical Control** and notify of treatments done thus far. It should be considered that while the assessment is being given to Medical Control, other responders should ready the patient for transport and move patient to vehicle.

**Document the FAST Exam and report it over the radio on report.**

**\*The Fast Exam mirrors the Cincinnati Prehospital Stroke Scale and is important\***

Seneca County Emergency Medical Services  
Medical Protocols

**COMA / UNCONSCIOUS UNKNOWN**

**I. SPECIFIC INFORMATION NEEDED**

- A. History
  - 1. Duration of illness
  - 2. Onset and progression of present state
  - 3. Antecedent symptoms
    - a. headache
    - b. confusion
    - c. seizures
  - 4. Trauma
  - 5. Alcohol abuse
  - 6. Drug abuse
  - 7. Toxic exposure
  - 8. Exposure to environment; i.e. heat exposure
- B. Medical History
  - 1. Previous psychiatric disorder
  - 2. Diseases
  - 3. Medications
  - 4. Establish known allergies
- C. Environment
  - 1. Evidence of trauma
  - 2. Evidence of drug ingestion
  - 3. Evidence of alcohol ingestion
  - 4. Note unusual presentations

**II. OBJECTIVE FINDINGS**

- A. Vital signs
  - 1. Respirations
  - 2. Pulse
  - 3. Blood Pressure
  - 4. Lung sounds
  - 5. Pupils (size, symmetry)
  - 6. EKG
  - 7. Pulse oximetry
  - 8. Skin Temperature vs. environment
  - 9. Blood sugar level
- B. Mental status
  - 1. Level of consciousness, i.e. purposeful response to pain.
- C. Characteristic of breath
  - 1. alcohol-type odor
  - 2. sweet/fruity odor
- D. Medic alert tags

**III. SPECIFIC CONSIDERATIONS**

- A. Pay particular attention to the airway. Common problems are:
  - 1. Occlusion

Seneca County Emergency Medical Services  
Medical Protocols

2. Secretions
  3. Vomiting
  4. Inadequate tidal volumes
- B. Hypoglycemia may present as focal neurologic deficit or coma (CVA like symptoms) in elderly patients. Hypoglycemia or hyperglycemia (diabetic ketoacidosis) may cause coma in the diabetic patient. 50% Dextrose should only be administered per protocol if blood sugar levels are <60mg/dl. Do not administer oral glucose to patients with a decreased sensorium.
- C. Naloxone is useful in any potential overdose situation. However, be sure the airway is secure before administering to the known opiate addict. The acute withdrawal precipitated in an addict may result in violent combativeness. It sometimes is preferable to intubate and support, rather than to awaken the patient. Infection control procedures are especially useful in this scenario, as these are high-risk patients.

IV. TREATMENT

- A. Safe scene, infection control, gloves, gown, mask, and eye protection.
- B. Establish responsiveness
- C. Evaluate airway (nasopharyngeal may be useful)
- D. Take vitals; respirations, pulse, blood pressure
- E. Attach pulse oximeter
- F. Attach cardiac monitor
- G. Administer high flow oxygen using non-rebreather mask  
support ventilations if necessary using BVM
- H. Establish an IV of 1000 ml NS using a regular drip tubing , TKO
- I. Test blood sugar using glucometer
- J. If the blood sugar reading is <60 mg/dl, administer 50 ml of 50% Dextrose. >60 mg/dl, go to L.
- K. If unable to establish an IV and blood sugar reading is <60 mg/dl from a capillary sample, administer 1 unit of Glucagon IM.
- L. Repeat set of vitals.
- M. If no change, administer **0.5 mg Naloxone, if unknown otherwise start with 1 mg Naloxone repeat 1 mg if necessary IVP, IM, or IN 1/2 volume in each nare. Max 1ml each side using Nasal Atomizer**
- N. Repeat set of vitals. The EMT/Paramedic should contact on-line **Medical Control** and notify of treatments done thus far. . It should be considered that while the assessment is being given to Medical Control, other responders should ready the patient for transport and move patient to vehicle.
- O. The patient should be transported in the lateral recumbent position with a close watch on the airway (if trauma suspected, use full c-spine precautions).

Seneca County Emergency Medical Services  
Medical Protocols

**DIABETIC / HYPOGLYCEMIA**

1. Follow Universal Standard of Care.
2. Establish responsiveness.
3. Reassure patient
4. Assess ABCs.
5. Vital signs, pulse oximeter with room air reading.
6. Administer oxygen, 2-4 LPM nasal cannula or 10-15 LPM bag valve mask if needed.
7. Perform lancet finger stick, milk finger, obtain sample blood droplet.
8. IV 0.9% NaCl, 1000 ml bag, infusing wide-open rate if unconscious or if decreased level consciousness exists.
9. Cardiac Monitoring (monitor lead II).
10. If blood sugar <60 mg/dl:

A. If the patient is conscious and can swallow, administer 1 tube of Instant Glucose. A second tube may be given if blood sugar is <60 mg/dl.

B. Give 50% Dextrose ½ - 1 amp IV push.

**MAXIMUM DOSAGE OF 50% DETROSE = 2 AMPS, CALL MEDICAL CONTROL BEFORE GIVING SECOND AMP OF D50! *Max of instant glucose is 2 tubes* )**

- **Or as an alternative to D50:** Hang a 250 mL bag of 10% dextrose, and administer a bolus of 100-200 mL.
- You may use D10 as the primary infusion fluid (AEMT) or hang as a piggy back infusion to 0.9% Normal Saline solution (paramedic)
- If a very small catheter has been used (22-24G), may apply light pressure to bag to facilitate administration.
- Clamp tubing between boluses, and reassess for improvements in mental status. Re-check the fingerstick glucose.
- Repeat boluses as needed until the patient becomes alert and oriented, and/or until normoglycemia is achieved.

C. Anyone given 50% Dextrose will be transported unless Online Order Received to leave patient with a competent Adult caregiver.

D. If unable to start IV fluids and/or give 50% Dextrose IV, attempt to draw blood and then give 1 mg Glucagon IM. Repeat Glucagon IM in 5 minutes if no clinical response.

**MAXIMUM DOSAGE OF GLUCAGON = 2MG (can be given IN with mucosal atomization device ½ volume in each nare)**

- D. Medical Control must be contacted if the patient refuses transport. The patient's blood sugar must be greater than 60 mg/dl for the patient to refuse transport to the emergency center.

## **Dextrose 10% Administration**

**Added 5/1/2019**

Dextrose 10% has been added to our EMS medication formulary due to recent shortages of Dextrose 50% through the medication supply chain.

Dextrose 10% is an IV solution available to us in 250ml bags and should be utilized in place of Dextrose 50% for the treatment of diagnosed hypoglycemia

The following is an augmented version of our current Symptomatic Hypoglycemia Management Protocol utilizing D10 in place of D50:

### **DIABETIC / HYPOGLYCEMIA**

1. Follow Universal Standard of Care.
2. Establish responsiveness.
3. Reassure patient
4. Assess ABCs. Manage Airway in unconscious patients!
5. Vital signs, pulse oximeter with room air reading.
6. Administer oxygen, 2-4 LPM nasal cannula if spO2 <94%
7. Perform lancet finger stick, milk finger, obtain sample blood droplet. Measure Blood Glucose
8. Cardiac Monitoring (monitor lead II).
9. If blood sugar <60 mg/dl: Initiate an IV infusion with the largest IV cannula suitable.
  - Hang a 250 mL bag of 10% dextrose, and administer a bolus of 100-200 mL.
  - You may use D10 as the primary infusion fluid (AEMT) or hang as a piggy back infusion to 0.9% Normal Saline solution (paramedic)
  - If a very small catheter has been used (22-24G), may apply light pressure to bag to facilitate administration.
  - Clamp tubing between boluses, and reassess for improvements in mental status. Re-check the fingerstick glucose.
  - Repeat boluses as needed until the patient becomes alert and oriented, and/or until normoglycemia is achieved.

Seneca County Emergency Medical Services  
Medical Protocols

- Alternatively, D10 may be drawn from the bag and given in 10ml increments slow IV push.

If unable to start IV fluids and/or give 10% Dextrose IV, attempt to draw blood and then give 1 mg Glucagon IM. Repeat Glucagon IM in 15 minutes if no clinical response.

**MAXIMUM DOSAGE OF GLUCAGON = 2MG (can be given IN with mucosal atomization device ½ volume in each nare)**

Medical Control must be contacted if the patient refuses transport. The patient's blood sugar must be greater than 60 mg/dl for the patient to refuse transport to the emergency center.

**MAXIMUM DOSAGE OF 10% DEXTROSE = 250ml (25grams), CALL MEDICAL CONTROL BEFORE BEGINNING a SECOND BAG OF D10!**

**A second bag of D10 may be ordered, but lung sound assessment and careful observation must be taken to avoid fluid overload.**

**D10 is very effective at achieving normoglycemia and it rarely causes rebound hypoglycemia if given slowly.**

**Most patients respond well and are awake and alert after 100ml of D10, at this point slow the infusion to 30ml/hr (TKO) and continue to monitor.**

**Plan to take 15-20 minutes for the maximum benefit of the patient.**

**These patients don't typically wake up suddenly like they often do with D50, please plan accordingly and let the D10 work, before giving up and injecting with Glucagon.**

**Transport the patient normal traffic to the closest emergency department and monitor mental status, vital signs, and blood glucose while enroute.**

**\*\*NOTE – this can be administered by AEMTs or Paramedics Only\*\***

Seneca County Emergency Medical Services  
Medical Protocols

## HYPERTENSION

This protocol applies to patients who are hypertensive and symptomatic of their hypertension. In general, patients should exhibit a sustained diastolic blood pressure above 130 and be **symptomatic** before this protocol applies.

### A. SIGNS AND SYMPTOMS OF HYPERTENSIVE CRISIS

1. A rapid rise in diastolic blood pressure to over 130mmHg. Diastolic blood pressure should be verified by several properly spaced measurements.
2. New symptoms accompanying the diastolic increase consistent with encephalopathy, i.e. agitation, severe headache, dizziness, nausea, confusion, or visual impairment (may include transient blindness) or difficulty breathing.
3. Other symptoms that may accompany hypertensive crisis include: seizures, stupor, coma, or chest pain.
4. Associated symptoms may include: pulmonary edema, neck stiffness, unequal peripheral pulses, stroke-like symptoms, and chest or back pain.

### B. SPECIFIC INFORMATION NEEDED FROM HISTORY INCLUDES:

1. Recent head trauma.
2. Substance abuse, i.e. amphetamines, cocaine.
3. Is the patient pregnant?
4. History of hypertension.
5. Current medications and any recent discontinuation of medications.

### C. SPECIAL CONSIDERATIONS

1. Secondary hypertension in response to stress or pain is a common field finding. It does not require field treatment.
2. Hypertensive Encephalopathy is rare but can be treated with Nitroglycerin, Morphine Sulfate, and Furosemide. Field diagnosis is not possible.
3. Hypertension is commonly associated with other problems like pulmonary edema, seizures, chest pain, and coma or altered mental states. Treatment of the underlying problem generally is the best approach.
4. **Improper BP cuff size can produce falsely high BP measurements.** The cuff should cover ½ to 1/3 of the upper arm and the bladder should cover ½ of the arm surface.
5. Hypertension can also manifest with severe head injury and intracranial bleeding. Treatment should be directed at the actual intracranial problem and not the blood pressure problem.
6. Remember to include 50% Dextrose and Naloxone in the treatment of patients who are unconscious from an unknown cause.

### D. TREATMENT

1. Safe scene, infection control, gloves.
2. Keep the patient quiet, preferably supine or in a position of comfort.
3. Start oxygen therapy as indicated.

## Seneca County Emergency Medical Services Medical Protocols

4. Attach cardiac monitor and monitor lead II.
5. Attach pulse oximeter.
6. Take vitals: pulse, BP, respirations, lung sounds. (if diastolic BP >130mmHg, and patient symptomatic, go to #8).
7. Establish an IV of 1000ml NS using regular drip tubing.
8. The EMT/Paramedic should contact on-line Medical Control and notify of assessment. If diastolic pressure remains above 130mmHg, and the patient exhibits symptoms of hypertension, anticipate the orders below. It should be considered that while the assessment is being given to Medical Control, other responders should ready the patient for transport and move patient to vehicle.

### **ANTICIPATE THE FOLLOWING POTENTIAL ORDERS FROM ON-LINE MEDICAL CONTROL**

1. Repeat set of vitals. If no change, administer Nitroglycerin, 0.4mg SL. On-line Medical Control may order repeat doses to attain a target diastolic pressure of no lower than 90mmHg.
2. Repeat set of vitals. If no change, Furosemide, 20-40mg IVP.
3. Repeat set of vitals. If no change, Morphine Sulfate, 2-4mg slow IVP. May repeat every 5 minutes to a maximum dose of 0.2mg/Kg.

### **HYPERTHERMIA**

#### **I. SPECIFIC INFORMATION NEEDED**

- A. Patient age, activity level.
- B. Medications: depressants, tranquilizers, alcohol, etc.
- C. Associated symptoms: cramps, headache, orthostatic symptoms, nausea, weakness.
- D. Exercise induced? Previous history of hyperthermia?

#### **II. SPECIFIC OBJECTIVE FINDINGS**

- A. Vital signs: temperature usually 104 degrees F (40 degrees C) or greater – if thermometer available.
- B. Oxygen, moderate flow, 2-4 LPM.
- C. Cool with ice or water soaked sheets. Ensure adequate airflow over patient for evaporative loss.
- D. IV: volume expander, NS or LR large bore:
  1. TKO if vital signs are stable.
  2. Fluid bolus, 1000ml (20ml/Kg) if signs of hypovolemia – further fluids as needed.
- E. Draw blood with IV start if possible, strip test for glucose.
- F. Administer Dextrose 50%. 50ml IV in secure vein if strip reading less than 60. (1-2ml/Kg)
- G. Administer Diazepam, 5-10mg IV for seizures *per Medical Control*.
- H. Monitor cardiac rhythm.
- I. Monitor vitals during transport.



# Seneca County Emergency Medical Services Medical Protocols

## **HYPOTHERMIA AND FROSTBITE**

### **I. SPECIFIC INFORMATION NEEDED**

- A. Length of exposure.
- B. Air temperature, water temperature, wind, patient wet?
- C. History and timing of changes in mental status.
- D. Drugs: alcohol, tranquilizers, anticonvulsant, others.
- E. Medical problems: diabetes, epilepsy, alcoholism, etc.
- F. With local injury: history of thawing/ refreezing?

### **II. SPECIFIC OBJECTIVE FINDINGS**

- A. Vital signs, mental status, shivering. (Prolonged observation for 45 seconds may be necessary to detect pulse, respirations.)
- B. Temperature: touch patient, feel cold? Shivering? Note current temperature of environment also.
- C. Evidence of local injury: blanching, blistering, erythema of extremities, ears, nose.
- D. Cardiac rhythm.
- E. Note and record mental status.

### **III. TREATMENT**

#### **A. Generalized Hypothermia**

- 1. High Quality CPR if NO pulse or respirations. Prolonged CPR may be required – use Autopulse. If monitor present, no CPR if organized electrical activity present.
- 2. Oxygen, moderate flow, 2-4 LPM. Warm and humidified if possible.
- 3. Avoid unnecessary suctioning or airway manipulation.
- 4. Remove wet or constrictive clothing from patient. Wrap in blankets and protect from wind exposure.
- 5. IV: volume expander, NS or LR, large bore, TKO or as ordered. Solution should be warmed if possible. Do not start IV until patient is inside transport vehicle.
- 6. Unconscious patient:
  - a. Draw Labs if possible - check Glucose via Glucometer.
  - b. Dextrose 50%, 50ml IV in secure vein if reading is less than 60. (peds 1-2 ml/Kg)
  - c. Naloxone, 2mg, IV or IN – should be considered
- 7. Monitor cardiac rhythm. Attempt defibrillation if appropriate per protocol. If ventricular fibrillation is present deliver 150J biphasic shock, further defibrillation attempts should be avoided until after warming to above 30 degrees C. (86 degrees F.).
- 8. Monitor vitals during transport.
- 9. The patient should be moved in the horizontal position to avoid aggravation hypotension through orthostatic mechanisms.

## Seneca County Emergency Medical Services Medical Protocols

### **Local (Frostbite)**

1. Remove wet or constricting clothing. Keep skin dry and protected from wind.
2. Do not allow the limb to thaw if there is a chance that the limb may refreeze before evacuation is complete or if patient must walk to transportation.
3. Dress injured areas lightly in clean cloth to protect from pressure, trauma, or friction. Do not rub. Do not break blisters.
4. Maintain core temperature by keeping patient warm with blankets, warm fluids, etc.
5. Transport with frostbitten areas supported and elevated if feasible.

## IV. SPECIFIC PRECAUTIONS

### **A. Hypothermia**

1. Shivering does not occur below 90 degrees F., 32 degrees C. Below this, the patient may not even feel cold and occasionally will even undress and appear vasodilated.
2. The heart is most likely to fibrillate below 80-85 degrees F (30 degrees C). Defibrillation should be attempted, but prolonged CPR may be necessary until the temperature is above this level.
3. ALS drugs should be used sparingly, since peripheral vasoconstriction may prevent entry into central circulation until temperature is restored: at that time, a large bolus of unwanted drugs may be infused into the heart. Bradycardia is normal and should not be treated.
4. Any handling and airway manipulation may induce ventricular fibrillation in the hypothermic patient. Delay intubation if airway can be managed by less invasive means.
5. If not shivering, don't ambulate patient and/or avoid unnecessary external stimuli (jarring of stretcher, loud noises). This activity can cause fibrillation.
6. If patient has even a faint pulse, organized monitor rhythm and occasional respirations,
7. Patients who appear dead after prolonged exposure to cold air or water should not be pronounced "dead" until they have been rewarmed. Full recovery from hypothermia with undetectable vital signs, severe bradycardia, and even periods of cardiac arrest has been reported.
8. Warming should be accomplished with careful monitoring in a hospital setting whenever possible.

### **B. Frostbite**

1. Thawing is extremely painful and should be done under controlled conditions, preferably in the hospital. Careful monitoring, pain medication, prolonged warming and sterile handling are required.

Seneca County Emergency Medical Services  
Medical Protocols

2. It is clear that partial rewarming or rewarming followed by refreezing is far more injurious to tissues than delay in rewarming or walking on a frozen extremity to reach help. Do not rewarm prematurely. Indications for field rewarming are almost nonexistent.
3. Warming with heaters or stoves, rubbing with snow, drinking alcohol, and other methods of stimulating the circulation are dangerous and should not be used.
4. Do not allow patient to smoke or have caffeine.

**POISONS AND OVERDOSES**

**I. SPECIFIC INFORMATION NEEDED**

- A. History
  1. Type of ingestion:
    - a. What
    - b. When
    - c. How much
    - d. Reason
    - e. Actions of bystanders; i.e. induced vomiting
  2. Symptoms
    - a. Burning
    - b. Eye irritation
    - c. Respiratory distress
    - d. Sleepiness
    - e. Nausea
  3. Alcohol abuse
  4. Drug abuse
- B. Medical history
  1. Previous psychiatric problems
  2. Diseases
  3. Medications
4. Establish known allergies
- C. Environment
  1. Evidence of trauma
  2. Evidence of drug ingestion
  3. Evidence of alcohol ingestion
  4. Note unusual presentations

**II. OBJECTIVE FINDINGS**

- A. Vital signs
  1. Respirations
  2. Pulse
  3. Blood pressure
  4. Pupils (size, symmetry)
  5. EKG

## Seneca County Emergency Medical Services Medical Protocols

6. Pulse oximetry
  7. Skin temperature vs. environment
  8. Blood sugar test
- B. Mental status
1. L.O.C.
  2. Appropriate actions (check often)
- C. Characteristics of breath
1. Alcohol-type odor
  2. Sweet/fruity odor
- D. Medic alert tags

### III. SPECIFIC CONSIDERATIONS

- A. All empty containers of ingested material should accompany patient to hospital. All emesis should be saved. Any questionable material should be taken to emergency department; i.e. syringes, needles.
- B. Pay particular attention to:
1. increased salivation
  2. soot or burns in mouth
  3. needle tracks
  4. irritation of the eyes
  5. sweating and skin burns
  6. lung findings, i.e. edema
  7. arrhythmias
- C. Antidotes
1. Product labels and home kits may be misleading and dangerous. Watch the ABCs
  2. Do not neutralize acids with alkali
  3. Do not neutralize alkali with acid
  4. With hydrocarbon ingestion, do not induce vomiting
  5. Gasoline should be flushed from trauma patients and is often overlooked.
  6. Protect yourself in inhalation poisoning incidents
- D. Do not induce vomiting in patients who have ingested:
1. strong acids
  2. strong base iodides
  3. silver nitrate
  4. strychnine
  5. who are not alert

### IV. TREATMENT

- A. External Contamination
1. Safe scene, infection control, gloves, gown, mask, and eye protection. Wear appropriate protective clothing for event; i.e. turn out gear, SCBA (utilize only trained personnel, or FD personnel)

## Seneca County Emergency Medical Services Medical Protocols

2. Remove all clothing and any solid chemical which might provide continuing contamination
  3. Decontaminate using running water for 15 minutes if available and patient stable enough (including eyes)
  4. Assess and treat patient according to appropriate protocol
  5. Contact on-line *Medical Control* for possible orders to correct systemic symptoms caused by the agent involved
- B. Internal Ingestion
1. Safe scene, infection control, gloves, gown, mask, eye protection
  2. Establish unresponsiveness
  3. Reassure patient (explain procedures)
  4. Evaluate airway, take appropriate action
  5. Take vitals – respiration, pulse, blood pressure
  6. Attach pulse oximeter
  7. Attach cardiac monitor
  8. Administer high flow oxygen using non-rebreather mask
  9. Establish an IV of 1000ml NS using regular drip tubing TKO
  10. If patient has decreased sensorium;
    - a. follow steps 1-9
    - b. test blood sugar using Glucometer
- C. If the blood sugar reading is <60 mg/dl, administer 50ml 50% Dextrose. If >60mg/dl, go to E.
- D. If unable to establish an IV and blood sugar reading is <60mg/dl from a capillary sample, administer 1 unit Glucagon IM.
- E. Repeat set of vitals
- F. If no change, administer 2 mg Naloxone IV push or Intranasally with Mucosal Atomization Device (1ml each nare).
- G. Repeat set of vitals. The EMT/Paramedic should contact on-line *Medical Control* and notify of treatments done thus far. It should be considered that while the EMT/Paramedic is giving the assessment to on-line *Medical Control*, other responders should ready the patient for transport and move the patient to the vehicle.
- H. The patient should be transported in the lateral recumbent position with a close watch on the airway. (if trauma situation suspected, use full c-spine precautions)

### SEIZURES

- I. SPECIFIC INFORMATION NEEDED
  - A. History
    1. Onset
    2. Time interval
    3. Previous seizure
    4. Type of seizure
  - B. Medical History

Seneca County Emergency Medical Services  
Medical Protocols

1. Head trauma
  2. Diabetes
  3. Headaches
  4. Drugs
  5. Alcohol
  6. Medication
  7. Pregnancy
- C. Environment
1. Evidence of traumas
  2. Evidence of drug ingestion
  3. Evidence of alcohol ingestion
  4. Note unusual presentations

II. OBJECTIVE FINDINGS

- A. Vital signs
1. Respirations
  2. Pulse
  3. Blood pressure
  4. Pupils (size & symmetry)
  5. EKG
  6. Pulse oximetry
  7. Blood sugar level
  8. End Tidal CO<sub>2</sub> – ETCO<sub>2</sub>
  9. Incontinence
  10. Skin temp vs. environment
  11. Skin color and moisture
- B. Mental Status
1. Postictal
  2. LOC
  3. Inappropriate behavior
- C. Characteristics of breath
1. Alcohol-type odor
  2. Sweet/fruity odor
- D. Medic alert tag

III. SPECIFIC CONSIDERATIONS

- A. Move the hazardous materials away from patient. Restrain only to protect patient. Protect patient's head. Remember always immediately check pulse after seizure stops.
- B. Trauma to the tongue is unlikely to cause serious problems. Trauma to the teeth may. Attempts to force anything into patient's airway may cause a complete obstruction.
- C. Seizures can be caused by:
1. Hypoxia
  2. Low glucose levels
  3. Irritable cerebral focus

Seneca County Emergency Medical Services  
Medical Protocols

4. Alcohol
  5. Drugs
- D. Paramedics are often called to assist epileptics who seize in public. If the patient meets the following criteria and signs AMA, they need not be transported. However, on-line **Medical Control** must be consulted.
1. Clears completely (asymptomatic)
  2. Is taking their own medication
  3. Has their own physician
  4. Is experiencing their usual; frequency of seizures
  5. Has sustained no trauma

IV. TREATMENT

- A. Safe scene, infection control, gloves
- B. Establish responsiveness
- C. Evaluate airway (nasopharyngeal may be helpful)
- D. Reassure patient (explain all procedures)
- E. Take vital signs; respirations, pulse, blood pressure
- F. If the patient's seizure persists or has a decreased sensorium:
  1. Administer oxygen to maintain spO<sub>2</sub> of 95% or higher
  2. Establish an IV of 1000ml NS using regular drip tubing TKO
  3. Test blood sugar using glucometer
  4. If blood sugar reading is <60mg/dl, administer 50ml of 50% Dextrose. If >60mg/dl, go to #6.
  5. If unable to establish an IV and blood sugar reading is <60mg/dl from a capillary sample, administer 1 unit Glucagon IM.
  6. Repeat set of vitals
  7. Monitor ETCO<sub>2</sub>- using nasal capnoline
  8. If no change, administer 2 mg Naloxone IV/IM/IN  $\frac{1}{2}$  volume in each nare, (max. 1 ml) push;

Repeat Vitals

If no change and BP >100, Administer Diazepam (Valium) 5 – 10 mg IVP slow (over 2-5 minutes); **or Versed 0.1 mg/kg IVP start with smaller doses (2.5- 5mg) and titrate to effect. If unable to establish an IV, administer Versed 0.1 mg/kg IM/IN  $\frac{1}{2}$  volume in each nare (max 1ml)**

Repeat set of vitals. The EMT/Paramedic should contact on-line **Medical Control**, other responders should ready patient for transport and move patient to the vehicle.

May receive order to repeat Diazepam (Valium) in 5-10 minutes using 5-10 mg IVP slow; Maximum allowable dose of 20 mg

9. Patient should be transported in the lateral recumbent position to protect airway
10. If known Pre-Eclampsia exists utilize Magnesium Sulfate 1gram slow IVP (1-2minutes) and 1 gram/250ml Infusion at 30ml/hr maintenance.

# Seneca County Emergency Medical Services Medical Protocols

## SHOCK – MEDICAL

### I. SPECIFIC INFORMATION NEEDED

- A. Onset: gradual or sudden; precipitating cause or event
- B. Associated symptoms: itching peripheral or facial edema, thirst, weakness, respiratory distress, abdominal or chest pain, dizziness on standing
- C. History: allergies, medications, blood vomitus or stools, significant medical diseases, history of recent trauma, last menstrual period, vaginal bleeding, fever

### II. SPECIFIC OBJECTIVE FINDINGS

- A. Vital signs: Pulse >120 (occasionally <50 or normal), BP <90 systolic
- B. Orthostatic changes: pulse rate >30bpm OR systolic BP drop >15mm from lying to sitting or standing (perform only if VITAL SIGNS normal in sitting position)
- C. Mental status: apathy, confusion, restlessness, mania
- D. Skin: flushed, pale, sweaty, cool or warm, hives or other rash
- E. Signs of trauma, particularly blunt
- F. Signs of pump failure (back-up pressure): jugular venous distention in upright position, wet lung sounds, peripheral edema (indicates chronic pump failure)

### III. TREATMENT

- A. Stop exsanguinating hemorrhage if it exists
- B. Oxygen, to maintain spO<sub>2</sub> of 95% or higher
- C. Cover patient to avoid heat loss. Do not over bundle.
- D. Assess for cardiogenic cause (see Table 1)
  - 1. If P >150, treat tachyarrhythmia according to protocol
  - 2. If P <60, treat bradyarrhythmia according to protocol
  - 3. If distended neck veins, chest pain or other evidence of cardiac cause:
    - a. position of comfort
    - b. be prepared to assist ventilations or initiate CPR
    - c. IV: NS, TKO
    - d. Monitor cardiac rhythm and ETCO<sub>2</sub>
    - e. Evaluate for possible Tension Pneumothorax. Treat per protocol
    - f. Contact **Medical Control** to consider fluid challenge 20ml/kg 0.9% Normal Saline and/or Epinephrine gtt using 60gtt tubing)
    - g. Transport rapidly for definitive diagnosis and treatment
- E. If no evidence of cardiogenic cause, institute general treatment measures:
  - 1. Place patient supine, elevate legs 10-12 inches. (If respiratory stress results, leave patient in position of comfort)



Seneca County Emergency Medical Services  
Medical Protocols

2. IV: NS, large bore, 1000ml (peds 20ml/Kg), rapid infusion. IV then TKO or as directed.
  - F. Assess and treat for specific cause such as anaphylaxis if this can be determined. (See Tables)
  - G. Monitor vital signs, cardiac rhythm and level of consciousness during transport
- IV. SPECIFIC PRECAUTIONS
- A. Shock in a cardiac patient may still represent hypovolemia. The dangers of inappropriate fluid treatment are such that if indicated, **Consult Medical Control**. Small fluid boluses (250ml) may be used per **Medical Control**.
  - B. Mixed forms of shock (see Table 1) are treated as hypovolemia, but the other factors contributing to the low perfusion should be considered. Neurogenic Shock is caused by relative hypovolemia as blood vessels lose tone, either from cord trauma, drug overdose, or sepsis. Anaphylaxis is a mixed form of shock with hypovolemic, Neurogenic, and cardiac depressant components. Epinephrine is used in addition to fluid load. (See protocol for Anaphylaxis)
  - C. Cardiogenic shock from various causes is difficult to treat even in a hospital setting and should be treated with rapid transport in the field, unless transport time is prolonged *and* an obvious abnormal pulse rate, Tension pneumothorax, or hypovolemia can be addressed.
  - D. **DO NOT FORGET TO NORMALIZE THE PULSE** if it is greater than 150 or less than 60. The heart cannot pump effectively outside its normal range. Correct tachy or bradyarrhythmia *first* and then treat shock, if it is still present.

**Sepsis Alert Protocol**

- Scene Safety, Infection Control – wear Eye Pro, N95 Mask
- **Patient criteria for this therapy:**
  - o History of Infectious process – UTI, Pneumonia, Fever, etc..
  - o Suspected Infection or infectious process
  - o Temp of greater than 100.4°F or less than 96°F
  - o Age greater than 18
  - o Altered Mental Status
  - o Patient not obviously pregnant
  - o Signs of Hypoperfusion
    - Systolic BP less than 90
    - Heart Rate above 100 or less than 60
  - o **Inclusion Criteria – any 2 of the above with suspicion of Sepsis**
- \* Treatment
  1. Administer high-flow oxygen
    - a. NRB masks are to be used exclusively
  2. Establish IV access with two large-bore angiocaths and draw blood samples

## Seneca County Emergency Medical Services Medical Protocols

- a. Baseline blood values will be important
- b. Administer IV fluid boluses (20 cc/kg), rapid infusion
- c. Reassess after infusing 500-ml increments: Extreme caution in elderly, frail patients of small size, stature, and/or history of CHF – Listen to LUNG SOUNDS!!
  1. Blood pressure
  2. Breath sounds – repeat every 5-10 minutes
- c. Contact med control if BP remains less than 90 systolic

Reassess patient on a regular basis. Document appropriately the following:

- a. Vital signs—BP must be auscultated (do not rely on auto-cuff BP)
  - b. Breath sounds\* - very important
  - c. Capnography – continuous waveform capnography using Philips Monitor
  - d. Pulse oximetry
  - e. Blood sugar Finger Stick
  - f. Monitor cardiac rhythm
  - g. Document exact amount of fluid the patient receives (very important).
4. Scene times should be less than 15 minutes, with emergent transport to definitive care.
- Consider the following: (expect a verbal order)
  - \*Medic Only\* - Epinephrine Infusion 2-10 ug/min to Maintain a Systolic BP of 90 – 100 mm Hg
  - Notify the Receiving Hospital as Early as possible of a SEPSIS ALERT
  - o Be Prepared for them to divert you to a more distant facility with greater capability of definitive treatment

### **VOMITING AND DIARRHEA**

#### **I. SPECIFIC INFORMATION NEEDED**

- A. Frequency, duration of vomiting, diarrhea.
- B. Presence of blood in vomitus, stool.
- C. Associated symptoms: abdominal pain, weakness, confusion.
- D. Medication ingestion.
- E. Past medical history: diabetes, cardiac disease, abdominal problems, alcoholism.

#### **II. SPECIFIC OBJECTIVE FINDINGS**

- A. Vital signs: orthostatic changes (if BP normal).
- B. Color of vomitus, diarrhea – presence of blood.
- C. Abdomen: tenderness, guarding, rigidity, distension.
- D. Signs of dehydration: poor skin turgor, tearless eyes, dry mucous membranes, and confusion.

#### **III. TREATMENT**

- A. Position patient: left lateral decubitus if vomiting; otherwise supine.

**Seneca County Emergency Medical Services  
Medical Protocols**

- B. Oxygen, moderate flow (4-6 LPM) by nasal cannula.
- C. Nothing by mouth.
- D. If BP is <90 systolic and signs of hypovolemic shock:
  - 1. elevate legs 10-12 inches
  - 2. IV: volume expander, NS , large bore, 1000ml (20ml/Kg) run in, further fluids as directed by Medical Control.
  - 3. Consider Zofran 4mg IV/IM/IN; <40kg (0.1mg/kg) IV/IM/IN
  - 4. Use Oral Zofran ODT if patient is able to allow pill to dissolve
  - 5. If unable or vomiting is intractable, use Zofran IV/IM or IN
- E. Monitor vital signs during transport.

**IV. SPECIFIC PRECAUTIONS**

- A. Vomiting and diarrhea may be symptoms of a more serious problem, but all represent some degree of hypovolemia. The most serious causes are GI bleed or other intra-abdominal catastrophe. A rare cardiac patient may also present with vomiting or diarrhea as the predominate symptom.
- B. Be sure to use an adequate emesis basin. Support the patient's head when he is vomiting. Avoid contaminating the ambulance, as some infectious disease may be transmitted by this means.
- C. Check at the scene for evidence of overdose; a patient who doesn't call the ambulance for medication ingestion may call later when GI symptoms become severe.
- D. The vast majority of persons with vomiting and diarrhea have become sick over days, not minutes. Unless severely ill, they do not require lights-and-siren transport or advanced field treatment.
- E. Dehydration may be particularly severe in children with simple vomiting and diarrhea. IVs may be very difficult to start, particularly with infants. Transport for definitive treatment is usually best.
- F. Blood in the GI tract is an irritant: it causes vomiting and diarrhea. Only if upper tract bleeding is extremely brisk will the blood reach the rectum undigested (still bright red). GI bleeders may be very sick and hypovolemic without showing an obvious source of their problem.
- G. Zofran will help with Nausea and Vomiting – it will do nothing for diarrhea

**SYNCOPE**

**I. SPECIFIC INFORMATION NEEDED**

- A. History
  - 1. Onset (events leading to)
  - 2. Duration
  - 3. Seizure activity
  - 4. Precipitating factors
- B. Medical History
  - 1. Medications
  - 2. Diseases

Seneca County Emergency Medical Services  
Medical Protocols

3. Trauma
  4. Pregnancy
  5. Drugs
  6. Alcohol
  7. Headaches
- C. Environment
1. Evidence of trauma
  2. Evidence of drug ingestion
  3. Evidence of alcohol ingestion
  4. Note unusual presentations

II. OBJECTIVE FINDINGS

- A. Vital Signs
1. Respirations
  2. Pulse
  3. Blood Pressure
  4. EKG
  5. Pulse oximetry
  6. Blood sugar level
  7. ETCO<sub>2</sub>- using nasal capnoline
  8. Incontinence
  9. Skin temperature vs. environment
  10. Skin color and moisture
- B. Mental Status
1. LOC
  2. Residual neurologic deficit
  3. Inappropriate behavior
- C. Characteristics of Breath
1. Alcohol-type odor
  2. Sweet/fruity odor
- D. Medic Alert Tags

III. SPECIFIC CONSIDERATIONS

- A. Syncope is by definition a transient state of unconsciousness from which the patient has recovered. If the patient is still unconscious, treat per coma protocol. If the patient is confused, treat according to altered mental state protocol.
- B. Special care should be used to note symptoms such as:
1. Neck stiffness
  2. Orthostatic changes (pulse change >30 bpm or systolic BP changes >15mm from lying to sitting or standing).
  3. Mouth trauma
- C. Most syncope is vasovagal, with dizziness progressing to fainting over several minutes. Recumbent position should be sufficient to restore vital signs and level of consciousness to within normal limits.

## Seneca County Emergency Medical Services Medical Protocols

- D. Syncope which occurs without warning or while in the recumbent position is potentially serious, and often is caused by cardiac arrhythmias.
- E. Patients over the age of 50 with syncope, even though apparently normal should be transported. In middle-aged or elderly patients, syncope can be due to a number of potentially serious conditions. The most important things to continually monitor and recognize are:
  - 1. Arrhythmias
  - 2. Occult GI bleeding
  - 3. Seizures
  - 4. Ruptured abdominal aortic aneurysm

### IV. TREATMENT

- A. Safe scene, infection control, gloves
- C. Establish responsiveness
- D. Reassure patient (explain all procedures)
- E. Vital signs: respirations, pulse blood pressure, (if BP <90mm, treat per hypovolemia protocol)
- F. If unstable or >50 years of age:
  - 1. Administer oxygen therapy to maintain spO<sub>2</sub> of 95%
  - 2. Establish IV of 1000ml NS using regular drip tubing TKO
  - 3. Test blood sugar using Glucometer.
  - 4. If blood sugar reading is <60mg/dl, administer 50ml of 50% Dextrose. If blood sugar reading is >60, go to #6.
  - 5. If unable to establish an IV and blood sugar reading is <60mg/dl from a capillary sample, administer 1 unit Glucagon IM.
  - 6. Repeat set of vitals. The EMT/Paramedic should contact **On-Line Medical Control** and notify of treatments done thus far. While the EMT/Paramedic is giving the assessment, other responders should ready the patient for transport and move patient to the vehicle.
  - 7. This patient may require transport in the Trendelenburg or recumbent position.

# **CARDIAC EMERGENCIES**

Seneca County Emergency Medical Services  
Medical Protocols

**CARDIAC ARREST PROTOCOL – Seneca County uses current AHA ACLS guidelines**

\* If these guidelines do not match current AHA ACLS contact Med Control for Guidance\*

**PRIMARY ABCD SURVEY**

- 1 – Check responsiveness*
- 2 – Circulation – give chest compressions using ResQPump – uninterrupted high quality CPR is Key!**
- 5 Attach AED/Defib Pads**
- 6 Defibrillation - VF/VT/Shock Advised**
- 7 Completely Remove Clothing from Chest – Apply Autopulse!!**

**SECONDARY ABCD SURVEY**

- A – Airway – intubate / King Airway**
- B – Breathing – confirm breath sounds, use adjunct, reassess – \*Switch Autopulse to continuous mode\***
  - **Once Airway is in place – ventilate 8-10 times per minute with 100% Oxygen**
- C – Circulation – IV/IO access – Use Pressure infuser on IO – run fluids Wide Open**
- D – Differential Diagnosis – search for treatable cause**

**Specific Information Needed**

- A. Arrest History**
  - 1. Time of onset
  - 2. Bystander CPR
  - 3. Time lapse until CPR
  - 4. Preceding symptoms
  - 5. AED used
- B. Medical History**
  - 1. Diseases
  - 2. Medications
  - 3. Medical Adjuncts, i.e. AID, pacemaker
  - 4. Established known allergies
- C. Environment**
  - 1. Evidence of drug ingestion
  - 2. Evidence of trauma
  - 3. Note unusual presentations

**Objective Findings**

- A. Patient totally unresponsive
- B. Agonal respirations or apnea
- C. Absence of pulse, weak thready
- D. Skin temperature vs. environment
- E. Evidence of dependent lividity (refer to DOA protocol)

Seneca County Emergency Medical Services  
Medical Protocols

**Treatment**

- A. Scene safe**
- B. Call for back-up early if needed – Start Chest Compressions using ResQpump and switch to Autopulse ASAP**
- C. Continue CPR for 2 minutes then check rhythm with monitor**
- D. Treat according to appropriate protocol**

**Specific Considerations**

- A. Cardiac arrest is a life-threatening condition and initial treatment should preclude contact with **On-Line Medical Control**. **On-Line Medical Control** may be contacted earlier in the resuscitation than indicated in the protocol, but must be contacted no later than the point indicated in the protocol.
- B. Cardiac arrest in a trauma situation is not treated according to this protocol. In a trauma situation, following c-spine & airway control, transport should be rapid with all stabilization done enroute to the closest hospital. Refer to Trauma Arrest Protocol.
- C. Hypothermic cardiac arrest is not treated according to this protocol. Refer to Hypothermic Arrest Protocol.
- D. Survival from cardiac arrest is related to both BLS and ALS treatment. With multiple responders, several treatments may be administered simultaneously. The “Paramedic” should make assignments so all resources are utilized to their fullest, i.e. CPR, packaging for transport, Use of ResQPump & Autopulse, etc..
- E. See Pediatric Protocols for special pediatric treatments.
- F. Large peripheral veins (antecubital or external jugular) are preferred IV sites in an arrest. (IO is appropriate if IV access is unobtainable. See IO Protocol).
- G. The first EMT/Paramedic on scene should check and document the effectiveness of CPR while in progress. Pulselessness should also be checked since cardiac function could have returned after an arrhythmia or vasovagal episode.

**ACUTE PULMONARY EDEMA**

This protocol applies to the patient who is symptomatic and it is suspected that they are in Pulmonary Edema. Acute Pulmonary Edema can become life threatening very quickly and the need for intervention must be recognized early. Signs and symptoms of Pulmonary Edema may include the following:

- A. Air hunger
- B. Orthopnea
- C. Dyspnea
- D. Cyanosis
- E. Diaphoresis
- F. Rales

**\*CPAP USE IN PULMONARY EDEMA IS LIFESAVING\***

**Treatment**

1. Safe scene, infection control, gloves.
2. Reassure patient (Fowler position if possible)



## Seneca County Emergency Medical Services Medical Protocols

3. Assess airway, breathing, and circulation. (Take suction, CPAP and intubation precautions). – This patient will benefit from CPAP – see CPAP protocol
4. Start oxygen therapy as indicated (may be helpful to assist ventilations).
5. Establish an IV- NS using a mini-drip (60gtt) tubing. (Use caution on fluid infused, very slow TKO).
6. Attach cardiac monitor and monitor Lead II,III,AVF.
7. Identify rhythm and treat per protocol.
8. Attach pulse oximeter.
9. Vitals: pulse, BP, respirations. Take special care in assessing lung sounds.
10. Apply CPAP – use nasal capnoline to monitor ETCO<sub>2</sub> & supplemental Oxygen.
11. Repeat set of vitals. If BP >110mm/Hg., administer Morphine Sulfate 1-3mg IV slow push. (If BP <110mmHg., go to #13).
12. Repeat set of vitals. If BP >110mm/Hg., administer one (1) sublingual Nitroglycerin 1/150gr. (If BP <110mmHg., go to #13). If the patient has taken *Erectile Dysfunction medication* within 24 hours, skip #12 and go to #13.
13. Repeat set of vitals. The EMT/Paramedic will contact **On-Line Medical Control** and notify of treatments done thus far. While assessment is being given, other rescuers should ready patient for transport and move patient to vehicle.

### ANTICIPATE THE FOLLOWING POTENTIAL ORDERS FROM ON-LINE MEDICAL CONTROL

Anticipate an order for Lasix 40mg IV/IO – max dose is 100mg

**CPAP administration can be a lifesaving measure and potentially avoid intubation in the patient suffering from acute pulmonary edema – This is a skill ALL EMTs can provide. See CPAP protocol.**

### VENTRICULAR FIBRILLATION / PULSELESS VENTRICULAR TACHYCARDIA

#### Unwitnessed (if witnessed, precordial thump is acceptable)

\*\*If CPR initiated prior to arrival Defibrillate immediately

\*\*If NO CPR prior to arrival – Provide 2 minutes of High Quality CPR prior to Defibrillation.

#### Treatment

1. Safe scene, universal precautions.
2. Establish unresponsiveness, pulselessness – Begin CPR with ResQCPR – switch to Autopulse
3. Apply monitor/*defib/AED combo pads*
4. Identify rhythm as V-fib or pulseless V-tach./ *Or Shock Advised*
5. Defibrillate at 200j Biphasic
6. Continue CPR for 2 minutes.
7. During the 2 minutes of CPR, prepare equipment of intubation and IV start.
8. CPR should continue without regards to a pulse check following defibrillation.
9. Monitor lead II using 4 lead hard wire.
10. King Airway (or Endotracheal Intubation), confirm bilateral breath sounds, secure tube. Reconfirmation mandated every time the patient is moved. CSpine immobilization with CID is recommended. – ATTACH ETCO<sub>2</sub> Monitoring as soon as a tube is placed.

## Seneca County Emergency Medical Services Medical Protocols

- \*\* Utilize the King Vision Video LaryngoScope to maximize first attempt success\*\***
11. Establish IV of 1000ml Normal Saline using large bore catheter and regular drip (10gtt) tubing in a large peripheral vein or place EZIO immediately.
  12. Administer 1mg 1:10,000 Epinephrine (every 3-5 minutes) IV push followed by a 20ml flush of saline.  
\*Raise extremity and circulate with CPR any time a medication is given\*
  13. Check pulse, if no change, defibrillate at max output
  14. Check pulse, if no change, administer Amiodarone 300mg IV push followed by a 20ml saline flush (one time dose) if available or Lidocaine 1mg/kg IVP  
Prepare and push 2 grams of Mag Sulfate for continuous VF/VT.
  15. Check pulse, if no change, defibrillate at max output. Check Pulse.
  16. The EMT/Paramedic will contact On-Line Medical Control and notify of treatments done thus far.
  17. Transport with Autopulse in place – in continuous mode with ventilations 8-10/min
  18. Monitor all parameters available – 4lead ECG, ETCO<sub>2</sub>, RR, HR, SpO<sub>2</sub>

**CPR should be maintained during this time. It should also be considered that while this EMT/Paramedics is giving the assessment to On-Line Medical Control that other responders should apply the Autopulse and ready the patient for transport and move the patient to the vehicle.**

### **ANTICIPATE THE FOLLOWING POTENTIAL ORDERS FROM ON-LINE MEDICAL CONTROL:**

1. **Order for other medications (Sodium Bicarbonate)**
2. **Termination of Resuscitation – considering all treatments, history, and downtime.**

For Patients who meet “cessation of resuscitation efforts” in the field following a complete AHA/ACLS protocol driven treatment effort – ***On-Line Medical Control*** – shall be contacted via Radio/Phone and the situation discussed with the physician in charge – A time of death will be declared if the following criteria has been met:

1. Pulseless & Apneic and ASYSTOLE on Monitor
2. IV or IO access that is flowing well
3. Positive Airway Control – ET or King with a WORKING ETCO<sub>2</sub> waveform less than 10mm/hg with effective CPR
4. CPR has been ongoing with no rhythm change from Asystole for 5 rounds (2 minutes/ each) of effective CPR
5. Patient is at home or in a controlled environment (not in the street).

Seneca County Emergency Medical Services  
Medical Protocols

**PEA (PULSELESS ELECTRICAL ACTIVITY) PROTOCOL**

**This protocol applies to rhythms that present with no pulse except V-fib/V-tach.**

**PEA can be caused by many underlying factors. The following possible causes should be considered and verified, the appropriate treatment administered prior to Epinephrine or Atropine therapy. Use the 5 H's and 5 T's acronym.**

<p><b>Hypovolemia</b> a. Treat with volume infusion. b. Shock pants</p>	<p><b>Tablets - Drug Overdose</b> a. 1mEq/kg Sodium Bicarb and medications per Overdose Protocol if tricyclic suspected</p>
<p><b>Hypoxia</b> a. Treat with increase ventilation</p>	<p><b>Tamponade, cardiac</b> a. No pre-hospital field treatment available (proceed with PEA protocol)</p>
<p><b>Hydrogen ion - Acidosis</b> a. Increase ventilations b. 1mEq/kg Sodium Bicarb; may be repeated every 10 min. at ½ dose</p>	<p><b>Tension Pneumothorax</b> a. See Needle Decompression Protocol</p>
<p><b>Hyperkalemia</b> a. Unable to recognize in pre-hospital setting (proceed with PEA protocol)</p>	<p><b>Thrombosis, Coronary</b> a. Unable to treat in a pre-hospital setting (proceed with PEA protocol)</p>
<p><b>Hypothermia</b> a. See Hypothermia Protocol</p>	<p><b>Thrombosis, Pulmonary</b> a. Unable to treat in pre-hospital setting (proceed with PEA protocol)</p>

**Treatment**

1. Safe scene, universal precautions.
2. Established unresponsiveness, pulselessness.
3. Apply monitor.
4. Identify rhythm, absence of palpable pulses confirms PEA.
5. Start or continue CPR using ResQPump if available, Switch to Autopulse ASAP
6. Monitor lead II, III, & AVF.
7. Intubate or King Airway, confirm bilateral breath sounds and secure tube.  
Reconfirmation is mandated every time the patient is moved. Use ETCO2 asap
8. Establish IV 1000ml Normal Saline using a large bore catheter and regular drip (10gtt) tubing in a large peripheral vein, or insert and IO. Bolus 250-500ml upon insertion.
9. Administer 1mg 1:10,000 Epinephrine (every 3-5 minutes) IV push followed by a 20ml saline flush. Raise extremity and circulate with CPR. Check pulse after 2 minutes.
10. The EMT/Paramedic will contact **On-Line Medical Control** and notify of treatments done thus far. CPR should be maintained during this time. It should also be considered

Seneca County Emergency Medical Services  
Medical Protocols

that while this EMT/Paramedic is giving the assessment, to **On-Line Medical Control** that other responders should ready the patient for transport and move patient to the vehicle. Utilize Autopulse as soon as possible.

**ANTICIPATE THE FOLLOWING ORDERS FROM  
ON-LINE MEDICAL CONTROL:**

1. Check pulse, if no change and Sodium Bicarb has not been given before Epinephrine (i.e. drug overdose), administer Sodium Bicarb 1mEq/kg. Raise extremity and circulate with CPR.

**ASYSTOLE PROTOCOL**

This protocol applies to those patients found initially in asystole and who do not respond to any pharmacological intervention. It does not apply to the patient who was converted to asystole through course of treatment or converted from asystole to any rhythm and back to asystole. Patients in this scenario should not have efforts terminated in the pre-hospital setting and should Paramedics should note in the protocol that after two full rounds Epinephrine, **On-Line Medical Control** may be contacted and asked if the EMTs/Paramedics may discontinue the efforts. Resuscitative measures may only be discontinued in this scenario with **On-Line Medical Control** permission. This protocol does not apply to patients with DNRCC, a Living Will that specifies no CPR or patients who meet the DOA protocol. Documentation in these cases is paramount. The following list of items will be factually documented addition to those items already mandated on the run report:

1. Successful Endotracheal intubation
  2. Successful IV/IO access
  3. Two rounds each of Epinephrine
  4. Persistent Asystole
  5. The duration of the cardiac arrest (not including the time the patient has not been seen)
  6. An attached copy of the code summary reflecting continuous refractory asystole
- Asystole may be caused by many underlying factors. The following possible causes should be considered and, if verified, the appropriate treatment. Use the 5 **H**'s and 5 **T**'s acronym.

For Patients who meet “cessation of resuscitation efforts” in the field following a complete AHA/ACLS protocol driven treatment effort – **On-Line Medical Control** – shall be contacted via Radio/Phone and the situation discussed with the physician in charge – A time of death will be declared if the following criteria has been met:

1. Pulseless & Apneic and ASYSTOLE on Monitor
2. IV or IO access that is flowing well
3. Positive Airway Control – ET or King with a WORKING ETCO2 waveform less than 10mm/hg with effective CPR
4. CPR has been ongoing with no rhythm change from Asystole for 5 rounds (2 minutes/ each) of effective CPR
5. Patient is at home or in a controlled environment (not in the street).

Seneca County Emergency Medical Services  
Medical Protocols

<p><b>Hypovolemia</b></p> <p>a. Treat with volume infusion. b. Shock pants</p>	<p><b>Tablets – Drug Overdose</b></p> <p>a. 1mEq/kg Sodium Bicarb and medications per Overdose Protocol if tricyclic suspected</p>
<p><b>Hypoxia</b></p> <p>a. Treat with increase ventilation</p>	<p><b>Tamponade, cardiac</b></p> <p>a. No pre-hospital field treatment available (proceed with PEA protocol)</p>
<p><b>Hydrogen ion – Acidosis</b></p> <p>a. Increase ventilations b. 1mEq/kg Sodium Bicarb; may be repeated every 10 min. at ½ dose</p>	<p><b>Tension Pneumothorax</b></p> <p>a. See Needle Decompression Protocol</p>
<p><b>Hyperkalemia</b></p> <p>a. Unable to recognize in pre-hospital setting (proceed with PEA protocol)</p>	<p><b>Thrombosis, Coronary</b></p> <p>a. Unable to treat in a pre-hospital setting (proceed with PEA protocol)</p>
<p><b>Hypothermia</b></p> <p>a. See Hypothermia Protocol</p>	<p><b>Thrombosis, Pulmonary</b></p> <p>a. Unable to treat in pre-hospital setting (proceed with PEA protocol)</p>

**Treatment**

1. Safe scene, universal precautions
2. Establish unresponsiveness, pulselessness Use ResQPump & Autopulse ASAP
3. Apply monitor or EKG patches
4. Identify rhythm as asystole
5. Start or continue CPR if already initiated using ResQPump & Autopulse if available.
6. Monitor Lead II,III, & AVF.
7. Intubate, or insert King LTSD airway confirm bilateral breath sounds, secure tube. Reconfirmation is mandated every time the patient is moved. ETCO2 Monitoring is mandatory for any intubated patient
8. Establish IV, 1000ml Normal Saline using a large bore catheter and regular drip (10gtt) tubing in large peripheral vein or insert EZIO ASAP.
9. Check pulse, if none and still asystole, administer 1 mg 1:10,000 Epinephrine IV push followed by a 20ml saline flush. Raise extremity and circulate with CPR.
10. The EMT/Paramedic will contact **On-Line Medical Control** and notify of treatments done thus far. CPR should be maintained during this time. It should also be considered that while the EMT/Paramedic is giving the assessment to **On-Line Medical Control** that other responders should ready the patient for transport and into the vehicle if transport is going to take place. Utilize Autopulse ASAP

**ANTICIPATE THE FOLLOWING POTENTIAL ORDERS FROM ON-LINE MEDICAL CONTROL:**

1. Consider discontinuation of efforts. – will only occur if all of the above are completed.

## Seneca County Emergency Medical Services Medical Protocols

### **AUTOMATIC IMPLANTABLE CARDIOVERTER DEFIBRILLATION (AICD)**

There is a growing number of patients who have had an AICD implanted. The AICD device continuously monitors the patients' cardiac electrical activity. If the AICD detects V-fib or V-tach above its present rate, the device will charge and deliver an electrical shock to the heart.

- A. If the AICD patient becomes pulseless, it is safe and appropriate to start CPR. While doing CPR, if the AICD fires, a slight tingling may be felt by the responder doing compressions.
- B. Treat all rhythms per ACLS guidelines, however, if the patient requires defibrillation, maximum joules should be used at all times. Avoid placement of patches over the AICD. If external defibrillation is unsuccessful, change patch position to either an anterior posterior placement or reversing placement on the anterior chest.
- C. Consider Amiodarone 150mg IV infusion (mix 150mg Amiodarone into 50ml D5W infuse over 10 minutes). Contact Medical Control before beginning infusion

### **TRAUMATIC CARDIAC ARREST – \*DO NOT USE RESQPUMP or AUTOPULSE\***

This protocol applies to the patient who has sustained a cardiac arrest from significant trauma. The emphasis in this protocol will be to load and go! Trauma arrest patients are difficult to handle in the pre-hospital setting. Traumatic cardiac arrest will be transported A.S.A.P. to the closest hospital. Only for patients with long extrications, an air ambulance should be considered so a physician will be on the scene. The patient should have no delay in transport after extrication, except as needed for c-spine, uncontrollable hemorrhage, and airway control. Contact **On-Line Medical Control** early and notify of treatments done thus far so they can be ready to accept the patient.

### **Minimal Radio Report**

1. Contact with **On-Line Medical Control** is *required*.
2. Four elements are required when reporting a traumatic arrest patient. The acronym **TEAM should be used**.
  - T.** Trauma Protocol: The EMT/Paramedic must state that ‘the patient meets Seneca County Trauma Protocol Criteria’.
  - E.** ETA: Provide an ETA to the closest facility and identify that facility.
  - A.** Age: Age of patient
  - M.** Matter – What’s the matter: Briefly describe what injuries or physiologic changes are present that include patient or trauma protocol.

The EMT/Paramedic should utilize other responders for extrication and other tasks, i.e., setting up IVs in the ambulance during extrication. “Patients who survive pre-hospital cardiopulmonary arrest associated with trauma, generally have received early *pre-hospital* endotracheal intubation, and undergo prompt transport by highly skilled paramedics to a definitive care facility.”

### **Treatment**

1. Safe scene, universal precautions.
2. Manual c-spine control, (patient should be c-collared and backboarded with CID as soon as possible).

## Seneca County Emergency Medical Services Medical Protocols

3. Establish unresponsiveness, apnea, pulselessness. Do NOT USE RESQPUMP or AUTOPULSE in Traumatic Arrest
4. Attach cardiac monitor and monitor Lead II,III & AVF.
5. Treat rhythm per appropriate protocol. If V-fib/V-tach, defibrillate as soon as possible.
6. CPR – Move patient to vehicle, all other treatments performed enroute to hospital.
7. The patient should be intubated as soon as possible and breath sounds confirmed every time the patient is moved. Utilize King LTSD airway if unable to intubate  
Always Monitor ETCO2 with all intubated patients - MANDATORY
8. Enroute, establish two IVs of 1000ml Normal Saline using a large bore catheter and regular drip (10gtt) tubing in a large peripheral vein.
9. Contact On-Line Medical Control and notify of treatments done thus far. CPR should be maintained during this time.
10. Check pulse, if none, continue CPR and continue to treat rhythm according to appropriate protocol.

### **HYPOTHERMIC CARDIAC ARREST**

This protocol applies to patients with suspected hypothermia. These patients are **load and go** situations. It should be noted that cardiac medications should not be administered to hypothermic patients unless directed by **On-Line Medical Control**. Rewarming attempts should be done enroute to hospital.

### **Treatment**

1. Safe scene, universal precautions.
2. Remove patient from environment (maintain horizontal position and avoid rough movement and excess activity).
3. Remove all wet garments.
4. Protect against heat loss and wind chill (use blankets and insulating equipment).
5. Establish unresponsiveness, apnea, pulselessness.
6. Apply monitor and identify rhythm.
7. If no pulse and V-fib/V-tach, defibrillate at 150J if rhythm other than VFib/Tach go to #8.
8. Start CPR. – use ResQPump & switch to Autopulse ASAP
9. Intubate, confirm bilateral breath sounds, secure endotracheal tube.
10. Monitor ETCO2 on all patients with advanced airway in place.
11. Reconfirmation is mandated every time the patient is moved.
12. Continue cardiac monitor and monitor Lead II.
13. Establish IV 1000ml NS using a large bore catheter and regular drip (10gtt) tubing in a large peripheral vein enroute to hospital.
14. Continue warming efforts and contact **On-Line Medical Control** with assessment and for medication administration intervals.

# Seneca County Emergency Medical Services Medical Protocols

## **BRADYCARDIA PROTOCOL (Patient is not in cardiac arrest)**

This protocol applies to the following rhythms:

1. Sinus Bradycardia
2. First Degree AV Block
3. Relative Bradycardia
4. Absolute Bradycardia
5. Second Degree Mobitz I (Wenckebach)

Treatment may not be required if patient is not symptomatic. Your key clinical question should be 'Is the bradycardia making your patient ill or is an illness making your patient bradycardic?' If the patient displays any of the following symptoms and is symptomatic, treatment should be initiated. **It should also be noted that if the patient is severely symptomatic, go immediately to TCP (Transcutaneous Pacing).** Denervated transplanted hearts (patients who have had a heart transplant) will not respond to Atropine, and TCP is indicated as initial response to Bradycardia.

### Symptoms

1. Chest Pain
2. Shortness of Breath
3. Decreased Level of consciousness
4. Hypotension
5. PVC's

### **Treatment**

1. Safe scene, universal precautions
2. Reassure patient (may be helpful to put in position of comfort).
3. Assess airway, breathing, and circulation.
4. Start oxygen therapy as indicated. Monitor ETCO<sub>2</sub> with nasal Capnoline.
5. Attach cardiac monitor and monitor lead II.
6. Identify rhythm as Bradycardia
7. Establish an IV of 1000ml NS using regular (10gtt) tubing
8. Take vitals, pulse, BP, respirations, pulse oximeter.
9. If patient is severely symptomatic, go to #10. Administer Atropine 0.5mg IV push for mildly symptomatic bradycardia followed by a 20ml saline flush, use 1mg for severe symptoms *if TCP is not effective*. (repeat dose every 3-5 minutes to a total dose of 0.03mg/kg is given or a perfusing heart rate is achieved).
10. TCP (Transcutaneous Pacing). Explain procedure to patient, set rate at 80, start pacing at 20 milliamps until capture. If patient cannot tolerate pacer, weighs over 50 kg, and has a systolic BP > 110 mmHg, administer Morphine Sulfate 3mg slow IV push. If allergic to morphine, administer Fentanyl 50-100mcg slow IV push. If weight is less than 50kg, BP < 110 mmHg or a second analgesic dose is required, contact **On-Line Medical Control** for choice and dose of sedation medication.
11. Repeat set of vitals, if no change, administer an Epinephrine drip (1mg of 1:10,000 Epinephrine in 50ml of D5W) and start the drip of 2 ug/min (8 gtt/min). Titrate up to 10 ug/min(30gts/min) or until a perfusing heart rate and BP are achieved. A second IV line is desired, however, do not withhold medication if second IV is not obtainable.
12. Repeat set of vitals. The EMT/Paramedic should contact **On-Line Medical Control** and notify of treatments done thus far. It should also be considered that while the EMT/Paramedic is giving the assessment to **On-Line Medical Control** that other responders should ready the patient for transport and into the vehicle.



## Seneca County Emergency Medical Services Medical Protocols

### **THIRD DEGREE HEART BLOCK / TYPE II SECOND-DEGREE AV BLOCK (Patient is not in cardiac arrest)**

Treatment may not be required if the patient is not asymptomatic. If patient displays any of the following symptoms and is symptomatic, treatment should be initiated. Moving as quickly as possible to TCP.

#### **Symptoms**

1. Chest Pain
2. Shortness of Breath
3. Decreased Level of Consciousness
4. Hypotension
5. PVC's

#### **Treatment**

1. Safe scene, universal precautions
2. Reassure patient (may be helpful to put in position of comfort).
3. Assess airway, breathing, and circulation.
4. Start oxygen therapy as indicated. Monitor ETCO<sub>2</sub> with Nasal Capnoline
5. Attach cardiac monitor and monitor lead II.
6. Identify rhythm.
7. Establish an IV of 1000ml NS using a regular (10gtt) tubing.
8. Take vitals, pulse, BP, respirations, pulse oximeter.
9. TCP (Transcutaneous Pacing). Explain procedure to patient, set rate at 80, start pacing at 20 milliamps, increase in increments of 5 milliamps until capture. If patient cannot tolerate pacer, weighs over 50kg, and has a systolic BP > 110 mmHg, administer Morphine Sulfate 3mg slow IV push. If weight is less than 50kg, BP < 110 mmHg, or a second analgesic dose is required, contact **On-Line Medical Control** for choice and dose of sedation medication.
10. Repeat set of vitals. If heart rate has not increased enough to provide adequate perfusion, administer Epinephrine drip at 2ug/min and titrate to obtain a perfusing heart rate or a maximum of 20 ug/min.
11. Repeat set of vitals, if no change, administer an Epinephrine drip at 2 ug/min. Mix 1mg 1:10,000 Epinephrine in 50ml D5W (this gives you a concentration of 10ug per ml) and titrate to a maximum of 10ug/minute or until a perfusing heart rate is achieved. Start at 4gtt a minute to achieve low-end dose of 2ug/min. A second IV line is desired, however, do not delay administration of medication if second IV is unobtainable.
12. Repeat set of vitals. The EMT/Paramedic should contact **On-Line Medical Control** and notify of treatments done thus far. It should also be considered that while the EMT/Paramedic is giving the assessment to **On-Line Medical Control** that other responders should ready the patient for transport and into the vehicle.

### **UNSTABLE TACHYCARDIA PROTOCOL (not in cardiac arrest)**

This protocol applies to the following rhythms with rates >150 and unstable signs and symptoms.

1. Atrial Fibrillation flutter.
2. Wide complex tachycardia of uncertain type.
3. PSVT (Paroxysmal Supraventricular Tachycardia).
4. VT (Ventricular Tachycardia).

## Seneca County Emergency Medical Services Medical Protocols

### 5. Polymorphic Ventricular Tachycardia.

Signs and Symptoms of the unstable patient are as follows:

1. Chest Pain
2. Shortness of Breath
3. Decreased Level of Consciousness
4. Hypotension (systolic BP < 100 mmHg with other indicators of inadequate perfusion)
5. Pulmonary Congestion from heart failure
6. Evidence of Acute Myocardial Infarction

### Treatment

1. Safe scene, universal precautions.
2. Reassure patient (may be helpful to put in position of comfort).
3. Assess airway, breathing, and circulation. (Take suction and intubation precautions).
4. Start oxygen therapy as indicated. Monitor ET<sub>CO</sub>2 with Nasal Capnoline
5. Attach cardiac monitor and monitor lead II.
6. Identify rhythm as tachycardia.
7. Establish an IV of 1000ml NS using a regular (10gtt) tubing.
8. Take vitals, pulse, BP, respirations, pulse oximeter.
9. If patient weight is over 50kg, and has a systolic BP > 110 mmHg, administer Morphine Sulfate 3mg slow IV push. Contact **On-Line Medical Control** for choice and dose of sedation medication (versed 1-2mg IV push)
10. Synchronized Cardioversion:
  - a. For VT: biphasic 70j, 120j, 150j, and 170j per Borderline V-Tach Protocol beginning at #10.
  - b. For Wide Complex Tachycardia: 70J, if no change 120J, if no change 150J, if no change 170J, if no change, treat per Wide Complex Tachycardia Protocol beginning at #10. (For Polymorphic VT [irregular form and rate] treat as V-fib and defibrillate at 150J, then go to then go to Wide Complex Tachycardia of Uncertain Type, Stable or Borderline beginning at #10.
  - c. For any PSVT: 50J, if no change 120J, if no change 200J, if no change treat per borderline PSVT Protocol beginning at #11. If IV access is easily obtained – attempt Adenosine **FIRST**
  - d. For Atrial Fibrillation / Flutter:50J, if no change, 70J, if no change 120J, if no change 150J, if no change 200J, if no change, treat per Borderline Atrial Fibrillation Protocol beginning at 10.
11. Repeat vitals. The EMT/Paramedic should contact **On-Line Medical Control** and notify of treatments done thus far. It should also be considered that while the EMT/Paramedic is giving the assessment to **On-Line Medical Control** that other responders should ready the patient for transport and into the vehicle.
12. For Patients with verified AFib/Aflutter that have a sustained Rapid Ventricular Rate (RVR) above 150bpm – the Paramedic should call for an order of Cardizem(Diltiazem) – given IV bolus & followed with a drip – this medication is Weight Based Dosing – see Addendum protocol for guidelines.

Seneca County Emergency Medical Services  
Medical Protocols

**NARROW COMPLEX TACHYCARDIA AND PAROXYSMAL  
SUPRAVENTRICULAR TACHYCARDIA (PSVT) Stable or Borderline**

This protocol applies to the patient who is slightly asymptomatic or whose condition has deteriorated since initial assessment.

**Treatment**

1. Safe scene, universal precautions.
2. Reassure patient (may be helpful to put in position of comfort).
3. Assess airway, breathing, and circulation. (Take suction and intubation precautions).
4. Start oxygen therapy as indicated. Monitor ETCO<sub>2</sub> with nasal capnoline
5. Attach cardiac monitor and monitor lead II - Transmit 12 lead for expert consultation.
6. Identify rhythm as tachycardia.
7. Establish an IV of 1000ml NS using a regular (10gtt) tubing.
8. Take vitals, pulse, BP, respirations, pulse oximeter.
9. Institute vagal maneuvers: i.e.
  - a. Bearing down
  - b. Coughing
  - c. Breath Holding (if possible)
  - d. Carotid sinus pressure is contraindicated
  - f. Avoid ice in patients with ischemic heart disease
10. Repeat set of vitals, if no change, administer Adenocard 6mg **rapid** IV push over 1-3 seconds. Adenocard requires a saline flush **immediately** after injection into IV site. Squeeze IV bag to accomplish a 20ml saline flush. (Adenocard must reach the heart in 5 seconds once it's intravenous)
11. Repeat set of vitals, if no change, administer Adenocard 12 mg **rapid** IV push over 1-3 seconds with an **immediate** 20ml saline flush (squeeze bag). This 12mg dose may be repeated one time in 1-2 minutes.
12. Consider Diltiazem (Cardizem) weight based push x 2 followed by a weight based infusion – Contact Medical Control for Order – see addendum for dosing  
\*It is possible that the med control physician may order Amiodarone\*
13. Repeat set of vitals, if no change, and if QRS is narrow, administer Amiodarone over 10 minutes. This is accomplished by putting 150mg in a 50ml bag of D5W with a regular 10gtt administration set and set your drip rate at 50gtt per minute. Dose may be repeated in 1-15 minutes if indicated. If QRS is wide, go to V-tach Protocol.
14. Repeat set of vitals. The EMT/Paramedic should contact **On-Line Medical Control** and notify of treatments done thus far. It should also be considered that while the EMT/Paramedic is giving the assessment to **On-Line Medical Control** that other responders should ready the patient for transport and into the vehicle if transport is going to take place.

**ANTICIPATE THE FOLLOWING POTENTIAL  
ORDERS FROM ON-LINE MEDICAL CONTROL**

- H. Repeat set of vitals, if no change and patient weight is greater than 50kg and BP >110, administer Morphine Sulfate 3mg slow IV push, or Fentanyl 50mcg
- I. Contact medical control for sedation with Versed 1-2mg.
- II. Repeat set of vitals, if no change, synchronized cardioversion at 50J, if no change 100J, if no change 150 J, if no change 200J, if no change 200J.

Seneca County Emergency Medical Services  
Medical Protocols

**MONOMORPHIC OR POLYMORPHIC VENTRICULAR TACHYCARDIA (Stable or Borderline)**

This protocol applies to the patient who has a pulse and heart rate <150 and is symptomatic or whose condition has deteriorated since initial assessment.

**Treatment**

1. Safe scene, universal precautions.
2. Reassure patient (may be helpful to put in position of comfort).
3. Assess airway, breathing, and circulation.
4. Start oxygen therapy as indicated. Monitor ETCO<sub>2</sub> with nasal capnoline
5. Attach cardiac monitor and monitor lead II. Transmit 12 Lead!
6. Identify rhythm as Ventricular Tachycardia.
7. Establish an IV of 1000ml NS using a regular (10gtt) tubing.
8. Take vitals, pulse, BP, respirations, pulse oximeter.
9. Repeat set of vitals, if no change, *If rhythm is regular and monomorphic, consider Adenosine 6 mg followed with a 20 cc Saline flush, followed 1-2 minutes later by 12 mg Adenosine with 20 cc Saline Flush. Rapid push and Rapid Flush*

**OR**

- Consult with ED Physician – 12 Lead Transmission – Discuss Amiodarone vs. Cardioversion  
Administer Amiodarone 150mg over 10 minutes. This is accomplished by putting 150mg in a 50ml bag of D5W with a regular 10gtt administration set and set your drip rate at 50gtt per minute. Dose may be repeated in 1-15 minutes if indicated.
10. Repeat set of vitals, if no change, consider repeating Amiodarone 150mg over 10 minutes after contacting medical control.
  11. The EMT/Paramedic should contact **On-Line Medical Control** and notify of treatments done thus far. It should also be considered that while the EMT/Paramedic is giving the assessment to **On-Line Medical Control** that other responders should ready the patient for transport and into the vehicle if transport is going to take place.

**ANTICIPATE THE FOLLOWING POTENTIAL  
ORDERS FROM ON-LINE MEDICAL CONTROL**

- I. Repeat set of vitals. If no change and patient weight is greater than 50kg and BP>110, administer Morphine Sulfate 3mg slow IV push or Fentanyl 50-100mcg and Versed 1-2mg IV push may also be considered for sedation and pain management .
- II. Synchronized cardioversion at 100J, if no change 150J, if no change 200 J, if no change 200J.  
All energy levels are for Zoll X-series Monitor/Defibrillators

## Seneca County Emergency Medical Services Medical Protocols

### **WIDE COMPLEX TACHYCARDIA OF UNCERTAIN TYPE (stable or borderline)**

This protocol belongs to the patient who has a pulse and heart rate of <150 and is symptomatic or whose condition has deteriorated since initial assessment.

#### **Treatment**

1. Safe scene, universal precautions.
2. Reassure patient (may be helpful to put in position of comfort)
3. Assess airway, breathing, and circulation.
4. Start oxygen therapy as indicated to maintain 95% spO<sub>2</sub> & Monitor ETCO<sub>2</sub>
5. Attach cardiac monitor and monitor Lead II.
6. Identify rhythm as Ventricular Tachycardia
7. Establish an IV of NS, 1000ml using a regular (10gtt) tubing.
8. Take vitals, pulse, BP, respirations, pulse oximeter.
9. Repeat set of vitals – if no change, administer Lidocaine 1mg/kg IV push (to be repeated in 5-10 minutes) *.If rhythm is regular and monomorphic, consider Adenosine 6 mg Fast IVP followed by 20 cc of saline flush. May be followed with 12 mg Adenosine Fast IVP with 20 cc flush (1-2minutes after initial dose).*

#### **OR**

Administer Amiodarone 150mg over 10 min. This is accomplished by putting 150mg in a 50ml bag of D5W with a regular 10gtt administration set and set your drip rate at 50gtt per minute. Dose may be repeated in 15 minutes if indicated.

10. Repeat set of vitals. The EMT/Paramedic should contact **On-Line Medical Control** and notify of treatments done thus far. It should also be considered that while the EMT/Paramedic is giving the assessment to **On-Line Medical Control** that other responders should ready the patient for transport and into the vehicle if transport is going to take place.

#### **ANTICIPATE THE FOLLOWING POTENTIAL ORDERS FROM ON-LINE MEDICAL CONTROL**

1. Repeat set of vitals, if no change, and patient weight is greater than 50kg and BP >110 mmHg, administer Morphine Sulfate 3mg slow IV push. OR Fentanyl 50-100mcg and Versed 1-2mg IV push may also be considered for sedation and pain management.
2. Synchronized cardioversion at 100J, if no change, 150J, if no change, 200J, if no change, 200J.  
All energy levels are for Phillips MRx Monitor/Defibrillators

### **ATRIAL FIBRILLATION / FLUTTER TACHYCARDIA (Borderline)**

This protocol applies to the patient who is mildly symptomatic or whose condition has deteriorated since initial assessment. Keep in mind that Atrial Fibrillation is a normal chronic condition for many of our geriatric patients, and these patients are not treated under this protocol unless symptomatic.

#### **Treatment**

1. Safe scene, universal precautions.
2. Reassure patient (may be helpful to put in position of comfort)
3. Assess airway, breathing, and circulation.

## Seneca County Emergency Medical Services Medical Protocols

4. Start oxygen therapy to maintain spO<sub>2</sub> at 95% and Monitor ETCO<sub>2</sub>
  5. Attach cardiac monitor and monitor Lead II.
  6. Identify rhythm as Atrial Fib/Flutter Tachycardia
  7. Establish an IV of NS, 1000ml using a regular (10gtt) tubing.
  8. Take vitals, pulse, BP, respirations, pulse oximeter.
  9. Repeat set of vitals. If no change, Cardizem (Diltiazem) – Weight based – see addendum 0.25mg/kg IVP slowly over 1-2 minutes followed by 0.35mg/kg after 15 minutes <Drip is mixed 1mg/ml and run to maintain therapeutic effect>
- \*Goal is to reduce heartrate to less than 120bpm and maintain a blood pressure above 100 systolic\*
10. Repeat set of vitals. The EMT/Paramedic should contact **On-Line Medical Control** and notify of treatments done thus far. It should also be considered that while the EMT/Paramedic is giving the assessment to **On-Line Medical Control** that other responders should ready the patient for transport and into the vehicle if transport is going to take place.

### ANTICIPATE THE FOLLOWING ORDERS FROM **ON-LINE MEDICAL CONTROL**

- I. Repeat set of vitals, if no change, and patient weight is greater than 50kg and BP >110 mmHg, administer Morphine Sulfate 3mg slow IV push. . Fentanyl 50-100mcg and Versed 1-2mg IV push may also be considered for sedation and pain management.
- II. Repeat set of vitals. If no change, synchronized cardioversion at 50J, if no change, 100J, if no change 150J, if no change, 200J. All energy levels are for Zoll X Series Biphasic monitor/defibrillators.

### **CARDIOGENIC SHOCK**

Hypotension and shock may be caused by volume, pump, or rate problems. Rate problems should be treated according to proper protocol, i.e. Bradycardia, Tachycardia.

#### **Treatment**

- A. Blood Pressure <70 and patient Symptomatic.
  1. Safe scene, universal precautions.
  2. Reassure patient (may be helpful to put in position of comfort)
  3. Assess airway, breathing, and circulation. (Take suction and intubation precautions)
  4. Start oxygen therapy to maintain spO<sub>2</sub> at 95% and Monitor ETCO<sub>2</sub>
  5. Attach cardiac monitor and monitor Lead II.
  6. Identify rhythm and treat according to appropriate protocol.
  7. Establish an IV of NS, 1000ml using a regular (10gtt) tubing.
  8. Take vitals, pulse, BP, respirations, pulse oximeter.
  9. If BP <100 systolic, administer a fluid bolus of 250-500ml. Continue Monitoring BP.  
BP <100 mmHg
  10. Repeat set of vitals, administer Epinephrine drip starting at 2ug/min to target BP. Target BP is 90-100 systolic with signs and symptoms of adequate perfusion.
  11. Repeat set of vitals. The EMT/Paramedic should contact **On-Line Medical Control** and notify of treatments done thus far. It should also be considered that while the EMT/Paramedic is giving the assessment to **On-Line Medical Control** that other responders should ready the patient for transport and into the vehicle if transport is going to take place.

# Seneca County Emergency Medical Services Medical Protocols

## ***ACUTE CORONARY SYNDROME (With or Without Chest Pain)***

### I Acute Coronary Syndromes (ACS)

The Acute Coronary Syndromes are not only related, they represent a continuum of a disease process. Emergency pre-hospital medical care places patients into one of three coronary syndromes. Each syndrome is associated with specific strategies in prognosis and management. The three syndromes are:

1. Unstable Angina
2. Non Q-wave Myocardial Infarction (NSTEMI)
3. Q-wave Myocardial Infarction (STEMI)

Distinguishing among coronary syndromes requires integration of clinical information and the evolution over time of the 12-lead EKG.

### II Clinical Presentation

Acute Coronary Syndromes may present with many different symptoms and they often pose a dilemma for pre-hospital caregivers. Pre-hospital presentations can vary greatly because of individual differences ranging from “classical angina” to silent (no pain) ischemia. It is the goal of this protocol to initiate pre-hospital treatment of all clinically evident Acute Coronary Sinus Syndromes. The major clinical descriptors used to describe chest pain are:

1. Classic Angina:  
Described as a dull substernal discomfort, a pressure or tightness in the chest, it may radiate to the left arm or into the neck. Classic angina may or may not be associated with shortness of breath, palpitations, sweating, nausea, or vomiting.
2. Anginal Equivalent:  
Presents with no specific chest pain or discomfort, however, the patient presents with sudden or decompensated ventricular failure (Dyspnea) or ventricular arrhythmias (palpitations, pre-syncope, syncope).
3. Atypical Chest Pain:  
Presents with a discomfort or pain that is localized to the precordial area, but has musculoskeletal, postural, or pleuritic features.

### III History – Risk Factors

Many factors may put patients into a high-risk group. EMT’s/Paramedics need to obtain a reliable history and relay this information to **On-Line Medical Control** and document their findings. Five of the most important risk factors are listed below and are to be determined from coherent patients.

1. Diabetes Mellitus
2. Smokers
3. Hypertension
4. Prior Cardiac History
5. Family Cardiac History

### IV Specific Considerations

In the protocol, specific treatments are listed prior to contact with **On-Line Medical Control**. However, **On-Line Medical Control** may be contacted earlier if so desired, but *must* be contacted no later than indicated. It is also protocol for the Paramedic to continue full the treatment course with nitroglycerin and narcotic analgesia as indicated: regardless when **On-Line Medical Control** occurs, unless **On-Line Medical Control** specifically orders standing orders to be suspended, or further treatment is contraindicated because of changes in patient’s condition, i.e., hypotension secondary to nitroglycerin.

## Seneca County Emergency Medical Services Medical Protocols

In the protocol when Morphine is indicated, it may be administered to patients without pain if the patient displays anxiety thought to be associated with ischemia.

### V Documentation

Documentation is crucial. **It is mandated by the Seneca County EMS Medical Director**, the following items be documented on your run form.

1. Times of all vital signs between the medication administrations.
2. What the patient graded the pain 0-10, 10 being the worst.

### VI Treatment – Acute Coronary Syndromes (with or without pain)

This protocol applies to patients suspected of suffering one of three (3) acute coronary syndromes. The ACS patient requires early recognition and intervention. Scene times should be less than 15 minutes when possible. Patients exhibiting evidence of one of the Acute Coronary Syndromes should be transported with the same urgency as Trauma Protocol patients.

1. Safe scene, universal precautions.
2. Reassure patient (may be helpful to put in position of comfort)
3. Assess airway, breathing, and circulation.
4. Attach pulse oximeter and ETCO<sub>2</sub> nasal capnoline
5. Start oxygen therapy. If no signs of hypoxia and observations of normal respiratory pattern (pulse ox of SpO<sub>2</sub> >95%), nasal cannula at 4-6 lpm. In presence of hypoxia, increased respiratory difficulty, or SpO<sub>2</sub> not available, non-rebreather mask at 10-15 lpm.
6. Vitals, grade pain, obtain risk factors.
7. Administer two (2) 81mg chewable aspirin – if no allergy
8. Attach cardiac monitor and monitor Lead II (treat life-threatening arrhythmias per protocol). Identify rhythm and treat according to appropriate protocol.

\*Transmit 12 Lead ECG to Receiving Hospital Immediately\*

\*If STEMI is Suspected – Place Combi-Patches at this time\*

9. Start an IV of Normal Saline, 1000ml bag (consider second IV enroute to hospital). If on erectile dysfunction medication, contact **On-Line Medical Control** before nitroglycerin administration.
10. Treat according to signs and symptoms.
  - A. For the patient with chest pain of cardiac origin:
    1. Ensure systolic blood pressure is >100 mmHg.
    2. **Nitro** – administer one (1) sublingual nitroglycerin (0.4mg dose)
    3. Administration of subsequent doses of nitroglycerin (q5x2) as dependent upon improvements in chest pain.
    4. A systolic BP must be obtained between each dose of nitroglycerin and prior to any Morphine (MS) administration.
    5. If the patient is not pain free after the second 0.4mg of nitro:
      - a. and systolic BP is >110 mmHg
      - b. and patient weight >50kg
      - c. administer 3mg of Morphine, IVP, IM is *not* to be used for cardiac patients.
    6. A second 3mg Morphine dose may be administered after the third dose of 0.4mg nitro if:
      - a. the patient is not pain free, and
      - b. the systolic BP is >110 mmHg
    7. All subsequent doses of Morphine require:
      - a. an On-Line Medical Control order



Seneca County Emergency Medical Services  
Medical Protocols

**B. For the patient who is not complaining of classic angina pain and/or:**

- 1. is complaining of an anginal equivalent**
- 2. is complaining of atypical chest pain**
- 3. is experiencing anxiety associated with ischemia**

**Treat as in 10A (above) starting at step1.**

**11. Repeat vitals.**

- 12 Some patients will respond well to nitro alone, others will continue to experience discomfort and will benefit from analgesia. For patients who respond poorly to Nitroglycerin alone, Morphine may be added to the treatment: Administer 3mg Morphine (slow IV push) if patient weight >50kg and systolic BP >110 mmHg. If weight <50kg or systolic BP <110 mmHg, contact **On-Line Medical Control**. Dose may be repeated in five (5) minutes if above vitals parameters are maintained.
- 13 Repeat set of vitals. The EMT/Paramedic should contact **On-Line Medical Control** and notify of treatments done thus far. It should also be considered that while the EMT/Paramedic is giving the assessment to **On-Line Medical Control** that other responders should ready the patient for transport and into the vehicle if transport is going to take place.
14. Continued titration of patient discomfort utilizing Nitroglycerin and Morphine if vitals are stable.
15. Repeat vitals.
16. Consider requesting a dose of Zofran 4mg for nausea associated with Morphine

\*Vitals will be taken between all nitro and morphine doses.

**12 Lead ECG**

When the following indications and conditions exist a Paramedic, or an *EMT/AEMT can transmit a electronic transmission without a Paramedic present*, may attach the Zoll X-Series pre-cordial leads and acquire a 12 - lead ECG tracing (if available) and acquire the ECG according to the following protocol after following the Acute Coronary Syndrome Protocol. **\*\*ENSURE THAT WIFI JETPACK IS TURNED ON\*\***

**Indications:**

1. An alert patient experiencing chest pain or other symptoms consistent with caused by cardiac ischemia OR experiencing his/her typical angina/MI pain.
2. A patient who's 3 or 5 lead ECG shows a rhythm which is difficult to interpret, in which a 12 lead ECG may assist in that interpretation.

**Conditions:**

Patient is  $\geq$  40 kg.

**Contraindications:**

Seneca County Emergency Medical Services  
Medical Protocols

Acquisition of a 12- lead ECG tracing will not be performed where/when:

1. The patient's privacy and dignity cannot be protected (e.g.: Public Place).
2. Acquiring the 12-lead ECG will increase scene or transport time.

**Procedure:**

1. Administer Oxygen and document vital signs per protocol
2. Initiate continuous cardiac monitoring, ETCO<sub>2</sub> and pulse oximetry.
3. Initiate treatment as per the Acute Coronary Syndrome Protocol or other protocols, as applicable.
4. Place patient in a supine or semi-sitting position.
5. Bare the patients chest enough to acquire a 12-lead EKG. Take all steps necessary and possible to protect the patient's dignity and privacy.
6. Prep skin with alcohol or other wipe. Remove excess chest hair where needed for good contact.
7. Attach the four limb leads to the patient.
8. Attach the chest leads in the following correct anatomical position:

**V1**- fourth intercostal space to the right of the sternum.

**V2** - fourth intercostal space to the left of the sternum

**V3** - directly between leads V2 and V3

**V4** - fifth intercostal space at left midclavicular line

**V5** - level with lead V4 at left anterior axillary line

**V6** - level with V5 at left midaxillary line.

9. Reduce causes of artifact. Stop patient movement. If en-route to hospital wait for a traffic lights or other stop. Acquire ECG Print 2<sup>nd</sup>. copy of ECG if possible.

10. Pre-alert receiving facility of patient with possible AMI if ST elevation is present in two anatomically contiguous leads.

11. The ECG may be repeated en-route if the patient's condition deteriorates and it does not delay any other treatment. A modified 12 - lead ECG may be done if indicated and it does not delay any treatment or transport. The modified 12-lead ECG involves moving V4-V6 to the positions of V4R, V8 and V9 respectively.

**V4** becomes: **V4R** - 5<sup>th</sup> intercostal space at right midclavicular line (*same as V4 but on right side of chest*)

**V5** becomes: **V8** - level with V6 at left midscapular line.

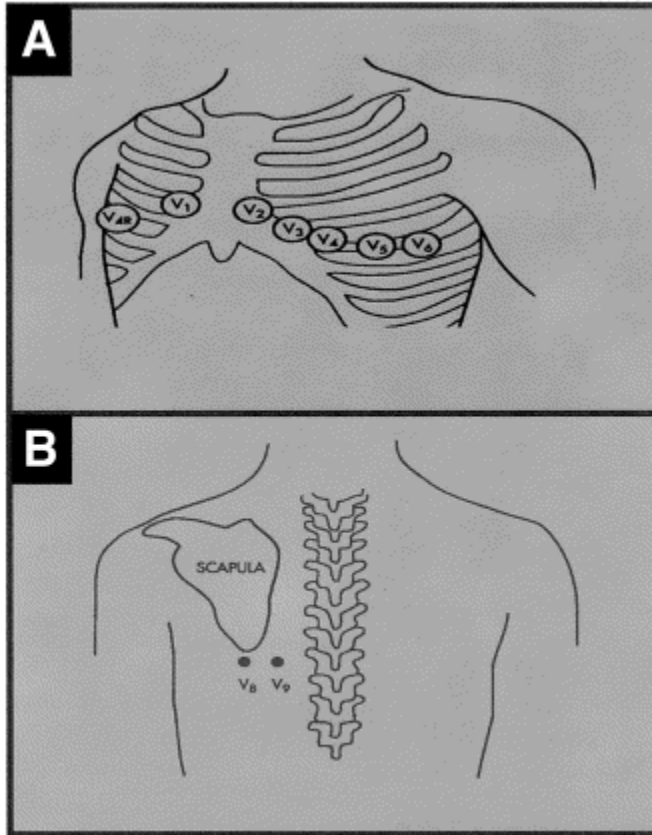
**V6** becomes **V9** - level with V6 at left paravertebral.

11. Provide the receiving facility with a copy of the 12-lead ECG. Attach a copy to the Hospital copy of the PCR, and document interpretation on the PCR.  
This will automatically happen upon transmission

## Seneca County Emergency Medical Services Medical Protocols

### Notes:

1. Acquiring a 12-lead tracing should not normally prolong scene time or transport.
2. Procedure should be performed concurrent with other assessment and care, as per the Acute Coronary Syndrome Protocol, or acquired while en-route to hospital.
3. A modified ECG is indicated when there is ST elevation in the inferior leads (II, III, aVF) and/or ST depression in the septal leads (V1/V2). It should only be done as indicated in the procedure #11 above.
4. If STEMI is suspected – Apply Combination Pace/Defib pads immediately
5. The following diagram depicts proper lead placement for the pre-cordial leads for traditional 12 lead placement as well as the modified placement.



RESPIRATORY  
EMERGENCIES

Seneca County Emergency Medical Services  
Medical Protocols

**ANAPHYLAXIS (SEVERE SYSTEMIC ALLERGIC REACTION)**

I. SPECIFIC INFORMATION NEEDED

- A. History
  1. Exposure to allergens
  2. Prior reactions
  3. Onset and progression of present state
  4. Exposure to environment
  5. Toxic exposure
- B. Medical History
  1. Medications and history
  2. Diseases
  3. Allergies
  4. Medic alert tag
  5. Itching
  6. Wheezing
  7. Respiratory distress
  8. Nausea
  9. Weakness
  10. Abdominal cramps
  11. Chest tightness
  12. Swelling
  13. Hives

II. OBJECTIVE FINDINGS

- A. Mental status: alert, agitated, confused,
- B. Respiratory effort: lower airway sounds, chest wall movement, use of accessory muscles, retractions (depressions between ribs on inspiration), nasal flaring, substernal reactions
- C. Audible breathing noise: wheezes, cough
- D. Lungs by auscultation: wheezes, rales, crackles (wet sounds)
- E. Other findings: drooling, skin color

III. SPECIFIC CONSIDERATIONS

- A. Patients with allergic reactions can deteriorate quickly. Airway is a prime concern.
- B. Anxiety, tremor, palpitations, tachycardia, and headache are not uncommon with the administration of Epinephrine. Symptoms with the use of Epinephrine may be particularly severe when given IV and may induce vomiting or cause V-fib. IV Epinephrine should be a last resort. The two forms of Epinephrine carried by the squads are:
  1. 1ml ampule of 1:1000
  2. 10ml prefilled-injectable 1:10,000

## Seneca County Emergency Medical Services Medical Protocols

### All Epinephrine for IV administration must be the 1:10,000 dilution.

- C. Before treating anaphylaxis, be sure your patient has objective signs as well as subjective symptoms. Hyperventilators will occasionally think they are having an allergic reaction. Epinephrine will aggravate this situation and add to their anxiety.
- D. Lethal edema may be localized to the tongue, uvula or other upper airway structures. Examine closely and be prepared to intubate early before swelling occurs. Nasal tracheal may be preferred.
- E. If anaphylaxis has been precipitated by either an injection of medication or insect toxin (stingers should be removed), half of the indicated Epinephrine dose should be given subcutaneous by the injection site, the rest in another extremity. Do not let treatment of the injection site distract you from IV treatment of life threatening anaphylaxis. Do not inject epinephrine into the end of an organ (tip of nose, digit, penis) or face.

### TREATMENT

1. Safe scene, infection control, gloves, mask, and eye protection.
2. Put patient in position of comfort.
3. Assess airway, breathing, and circulation.
4. Start oxygen therapy as indicated (intubate if indicated).
5. Take vitals: pulse, respirations, BP, EKG, lung sounds.
6. Attach pulse oximeter and monitor ETCO<sub>2</sub> via nasal capnoline
7. If no change, and in the presence of respiratory distress...
8. Administer 1 unit dose of Albuterol aerosol treatment, if no change or condition worsens,
9. Administer **0.3mg 1:1000 Epinephrine subcutaneous**. (If unconscious due to shock, administer 0.3mg 1:10,000 Epinephrine IV as a last resort. CAUTION: it may cause vomiting or V-fib.) Epinephrine in patients over 55 may be relatively contraindicated due to cardiac hx or CVA
10. Establish IV 1000ml NS using regular drip tubing.
11. Repeat set of vitals.
12. If patient displays symptoms of shock, administer fluid bolus of 250ml NS IV - wide open rate
13. If no change, administer 25-50mg Benadryl IM/IV, IV preferred.
14. Administer Solu-Medrol 125mg slow IV push
15. Repeat set of vitals. The EMT/Paramedic should contact on-line **Medical Control** and notify of treatment given thus far. It should also be considered that while assessment is being given to Medical Control, the other responders should ready patient for transport and move patient to the vehicle.

### ANTICIPATE THE FOLLOWING POTENTIAL ORDERS FROM ON-LINE MEDICAL CONTROL

1. Continuous Administration of Albuterol aerosol treatments.

Seneca County Emergency Medical Services  
Medical Protocols

**ASTHMA**

**I. SPECIFIC INFORMATION NEEDED**

- A. History
  - 1. Sudden onset
  - 2. Gradual onset
  - 3. Duration
- B. Medical History
  - 1. Cough
  - 2. Lower respiratory sounds
  - 3. Current medications
  - 4. Allergies
  - 5. Medic alert tag
  - 6. Diseases

**II. OBJECTIVE FINDINGS**

- A. Mental status: alert, agitated, confused.
- B. Respiratory effort: lower airway sounds, chest wall movement, use of accessory muscles, retractions (depressions between ribs on inspiration), nasal flaring substernal retractions.
- C. Audible breathing noises: wheezes, cough.
- D. Lungs by auscultation: wheezes, rales, crackles (wet sounds).
- E. Other findings: drooling, skin color.

**III. SPECIFIC CONSIDERATIONS**

- A. If there is no history of Asthma, consider other processes that produce wheezing, such as bronchitis, foreign body aspiration, pneumonia, pulmonary edema and some insecticide poisonings. A known asthmatic with severe bronchospasm may have little wheezing because of poor air movement through the small airways. Forced exhalation or coughing will often accentuate the wheezing and careful auscultation of peripheral lung fields will confirm the absence of normal breath sounds.  
  
Life threatening complications of Asthma include pneumothorax, cardiac dysrhythmia, bronchial plugging, and respiratory failure.
- B. Lungs that are hyperinflated because of air trapping increase the risk of pneumothorax and pneumomediastinum. Suspect those diagnosis in patients with decreased unilateral aeration, in a patient with subcutaneous emphysema or in a patient who acutely decompensates (in the last situation, suspect either a tension pneumothorax or pneumopericardium).

**IV. TREATMENT**

- 1. Safe scene, infection control, gloves, mask, and eye protection.
- 2. Put patient in position of comfort.
- 3. Assess airway, breathing, and circulation.
- 4. Start oxygen therapy as indicated – Consider CPAP if patient tolerates and work of breathing is elevated. – Consider Intubation if necessary

Seneca County Emergency Medical Services  
Medical Protocols

5. Take vitals: pulse, respirations, BP, EKG, lung sounds.
6. Attach pulse oximeter and monitor ETCO<sub>2</sub> using nasal capnoline
7. If no change, administer 1 unit dose Albuterol Aerosol treatment, reassess.
8. If patient is stable with limited improvement from first treatment, repeat a second unit dose. All subsequent doses are only administered after contact with on-line **Medical Control**.
9. Establish IV of 0.9% Normal Saline using regular drip tubing.
10. Administer Magnesium Sulfate 1gram IV Bolus – 1gram/50ml D5W run to gravity over 10 minutes while other treatments are ongoing.
11. Administer Solu-Medrol 125mg IV push over 1-2 minutes after Mag Sulfate is complete – DO NOT MIX drugs or push drugs through running infusions.
11. Repeat set of vitals. The EMT/Paramedic should contact on-line **Medical Control** and notify of treatment given thus far. It should also be considered that while assessment is being given to Medical Control, the other responders should ready patient for transport and move patient to the vehicle.

ANTICIPATE THE FOLLOWING POTENTIAL ORDERS FROM ON-LINE  
**MEDICAL CONTROL**

1. Administer 0.3mg 1:1000 Epinephrine subcutaneous. Epinephrine in patients over 55 may be relatively contraindicated due to possible cardiac side effects.

**COPD – CHRONIC OBSTRUCTIVE PULMONARY DISEASE**

**I. SPECIFIC INFORMATION NEEDED**

- A. History
  1. Sudden onset of respiratory distress.
  2. Gradual onset of respiratory distress.
  3. Duration.
- B. Medical History
  1. Cough
  2. Respiratory sounds
  3. Current medications (including home oxygen)
  4. Allergies
  5. Medic alert tag
  6. Diseases
  7. Emphysema, COPD, Asthma, CHF
  8. Smoker (year pack smoker – see Specific Considerations, C.)

**II. OBJECTIVE FINDINGS**

- A. Mental status: alert, agitated, confused.
- B. Respiratory effort: lower airway sounds, chest wall movement, use of accessory muscles, retractions (depressions between ribs on inspiration), nasal flaring substernal retractions.
- C. Audible breathing noise: Wheezes, cough.
- D. Lungs by auscultation: wheezes, diminished breath sounds.



Seneca County Emergency Medical Services  
Medical Protocols

E. Other findings: skin color, temperature, and barrel chest.

III. SPECIFIC CONSIDERATIONS

- A. Chronic Obstructive Pulmonary Disease is a disease characterized by abnormal enlargement of the air spaces beyond the terminal bronchioles and destruction of the alveoli.
- B. Life threatening complications of COPD may include Pulmonary Hypertension, which may lead to Cor Pulmonale (Right Heart Failure)
- C. Calculation should be used to determine a patient's smoking habits to "pack years smoker". The calculation is as follows: packs per day multiplied by years smoked equals "pack year smoker". Example 2 packs per day multiplied by years smoking (10) equals 20-pack year smoker.  
#\_\_\_packs per day X #\_\_\_years smoking = pack years.

IV. TREATMENT

- 1. Safe scene, infection control, gloves, mask, eye protection.
- 2. Put patient in position of comfort.
- 3. Assess airway, breathing, circulation.
- 4. Start oxygen therapy as indicated : Consider the use of CPAP if lung sounds are moist.
- 5. Take vitals: pulse, respirations, BP, EKG, lung sounds.
- 6. Attach pulse oximeter and monitor ETCO<sub>2</sub> using nasal capnoline
- 7. If no change, administer 1 unit dose Albuterol Aerosol treatment, reassess. (If patient on home Bromide and symptomatic, administer that in lieu of Albuterol).
- 8. If patient is stable with limited improvement from first treatment, repeat a second unit dose. All subsequent doses are only administered after contact with on-line **Medical Control**.
- 9. Establish IV 1000ml NS using regular drip tubing.
- 10. Administer Solu-Medrol 125mg Slow IV push over 1-2 minutes
- 11. Repeat set of vitals. The EMT/Paramedic should contact on-line **Medical Control** and notify of treatment given thus far. It should also be considered that while assessment is being given to Medical Control, the other responders should ready patient for transport and move patient to the vehicle.

Seneca County Emergency Medical Services  
Medical Protocols

**DROWNING / NEAR DROWNING**

**I. SPECIFIC INFORMATION NEEDED**

- A. How long patient was submerged.
- B. Fresh or salt water, degree of contamination, water temperature.
- C. Diving accident? Water depth?

**II. SPECIFIC OBJECTIVE FINDINGS**

- A. Vital signs
- B. Neurologic status: monitor on a continuing basis.
- C. Lung exam: crackles or signs of pulmonary edema, respiratory distress.

**III. TREATMENT**

- A. Clear upper airway of vomitus or large debris.
- B. Start CPR if needed. Do not drain lungs prior to initiating ventilatory assistance except in seawater victims.
- C. Stabilize neck prior to removing from water if any suggestion of neck injury. Remove from water on backboard.
- D. Suction as needed.
- E. Oxygen, high flow (10-15 LPM), non-rebreather mask, regardless of condition.
- F. If patient is not awake and alert:
  - 1. Assist ventilation using pocket mask or BVM.
  - 2. Intubate and apply positive pressure ventilation.
  - 3. IV: Volume expander, NS or LR, TKO or as directed by on-line Medical **Control**.
  - 4. Monitor cardiac rhythm during transport.
- G. Transport patient, even if normal by initial assessment.

**IV. SPECIFIC PRECAUTIONS**

- A. Be prepared for vomiting. Patients should be secure on spine board for logrolling to protect airway.
- B. All near-drownings or submersions should be transported. Even if patients initially appear fine, they can deteriorate. Monitor closely. Pulmonary Edema often occurs due to aspiration, hypoxia and other factors. Consider CPAP application. It may not be evident for several hours after near-drownings.
- C. Beware of neck injuries – they often go unrecognized. Collar and backboard can be applied in the water if the patient is not yet on land.
- D. If patient is hypothermic, defibrillation may be unsuccessful until the patient is rewarmed. Prolonged CPR may be needed. (See Hypothermia Protocol.)

**PEDIATRIC  
EMERGENCIES**

Seneca County Emergency Medical Services  
Medical Protocols

**PEDIATRIC RESPIRATORY DISTRESS**

This protocol applies to the pediatric patient (<8 years of age) who is characterized as clinical state that requires intervention to prevent respiratory or cardiac arrest.

I. SPECIFIC INFORMATION NEEDED

- A. History
  - 1. Sudden
  - 2. Gradual onset
  - 3. Duration
- B. Medical History
  - 1. Cough
  - 2. Fever
  - 3. Upper respiratory
  - 4. Sore throat
  - 5. Hoarseness
  - 6. Current medications
  - 7. Chronic physical development

II. OBJECTIVE FINDINGS

- A. Mental Status: alert, agitated, confused, somnolent, decreased level to pain
- B. Respiratory Effort: upper airway sounds, stridor (chest wall movement), use of accessory muscles, retractions (depressions between ribs on inspiration), nasal flaring, substernal retractions, inherent respiratory rate.
- C. Audible Breathing Noise: wheezes, cough, crowing, grunting.
- D. Other Findings: drooling, fever, poor skeletal muscle tone.
- E. Skin Color: cyanosis, pallor, capillary refill.

II. SPECIFIC CONSIDERATIONS

- A. If children with croup, epiglottitis, or laryngeal edema are in respiratory arrest, it is usually due to exhaustion or airway obstruction. You may still be able to ventilate or bag/valve/mask (BVM) technique. Epiglottitis/Croup can become total airway obstructions quickly. Constantly monitor the airway.
- B. Bag/valve/mask in small children carries the risk of excessive pressures and possible pneumothorax. It is possible to get overly excited and manually over-ventilate. Be cautious. **The Auto Vent at pediatric settings** is the preferred method of ventilation.
- C. In respiratory distress of sudden onset, think of foreign body aspirations. The mouth is a major sensory organ for children. The EMT/Paramedic must anticipate infants and children placing a multitude of obstructive hazards in their airways.
- D. You may be called to attend a child who has allegedly aspirated something that was in his or her mouth, but is now asymptomatic. This child may not need emergency intervention, but should immediately be seen by a physician. Once the object has settled in the lung and is not irritating or

## Seneca County Emergency Medical Services Medical Protocols

obstructing a major airway, it can rapidly become asymptomatic while still requiring removal to prevent further complications. These patients require transport and skillful monitoring.

- E. Total obstructions that cannot be cleared by conventional methods may require surgical or needle cricothyrotomy in emergency situations.

### III. TREATMENT

- A. Safe scene, universal precautions
  - B. Put patient in position of comfort (usually upright)
  - C. Assess airway, breathing, circulation
  - E. Start oxygen therapy as indicated (assist ventilations if necessary)
  - F. Move patient to vehicle and start transport. Contact **On-Line Medical Control** with assessment, ETA, age and sex of patient.
  - G. Assist ventilation (intubate or surgical needle cricothyrotomy indicated)
- 
- F. Take vitals, pulse, respirations, capillary refills, BP, EKG, pulse oximeter. Use Broselow tape to determine weight in kilograms. Ensure All Monitoring parameters are set to PEDIATRIC settings
  - G. Establish IV, Normal Saline (IO only if patient becomes unconscious, unresponsive, and is in a life-threatening situation.
  - H. The EMT/Paramedic should contact **On-Line Medical Control** with full assessment, ETA, and treatments done thus far.

### PEDIATRIC ASTHMA

This protocol applies to the pediatric patient (<8 years of age) who is symptomatic.

#### I. SPECIFIC INFORMATION NEEDED

- A. History
  - 1. **Sudden**
  - 2. **Gradual onset**
  - 3. Duration
- B. Medical History
  - 1. Cough
  - 2. Lower respiratory sounds
  - 3. Current medications
  - 4. Allergies
  - 5. Medic alert tag
  - 6. Chronic physical development
  - 7. Diseases

#### II. OBJECTIVE FINDINGS

- A. Mental Status: alert, agitated, confused, somnolent, decreased level to pain

## Seneca County Emergency Medical Services Medical Protocols

- B. Respiratory Effort: upper airway sounds, (chest wall movement), use of accessory muscles, retractions (depressions between ribs on inspiration), nasal flaring, substernal retractions, inherent respiratory rate.
- C. Audible Breathing Noise: wheezes, cough, crowing, grunting.
- D. Lungs by auscultation: wheezes, rales, crackles (wet sounds), diminished breath sounds
- E. Other Findings: drooling, fever, poor skeletal muscle tone.
- F. Skin Color: cyanosis, pallor, capillary refill.

### III. SPECIFIC CONSIDERATIONS

- A. Wheezing is the hallmark of lower airway obstruction. Decreased, unequal, or absent breath sounds can also occur. The respiratory rate generally is rapid (although when respiration becomes prolonged, the rate may fall, an ominous sign). Bronchiolitis, asthma, and foreign body obstruction are the major diagnoses to consider.
- B. Wheezing in a child with a past history or family history of allergies suggests asthma, particularly if it resolves when treated with bronchodilators. The diagnosis of asthma is difficult to make on the first episode of wheezing; consider other processes that produce wheezing such as bronchiolitis, foreign body aspiration, pneumonia, pulmonary edema, and some insecticide poisonings. Conversely, a known asthmatic with severe bronchospasm may have little wheezing because of poor air movement through the small airways. Forced exhalation or coughing will often accentuate the wheezing, and careful auscultation of peripheral lung fields will confirm the absence of normal breath sounds.
- C. Life-threatening complications of asthma include pneumothorax, cardiac dysrhythmias, bronchial plugging, and respiratory failure. Lungs that are hyperinflated because of air trapping increase the risk of pneumothorax and pneumomediastinum. Suspect those diagnoses in a patient with decreased unilateral or bilateral aeration, in a patient with subcutaneous emphysema, or in a patient who acutely decompensates. In the patient who acutely decompensates, suspect either a tension pneumothorax or pneumopericardium.

### IV. TREATMENT

- A. Safe scene, universal precautions.
- B. Put patient in position of comfort.
- C. Assess airway, breathing, circulation
- D. Start oxygen therapy as indicated, assist ventilations if necessary
- E. Take vitals, pulse, respirations, capillary refill, BP, EKG, pulse oximeter. Use Broselow tape to determine weight in kilograms and dosing.
- F. If no change, or slight improvement, administer ½ unit dose of Albuterol Aerosol if patient weighs <10kg. Of patient weighs >10kg, administer one (1) unit dose.
- G. Move patient to vehicle and start transport. Notify **On-Line Medical Control** of ETA, age, sex of patient, and condition.

Seneca County Emergency Medical Services  
Medical Protocols

- H. If no change, or slight improvement, administer ½ unit dose of Albuterol Aerosol if patient weighs <10kg. Of patient weighs >10kg, administer one (1) unit dose.
- I. If indicated, establish IV Normal Saline using regular drip (10gtts) tubing (IO if patient becomes unconscious and unresponsive and in life-threatening situation.)
- J. Repeat vitals, pulse oximeter
- K. The EMT/Paramedic should contact **On-Line Medical Control** with full assessment, ETA, and treatments done thus far.

ANTICIPATE THE FOLLOWING POTENTIAL ORDERS FROM **ON-LINE  
MEDICAL CONTROL**

- 1. If no change, administer 0.01mg/kg (0.01ml/kg) 1:1000 Epinephrine subcutaneous
- 2. Nebulized 1:1000 Epi via Nebulizer – 1ml 1:1000 Epi mixed with 2 ml Normal Saline in nebulizer.(Field Expedient “Racemic Epi”.

**PEDIATRIC ALLERGY / ANAPHYLAXIS**

This protocol applies to the pediatric patient (<8 years of age) who is symptomatic.

**I. SPECIFIC INFORMATION NEEDED**

- A. History
  - 1. Exposure to allergens
  - 2. Prior reactions
  - 3. Onset and progression of present state
  - 4. Exposure to environment
  - 5. Toxic exposure
- C. Medical History
  - 1. Medications
  - 2. Diseases
  - 3. Allergies
  - 3. Medic Alert tag
  - 4. Itching
  - 5. Wheezing
  - 6. Respiratory distress
  - 7. Nausea
  - 8. Weakness
  - 9. Abdominal cramps
  - 10. Chest tightness
  - 11. Swelling
  - 12. Hives
  - 13. Difficulty swallowing or breathing

**II. OBJECTIVE FINDINGS**

- A. Mental Status: alert, agitated, confused, somnolent, decreased level to pain

Seneca County Emergency Medical Services  
Medical Protocols

- B. Respiratory Effort: upper airway sounds, (chest wall movement), use of accessory muscles, retractions (depressions between ribs on inspiration), nasal flaring, substernal retractions, inadequate respiratory rate.
- C. Audible Breathing Noise: wheezes, cough, crowing, grunting.
- D. Lungs by auscultation: wheezes, rales, crackles (wet sounds), diminished breath sounds
- E. Other Findings: drooling, poor skeletal muscle tone.
- F. Skin Color: cyanosis, pallor, capillary refill.

III. SPECIFIC CONSIDERATION

- A. Patients with allergic reactions can deteriorate quickly. Airway is a prime concern.
- B. Anxiety, tremor, palpitations, tachycardia, and headache are not uncommon with the administration of Epinephrine. Symptoms with the use of Epinephrine may be particularly severe when given IV and may, in pediatric patients, induce vomiting or cause V-fib. **IV Epinephrine should be used as a last resort.**

The two forms of Epinephrine carried are:

- 3. 1mg/1ml ampule of 1:1000
- 4. 1mg/ml pre-injectable 1:10,000

**All IV Epinephrine in anaphylaxis should be the 1:10,000 concentration.**

- C. Before treating anaphylaxis, be sure your patient has objective signs as well as subjective symptoms. Hyperventilators will occasionally think they are having an allergic reaction. Epinephrine will aggravate this situation and add to their anxiety.
- D. Lethal edema may be localized to the tongue, uvula, or other upper airway structures. Examine closely and be prepared to intubate early before swelling occurs.
- E. If anaphylaxis has been precipitated by either an injection of medication or insect toxin (stingers should be removed), half of the indicated Epinephrine dose may be given subcutaneous by the injection site, the rest in another extremity with a clean needle. Do not let treatment of the injection site distract you from IV treatment of life-threatening anaphylaxis. Do not inject Epinephrine into the end of an organ (i.e. tip of nose, digits, penis) or face.

IV. TREATMENT

- A. Safe scene, universal precautions
- B. Put patient in position of comfort
- C. Assess airway, breathing, circulation
- D. Start oxygen therapy as indicated, assist ventilations if necessary
- E. Take vitals, pulse, respirations, capillary refill, BP, EKG, pulse oximeter. Use Broselow tape to determine weight in kilograms.



## Seneca County Emergency Medical Services Medical Protocols

- F. If no change, administer 0.01mg/kg (0.01ml/kg) 1:1000 Epinephrine subcutaneous not to exceed 0.3mg. If unconscious due to shock, administer 0.1mg/kg 1:10,000 Epinephrine IV/IO as a last resort as it may cause vomiting or V-fib.
- G. If no change, and in the presence of respiratory distress, administer ½ unit dose of Albuterol Aerosol if patient weight is <10kg. If >10kg, administer one (1) unit dose.
- H. If no change, administer 1mg/kg Benadryl IM/IV/IO
- I. Establish IV Normal Saline using regular drip (10gtts) tubing. (IO if patient loses consciousness, is unresponsive, and in a life-threatening situation)
- J. Move patient to vehicle and start transport. Notify **On-Line Medical Control** of ETA, age, sex of patient, and condition.
- K. Repeat vitals, pulse oximeter.
- L. If patient displays symptoms of shock, administer fluid bolus of 20ml/kg Normal Saline IV.
- M. The EMT/Paramedic should contact **On-Line Medical Control** with full assessment, ETA, and treatments done thus far.

### **PEDIATRIC CARDIAC ARREST**

**This protocol applies to the pediatric patient (<8 years of age) who has sustained cardiac arrest. The CURRENT AHA Pediatric Advanced Life Support Protocols are the Gold Standard to follow for all Peri-arrest or True Arrest states in Pediatric Patients.**

Always use the BROSELOW TAPE provided in Each Pediatric Bag for size specific adjuncts and meds.

- I. **SPECIFIC INFORMATION NEEDED**
  - A. Arrest History
    - 1. Time of onset
    - 2. Bystander CPR
    - 3. Time lapse until CPR
    - 4. Preceding symptoms
    - 5. Underlying cause
    - 6. Age
  - B. Medical History
    - 1. Diseases
    - 2. Medications
    - 3. Medical adjuncts
    - 4. Establish known allergies
    - 5. Chronic physical development
  - C. Environment
    - 1. Evidence of Trauma
    - 2. Note unusual presentations
    - 3. Evidence of abuse, neglect or poisoning
- II. **OBJECTIVE FINDINGS**
  - A. Patient totally unresponsive
  - B. Agonal respirations or apnea

## Seneca County Emergency Medical Services Medical Protocols

- C. Absence of pulse
  - D. Skin temperature vs. environment
  - E. Evidence of dependent lividity. (Refer to DOA protocol)
- III. SPECIFIC CONSIDERATIONS
- A. Cardiac arrest is a life threatening condition and initial treatment should preclude contact with **On-Line Medical Control**. **On-Line Medical Control** should be contacted where indicated in each specific protocol. **On-Line Medical Control** may be contacted earlier in the resuscitation than indicated in the protocol, but must be contacted no later than the point indicated in the protocol. It is recommended that **On-Line Medical Control** be contacted early so they may ready themselves for the patient. Give ETA, the situation, patient's age and sex.
  - B. Pediatric patients are not just "small people". They have unique needs and different problems that will affect pre-hospital as well as hospital care. These differences are all the more important to remember because infants and children make up a small part of our patient population and opportunities to practice assessment and management skills are infrequent. In addition, the pediatric emergency is rarely preceded by chronic disease. The most common cause of pediatric cardiac arrest is Hypoxia. For this reason, our primary responsibilities differ somewhat from that of an adult. If intervention is swift and effective, the child can often be restored to full health. This makes the psychological burden and reward for you as providers all the greater.
  - C. Hypothermic cardiac arrest is **not** treated according to this protocol. Refer to Pediatric Hypothermic Cardiac Arrest protocol.
  - D. Survival from cardiac arrest is related to both BLS and ALS treatment. With multiple responders, several treatments may be administered simultaneously. Assignments should be made so all resources are utilized to their fullest, i.e. CPR.
  - E. For children under 6 years of age, intraosseous or peripheral cannulation is acceptable, whichever procedure is felt to be accomplished the quickest. It should be noted, however, that if an IV is not established within 90 seconds, IO should be accomplished. IO is a very painful procedure, thus the patient should be unconscious and unresponsive. This should be a life-threatening situation.
  - F. The first EMT/Paramedic on scene should check effectiveness of CPR while in progress. Pay close attention to ventilatory support.
  - G. Pediatric airways are small, softer, and easier to obstruct or collapse. Be cautious. Intubation may cause sub glottic- stenosis, use uncuffed tubes on pediatrics less than 6 years old.
  - H. Respiratory reserve is small: minor insults such as improper positioning, vomitus, or airway narrowing can lead to major problems.
  - I. Circulatory reserve is also small: the loss of one unit of blood is sufficient to account for severe shock or death in an infant. Conversely, 500ml of unnecessary fluid can result in acute pulmonary edema. Bolus volume replacement for shock is 20ml per kilogram.
  - J. Vital signs and level of consciousness are difficult to assess. History, a high index of suspicion and "soft signs" can be critical. Listen to the parents/caregivers, they know when changes have occurred, even if they have difficulty expressing what has changed.
  - K. Nutritional reserves are limited, particularly in younger infants.
  - L. Electrolyte solutions should always be used in pediatric IVs or IO. (Normal Saline)

## Seneca County Emergency Medical Services Medical Protocols

- M. Pediatric resuscitation skills must be practiced to be ready when needed. Procedures with poor likelihood of success or complications should be left to the hospital setting if simpler support and rapid transport will suffice to maintain the patient, i.e. intubation. Use of Pediatric Size Specific King Airways are advised.
  - N. Emphasis should be placed on simultaneously securing the airway and rapid transport to the hospital. Under some circumstances, the paramedic may determine that intubation, if indicated, may be more expeditious prior to movement of the patient to the vehicle. The paramedic needs to consider that moving an intubated patient may be more difficult than controlling the airway by manual methods. I.e. oral airway, BVM.
  - O. SIDS (Sudden Infant Death Syndrome) will be one of the most frequent causes of cardio-respiratory arrest in infants between the ages of 1 month to 1 year. The parents or caretakers will have a great deal of guilt feelings. If you recognize and address these feelings, you can help prevent some of the long- term effects of this devastating occurrence. Unfortunately, SIDS can be very hard to distinguish from child abuse and vice versa. Therefore, it is most important not to be judgmental or suggest a diagnosis when you do not have enough information to be accurate.
  - P. In the V-fib / V-tach post-resuscitation scenario with a perfusing rhythm and Lidocaine was Indicated and administered during the arrest, a Lidocaine drip should be started at 20-50 ug/kg/min. This can be accomplished by injecting 60mg of Lidocaine in a 50ml bag of D5W. This will give you a concentration of 1200ug per ml. If Amiodarone was administered, do not follow with Lidocaine drip.
- IV. TREATMENT
- A. Safe scene, universal precautions.
  - B. Call for back up if needed.
  - C. Treat according to appropriate protocol.

### PEDIATRIC VENTRICULAR FIBRILLATION /PULSELESS VENTRICULAR TACHYCARDIA

This protocol applies to the pediatric patient (<8 years of age).

- I. TREATMENT
- A. Safe scene, universal precautions.
  - B. Establish unresponsiveness, apnea, pulselessness
  - C. Start CPR, move patient to vehicle, and start transport. Contact **On-Line Medical Control** with assessment, ETA, Age and sex of patient.
  - D. Attach stat-padz. Use Broselow tape to determine weight in kilograms
  - E. Identify rhythm as V-fib or pulseless V-tach.
  - F. Defibrillate at 2J/kg, if no change.
  - G. Continue High Quality CPR for 5 cycles.
  - H. Assist ventilations, intubate if indicated, confirm bilateral breath sounds. Reconfirmation is mandated every time the patient is moved.
  - I. Monitor lead II and monitor ETCO<sub>2</sub> in all intubated patients -  
MANDATORY
  - J. Establish IV/IO Normal saline using a regular drip (10gtt) tubing. IO if <6 years old. Use Broselow tape to determine weight in kilograms

Seneca County Emergency Medical Services  
Medical Protocols

- K. During CPR, administer 0.01mg/kg (0.1ml/kg) 1:10,000 Epinephrine IV/IO. Circulate with CPR
- L. If no change, defibrillate at 4J/kg
- M. If no change, administer Lidocaine 1mg/kg IV/IO  
**or**  
Amiodarone 5mg/kg, one time dose. Circulate with CPR
- N. If no change, defibrillate at 4J/kg
- O. The EMT/Paramedic should contact **On-Line Medical Control** and give full assessment, ETA, and treatments done thus far. CPR should be maintained during this time.

**ANTICIPATE THE FOLLOWING ORDERS FROM ON-LINE MEDICAL CONTROL**

- 1. If no change, administer Epinephrine 0.1mg/kg (0.1ml/kg) 1:1000 IV/IO
- 2. Defibrillate at 4J/kg

**PEDIATRIC PEA (Pulseless Electrical Activity) PROTOCOL**

This protocol applies to the pediatric patient (<8 years of age) without a pulse except V-fib / V-tach.

PEA can be caused by many underlying factors. The following possible causes should be considered and, if verified, the appropriate treatment administered prior to Epinephrine or Atropine therapy. Use the 5 **H**'s and 5 **T**'s acronym.

<p><b>Hypovolemia</b></p> <ul style="list-style-type: none"> <li>a. Treat with volume infusion.</li> <li>b. Shock pants</li> </ul>	<p><b>Tablets – Drug Overdose</b></p> <ul style="list-style-type: none"> <li>a. 1mEq/kg Sodium Bicarb and medications per Overdose Protocol if tricyclic suspected</li> </ul>
<p><b>Hypoxia</b></p> <ul style="list-style-type: none"> <li>a. Treat with increase ventilation</li> </ul>	<p><b>Tamponade, cardiac</b></p> <ul style="list-style-type: none"> <li>a. No pre-hospital field treatment available (proceed with PEA protocol)</li> </ul>
<p><b>Hydrogen ion – Acidosis</b></p> <ul style="list-style-type: none"> <li>a. Increase ventilations</li> <li>b. 1mEq/kg Sodium Bicarb; may be repeated every 10 min. at ½ dose</li> </ul>	<p><b>Tension Pneumothorax</b></p> <ul style="list-style-type: none"> <li>a. See Needle Decompression Protocol</li> </ul>
<p><b>Hyperkalemia</b></p> <ul style="list-style-type: none"> <li>a. Unable to recognize in pre-hospital setting (proceed with PEA protocol)</li> </ul>	<p><b>Thrombosis, Coronary</b></p> <ul style="list-style-type: none"> <li>a. Unable to treat in a pre-hospital setting (proceed with PEA protocol)</li> </ul>
<p><b>Hypothermia</b></p> <ul style="list-style-type: none"> <li>a. See Hypothermia Protocol</li> </ul>	<p><b>Thrombosis, Pulmonary</b></p> <ul style="list-style-type: none"> <li>a. Unable to treat in pre-hospital setting (proceed with PEA protocol)</li> </ul>

Seneca County Emergency Medical Services  
Medical Protocols

I. TREATMENT

- A. Safe scene, universal precautions
  - B. Establish unresponsiveness, apnea, pulselessness.
  - C. Start CPR, move patient to vehicle and start transport. Contact **On-Line Medical Control** with assessment, ETA, age and sex of patient.
  - D. Attach to heart monitor and identify rhythm as PEA.
  - F. Establish IV/IO Normal Saline using regular drip (10gtt) tubing. IO < 6 years of age.
  - G. Intubate if indicated. Confirm bilateral breath sounds. Reconfirmation is mandated every time the patient is moved. Monitor ETCO<sub>2</sub> - MANDATORY
  - H. If no change, administer Epinephrine 0.01mg/kg (0.1ml/kg) 1:10,000 IV/IO. Circulate with CPR.
  - I. Monitor Lead II.
  - J. The EMT/Paramedic should contact **On-Line Medical Control** and give full assessment, ETA, and treatments done thus far. CPR should be maintained during this time.
  - K. ANTICIPATE THE FOLLOWING ORDERS FROM **ON-LINE MEDICAL CONTROL**
1. If no change, administer Epinephrine 0.1mg/kg – 0.2mg/kg (0.1ml/kg – 0.2ml/kg) 1:10,000 IV/IO.

Seneca County Emergency Medical Services  
Medical Protocols

**PEDIATRIC ASYSTOLE**

Asystole may be caused by many underlying factors. The following possible causes should be considered and, if verified, the appropriate treatment administered prior to Epinephrine or Atropine therapy. Use the 5 **H**'s and 5 **T**'s acronym. This protocol applies to the pediatric patient (<8 years of age)

<p><b>Hypovolemia</b></p> <p>a. Treat with volume infusion. b. Shock pants</p>	<p><b>Tablets – Drug Overdose</b></p> <p>a. 1mEq/kg Sodium Bicarb and medications per Overdose Protocol if tricyclic suspected</p>
<p><b>Hypoxia</b></p> <p>a. Treat with increase ventilation</p>	<p><b>Tamponade, cardiac</b></p> <p>a. No pre-hospital field treatment available (proceed with PEA protocol)</p>
<p><b>Hydrogen ion – Acidosis</b></p> <p>a. Increase ventilations b. 1mEq/kg Sodium Bicarb; may be repeated every 10 min. at ½ dose</p>	<p><b>Tension Pneumothorax</b></p> <p>a. See Needle Decompression Protocol</p>
<p><b>Hyperkalemia</b></p> <p>a. Unable to recognize in pre-hospital setting (proceed with PEA protocol)</p>	<p><b>Thrombosis, Coronary</b></p> <p>a. Unable to treat in a pre-hospital setting (proceed with PEA protocol)</p>
<p><b>Hypothermia</b></p> <p>a. See Hypothermia Protocol</p>	<p><b>Thrombosis, Pulmonary</b></p> <p>a. Unable to treat in pre-hospital setting (proceed with PEA protocol)</p>

I. TREATMENT

- A. Safe scene, universal precautions
- B. Establish unresponsiveness, apnea, and pulselessness.
- C. Start CPR, move patient to vehicle and start transport. Contact **On-Line Medical Control** with assessment, ETA, age and sex of patient.
- D. Attach to heart monitor and identify rhythm as asystole.
- E. Establish IV/IO Normal Saline using regular drip (10gtt) tubing. <6 years old, IO. Use Broselow tape to determine weight in kilograms.
- F. If no change, administer Epinephrine 0.01mg/kg (0.1ml/kg) 1:10,000 IV/IO. Circulate with CPR
- G. Assist ventilations, intubate if indicated. Confirm bilateral breath sounds. Reconfirmation is mandated every time the patient is moved & Monitor ETCO2 waveform – monitor carefully for sudden increase in ETCO2.
- H. Monitor lead II

Seneca County Emergency Medical Services  
Medical Protocols

- L. The EMT/Paramedic should contact **On-Line Medical Control** and give full assessment, ETA, and treatments done thus far. CPR should be maintained during this time.
- M. ANTICIPATE THE FOLLOWING POTENTIAL ORDERS FROM **ON-LINE MEDICAL CONTROL**
  - 1. If no change, administer Epinephrine 0.1mg/kg – 0.2mg/kg (0.1ml/kg – 0.2ml/kg) 1:10,000 IV/IO. Repeat every 3-5 minutes

**PEDIATRIC TRAUMA CARDIAC ARREST**

This protocol applies to the pediatric patient (<16 years of age) who has sustained a cardiac arrest from significant trauma. The emphasis in this protocol will be to load and go. Trauma arrest patients are difficult to handle in the pre-hospital setting. Traumatic cardiac arrest should be transported ASAP to the closest hospital. Patients with long extrications, a helicopter should be considered so a physician will be on scene. The patient should have no delay in transportation after extrication, except as needed for c-spine and airway control. It should also be considered to contact **On-Line Medical Control** early and notify of treatments done thus far so they can be ready to accept the patient. The receiving hospital should be given five (5) specific pieces of information: the acronym TEAM should be used.

**T** – patient meets trauma protocol

**E** – E.T.A.

**A** – age of patient

**M** – mechanism of injury

The EMT/Paramedic should utilize other responders for extrication and other tasks, i.e. setting up IVs in the ambulance during extrication.

- I. TREATMENT
  - A. Safe scene, universal precautions
  - B. Manual c-spine control (patient should be c-collared and back-boarded with CID as soon as possible if manual stabilization methods are inadequate).
  - C. Establish unresponsiveness, apnea, and pulselessness.
  - C. Start CPR, move patient to the vehicle and start transport. Contact **On-Line Medical Control** with assessment, ETA, age and sex of patient, and penetrating or blunt trauma.
  - D. The patient should have ventilations assisted. Intubate if indicated, confirm as soon as possible, however, do not withhold ventilation until equipment is available. Ventilations must be accomplished while maintaining c-spine control. Reconfirmation is mandated every time the patient is moved.
  - E. Apply combi pads. Use Broselow tape to determine weight in kilograms.
  - F. V-fib / V-tach: (with no pulse)  
Defibrillate at 2J/k, no change - defib. at 4J/k, no change – defib. at 4J/k  
(If rhythm other than V-fib / V-tach, go to H)

Seneca County Emergency Medical Services  
Medical Protocols

- G. Establish IV/IO of Normal Saline using regular drip (10gtt) tubing. Administer a fluid bolus of 20mg/kg bolus. <6 years old, IO.
- H. Monitor lead II
- I. The EMT/Paramedic should contact **On-Line Medical Control** and give full assessment, ETA, and treatments done thus far. CPR should be maintained during this time.

**ANTICIPATE THE FOLLOWING POTENTIAL ORDERS FROM ON-LINE MEDICAL CONTROL**

- 1. If no change, administer another fluid bolus of 20ml/kg IV/IO of normal saline.

**PEDIATRIC HYPOTHERMIC CARDIAC ARREST**

This protocol applies to pediatric patients (<8 years of age) with suspected hypothermia. These patients are load and go situations.

- I. TREATMENT
  - A. Safe scene, universal precautions
  - B. Remove patient from environment carefully (maintain horizontal position and avoid rough movement and excess activity).
  - C. Remove all wet garments
  - D. Protect against heat loss and wind chill (use blankets and insulating equipment)
  - F. Establish responsiveness, apnea, and pulselessness.
  - G. Start CPR, move patient to vehicle and start transport. Contact **On-line Medical Control** with assessment, ETA, age and sex of patient.
  - H. Attach Combi Pads
  - I. If no pulse an V-fib / V-tach, defibrillate at 4joules/kg if no change continue High Quality CPR. Do not administer cardiac medications.
  - J. Establish IV/IO Normal Saline using regular drip (10gtt) tubing. ≤6 years old, IO. Use Broselow tape to determine weight in kilograms.
  - K. Continue warming efforts.
  - L. Intubate if indicated. Confirm bilateral breath sounds. Reconfirmation is mandated every time the patient is moved.
  - M. Monitor Lead II
  - N. The EMT/Paramedic should contact **On-Line Medical Control** and give full assessment, ETA, and treatments done thus far. CPR should be maintained during this time.
  - O. **RAPID SMOOTH TRANSPORT**



Seneca County Emergency Medical Services  
Medical Protocols

**PEDIATRIC BRADYCARDIA (Patient not in cardiac arrest)**

**This protocol applies to pediatric patients (<8 years of age) who are in symptomatic bradyarrhythmias. These may include:**

1. Sinus Bradycardia
  2. First Degree AV Block
  3. Relative Bradycardia
  4. Absolute Bradycardia
  5. Second Degree Mobitz 1 (Wenckebach)
  6. Second Degree AV Block
  7. Third Degree Heart Block

Treatment may not be required if patient is not symptomatic. Remember that the normal heart rates for pediatric patients are higher than that of adults. If a pediatric's (less than 8 years old) heart rate is <60/min, this pediatric patient needs not only ALS intervention, but chest compressions.

Hypoxemia, acidosis, and Hypotension interfere with normal sinus node function and slow conduction. In addition, excessive vagal stimulation (i.e. suctioning) may produce bradycardia. Sinus bradycardia, sinus node arrest with a slow junctional or idioventricular rhythm, and idioventricular block are the most common preterminal rhythms observed in infants and children. All slow rhythms that result in instability require immediate treatment. AV Block or vagal induced bradycardia may respond better to Atropine than Epinephrine unless accompanied by Hypotension.

**I. TREATMENT**

- A. Safe scene, universal precautions
- B. Assess airway, breathing, and circulation
- C. Start oxygen therapy as indicated (intubation precautions)
- D. Move patient to vehicle and start transport. Contact **On-Line Medical Control** with assessment, ETA, situation, age and sex of patient.
- E. Establish IV (or IO if patient is unconscious, unresponsive, and in a life threatening situation) Normal saline using regular (10gtt) drip tubing
- F. Attach cardiac monitor and monitor lead II
- G. Identify rhythm as Bradycardia
- H. Take vitals, pulse respirations, capillary refill, BP, pulse oximeter. Use Broselow Tape to determine weight in kilograms
- I. If no change, administer Epinephrine 0.01mg/kg (0.1ml/kg) 1:10,000 IV (repeat every 3-5 minutes)
- J. The EMT/Paramedic should contact **On-Line Medical Control** and give full assessment, ETA, and treatments done thus far. CPR should be maintained during this time.

**ANTICIPATE THE FOLLOWING POTENTIAL ORDERS FROM ON-LINE MEDICAL CONTROL**

Seneca County Emergency Medical Services  
Medical Protocols

1. If no change, administer Atropine 0.02mg/kg (minimum dose 0.1mg, maximum single dose 0.5mg child, 1.0 mg adolescent) may be repeated once. – \*\*Atropine is rarely effective in Children\*\*
2. Transcutaneous Pacing – set rate at 100 and start 20 milliamps increasing in increments of 5 milliamps until capture.

**PEDIATRIC SYMPTOMATIC TACHYCARDIA (Patient not in cardiac arrest)**

This protocol applies to pediatric patients (<8 years of age) who are in symptomatic tachycardias. These may include:

1. Atrial Fibrillation/flutter
2. Wide complex tachycardia of uncertain type
3. PSVT (Paroxysmal Supraventricular Tachycardia)
4. VT (Ventricular Tachycardia)
5. Polymorphic Ventricular Tachycardia

Defined will be symptomatic or unstable patients. Signs and symptoms are as follows:

1. Shortness of breath
2. Decreased Level Of Consciousness
3. Hypotension
4. Shock
5. Pulmonary congestion
6. Congestive heart failure
7. Delayed capillary refill >2 seconds

Supraventricular tachycardia (SVT) is the most common arrhythmia producing cardiovascular instability during infancy and it can occur throughout the pediatric years. Usually due to a reentrant mechanism, SVT in infants often produces a heart rate >220 beats per minute, but possibly as high as 300beats per minute (infants >220, children >180). Lower heart rates may be observed in children during episodes of SVT. The QRS complex is narrow in more than 90% of involved children, making differentiation between sinus tachycardia and SVT difficult. Because wide-QRS SVT is relatively uncommon in infants and children, any wide-QRS tachycardia should be assumed to be of ventricular origin. Although medication administration is the first choice of treatment, if any delays occur in administration of the appropriate medication, go directly to cardioversion if indicated. Caution: IO should only be established if patient meets the criteria in Intraosseous Needle Protocol. Cardiopulmonary stability during episodes of SVT is affected by the child's age, duration of SVT, ventricular function, and ventricular rate. Very rapid rates for long periods in young infants can lead to a low-output state and shock. If myocardial function is poor, SVT can produce signs of shock in a relatively short time. Use the 5 **H**'s and the 5 **T**'s acronym:

Seneca County Emergency Medical Services  
Medical Protocols

<p><b>Hypovolemia</b></p> <p>a. Treat with volume infusion. b. Shock pants</p>	<p><b>Tablets – Drug Overdose</b></p> <p>a. 1mEq/kg Sodium Bicarb and medications per Overdose Protocol if tricyclic suspected</p>
<p><b>Hypoxia</b></p> <p>a. Treat with increase ventilation</p>	<p><b>Tamponade, cardiac</b></p> <p>a. No pre-hospital field treatment available (proceed with PEA protocol)</p>
<p><b>Hydrogen ion – Acidosis</b></p> <p>a. Increase ventilations b. 1mEq/kg Sodium Bicarb; may be repeated every 10 min. at ½ dose</p>	<p><b>Tension Pneumothorax</b></p> <p>a. See Needle Decompression Protocol</p>
<p><b>Hyperkalemia</b></p> <p>a. Unable to recognize in pre-hospital setting (proceed with PEA protocol)</p>	<p><b>Thrombosis, Coronary</b></p> <p>a. Unable to treat in a pre-hospital setting (proceed with PEA protocol)</p>
<p><b>Hypothermia</b></p> <p>a. See Hypothermia Protocol</p>	<p><b>Thrombosis, Pulmonary</b></p> <p>a. Unable to treat in pre-hospital setting (proceed with PEA protocol)</p>

If vagal maneuvers are to be performed, ice water applied to the face is most effective in pediatrics. Also, depending on age, blowing through a straw will stimulate the vagus nerve.

I. TREATMENT

- A. Safe scene, universal precautions
- B. Assess airway, breathing, and circulation. (Take suction and intubation precautions.)
- D. Start oxygen therapy as indicated. (intubate if indicated)
- E. Move patient to vehicle and start transport. Contact **On-Line Medical Control** with assessment, ETA, age and sex of patient.
- F. Establish an IV (or IO if unconscious, unresponsive, and in a life-threatening situation) of normal saline using regular drip (10gtt) tubing.
- G. Attach cardiac monitor and monitor lead II.
- H. Identify rhythm as tachycardia
- I. Take vitals, pulse, respirations, capillary refill, BP, pulse oximeter. Use Broselow Tape to determine weight in kilograms.
- J. If QRS <0.08 and P waves present, probable sinus tachycardia. Treat underlying cause, i.e. fever.
- K. If QRS ,0.08 and P waves absent, probable SVT. Vagal maneuvers – if no change, administer Adenocard 0.1mg/kg IV (not to exceed 6mg) rapid push followed by a 5ml bolus of saline. (If vascular access is not readily available or patient demonstrates cardiovascular compromise, go to M.) If no change, this dose may be doubled not to exceed 12mg. If no change, go to M.

Seneca County Emergency Medical Services  
Medical Protocols

- L. If QRS >0.08, probable V-tach. (If vascular access is not readily available or patient demonstrates cardiovascular compromise, go to M.) Administer Lidocaine 1mg/kg (wide complex only) – if no change consider Cardioversion.
- M. If patient’s condition deteriorates, synchronized cardioversion at 0.5J/kg to 1.0J/kg. May be doubled to 2J/kg if ineffective. (If sedation is required, contact **On-Line Medical Control** first. You *may* receive an order for 1-2 mg Versed.)
- N. The EMT/Paramedic should contact on-line **Medical Control** and give full assessment, ETA and treatments done thus far.

**ANTICIPATE THE FOLLOWING POTENTIAL ORDERS FROM ON-LINE MEDICAL CONTROL**

- 1. If QRS >0.08, administer Lidocaine drip at 20ug-50ug/kg/min.  
\* Seek Guidance from Medical Control for drip rates/calculations\*

**PEDIATRIC PREMATURE VENTRICULAR CONTRACTIONS (PVCs / VPBs)**

This protocol applies to the pediatric patient (<8 years of age) who is displaying some form of ventricular ectopy. With the 2020 AHA guidelines regarding the treatment of ACS arrhythmias, we may be serving our patients by treating underlying cause of arrhythmias in lieu of suppressing the arrhythmia by pharmacological intervention and reducing cardiac output. These patients need to be monitored closely.

**I. TREATMENT**

- A. Safe scene, universal precautions.
- B. Reassure patient (may be helpful to put in position of comfort).
- D. Assess airway, breathing, circulation.
- E. Start oxygen therapy as indicated & Monitor ETCO<sub>2</sub>
- F. Establish an IV of Normal Saline using regular drip (10gtt) tubing.
- G. Attach cardiac monitor and monitor lead II. Treat per appropriate protocol.
- H. Take vitals, pulse, BP, respirations, pulse oximeter.
- I. Repeat set of vitals. The EMT/Paramedic should contact **On-Line Medical Control** and notify of treatments done thus far. It should also be considered that while the EMT/Paramedic is giving the assessment to **On-Line Medical Control**, other responders should ready patient for transport and move patient to vehicle.

**ANTICIPATE THE FOLLOWING POTENTIAL ORDERS FROM ON-LINE MEDICAL CONTROL**

- 1. Administration of an antiarrhythmic

**PEDIATRIC I.V. / I.O. ACCESS**

IV ACCESS IN PEDIATRIC PATIENTS IS OFTEN DIFFICULT DUE TO LACK OF PROMINANT VEINS, DEHYDRATION, PATIENT APPREHENSION, AND COLD EXTREMITIES. An IV should only be done when an immediate need is present. Limit attempt to 1 or 2 so as not to delay transportation. IO should only be done by persons experienced in this technique and as a life saving measure. See EZ-IO protocol.

Seneca County Emergency Medical Services  
Medical Protocols

**PEDIATRIC SEIZURES**

This protocol applies to the pediatric patients (<8 years of age)

**I. SPECIFIC INFORMATION NEEDED**

- A. History
  - 1. Time of onset
  - 2. Duration of seizure
  - 3. Description of seizure
  - 4. Activity
  - 5. Recent illness
- B. Medical History
  - 1. Previous seizures
  - 2. Medications
  - 3. Diseases
  - 4. Pupils (note size, asymmetry)
  - 5. Rash
  - 6. Blood sugar level
  - 7. Incontinence
  - 8. Postictal
  
  - 9. Level of consciousness
  - 10. Inappropriate behavior
  - 11. Sweet / fruity odor
  - 12. Other odors
- C. Environment
  - 1. Evidence of drug ingestion
  - 2. Evidence of trauma
  - 4. Note unusual presentations

**II. OBJECTIVE FINDINGS**

- A. Mental Status: alert, agitated, confused, somnolent
- B. Other Findings: drooling, snoring, grunting
- C. Fever: skin temperature vs environment
- D. Signs of trauma
- F. Skin color: cyanosis, pallor, capillary refill

**III. SPECIFIC CONSIDERATIONS**

- A. Move hazardous material away from patient. Restrain only to protect patient. Protect patient's head. Remember, always immediately check pulse after seizure stops.
- B. Trauma to the tongue is unlikely to cause serious problems. Trauma to the teeth may. Attempts to force anything into the patient's airway may cause a complete obstruction.
- C. Seizures can be caused by:
  - 1. Hypoxia
  - 2. Low glucose levels

Seneca County Emergency Medical Services  
Medical Protocols

3. Irritable cerebral focus
  4. Alcohol
  5. Drugs
  6. Fever
- D. Remove excess clothing if patient feels febrile (dress lightly).
- E. If patient is obviously febrile, you may use cool, wet towels during transport. DO NOT DELAY TRANSPORT FOR COOLING. Unbundling is often sufficient.
- F. Unlike the adult with a diagnosis of Epilepsy, a child who has had a seizure, even those alert upon arrival of the squad, usually requires transport. DO NOT be falsely reassured by return to normal cry.
- G. Seizures in children may not be the usual (tonic-clonic) grand mal type. A staring, peculiar eye movement, unresponsiveness, or arm twitching may be the only clue. The parents are usually very sensitive to the abnormality and potential seriousness of the situation.
- H. Do not make the diagnosis of “febrile seizures” in the field. This diagnosis cannot be made until other causes are excluded. An important cause of seizures in a child is meningitis. Other forms of encephalitis, head trauma, and epilepsy must also be excluded.
- I. If the diagnosis of meningitis is made at a later time, be sure to check with the receiving hospital concerning the need for prophylactic antibiotics for all EMS personnel. This may not be necessary if you had no close contact with the patient.

IV. TREATMENT

- A. Safe scene, universal precautions
  - B. Establish unresponsiveness
  - C. Evaluate airway, breathing, circulation
  - D. Start oxygen therapy as indicated
  - E. Move patient to vehicle and start transport. Contact **On-Line Medical Control** with assessment, ETA, age and sex of patient.
  - F. Take vital signs: pulse, respirations, capillary refill, BP, pulse oximeter. Use Broselow tape to determine weight in kilograms.
  - G. If the patient’s seizure persist or has decreased sensorium:
    1. Establish an IV Normal Saline using regular drip (10gtt) tubing
    2. Perform blood sugar test using glucometer
    3. If the blood sugar reading is <80mg/dl, administer 1-2ml/kg of 50% Dextrose and the same volume of Normal Saline.
    5. If unable to establish an IV and blood sugar is <80mg/dl from capillary sample, administer ½ unit of Glucagon IM.
6. Repeat set of vitals If no change and blood pressure adequate, administer:  
**Diazepam (Valium) 0.1 mg/kg; may repeat X 2 IVP slow**  
**Maximum dose: 0 to 5 years is 5 mg to 12 years is 5-10 mg.**  
**OR**  
**Versed (Midazolam) 0.1 mg/kg IV or 0.2mg/kg IN / IM Max. 2 mg./ Max 1ml per nostril IN**

Seneca County Emergency Medical Services  
Medical Protocols

Repeat set of vitals. The EMT/Paramedic should contact **On-Line Medical Control** and give full assessment, ETA, and treatments done thus far.

**ANTICIPATE THE FOLLOWING POTENTIAL ORDERS FROM ON –LINE MEDICAL CONTROL**

1. Administer 50% Dextrose 1-2ml/kg IV (may be ordered even if blood sugar is >80mg/dl), give equal volume of Normal Saline

**PEDIATRIC POISONING AND OVERDOSE (UNCONSCIOUS/UNKNOWN)**

This protocol applies to the pediatric patient (<8 years of age)

**I. SPECIFIC INFORMATION NEEDED**

- A. History of Ingestion
  1. What
  2. When
  3. How much
  4. Reason
  5. Actions of bystanders; i.e. induced vomiting
- B. Medical History
  1. Diseases
  2. Medications
  3. Establish known allergies
- C. Environment
  1. Evidence of trauma
  2. Evidence of drug ingestion
  3. Note unusual presentations

**II. OBJECTIVE FINDINGS**

- A. Mental status, alert, confused, lethargic
- B. Patient totally unresponsive
- C. Skin temperature vs the environment
- D. Appropriate actions
- E. Sweet/Fruity odor
- F. Unusual odor
- G. Medic alert tags

**IV. SPECIFIC CONSIDERATIONS**

- A. All empty containers of ingested material should accompany patient to the hospital. All emesis should be saved. Any questionable material should be taken to the emergency department; i.e. empty vials.
- B. Pay particular attention to:
  1. Increased salivation
  2. Soot or burns in mouth
  3. Irritation of the eyes

## Seneca County Emergency Medical Services Medical Protocols

4. Sweating and skin burns
  5. Lung findings; i.e. edema
  6. Arrhythmias
  7. Capillary refill.
- C. Antidotes
1. Product labels and home kits may be misleading and dangerous. Watch the ABCs.
  2. Do not neutralize acids with alkali.
  3. Do not neutralize alkali with acid.
  4. With hydrocarbon ingestion, do not induce vomiting, unless poison dissolved in hydrocarbon.
  5. Gasoline should be flushed from trauma victims and is often overlooked.
  6. Protect yourself in inhalation poisoning incidents.
- D. Do not induce vomiting in the following patients who have ingested:
1. Strong base acids
  2. Silver nitrate
  3. Strychnine
  4. Who are not alert

### IV. TREATMENT

- A. External Contamination: See Hazardous Material Protocol
- B. Internal Ingestion:
1. Safe scene, universal precautions
  2. Establish unresponsiveness
  3. Reassure patient (explain procedures)
  4. Evaluate airway, take appropriate action. (Intubate enroute to hospital if indicated)
  5. Take vitals; pulse, respirations, capillary refill, BP. Use Broselow Tape to determine weight in kilograms.
  6. Attach pulse oximeter
  7. Attach cardiac monitor, treat per appropriate protocol.
  7. Administer high flow Oxygen using a non-rebreather mask
  8. Move patient to vehicle and start transport. Contact **On-Line Medical Control** with assessment, ETA, age and sex of the patient.
  9. Establish an IV Normal Saline using regular drip (10gtt) tubing to keep open (TKO)
  10. If patient has decreased sensorium:
    - a. Follow steps 1-10
    - b. Perform blood sugar test using Glucometer
    - c. If the blood sugar reading is <80mg/dl, administer 1-2ml/kg of 50% Dextrose and the same volume of Normal Saline



Seneca County Emergency Medical Services  
Medical Protocols

- d. If unable to establish an IV and blood sugar reading is <80mg/dl from a capillary sample, administer ½ unit of Glucagon IM,
  - e. Repeat set of vitals
  - f. The patient should be transported in the lateral recumbent position with a close watch on the airway. (If trauma situation is suspected, use full c-spine precautions).
- C. If the blood sugar reading is <80mg/dl, administer 1-2ml/kg 50% Dextrose IV and 1-2ml/kg Normal Saline, if blood sugar reading is >80mg/dl, go to E.
- D. If unable to establish an IV, blood sugar reading should come from a capillary sample. If blood sugar <80mg/dl, administer ½ unit Glucagon IM.
- E. If no change, administer 0.1mg/kg Narcan IV, (over 5 years old, 2mg).
- F. Repeat set of vitals. The EMT/Paramedic should contact **On-Line Medical Control** and give full assessment, ETA and notify of any treatments done thus far.
- G. This patient should be transported in the lateral recumbent position with a close watch on the airway. (If trauma situation suspected, use full c-spine precautions.)

**ANTICIPATE THE FOLLOWING POTENTIAL ORDERS FROM ON-LINE MEDICAL CONTROL**

- 1. If no change, administer 1-2ml/kg of 50% dextrose IV and 1-2ml/kg of Normal Saline (may be ordered even if blood sugar is >80mg/dl)

Seneca County Emergency Medical Services  
Medical Protocols

**PEDIATRIC TABLES**

**NORMAL VITAL SIGNS IN THE PEDIATRIC AGE GROUP**

<b>AGE</b>	<b>PULSE beats/min</b>	<b>RESPIRATIONS rate/min</b>	<b>BLOOD PRESSURE Systolic +/-20</b>
<b>Premature</b>	<b>144</b>	<b>20 – 38</b>	<b>N/A</b>
<b>Newborn</b>	<b>140</b>	<b>20 – 38</b>	<b>N/A</b>
<b>6 Months</b>	<b>130</b>	<b>20 – 30</b>	<b>80 palp</b>
<b>1 year</b>	<b>130</b>	<b>20 – 24</b>	<b>90 palp</b>
<b>3 years</b>	<b>100</b>	<b>20 – 24</b>	<b>95 palp</b>
<b>5 years</b>	<b>100</b>	<b>20 – 24</b>	<b>95 palp</b>
<b>8 years</b>	<b>90</b>	<b>12 – 20</b>	<b>100 palp</b>

**PEDIATRIC AIRWAY SIZES**

<b>AGE</b>	<b>ORAL AIRWAY</b>	<b>ENDOTRACHEAL TUBE (uncuffed)</b>	<b>SUCTION CATHETER</b>
<b>Preemie</b>	<b>00</b>	<b>2.5 – 3.0</b>	<b>5 French</b>
<b>Newborn</b>	<b>0</b>	<b>3.0 – 3.5</b>	<b>6 Fr</b>
<b>6 Months</b>	<b>0 – 1</b>	<b>3.5</b>	<b>8 Fr</b>
<b>18 Months</b>	<b>1</b>	<b>4.0</b>	<b>8 Fr</b>
<b>3 years</b>	<b>2</b>	<b>4.5</b>	<b>8 Fr</b>
<b>5 years</b>	<b>2 – 3</b>	<b>5.0</b>	<b>10 Fr</b>
<b>8 years</b>	<b>3</b>	<b>6.0 cuffed</b>	<b>10 Fr</b>
<b>Older</b>	<b>4</b>	<b>6.5 – 7.0 cuffed</b>	<b>12 Fr</b>

**\*\*Utilize Broselow tape for all pediatric emergencies\*\***

# OBSTETRICAL EMERGENCIES

Seneca County Emergency Medical Services  
Medical Protocols

**DELIVERIES AND NEONATAL RESUSCITATION**

**I. Specific Information Needed**

- A. History of Mother
  - 1. Due date
  - 2. Prenatal care
  - 3. Previous pregnancies and problems
  - 4. Medication
  - 5. Duration of labor
  - 6. Foul smelling or stained amniotic fluid
  - 7. History of multiple births
- B. History of Infant
  - 1. If already delivered
  - 2. When was delivery
  - 3. How has infant behaved since delivery
  - 4. What has been done for infant
- D. Environment
  - 1. Evidence of trauma
  - 2. Note unusual presentations

**II. Objective Findings**

- A. Vital signs, APGAR score at 1 and 5 minutes (see table)
- B. Temperature or warmth of skin vs environment
- C. Color and capillary refill
- D. Spontaneous movement
- E. Meconium (brown/green/black stool fragments) in amniotic fluid
- F. **Note time of delivery**

**III. Specific Considerations**

- A. Neonatal resuscitation, unlike most other resuscitation situations, requires careful attention to temperature. For neonates, the management priorities are:
  - A Airway
  - B Breathing
  - C Circulation
  - T Temperature
- B. Avoid stimulation of the back of the pharynx during suctioning. This may cause bradycardia in the newborn. Do suction nares, as babies breathe only through the nose for the first few months. In newborns, suction the mouth first.
- C. If thick meconium is present in the upper airway, or an open adequate airway cannot be obtained, use laryngoscope and suction to clear airway under direct vision to avoid contamination of the lungs with meconium as much as possible. Hypoxia and vagal stimulation can result if prolonged suctioning occurs. DO not stimulate infant to cry until airway is cleared.
- D. Airway management should be kept as simple as possible. BVM use may be efficient during transport if there is only one rescuer, but chances of

## Seneca County Emergency Medical Services Medical Protocols

over ventilation (pneumothorax) or inadequate ventilation are increased. Intubation should be accomplished as soon as possible, if indicated.

- F. If infant's color is poor and not responding after the airway has been stabilized, an umbilical IV may be established enroute to the hospital. This can be accomplished by inserting an IV catheter into the umbilical vein. (watch fluid administration. Only if you have been cleared by **On-Line Medical Control** to do this procedure.
  - G. Infants, and particularly preemies, are very fragile. Basic stabilization with attention to airway control, suctioning, temperature conservation, and CPR if indicated enroute to the hospital is recommended.
  - H. It is estimated that over 5 million neonatal deaths occur each year. Nearly 20% of these from asphyxia; conversely, nearly 1 million could be saved by simple resuscitation measures. Watch the airway!
- IV. **Normal Delivery**
- A. Safe scene, universal precautions
  - B. If baby is not delivered and head is not appearing at vaginal opening with contractions, transport and prepare to stop for delivery enroute if situation changes. Place mother in left lateral recumbent if possible, to maintain blood pressure. Prepare mother for delivery:
    - 1. Put mother in position of comfort
    - 2. Vitals
    - 3. Start mother on oxygen
    - 4. Establish IV of Normal saline
    - 5. Set up for delivery as a precaution
    - 6. The EMT/Paramedic should contact **On-Line Medical Control** and give full assessment, ETA, and treatments done thus far.
  - C. If baby is not delivered, but head visible with contractions (crowning), delivery is imminent. (Carry out treatments to mother when possible).
    - 1. Contact **On-Line medical Control** with assessment
    - 2. Set up clean or sterile area for delivering baby:
    - 3. Place sterile or clean drape between mother's legs
    - 4. Set sterile ties, scissors, and suction on drape
    - 5. Put on sterile gloves
    - 6. Assign one attendant to mother, second to infant if possible.
    - 7. As infant's head is delivering, put very gentle pressure against it to prevent an explosive delivery.
    - 8. As soon as head has delivered, use bulb syringe suction to clear mouth and nares. (This should be done before delivery of rest of infant if possible.) As the neck is delivered, ensure cord is not wrapped around infant's neck.
    - 9. Repeat suctioning immediately after delivery, also administer oxygen near face and stimulate by drying with clean towel or blanket.

## Seneca County Emergency Medical Services Medical Protocols

- D. After baby is delivered, assess general appearance:
1. If infant is pink, with good cry and movement (APGAR 8-10):
    - a. Keep in clean, dry blanket.
  2. Keep infant level with perineum.
    - c. Tie cord in two places about 8-10 inches from infant
    - d. Cord may be cut between ties, if desired.
    - e. Bundle infant with mother , continue to monitor.
    - f. Transport as soon as possible and notify **On-Line Medical Control**.
  3. If infant color is poor, with weak cry, or limp (APGAR 7 or less):
    - a. Hold oxygen tubing near infant's face
    - b. Keep infant warm
    - c. Continue to stimulate with suctioning and drying.
    - d. Assist ventilation with bag/valve mask with supplemental oxygen if respirations are inadequate or heart rate <100. Use 40-60 breathes per minute.
      - c. CPR if heart rate <80/min and unresponsive to ventilatory control . Chest compression rate 120/min (3:1 ratio).
      - d. Tie and cut cord.
      - e. Transport as soon as possible and notify **On-Line Medical Control**
      - f. BVM may achieve adequate ventilatory support if not intubated enroute to hospital.

### V. APGAR SCORE

OBSERVATION	2	1	0
Color	Pink	Pink body Blue extremities	Blue
Respirations	Good, crying	Slow, irregular	None
Heart Rate	>100	<100	None
Muscle Tone	Active	Flexion of extremities	Limo
Reflex Irritability	Cough, sneeze	Grimace	Non-responsive

Average APGAR in normal newborns is 7-10

Example: Blue hands & Feet =1 Crying = 2 Heartrate 150=2 Active=2 Grimace=1 TOTAL =8

## Seneca County Emergency Medical Services Medical Protocols

### INFANT ABANDONMENT (infant <72 hours)

If Seneca County EMS Dispatch is called with a request to respond to a child less than 72 hours old who has been delivered by parent(s) (pursuant to ORC 2152.3515 et. Seq., effective 4/9/01 and local safety service entity agreement) to police, fire, hospital, or EMS workers:

1. An ambulance shall be dispatched to perform any act necessary to protect the child's health or safety; and transport the child to the closest appropriate hospital emergency department.
2. Response to the child shall be uninterrupted Code 3 unless reliable medical information exists justifying decreasing to a Code 2 response. First responders shall not cancel the ambulance on these responses, but may downgrade them from a Code 3 to a Code 2 response.

### Synopsis of Emergency Medical Services Workers Obligations To Whom A Child Which is Less Than 72 Hours Old is Delivered (ORC 2151.3515 et.seq. Effective April 9, 2001.)

While acting in their official capacity, an **EMS Worker** (first responder, EMT-Basic, EMT-Intermediate, or EMT-Paramedic) on behalf of the Emergency Services Organization (as defined by 4765.01) that employs the worker or for which the worker provides services, **shall take possession of a child who is seventy-two hours old or younger**

If that child's **parent** has **voluntarily delivered** the child to that person without the parent expressing and intent to return for the child.

Upon taking possession for the child the Emergency Services Organization **shall do all of the following:**

1. Perform any act necessary to protect the child's health or safety;
2. Notify Seneca County Dispatch that the child has been taken into possession;
3. When forms developed by Ohio Department of Jobs and family Service (ODJFS) are available to gather medical information concerning the child and the child's parents, provide such to surrendering parent;
4. If available, offer written materials developed by ODJFS that describe services available to assist parents and newborns;
5. Only if child appears to have condition that reasonably indicates physical or mental abuse or neglect – attempt to identify and, if necessary, pursue the person who delivered the child.

### EMS WORKERS SHALL NOT

1. Coerce or otherwise try to force the parent into revealing the identity of the child's parents;
2. Pursue or follow the parent after the parent leaves the place at which the child was delivered;

## Seneca County Emergency Medical Services Medical Protocols

3. Coerce or otherwise try to force the parent not to desert the child;
  4. Coerce or otherwise try to force the parent to accept the medical information forms promulgated by the ODJFS;
  5. Coerce or otherwise try to force parent to accept materials promulgated by the ODJFS.
- Items (1) and (2) above do not apply to a person who delivers or attempts to deliver a child who has suffered any physical or mental wound, injury, disability, or condition of a nature that reasonably indicates abuse or neglect of the child.

### **ABDOMINAL PAIN – 3<sup>rd</sup> TRIMESTER (Abruptio Placenta / Placenta Previa)**

1. Safe scene, infection control.
2. Universal Standard of Care.
3. ABCs.
4. Administer oxygen as indicated.
5. Obtain vital signs and monitor ETCO<sub>2</sub> using nasal capnoline
6. Establish two (2) IVs of NS, infusing at TKO rate. If BP <90 systolic, give a bolus of 20mg/kg. Consider second IV if perfusion is poor. (assess lung sounds) Transport patient without delay.
7. Apply cardiac monitor enroute.
8. Contact on-line **Medical Control**, report patient condition and treatment given.
9. **Rapid transport** to emergency department, patient transported on left side.

#### **NOTE:**

**Abruptio Placenta** – Premature separation of the placenta from the uterine wall, usually occurs during the third trimester of pregnancy. The patient experiences severe pain in the lower abdominal region and the uterus will be rigid.

**Placenta Previa** – Usually painless bleeding in the third trimester.

### **SEXUAL ASSAULT**

When faced with this situation, the patient should not be extensively questioned about the details of the assault. Treat the patient with dignity & preserve privacy.

#### **Precautions**

Explain all procedures to the patient prior to performing, maintain privacy, and avoid touching the patient without consent.

1. Use maximum tact and sensitivity.
2. Whenever possible, same gender rescuer should care for the sexual assault patient.
3. Limit physical exam to an assessment for injuries requiring immediate intervention. Treat necessary injuries per protocol and Universal Standard of Care.
4. Try to preserve evidence. Do not remove clothing unless absolutely necessary.
5. Use discretion in any information transmitted over the radio.



Seneca County Emergency Medical Services  
Medical Protocols

**VAGINAL BLEEDING**

I. SPECIFIC INFORMATION NEEDED

- A. Symptoms: cramping, passed clots or tissue, dizziness, weakness, thirst.
- B. Present History: duration, amount last menstrual period (normal?), birth control method. If pregnant: due date. If postpartum: time and place of delivery, current medications.
- C. Past History: Bleeding problems, pregnancies, medications, and allergies.

II. SPECIFIC OBJECTIVE FINDINGS

- A. Vital signs and orthostatic changes.
- B. Evidence of blood loss, clots of tissue fragments (bring tissue to ED).
- C. Signs of hypovolemic shock: altered mental status, hypotension, tachycardia, sweating, skin pallor.
- D. Fever.

III. TREATMENT

- A. Oxygen, moderate flow (2-4 LPM)
- B. If BP <90mm systolic, and signs of hypovolemic shock:
  - 1. With early or no apparent pregnancy:
    - a. elevate legs 10 inches and keep patient warm
    - b. IV: volume expander (NS), large bore, wide open, 1000ml (20mg/kg), further fluids as directed by **On-Line Medical Control**
  - 2. With mid or late pregnancy:
    - a. elevate legs 10 inches and keep patient warm
    - b. IV: volume expander (NS), large bore, wide open, 1000ml (20mg/kg), further fluids as directed by **On-Line Medical Control**
    - c. Transport rapidly if bleeding severe.
  - 3. If patient postpartum (within 24 hours):
    - a. massage uterus and have mother nurse infant to aid in uterine contraction
    - b. IV enroute: volume expander (NS), large bore, wide open, 1000ml (20mg/kg), further fluids as directed by **On-Line Medical Control**
    - c. Consider TXA 1gram/50ml Bolus over 10 minutes (within 3hours of delivery)
- C. Monitor vital signs during transport

IV. SPECIFIC PRECAUTIONS

- A. Amount of vaginal bleeding is difficult to estimate. Visual estimates from sheets and towels can be misleading. Try to get an estimate of number of saturated pads in the previous 6 hours. Discreet inspection of the

## Seneca County Emergency Medical Services Medical Protocols

perineum may be useful to determine if clots or tissue are being passed.  
**VAGINAL EXAM IN THE FIELD IS NOT INDICATED!**

- B. A patient in shock from vaginal bleeding should be treated like any patient with hypovolemic shock.
- C. If patient is pregnant, bring in any tissue that has been passed. Laboratory analysis may be important in determining status of pregnancy.
- D. Always consider pregnancy as a cause of vaginal bleeding. The history may contain inaccuracies, denial, or wishful thinking. The only patients who “can’t be pregnant” are male.
- E. If post-partum hemorrhage is severe or patient is hypovolemic due to blood loss – Consider Tranexamic Acid 1gram IV Bolus over 10 minutes  
– Contact Medical Control prior to administration in spontaneous abortion (miscarriage). Within 3 hours of onset of hemorrhage.

Seneca County Emergency Medical Services  
Medical Protocols

# PHARMACOLOGY

# Seneca County Emergency Medical Services Medical Protocols

## **ADENOCARD** (ADENOSINE)

Onset: 30 seconds  
Duration: 10 seconds

### Indications

A. PSVT

### Contraindications

- A. 2° or 3° AV block
- B. Sick sinus syndrome
- C. Atrial Flutter
- D. Atrial fibrillation
- E. Ventricular tachycardia
- F. Hypersensitivity to Adenocard

### Adverse Reactions

- A. Facial flushing
- B. Lightheadedness
- C. Paresthesia
- D. Headache
- E. Diaphoresis
- F. Palpitations
- G. Chest pain
- H. Hypotension
- I. Shortness of breath
- J. Nausea
- K. Metallic taste
- L. Transient periods of bradycardia
- M. Transient ventricular ectopy

### Supplied

6 mg/2 ml vial  
6 mg/2 ml pre-injectable

## **AMIODARONE** (Cordarone)

Onset: Minutes from time given IV  
Duration: Days. No reliable data

### **Indications**

- A. V-fib/V-tach cardiac arrest
- B. Unstable V-tach (2<sup>nd</sup> choice) with a pulse
- C. SVT refractory to other therapy
- D. Symptomatic A-fib/A-flutter tachycardias

### **Contraindications**

- A. None in cardiac arrest

### **Adverse Reactions**

- A. Hypotension
- B. Bradycardia

# Seneca County Emergency Medical Services Medical Protocols

## Special Considerations

- A. Must be drawn up slowly to avoid bubbles
- B. Enhanced bradycardia and Hypotension when given with other b-blockers or calcium channel blockers

## Supplied

150mg/3ml vial

## ASPIRIN

Onset: Approximately 15 minutes  
Duration: 2-4 hours for pain / Life of platelets

### Indications

- A. In the presence of suspected myocardial infarction or TIA

### Contraindications

- A. Children with chicken pox
- B. Children with flu
- C. In the presence of anticoagulants (It is a relative contraindication. Aspirin should be given for AMI.)
- D. Children under 2 years
- E. Hypersensitivity to salicylates
- F. History of Peptic Ulcers
- G. Hemophilia or other bleeding disorders
- H. Pregnancy
- I. Allergic to Ibuprofen

### Adverse Reactions

- A. Ringing in ears
- B. Gastrointestinal bleeding

### Supplied

1-1.4 gr. (81mg) chewable tablet

## ATROPINE SULFATE

Onset: Rapid  
Duration: 2-6 hours

### Indications

- A. Bradycardia – hemodynamically unstable
- B. Asystole
- C. Organophosphate poisoning
- D. Bronchospastic pulmonary disorders
- E. PEA

### Contraindications

- A. Tachycardia
- B. Hypersensitivity
- C. Unstable cardiovascular status in acute hemorrhage and myocardial ischemia
- D. Narrow angle glaucoma

### Adverse Reactions

- A. Tachycardia
- B. Paroxysmal bradycardia when pushed slowly or when used in doses less than 0.5mg
- C. Palpitations

## Seneca County Emergency Medical Services Medical Protocols

- D. Dysrhythmias
- E. Headache
- F. Dizziness
- G. Dry mouth / nose
- H. Photophobia / blurred vision
- I. Nausea / vomiting

### Special Considerations

- A. When given endotracheally, follow with positive-pressure ventilation

### Supplied

1 mg/ml pre-injectable

## **BENADRYL (Diphenhydramine HCL)**

Onset: 1-3 hours

Duration: 6-2 hours

### Indications

- A. Relief from allergies
- B. Allergic reactions
- C. Anaphylaxis
- D. Acute dystonic reactions

### Contraindications

- A. Asthma attacks
- B. Hypersensitivity
- C. Narrow angle glaucoma

### Adverse Reactions

- A. Drowsiness
- B. Disturbed coordination
- C. Hypotension
- D. Palpitations
- E. Tachycardia / bradycardia
- F. Dry mouth
- G. Thickening of secretions
- H. Sedation

### Special Considerations

- A. CNS depressants may increase depressant effect

### Supplied

50 mg / 1 ml pre-injectable

# Seneca County Emergency Medical Services Medical Protocols

## **DEXTROSE 50%**

Onset: <1 minute  
Duration: Depends on blood sugar

### Indications

- A. Hypoglycemia
- B. Altered LOC
- C. Coma
- D. Seizures
- E. Overdose

### Contraindications

- A. None

### Adverse Reactions

- A. Thrombophlebitis
- B. Warmth or pain from infusion

### Supplied

25 gm/50 ml pre-injectable

## **EPINEPHRINE**

Onset:  
    Sub Q 5-10 minutes  
    IV 1-2 minutes  
Duration: 5-10 minutes

### Indications

- A. Asthma
- B. Anaphylaxis
- C. Cardiac arrest
  - 1. Asystole
  - 2. PEA
  - 3. Ventricular fibrillation
- D. Hemodynamically Unstable Bradycardia

### Contraindications

- A. Hypersensitivity
- B. Hypovolemic shock
- C. Coronary insufficiency
- D. Hypertension

### Adverse Reactions

- A. Nausea
- B. Headache
- C. Tachycardia
- D. Palpitations
- E. Dysrhythmias
- F. Precipitation of Angina
- G. Restlessness
- H. Hypertension

### Supplied

1 mg /10 ml pre-injectable  
1 mg / 1 ml ampule

# Seneca County Emergency Medical Services Medical Protocols

## **GLUCAGON**

Duration: 9-15 minutes

### Indications

- Altered LOC Onset: <1 minute
- A. when hypoglycemia is suspected
  - B. Used as an inotropic agent in beta-blocker overdose

### Contraindications

- A. Allergies to proteins

### Adverse Reactions

- A. Tachycardia
- B. Hypertension
- C. Nausea

### Supplied

1 unit dose

Given IM,SQ or IN with mucosal atomization device ½ volume in each nare

## **LASIX (Furosemide)**

Onset: 15-20 minutes

Duration: 4-6 hours

### Indications

- A. Pulmonary edema
- B. Congestive heart failure

### Contraindications

- A. Anuria
- B. Hypersensitivity
- C. Severe electrolyte depletion

### Adverse Reactions

- A. Hypotension
- B. EKG changes
- C. Chest pain
- D. Dry mouth
- E. Hypochloremia
- F. Hypokalemia
- G. Hyponatremia
- H. Hyperglycemia

### Special Considerations

- A. Protect from light
- B. Can cause fetal abnormalities

### Supplied

40 mg / 4 ml pre-injectable

100 mg / 10 ml pre-injectable



# Seneca County Emergency Medical Services Medical Protocols

## **LIDOCAINE (Xylocaine)**

Onset: 30-90 seconds  
Duration: 2-4 hours

### Indications

A. Ventricular dysrhythmias

### Contraindications

- A. Hypersensitivity
- B. Stokes-Adams Syndrome
- C. Second or third degree heart block in the absence of a pacemaker

### Adverse Reactions

- A. Lightheadedness
- B. Confusion
- C. Blurred vision
- D. Hypotension
- E. Cardiovascular collapse
- F. Bradycardia
- G. CNS depression

### Supplied

100 mg / 5 ml  
2gm in 500ml D5W  
2% jelly

## **MORPHINE SULFATE**

Onset: Immediate  
Duration: 2-7 hours

### Indications

- A. Chest pain associated with an MI
- B. Pulmonary edema
- C. Sedation prior to cardioversion
- D. Sedation prior to pacing
- E. Pain control

### Contraindications

- A. Allergies to narcotics
- B. Diarrhea caused by poisoning
- C. Hypovolemia
- D. Head injury
- E. Hypotension

### Adverse Reactions

- A. Hypotension
- B. Tachycardia
- C. Bradycardia
- D. Palpitations
- E. Syncope
- F. Facial flushing

## Seneca County Emergency Medical Services Medical Protocols

- G. Respiratory depression
- H. Euphoria
- I. Bronchospasm
- J. Dry mouth
- K. Allergic reaction
- L. May worsen heart blocks
- M. Narcotics rapidly cross the placenta

### Supplied

4 mg/1ml carpject

### **NARCAN (Naloxone)**

Onset: <2 minutes  
Duration: 30-60 minutes

### Indications

- A. For reversal of respiratory and CNS depression induced by opiates
- B. Coma
- C. Decreased level of consciousness

### Contraindications

- A. Hypersensitivity

### Adverse Reactions

- A. Tachycardia
- B. Hypertension
- C. Dysrhythmias
- D. Nausea
- E. Diaphoresis
- F. Seizures (rare)

### Supplied

2 mg / 2 ml pre-injectable

Can be given IV, IM or IN with mucosal atomization device ½ volume in each nare

Can also be placed in a nebulizer and used as blow by in infants or small children in opiate exposure.

### **NITROGLYCERIN**

Onset: 1-3 minutes  
Duration: 20-30 minutes

### Indications

- A. Ischemic chest pain
- B. Hypertension
- C. Congestive heart failure

### Contraindications

- A. Hypersensitivity
- B. Hypotension
- C. Head injury
- D. Cerebral hemorrhage

## Seneca County Emergency Medical Services Medical Protocols

- E. Viagra within 24 hours

### Adverse Reactions

- A. Headache
- B. Syncope
- C. Tachycardia
- D. Hypotension
- E. Nausea
- F. Allergic reaction
- G. Diaphoresis

### Supplied

0.4mg (1/150 gr) sublingual tabs

## **SODIUM BICARBONATE**

Onset: 2-10 minutes  
Duration: 30-60 minutes

### Indications

- A. Tricyclic overdose
- B. Acidosis

### Contraindications

- A. Alkalosis
- B. Hypocalcemia
- C. Hypokalemia

### Adverse Reactions

- A. Metabolic alkalosis
- B. Hypoxia
- C. Seizures
- D. Electrolyte imbalance
- E. Tissue sloughing at injection site

### Supplied

50 mEq / 50 ml pre-injectable

## **VENTOLIN (Albuterol)**

Onset: 5-15 minutes  
Duration: 3-4 hours

### Indications

- A. Relief of bronchospasm

### Contraindications

- A. Hypersensitivity to Ventolin
- B. Cardiac dysrhythmias associated with tachycardia
- C. Tachycardia caused by digitalis
- D. Coronary insufficiency

### Adverse Reactions

- A. Usually dose related
- B. Restlessness
- C. Dizziness
- D. Palpitations

## Seneca County Emergency Medical Services Medical Protocols

- E. Increased blood pressure
- F. Dysrhythmias
- G. Increased hypoxia

### Supplied

2.5 mg / 3 ml inhalation solution

### **Versed (Midazolam)**

Onset: Immediate

Duration: Short acting benzodiazepine CNS depressant

#### Indications:

- Intubated patient with increased level of consciousness in who extubation is not desirable and is either becoming distressed or at risk of destabilizing their airway
- Pain/sedative therapy for electrical cardioversion
- Pain/sedative therapy for transcutaneous pacing
- Seizures
- Anxiolytic

#### Contraindications:

- Known hypersensitivity to Midazolam or other benzodiazepines
- Glaucoma, shock, coma, alcohol intoxication, overdose patient
- Concomitant use with other CNS depressants, barbiturates, alcohol, Narcotics

#### Adverse Reactions

- Hiccups, cough, over-sedation, nausea, vomiting, injection-site pain, headache, blurred vision
- Hypotension, respiratory depression and arrest

#### Drug Interactions

- Should not be used in patients who have taken CNS depressant

#### Supplied

- 5 mg/1 mL vial (5mg/mL)

Dosage: **NEVER EXCEED 5mg in any patient at any time without physician order**

Adult: 2-4mg IV/IO/IN for seizures or sedation (Not to exceed 0.2mg/kg)

Peds: Weight based 0.02-0.05mg/kg (not exceed 0.2mg/kg) Avg dose 1mg intranasally (0.5mg per nare)

### **FENTANYL CITRATE (Sublimaze)**

Onset: Immediate

Duration: 20-30 minutes

Indications: Pain (non-cardiac)  
Musculoskeletal pain  
Burn Pain

Contraindications: Allergy to Fentanyl

Seneca County Emergency Medical Services  
Medical Protocols

Adverse Reactions

- A. Respiratory Depression
- B. Bradycardia (rare)
- C. Unknown Allergy
- D. Chest Rigidity if given too fast IV

Dose:

0.5 -1 mcg/kg (average adult dose of 50 -100 mcg) slow IV push or IM or IN with mucosal atomization device ½ volume in each nare

Supplied

100mcg/2ml ampule

**ZOFRAN (Odansetron)**

Onset: 5-10 minutes IV

Duration 8 hours

Indications: Nausea/Vomiting  
Prophylactic use with Narcotic Pain meds to prevent nausea/vomiting

Adverse Reactions:

- A. Blurred vision if given too fast IV
- B. Headache
- C. Allergic Reaction (rare)
- D. Not to be used in children less than 2 years of age

Dose: Can be given IV/IM/IO or IN with mucosal atomization device ½ volume in each nare

ADULT: 4mg IV push (slow – over 1-2 minutes)

Can be given orally using Oral Dissolving Tablet 4mg – advise patient to let pill dissolve and not swallow it

Do not give Oral Tablets to patients that are actively vomiting.

PEDS: The studied safe dosing range for Pediatrics is 0.05 – 0.15mg/kg

Supplied:

4mg/2ml vial

4mg ODT - oral dissolving tablet

Seneca County Emergency Medical Services  
Medical Protocols

**Diazepam (Valium)**

Onset: 1-5 minutes IV

Duration: 15 minutes – 1 hour

Indications: Seizure Activity

Adverse Reactions:

Hypotension

Reflex tachycardia

Respiratory depression

Ataxia

Psychomotor impairment

Confusion

Nausea

Dose:

Adult: 5-10 mg IV q 10-15 min prn (maximum dose 20 mg)

Pediatric: 0.2-0.3 mg/kg/dose IV

( $\leq 1$  mg/min) q 2-5 min prn (maximum total dose 10 mg)

Supplied: 10 mg Carpuject

**Instant Glucose - Oral**

Onset: Varied; Dependent on the patient

Indications: Patients with altered mental status and a known history of diabetic mellitus

Contraindications: Unconscious, known diabetic who has not taken insulin for days, unable to swallow

Adverse Reactions: None when given properly. May be aspirated by the patient without a gag reflex

Dose: 1 tube between the cheek and gum, repeat with second tube if patient is still conscious and can swallow following finger blood sugar is  $< 60$ mg/dl.

Supplied: 1 tube-gel, 15-25gm

Seneca County Emergency Medical Services  
 Medical Protocols  
**DILTIAZEM (CARDIZEM)**

**INDICATION: \*\*Echo Paramedic Only\*\***

- Atrial fibrillation / flutter with rapid ventricular response or SVT

**ACTION:**

- Slows AV conduction
- Decreases rate of ventricular response
- Onset: 2 – 5 minutes
- Duration: 3 – 4 hours

**PRECAUTIONS:**

- Watch for hypotension

**CONTRAINDICATIONS:**

- Hypersensitivity to the Medication
- 2nd or 3rd degree AV Block
- Cardiogenic Shock
- Ventricular Tachycardia

**SIDE EFFECTS:**

- Nausea/Vomiting
- Hypotension
- Dizziness

**Adult Only – NOT Appropriate for use in Pediatric Patients.**

**Indications:** Atrial fibrillation or Flutter w/ RVR or PSVT

**The Safest method to administer Cardizem in the Pre-Hospital Environment:**

Ensure patient has all hemodynamic monitoring equipment attached (ECG, sPO<sub>2</sub>, ETCO<sub>2</sub>, NIBP)

Administer Weight appropriate dose of Cardizem over 2 minutes slow IV push – Check full set of vitals

After 15 minutes & Patient is stable and HR remains above 120bpm – Administer 2<sup>nd</sup> dose of Cardizem over 2 minutes and re-assess. – Begin Cardizem infusion at 10mg/hr & titrate to maintain HR at or less than 120bpm.

**Adult Administration Guideline**

Indication	Dosage	Routes	Special
Atrial fibrillation or Flutter w/ RVR or PSVT	0.25 mg / kg Repeat 0.35 mg / kg	IV / IO	Give slowly IV bolus over 2 minutes

Seneca County Emergency Medical Services  
Medical Protocols

**\*\*Not Indicated in Pediatric Patients\*\***

**IV Bolus Dose**

<b>Pounds/Kg</b>	<b>Initial Bolus Bolus Dose of 0.25mg/kg</b>	<b>After 15 minutes Bolus dose of 0.35mg/kg</b>
<b>90/41</b>	<b>10</b>	<b>14.5</b>
<b>100/45</b>	<b>11</b>	<b>16</b>
<b>110/50</b>	<b>12.5</b>	<b>17.5</b>
<b>120/55</b>	<b>13.5</b>	<b>19</b>
<b>130/60</b>	<b>14.5</b>	<b>20.5</b>
<b>140/65</b>	<b>16</b>	<b>22</b>
<b>150/68</b>	<b>17</b>	<b>24</b>
<b>160/73</b>	<b>18</b>	<b>25.5</b>
<b>170/77</b>	<b>19</b>	<b>27</b>
<b>180/82</b>	<b>20.5</b>	<b>28.5</b>
<b>190/86</b>	<b>21.5</b>	<b>30</b>
<b>200/91</b>	<b>22.5</b>	<b>31.5</b>
<b>210/95</b>	<b>24</b>	<b>33.5</b>
<b>220/100</b>	<b>25</b>	<b>35</b>
<b>230/105</b>	<b>27</b>	<b>36.5</b>

**How to mix a drip**

<b>Diluent Volume</b>	<b>Quantity of Cardizem to add</b>	<b>Final Concentration</b>
50ml	50mg	1mg/ml – 5ml/hr (5mg/hr) 10ml/hr (10mg/hr)  15/mg/hr(15mg/hr)

- In Most cases you won't need a drip, but if you have an extended transport (>30 min) time you may need to titrate the drip to maintain a heart rate of less than 120 (<120).
- Titrate every 30-45 minutes (based on med control order) to maintain a HR above 60bpm & below 120bpm
- If HR or BP drops - STOP THE INFUSION!



Seneca County Emergency Medical Services  
Medical Protocols

**Solu-medrol (Methylprednisolone)**

**Class:** Glucocorticosteroid  
**\*\*Echo Paramedic Only\*\***

**Action:**

Methylprednisolone is a synthetic steroid that suppresses acute and chronic inflammation and may alter the immune response. In addition, it potentiates vascular smooth muscle relaxation by beta-adrenergic agonists and may alter airway hyperactivity

**Indications:**

Anaphylaxis / Allergic Reaction  
Asthma/COPD

**Precautions/Contraindications:**

Evidence of active GI bleed

**Adult Dosing:**

- 125 mg, IV/IO bolus, slowly, over 2 minutes

**Pediatric Dosing:**

- 2 mg/kg, IV/IO bolus, slowly, over 2 minutes to max dose of 125 mg

**Notes/Special Considerations:**

- Must be reconstituted and used immediately
- The effect of methylprednisolone is generally delayed for several hours.
- Methylprednisolone is not considered a first line drug. Be sure to attend to the patient's primary treatment priorities (i.e. airway, ventilation, albuterol nebulization) first. If primary treatment priorities have been completed and there is time while in route to the hospital, then methylprednisolone can be administered. Do not delay transport to administer this drug.

Seneca County Emergency Medical Services  
Medical Protocols

**MAGNESIUM SULFATE**

**\*\*Echo Paramedic Only\*\***

CLASS OF DRUG: antidysrhythmic; electrolyte; smooth muscle relaxant

PHARMACOLOGIC ACTION:

Blocks peripheral neuromuscular transmission, produces anticonvulsant effects; decreases amount of acetylcholine released at end-plate by motor nerve impulse. Slows rate of sino-atrial (SA) node impulse formation in myocardium and prolongs conduction time. Promotes movement of calcium, potassium, and sodium in and out of cells and stabilizes excitable membranes

INDICATIONS

1. Initial treatment of seizures associated with eclampsia, and seizures, refractory to benzodiazepines.
2. First-line antidysrhythmic in the treatment of Torsades de Pointes.
3. Acute asthma refractory to other more conventional treatment, or when the effects of beta-adrenergic medications contraindicate their use.

CONTRAINDICATIONS

1. Hypermagnesemia
2. Hypocalcemia
3. Anuria
4. Heart blocks
5. Diabetic Coma
6. Myocardial damage

DRUG INTERACTION

1. Potentiates neuromuscular blocking agents

ADMINISTRATION:

1. Treatment of pre-eclampsia and/or seizures associated with eclampsia: [2 - 4 gm] slow IVP or IO followed by maintenance infusion of 1- 2 gm per hour
2. Torsades de Pointes: [1 - 2 gm] diluted in 10ml of D5W IV/IO push
3. Acute asthma: [1 - 2 gm] slow IVP or IO, or IV/IO infusion over 10 minutes

SPECIAL NOTES

1. Monitor deep tendon reflexes often, especially those patients receiving a maintenance infusion.
2. Calcium gluconate should be used to reverse the toxic effects of magnesium sulfate.
3. Monitor for hypotension.

Seneca County Emergency Medical Services  
Medical Protocols

**Transexamic Acid (TXA or Cyklokapron) Protocol for Rural EMS**

**\*\*Echo Paramedic Only\*\***

**Class:** Anti-fibrinolytic

**Mechanism of Action:**

Forms a reversible complex that displaces plasminogen from fibrin resulting in inhibition of fibrinolysis; it also inhibits the proteolytic activity of plasmin.

**Indication:**

Trauma associated with significant hemorrhage

- Must administer within 3 hours of injury
- SBP <90 mmHg, HR >110 or both

**Dosage/Administration**

**\*MUST BE ADMINISTERED WITHIN 3 HOURS OF INJURY\***

Adult :

- 1 gram administered over 10 minutes for the initial dose.
  - Mix 1 gram (10 ml) in 50 ml of NS and infuse over 10 minutes.
- Maintenance Infusion- Mix 1 gram (10 ml) in 100 ml of NS and infuse over 8 hours.

Set infusion to 15 ml/hr. (an infusion pump is a best practice and is best done at the receiving hospital).

**\*MUST HAVE PHYSICIAN ORDER TO ADMINISTER.\***

**Pediatric:**

**\*\* Not recommended for patients < 12 years of age\*\*.**

**Adverse Reactions/Side Effects:**

Hypotension (with rapid IV injection), giddiness, allergic dermatitis, diarrhea, nausea, vomiting, blurred vision

DO NOT GIVE THIS MED FAST IV PUSH – it must be given in an IV bolus over 10 minutes

**Contraindications:**

- Hypersensitivity to medication
- Suspected CVA, MI, or PE

**\*\*Echo Paramedic ONLY\*\***

Seneca County Emergency Medical Services  
Medical Protocols

## **EZ-IO Device – Intraosseous Needle Driver**

### **INTRODUCTION**

The EZ-IO device is designed for use in emergency situations when you are unable to obtain a peripheral IV. The EZ-IO can be used to deliver lifesaving fluids and drugs into the intraosseous space. Intraosseous access is a treatment procedure within the Paramedic and EMT-I protocols. Mercy Hospital of Tiffin, functioning as the Medical Control Facility for Seneca County EMS has approved the use of the EZ-IO device for pre hospital use.

### **USE OF the EZ-IO**

#### **Indications:**

#### **Adult Patients (40 kilograms (88) lbs or more) (Blue needle)**

1. Needs IV fluids or medications and a peripheral IV cannot be established in 2 attempts or 90 seconds AND exhibit 1 or more of the following:
  - a. Altered mental status (GCS < 8) in situations other than hypoglycemia
  - b. Cardiac or respiratory compromise, such as
    1. Impending cardiopulmonary arrest
    2. Respiratory rate less than 10/min or more than 40/min
  - c. Hemodynamic instability (systolic BP < 80 mmHg)
2. EZ-IO may be considered PRIOR to peripheral IV attempts in the following situations:
  - a. Cardiac arrest (medical or traumatic)
  - b. Hemodynamic instability with alteration of mental status

#### **Pediatric Patients (between 3 and 39 kilograms (6.6 - 87 lbs) (Pink needle)**

1. Needs IV fluids or medications and a peripheral IV cannot be established in 2 attempts or 90 seconds AND the patient is:
  - a. Unconscious or
  - b. Unresponsive
2. EZ-IO may be considered PRIOR to peripheral IV attempts in the following situations:
  - a. Cardiac arrest (medical or traumatic)
  - b. Unconscious and seriously ill or injured
  - c. Hemodynamically unstable

#### **Bariatric Adult Patients (excessive adipose tissue depth) (Yellow Needle)**

1. Needs IV fluids or medications and peripheral IV cannot be established in 2 attempts or 90 seconds AND the patient is:
  - a. Too Large to access with a Blue EZ IO needle
  - b. Any of the above criteria for EZ IO access

# Seneca County Emergency Medical Services Medical Protocols

## **Contraindications:**

- Fracture of the tibia or femur (consider alternative tibia)
- Previous orthopedic procedures such as an IO within 24 hours or a knee replacement, or other knee surgery... (consider alternate tibia)
- Pre-existing medical condition involving that extremity
- Infection at insertion site (consider alternate tibia)
- Inability to locate landmarks (significant edema)
- Excessive tissue at insertion site (obesity)
- Infants less than 3 kilograms (6.6 lbs) in weight
- The EZ-IO shall not be used when hypoglycemia is the primary presenting problem.

## **Considerations:**

1. Flow rates:
  - a. Due to the anatomy of the intraosseous space, flow rates will be slower than those achieved with IV catheters.
  - b. Initially infuse a rapid bolus of normal saline. . >40kg 10ml and 3-39kg 5ml.
  - c. Use a pressure bag to ensure continuous infusion.
  - d. Flush = Flow – if you don't flush it will not flow
2. Pain:
  - a. Insertion of the EZ-IO in conscious patients causes mild to moderate discomfort but is usually no more painful than a large bore IV.
  - b. IO infusion can cause severe discomfort for conscious patients.
  - c. Prior to IO flush on alert, SLOWLY administer 2% IV Lidocaine through the EZ-IO hub. >40kg 40mg and 3-39kg 0.5mg/kg.

## **Potential Complications:**

1. Fracture
2. Compartment Syndrome
3. Pain
4. Infection

## **Available Sizes:**

- Adult -- for use with patients 40 kg's or more (Blue) (25mm)  
Bariatric Adult – for use in Adult patients with excessive subcutaneous tissue (45mm)  
Pediatric -- for use with patients between 3 and 39 kg's (Pink) (15mm)

## **Correct Needle Selection: (EZ- IO needles supplied in 15 mm, 25 mm and 45 mm lengths.)**

1. Selecting the correct needle set is based on tissue depth overlying the insertion site.

Seneca County Emergency Medical Services  
Medical Protocols

2. The best way to determine the appropriate needle length is by assessing tissue depth by using a finger or thumb and palpating the insertion site to estimate the depth of the tissue.
3. Situations that usually require the longest needle include:
  - a. Adult proximal humerus site.
  - b. Patients with excessive soft tissue
  - c. Patients with excessive muscle tissue
  - d. Patients with substantial edema.

**Insertion Procedure:**

1. BSI.
2. Locate and cleanse insertion site using aseptic technique
3. Prepare the EZ-IO driver and needle set.
4. Stabilize leg.
5. Insert EZ-IO needle set.
6. Remove EZ-IO driver from needle set while stabilizing catheter hub.
7. Remove stylet from needle set and dispose in sharps container.
8. Confirm placement.
9. If the adult patient is conscious, administer 2% Lidocaine IO . >40kg give **40mg** and 3-39kg give **0.5mg/kg** and wait 15 seconds.
10. Bolus the EZ-IO catheter with normal saline. >40kg give **10ml** and 3-39kg give **5ml**.
11. Connect the IV tubing.
12. Place a pressure bag on solution being infused and adjust the flow rate, as desired.
13. Monitor EZ-IO site and patient condition.
14. Document use of EZ-IO in the patient care report.

**Cleaning and Disinfecting:**

1. Observe BSI precautions
2. Wipe the exterior surface of the EZ-IO power driver with a soft, clean moistened cloth. Use a soft bristled brush to remove any visible debris.
3. Spray the exterior surface with Cavacide or similar cleaner.
4. Gently wipe all exterior surfaces with gauze pads until all visible debris is removed.
5. Manipulate the trigger and clean this area with a clean cloth that is moistened with Cavacide or similar cleaner.
6. Using sterile 2x2 moisten with Cavacide or similar cleaner and clean inside the opening of the metal drive shaft
7. Inspect the entire device for visible debris (repeat steps 1-6 if necessary)
8. Inspect the entire device for damage (take device out of service if damaged)

## Seneca County Emergency Medical Services Medical Protocols

9. Dry the device with a soft, clean cloth and return it to its case – restock needle sets as necessary)

**NOTE:** Do Not immerse or soak the driver or use excessive liquid during the cleaning and disinfecting.

### Troubleshooting:

Problem	Troubleshooting Tip
The driver has too little torque to accomplish the insertion procedure	You may be applying too much pressure to the driver or you may be pushing the needle in too fast. Apply less pressure and allow the motor to do the work. Note: very hard bone may take longer than expected to penetrate.
The catheter or needle set breaks during or after placement in the patient.	If the catheter is accessible, attempt to grasp it and gently pull it out while turning in a clockwise rotation. X-Ray confirmation of removal is required. Note: Report this to the ER Physician ASAP.
The needle set bends prior to or during insertion.	Replace with new, sterile set.
The EZ-IO catheter cannot be removed by hand.	Attach a syringe to the luer lock of the catheter and use the body of the syringe to apply gentle pulling force to the catheter while turning clockwise.

### ResQPOD Circulatory Enhancer:

- A. Conventional CPR provides 15% of normal blood flow to the heart and blood flow to the brain is 25% of normal. Current survival rates average 5%.
- B. The ResQPOD is an impedance threshold device that prevents unnecessary air from entering the chest during the decompression phase of CPR. When air is prevented from rushing into the lungs as the chest wall recoils, the vacuum (negative pressure) in the thorax pulls more blood back to the heart, resulting in a:
  1. Doubling of blood flow to the heart.
  2. 50% increase in blood flow to the brain.
  3. Doubling of systolic blood pressure.

### II. Indications:

- A. Cardiopulmonary arrest 8 years and older (medical etiology)

### III. Contraindications:

- A. Patients under 8 years of age
- B. Cardiopulmonary arrest related to trauma

### IV. Procedure:

- A. Confirm absence of pulse and begin CPR immediately. Assure that chest wall recoils completely after each compression.
- B. Using the ResQPOD on a facemask:
  1. Connect ResQPOD to the facemask.
  2. Connect ventilation source (BVM) to top of ResQPOD. If utilizing a mask without a bag, connect a mouthpiece.
  3. Establish and maintain a tight face seal with mask throughout chest compressions. Use a two-handed technique or head strap.

Seneca County Emergency Medical Services  
Medical Protocols

4. Do not use the ResQPOD's timing lights during CPR utilizing a facemask for ventilation.
5. Perform ACLS interventions as appropriate.
6. Insert the King LTSD airway and connect the ResQPOD.
7. Utilize the rescue breathing timing lights when using the King airway or if patient is intubated.
8. Immediately REMOVE ResQPod if a Return of Spontaneous Pulse is achieved.

**\*\*\* Epinephrine Infusion Protocol**

**Mix Epinephrine solution as follows, and use a Volutrol® type device, (60 gtts/cc):**

**Usual Dose:** 2 - 20 micrograms/min. for adults and pediatrics.

**A. Adult solution:**

1. Mix 0.5ml 1:10,000 (Cardiac) Epinephrine into 50ml D5W.
2. Concentration = 10 mcg/ml.
3. Using 60ml Drip Set; Initiate the infusion at 15gtts/min (2.5mcg/min).  
Titrate the infusion to no more than 120gtts/min (20mcg/min)  
Titrate to the desired effect: BP 90-100 systolic, HR 60-100bpm  
If used in Severe Anaphylaxis – combine with large fluid volumes of 0.9% Saline (20-60ml/kg)

**B. Pediatric solution:**

**Same as outline above: Dose will be titrated**

**PED Epinephrine Infusion 0.1-2 mcg/kg/min (Medical Control Call In)**

**Utilize Broselow Tape for length based approximation of weight**

**\*\*Push Pressor Method\*\***

**\*This method is alternative to mixing a drip and can be done much faster while your partner mixes a drip as above\***

**Using a Cardiac (1:10,000) Prefilled Epinephrine – squirt out 9ml of the 10ml prefilled syringe.**

**Refill the Prefilled Syringe with 9ml of Normal Saline from the IV bag.**

**What remains is 10ml of 1:100,000 Epinephrine Solution (10mcg/ml)**

**Slowly push 0.5ml – 2.0ml every 2-5 minutes while simultaneously running a fluid bolus.**

**This is the same as starting a drip and can be done much faster and quicker in the field.**

**\*This is only to be used in extreme hypotensive situations (ROSC, Bradycardia,etc.)**



Seneca County Emergency Medical Services  
Medical Protocols

## ICE Protocol (Induced Cooling by EMS) (Therapeutic Temperature Management)

- Scene Safety, Infection Control
- Patient criteria for this therapy:
  - Must have Return of Spontaneous Circulation not related to blunt/penetrating trauma or hemorrhage with non-purposeful neurological activity
  - Initial core temperature > 34 C
  - Age > 18
  - Patient has an advanced airway in place
  - Patient not obviously pregnant
- ABC's with high flow O2.
- Vital signs every 15 minutes with continuous cardiac monitoring, pulse oximetry, capnography.
- IV of Normal Saline, consider a second line.
- Patient must have an advanced airway in place. ET Tube or King Airway.
- Expose patient, place cold packs in groin area, under the neck and in axilla.
- Cold Saline bolus 30cc/kg IV/IO (Maximum of 2 liters)
- Consider sedation with the following:
  - **Valium 2-5 mg IVP/IO (maximum dose 0.3 mg/kg)**, may repeat in 5min PRN
  - OR**
  - **Versed 0.1 mg/kg IVP/IO** (start with small doses (2.5-5mg) and titrate to effect
  - **Morphine 2-5 mg IV/IO may repeat every 5 minutes to a maximum dose of 20 mg**
  - OR**
  - **Fentanyl 50-100 mcg IV/IO, (over two minutes) may repeat every 10 minutes to a maximum dose of 200 mcg**
- **Epinephrine Drip 2-10 ug/kg/min** to Maintain a Mean Arterial Pressure of 90 – 100 mm Hg
- Continue to treat the original cause of the dysrhythmia or cause of the arrest. Follow the specific dysrhythmia protocol.
- Monitor and maintain the End Tidal CO2 at a target value of 40 mm Hg. Do Not hyperventilate.
- Patients with a ROSC and/or induced hypothermia should be transported to an appropriate “STEMI” facility. Facilities include: St. Vincent's Mercy Medical Center, University of Toledo Medical Center, The Toledo Hospital and St. Luke's Hospital.
- The ROSC ICE patients need to be maintained in a cool, medication induced coma with Sedation and Paralytics – we cannot do that adequately in the field. Transport immediately or arrange for Aeromedical Evacuation to a Facility that does Emergent Cardiac Interventions
- Seneca County EMS recognizes that this abbreviated ICE protocol is the first step towards a full Induced Cooling protocol that needs to be continued at a definitive care facility (Emergency Department, Aeromedical Ambulance, and Advanced Cardiac Care).