Statewide Standard Treatment Protocols

Delaware Advanced Life Support Protocols, Guidelines, Policies and Standing Orders

Effective: November 1, 2024

Approved by the EMS Medical Directors: **April 17, 2024**

Approved by the Advanced Life Support Subcommittee of the Board of Medical Licensure and Discipline: **May 31, 2024**

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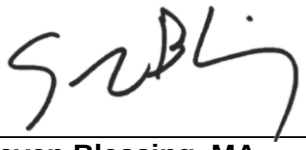
State of Delaware
Department of Health and Social Services
Division of Public Health
Office of Emergency Medical Services

2024 Statewide Standard Treatment Protocols, Guidelines, Policies and Advanced Life Support Standing Orders



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ALPHABETIZED CONTENTS BY KEYWORD

INTRODUCTION

The standing orders of the Statewide Standard Treatment Protocol have been developed for use by paramedics while functioning in the Delaware Paramedic Services System. These Standing Orders replace the previous set and are initially effective on November 1, 2024. The Standing Orders are specific and should not be open to alteration. However, while many of the common, frequently encountered medical emergencies have been addressed by specific standing order, it is recognized that not all patient presentations are clear-cut, nor will all patients benefit from "recipe" treatment approaches. Standing orders do not replace the need for sound clinical judgment or the need to **contact medical control** as soon as possible.

Standing orders are not intended to provide definitive treatment but are intended to stabilize the patient prior to transport to the hospital for definitive treatment. Deviation from standing orders may be undertaken only by direct order from an approved medical control physician serving as Medical Command within an approved facility.

The intent of these orders is two-fold: 1) promotion of statewide standardization of prehospital advanced life support services, and 2) provision of guidelines under which paramedics may initiate life-saving treatments prior to establishing contact with medical control.

The ultimate goal of the Delaware Paramedic System is to deliver viable patients to the hospital, thereby creating a positive impact on health care in Delaware.

Unless marked specifically as optional, these standing orders and equipment list are to be complied with by all paramedic agencies. All Delaware paramedic agencies must be in compliance with the ability to perform the standing orders within a period of time determined by the State EMS Director.

PARAMETERS OF PARAMEDIC PRACTICE

Paramedics are not authorized, in the State of Delaware, to function as independent providers of advanced life support services.

Paramedics function as physician extenders and, as such, participate in the practice of medicine. Paramedics may only perform advanced life support procedures when functioning as members of an on-duty Advanced Life Support (ALS) unit. Such a response unit must be from a state approved paramedic service whose paramedics are functioning under the license of the State Emergency Medical Service's Medical Director.

The prehospital provision of ALS services by a paramedic in any other situation constitutes the unlawful practice of medicine. Off duty paramedics who respond to a scene are considered good Samaritans and are only expected to perform at the level of a first responder unless activated by an agency policy or procedure.

These situations include but are not limited to performing ALS skills while serving on Basic Life Support (BLS) units, carrying ALS equipment in personal vehicles for the purpose of responding to medical emergencies, and offering or providing paramedic services in settings other than those described above.

PARAMEDIC SCOPE OF PRACTICE

Delaware paramedics serve as physician extenders in providing prehospital advanced life support within the state, and as specified in reciprocity agreements, in surrounding states.

The underlying objective of all paramedic activities is the rapid treatment, stabilization, and transport of the sick and injured to appropriate receiving facilities. The paramedic is authorized to provide all "first responder" and basic life support interventions in addition to the advanced life support procedures specified by this statewide standard treatment protocol, as approved by the Board of Medical Licensure and Discipline. Unless an imminent threat to life or limb necessitates immediate treatment, it is in the patient's best interest for the paramedic to obtain the chief complaint, history of present illness, pertinent past medical history, list of medications, and conduct a directed physical examination. Information gathered during the assessment is then used to guide treatment.

Paramedics respond to all calls to which they are dispatched, whether the nature of the call is medical or trauma. Paramedics evaluate and treat prehospital patients utilizing guidelines specified by these protocols. Communication is to be established with medical control as soon as possible, even if treatment of the patient does not require authorization by medical control. Treatments that do require authorization by medical control shall not be carried out on the paramedic's own initiative except under exceptional circumstances where communication with medical control is not immediately obtainable and, in the opinion of the paramedic, the patient's life may be jeopardized by further delay. At no time shall paramedics perform procedures beyond their scope of training or practice. A list of procedures ordinarily accomplished by protocol and verbal order of medical control follows and clearly defines the scope of paramedic practice. All patients evaluated by the paramedics are to be transported to the hospital. The only exceptions to this rule occur when patient care is released to another EMS agency; the patient receives an appropriate treatment and then refuses transportation to a hospital or when the patient refuses service. In some instances, medical control must be contacted for authorization per standing order.

In cases of anticipated, actual, or pending public health need, paramedics may be authorized by the Director of Public Health, and the State EMS Medical Director to give immunizations and vaccinations against infectious/communicable diseases. Specific immunization standing orders, administrative procedures and modifications to protocols must be authorized and signed by the Director of Public Health the State EMS Director and the State EMS Medical Director. This standing order must meet or exceed the policy standards and guidelines established by the National Vaccine Advisory Committee of the Centers for Disease Control (CDC). Participation in the vaccination program by Delaware Paramedic Agencies is elective.

Use of the standing orders within the Statewide Standard Treatment Protocol is straightforward. When ALS providers functioning as Delaware paramedics encounter a patient meeting the proper criteria as described in the order, treatment should be initiated. The orders are designed to permit paramedics to render emergent treatment of the sick and injured. Treatment should proceed through the protocol until the patient's condition changes or stabilizes. If the change in patient condition meets the criteria for a different standing order, treatment should be altered accordingly. Once the patient is stabilized, or the orders have been completed, medical control contact should be considered. Medical control may be contacted at any point during patient care, preferably early in the course of therapy, but must be contacted in all cases, preferably before transportation is initiated, unless the trauma protocol is in use.

“Any person, agency, organization, or entity who knows or in good faith suspects child abuse or neglect shall make a report in accordance with § 904 of this title (Title 16 of Delaware Code). For purposes of this section, "person" shall include, but shall not be limited to, any physician, any other person in the healing arts including any person licensed to render services in medicine, osteopathy or dentistry, any intern, resident, nurse, school employee, social worker, psychologist, medical examiner, hospital, health care institution, the Medical Society of Delaware or law enforcement agency."

Child Abuse Reporting Phone Contact:1-800-292-9582 or www.iseethesigns.org

Any person having reasonable cause to believe that an adult person is infirm or incapacitated as defined in § 3902 of this title (Title 31 of Delaware Code) and needs protective services as defined in § 3904 of this title shall report such information to the Department of Health and Social Services.

Division of Services for Aging and Adults with Physical Disabilities (DSAAPD): 1-800-223-9074.

National Human Trafficking Resource Center Hotline 1-888-373-7888

If an EMS provider has reasonable cause to suspect that a person is a potential victim of human trafficking, report the concern. National Human Trafficking Resource Center Hotline 1-888-373-7888 (24 hours). The NHTRC call takers are trained to assist by discussing a case in a HIPAA compliant manner.

MINIMUM SKILLS AND PROCEDURES

The following are skills and procedures that all paramedics must demonstrate proficiency in for initial certification and must maintain proficiency in for recertification. Procedures that are allowed only with approval by medical control are marked by an asterisk (*). All equipment/devices carried by or utilized by ALS agencies require the **written approval** of the State EMS Medical Director or his/her designee.

1. Patient assessment (primary and secondary surveys)
2. Obtaining vital signs including temperatures
3. Airway control (manual)
4. Use of airway adjuncts (nasopharyngeal and oropharyngeal airways)
5. Spine immobilization/stabilization
6. Cardio-pulmonary resuscitation
7. Bleeding control
8. Splinting of fractures and dislocations
9. Endotracheal intubation (oral and nasal)
10. Obtaining IV access (includes use of saline locks and accessing central lines)
11. Medication, vaccine and immunization administration (parenteral, intraosseous, endotracheal, intranasal, nebulized, oral, sublingual, and transdermal)
12. Calculation of drug dosages
13. Defibrillation/cardioversion (includes use of SAED)
14. Dysrhythmia recognition and treatment
15. External cardiac pacing
16. Use of suction equipment
17. Application of oxygen delivery devices (includes use of CPAP/BiPAP)
18. Use of bag-valve-mask device
19. Application of cardiac monitors
20. Venipuncture to obtain blood samples.
21. Vaginal delivery
22. Eye irrigation
23. External jugular cannulation
24. Use of Magill forceps to remove foreign body from the obstructed airway.
25. Pulse oximetry and CO-oximetry
26. Capnography (nasal and endotracheal)
27. 12 lead electrocardiogram (ECG)
28. Blood glucose determination and other point of care testing devices as approved by the State of Delaware Medical Directors.
29. Valsalva maneuvers (to control supraventricular tachycardia)
30. Intraosseous access for fluid/medication administration
31. Use of approved rescue airway device
32. Gastric tubes
33. Surgical/Needle cricothyrotomy
34. Needle chest decompression
35. *Presumptive diagnosis of death*
36. Use of pelvic compression devices
37. Use of approved ventilator device
38. Use of IV infusion pumps
39. Use of tourniquets and approved hemostatic agents.
40. Use of approved mechanical chest compression device
41. Provision of post resuscitation care

42. Application of Junctional Tourniquet (Optional)
43. Use of impedance threshold device (ITD)
44. Administration of blood products
45. Use of Point of Care Ultrasound (Optional)
46. BiPAP (Optional)

PARAMEDIC RADIO/TELEPHONE REPORTS GUIDELINES

The paramedic report to medical control should be brief and concise. The goal is to provide enough vital information to medical control so that they may provide informed direction for the patient's continued care and plan for the patient's disposition. Reports generally should not exceed thirty (30) seconds in duration in order to provide economical use of time by the paramedic, the medical control physician, and nursing personnel. The paramedic is to first attempt to contact the Delaware Medical Control facility of intended patient disposition. If a paramedic does not obtain a timely response, they may contact a second Delaware Medical Control facility for orders or consultation. If an out of state hospital is the intended destination, the EMS provider should contact the closest Delaware Medical Control facility. Delaware Medical Control facilities may be contacted by radio, phone, or approved alternative telemedicine method.
Receiving facility should be contacted on all calls when specialized equipment or personnel is needed.

ALS Priority I patients or patients requiring online medical direction for orders or consultation must have phone or radio consultation with receiving facility.

Priority II and III patients being treated under standard orders only do not require Medical Control contact.
Follow local agency SOP and facility request for reports.
A paramedic may seek expert consultation via online medical control at any time, for any patient, for any reason.

The following report format is acceptable:

- Paramedic unit number.
- Specific notification or requests such as (DFI, DOPA, TOR, Trauma Alert, Trauma Code, Cardiac Arrest, Stroke Alert, Heart Alert, CPAP/BiPAP, Sepsis Alert, etc.)
- Estimated time of arrival.
- Priority.
- Patient age.
- Patient sex.
- Chief complaint and related past medical history (i.e., patient with chest pain, history of MI and CABG or patient with altered mental status and history of insulin dependent diabetes).
- Vital signs.
- Significant physical findings (i.e., patient with shortness of breath found to have wheezing and to be hot to the touch, or the patient complaining of leg pain who has deformity of the mid-thigh without distal pulses).
- Care rendered.
- Response to care.
- Orders requested.
- Run case number is required for DOPA or relay information as soon as possible prior to leaving shift.

PARAMEDIC DOCUMENTATION RECORDS POLICY

At the time of patient delivery to an approved healthcare facility, the paramedic must give a verbal report to a physician or nurse at the patient's bedside and leave identified copies of all pertinent ECGs, rhythm strips, and printed patient trend data. **All IV bags that have been mixed with a medication must be labeled at time of ED disposition.**

EMS providers must complete, without exception, a State of Delaware PCR on each patient contact, and shall document all relevant findings, and treatments.

- In the absence of extraordinary circumstances, a PCR should be submitted to the receiving facility within four (4) hours of patient disposition.
- EMS providers must complete and submit a PCR to the receiving facility prior to going off duty.
- A completed PCR is also necessary to identify EMS providers in the event of a potential infectious disease exposure.

Documentation requirements apply to all 911 service providers and **ALL non-911 service providers including interfacility transport companies.**

ADULT GENERAL PATIENT CARE

INDICATIONS: *Any adult (age 15 years of age and greater) patient requiring pre-hospital medical evaluation by a prehospital healthcare provider in the State of Delaware*.

A patient is an individual who is sick, injured, wounded, or otherwise incapacitated or helpless and seeks immediate medical attention for whom EMS has been activated. A person that denies the need for medical treatment and/or transport, but any reasonable EMS provider can see that a person(s) has an obvious injury or illness, should be considered a patient, and treated as such.

The Adult General Patient Care protocol will be followed in conjunction with all other applicable protocols.

The most current version of the American Heart Association Guidelines for Cardiopulmonary Resuscitation is considered the standard for CPR within these protocols.

Respond using lights and sirens utilizing guidance of Priority Medical Dispatch® (PMD®) protocols and following discretion to limit use of lights and sirens currently approved by Delaware EMS Medical Directors.

Perform scene survey. *Delaware EMS Medical Directors recommend that all EMS crews carry "room" carbon monoxide detectors with an audible alert on their first-in bag for provider and patient protection.*

Observe universal precautions:

- Follow your agency's infection control policy.
- Delaware EMS Medical Directors recommend wearing masks when caring for patients with active coughing. Consider masking the patient pending respiratory status.

Consider the need for additional resources.

Determine responsiveness using AVPU.

Evaluate Airway, Breathing, Circulation, and Disability, Exposing the patient as necessary.

Secure a patent airway appropriately.

Manage cervical spine appropriately.

Treat life-threatening conditions as necessary per specific treatment protocols.

Contact Medical Control for consideration of a needle chest decompression for non- traumatic tension pneumothorax patients.

Monitor patient via the use of pulse oximetry and/or capnography (nasal prong/ET), as appropriate.

Administer oxygen as appropriate (maintain a SpO_2 of at least 92%).

Obtain medical history (HPI, PMH, allergies, and medications).
Evaluate blood pressure, pulses, respiratory rate, and tactile (or measured) temperature. Reassess with a frequency indicated by patient condition.

Monitor blood glucose levels as appropriate.

Monitor cardiac rhythm and/or 12 lead ECG as appropriate.
Assign treatment priority and make transport decision.

Establish intravenous access with normal saline infused as appropriate.

Consider intraosseous access if IV access cannot readily be obtained for Priority 1 patients in extremis that are in need of medication or fluid resuscitation:

- Administer 20 – 40 mg lidocaine IO over 1 minute in the conscious patient if not contraindicated.
- Administer 10 mL NSS rapid IO push.
- All IV medications can be administered IO.

Consider the insertion of an orogastric tube after the patient is successfully intubated.

Consider the administration of 4-8 mg Zofran (Ondansetron) ODT, IV or IM for nausea or vomiting. After 10 minutes, consider the administration of 1.25 mg Droperidol slow IVP for nausea or vomiting refractory to Zofran.

Secure patient in ambulance using appropriate equipment per ambulance design and agency standard operating procedures.

Consider proposed receiving facility's diversion status and inform patient (family) as appropriate.

Transport patient to an appropriate medical facility via appropriate mode of transportation without delay. Transport should be made safely and, in a manner, as to prevent further injury through the appropriate use of lights and sirens or no lights and sirens. **The highest medically trained practitioner engaged in patient care will determine the medically appropriate mode of transportation based upon the patient's presenting medical condition. This practitioner will communicate with the transporting EMS vehicle's operator and advise him/her as to the transport mode to be utilized.**

Patients should be taken to the approved facility's emergency department, labor and delivery area, other specialty care area, or to an inpatient bed if arranged prior to arrival at the facility. If there are questions or doubts as to the appropriate facility or point of delivery, the medical control physician will be the arbitrator. All unstable patients should be transported directly to an emergency facility.

Patients are to be transported to Delaware Office of EMS approved facilities within the EMS agency's usual operations area.

On scene direction of medical care is provided by the Delaware EMS provider with the highest level of licensure.

Patient care does not end until transfer of care of the patient to an appropriately trained health care provider is completed and the patient care report is made available and completed in the approved electronic reporting system.

Document relevant findings and treatments.

All IV bags that have been mixed with a medication must be labeled at time of ED disposition.

Priority I Patient suffering from an immediate life or limb threatening injury or illness.
It is the consensus of the EMS medical directors that during transport to the hospital lights and sirens are not medically indicated for many Priority I patients.

Priority II Patients suffering from an injury or illness that if left untreated could potentially threaten life or limb.
It is the consensus of the EMS medical directors that during transport to the hospital, lights and sirens are not medically indicated for Priority II patients.

Priority III Patient suffering from an injury or illness that requires medical attention but does not threaten life or limb.
It is the consensus of the EMS medical directors that during transport to the hospital, lights and sirens are not medically indicated for Priority III patients.

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The approved pharmacology manual should be used for medication reference.

Zofran (Ondansetron®) ODT means oral dissolving tablet.

CO-oximetry may be performed as an option by agencies carrying CO monitoring equipment.

It should be noted that the General Patient Care protocol above is a guideline to be followed in as much as it aids in providing appropriate and timely medical care. The ALS provider may change the order or omit steps listed above as dictated by sound judgment of the care provider and/or presentation of the patient(s).

The following information should be passed on in either verbal or written form at the time of patient transfer: HPI, PMH, allergies, medications, vital signs, SpO2, $EtCO_2$, cardiac rhythm, prehospital treatments, and patient's response to those treatments.

ACUTE RESPIRATORY DISTRESS

INDICATIONS: *Acute exacerbation of asthma, emphysema, COPD, and reactive airway disease; cough, shortness of breath, air hunger, wheezing, diminished breath sounds, retractions, and tachypnea, accessory muscle usage.*

Apply Non-Invasive Mechanical Ventilation (NIMV): CPAP (or BiPAP in systems utilizing BiPAP) for an alert patient who is able to maintain patent airway and is in severe respiratory distress.

Consider early utilization of NIMV for an alert patient who is able to maintain a patent airway but is in moderate or persistent respiratory distress.

If the patient presents with rhonchi or rales, consider the use of Pulmonary Edema protocol.

Consider nasal prong capnography.

Moderate to Severe Respiratory Distress

If the patient who is short of breath has a history of asthma, COPD, or other reactive airway disease, is actively wheezing, or is otherwise suspected of having acute bronchospasm:

- Administer up to 5 mg of albuterol via nebulizer or through NIMV circuit.
- Administer 0.5 mg nebulized ipratropium bromide (Atrovent) with albuterol.
- For continued symptoms, repeat albuterol.

For moderate/severe respiratory distress secondary to asthma or COPD, administer 125 mg methylprednisolone (Solu-Medrol) IV/IM.

In extreme circumstances, consider the administration of 25 mg Ketamine IV to allow for NIMV tolerance. May repeat in 5 minutes if needed.

- If no IV, may give Ketamine 25-50 mg IM to allow NIMV tolerance.

For patients less than 60 years of age in pending respiratory failure:

- Consider the administration of 0.5 mg epinephrine (1 mg/mL) IM.
- Contact Medical Control for the consideration of administration of 0.5 mg. epinephrine (1 mg/mL) IM for patients older than 60 years of age.

For pending respiratory failure secondary to asthma, consider the administration of 2 g magnesium sulfate IV over 10 minutes.

Mild Respiratory Distress

If the patient who is short of breath has a history of asthma, COPD, or other reactive airway disease, is actively wheezing, or is otherwise suspected of having acute bronchospasm:

- Administer up to 5 mg of albuterol via nebulizer.
- Administer 0.5 mg nebulized ipratropium bromide (Atrovent) with albuterol.
- Administer prednisone 60 mg PO in combination with Maalox 50 mg or other PO fluid.
- For continued symptoms, repeat albuterol.

PULMONARY EDEMA DUE TO CONGESTIVE HEART FAILURE

INDICATIONS: *Afebrile, shortness of breath, air hunger, tachypnea, tachycardia, elevated blood pressure, rales, neck vein distention, and diaphoresis.*

Consider nasal prong capnography.

Apply early NIMV for an alert patient who is able to maintain a patent airway but is, or continues to be, in moderate to severe respiratory distress.
For systems using BiPAP

Apply BiPAP device per manufacturer's instructions.
Follow non-invasive ventilation protocol on page 18.

IV must be established prior to NTG administration for patients with a systolic BP less than 150 mmHg.

- Administer 0.8 mg nitroglycerin (NTG) SL. Repeat NTG 0.8 mg every 3-5 minutes.
- Apply 1" nitroglycerin paste if systolic blood pressure is greater than 120 mmHg.
- If systolic blood pressure (SBP) is less than 120 mmHg, discontinue NTG administration until SBP recovers to greater than 120 mmHg.

Perform and interpret 12 lead ECG.

Assessment and management of airway and breathing precedes the performance of a 12 lead ECG. Withhold nitrates and ***Contact Medical Control*** *if the patient relates taking sildenafil (Viagra/Revatio) or vardenafil (Levitra) within the last 24 hours or tadalafil (Cialis), Adcirca for pulmonary hypertension or any other prescription erectile dysfunction drugs within the last 48 hours.*

Afebrile is defined as no history of recent fever and no tactile temperature or a measured temperature outside the range of 36-38°Celsius (96.8° F to 100.4° F).

Early NIMV or BiPAP at the point of contact, as the first ALS procedure, is preferable to the delay of initiation in the ambulance.

NON-INVASIVE MECHANICAL VENTILATION (NIMV)

INDICATIONS: *Patients who are 15 years of age or older, presenting with respiratory distress or failure due to respiratory infection, pulmonary edema, congestive heart failure, COPD, or asthma.*

The patient must have a patent, self-maintained airway, and spontaneous respirations.

CONTRAINDICATIONS: Active vomiting, facial or cranial trauma, facial burns, severe epistaxis, inability to clear secretions, or any circumstance in which endotracheal intubation or a surgical airway is immediately indicated.

PROCEDURES:
Ensure emergency equipment is immediately available and an alternate airway management plan has been established.

Assure patent airway.

Perform appropriate patient assessment, including obtaining vital signs, pulse oximeter (SpO2) reading, ETCO2, and cardiac rhythm.

Apply BiPAP device per manufacturer's instructions.

Set initial inspiratory positive airway pressure (IPAP) and expiratory positive airway pressure (EPAP) to decrease patient respiratory effort and adjust as needed.

- Choose the appropriately sized mask for patient.
- Start with IPAP at 10 cm H20 (max 15 cm H20).
- Start with EPAP at 5 cm H20 (max 8 cm H20) if using BiPAP.
- Pressure support to be no less than 5 cm H2O (Difference of IPAP-EPAP).
- Set back-up ventilatory rate of 8 BPM or higher. (If equipped).
- Set FiO2 to appropriate level to maintain an SpO2 of 94 - 99%.
- Continually reassess the patient after placing the NIMV device.
- Recheck the mask for leaks and adjust as needed.
    - Monitor continuous pulse oximetry.
    - Monitor continuous ETCO2 with nasal prongs.
    - Monitor HR, BP, and ECG
- If the patient deteriorates and meets one or more of the contraindications above, then discontinue the use of NIMV.

ALTERED MENTAL STATUS

***INDICATIONS**: Incomprehensible speech, inappropriate verbal responses, inability to follow verbal commands, decreased responsiveness, or unresponsiveness.*

- If blood sugar less than 60 mg/dL, proceed to hypoglycemia section.
- If suspected opioid overdose, proceed to opioid overdose section.
- **Contact Medical Control** for consideration of sodium bicarbonate for tricyclic antidepressant overdose, glucagon for beta blocker overdose, and calcium chloride for calcium channel blocker overdose.

Hypoglycemia

If patient is awake and able to speak and swallow

- Administer 15-24 g of oral glucose.

If the patient is unable to follow commands and swallow:

- Obtain IV access.
- Administer 10% dextrose in 50 mL (5 g) boluses 1 minute apart, to a maximum of 250 mL OR (25 g) IVP until:
    - the patient has a return to normal mental status and
    - the patients' blood glucose is at least 90 mg/dL
- If patient has persistently altered mental status and blood glucose less than 90 mg/dL despite treatment, repeat dosing regimen above.
- If patient has persistently altered mental status and blood glucose less than 90 mg/dL at 15 minutes, transport to the hospital should not be delayed.
- If no IV access, administer 1 mg glucagon IM or IN

If a glucometer fails or is not immediately available and hypoglycemia is a suspected cause of altered mental status, administer appropriate dose of dextrose or glucagon.

Suspected hypoglycemia patients who become fully alert and oriented with stable vital signs that wish to be transported to a facility may be released to BLS without a call in to Medical Control if the BLS unit is carrying oral glucose.

An IV may be transported by BLS if converted to an IV lock.

For patients who wish to refuse transport after being treated for hypoglycemia, Medical Control contact is NOT required if:

- Patient is alert and oriented.
- Repeat glucose level above 80 mg/dl
- Able to consume a carbohydrate-rich meal.
- It is preferred that the patient be left with an adult who can monitor their safety.
- Hypoglycemia suspected to be caused by exercise or missed meal.
- The patient takes insulin and is NOT prescribed any other oral medications for diabetes.

Opioid Overdose

Altered mental status with adequate respiration.

- Administer supplemental oxygen to maintain SP02 above 94%. Use EtCO2 monitoring along with pulse oximetry to ensure adequate oxygenation with ventilation.
- Withhold naloxone (Narcan) unless the patient displays respiratory depression and cannot be aroused with tactile stimuli.

Respiratory failure (hypoventilation, loss of airway reflexes, SPO2 less than 92%)

- Assist the patient's ventilation with a BVM connected to 100% oxygen for two minutes.
- Use EtCO2 monitoring along with pulse oximetry to ensure adequate oxygenation and ventilation.
- If respiratory depression continues with assisted ventilation, administer up to 2 mg naloxone (Narcan) IV, IN, or IM. Consider tiered dosing at 0.4 mg per dose.
- If inadequate respiration continues, administer a second dose up to 2 mg naloxone (Narcan) IV, IN, or IM. Total ALS dosage of up to 6 mg naloxone is authorized.
- For continued respiratory depression:
    - Initiate transport. Consider co-ingestion or other cause of respiratory depression.
    - **Contact Medical Control** for consideration of additional doses of naloxone (Narcan) for continued respiratory depression.
- Suspected opiate overdose patients that wish to be transported to a facility may be released to BLS without a call in to medical control if the BLS unit is carrying naloxone.
- An IV may be transported by BLS IF converted to an IV lock.

Discuss buprenorphine administration with patients agreeable to discussion.

See Buprenorphine protocol page 21.

Considerations for refusal:
If the patient regains full consciousness after treatment, they should be encouraged to be transported to the hospital to monitor for relapse and receive counseling about substance abuse treatment.

For patients who wish to refuse transport after being treated for Opioid overdose, Medical Control contact is NOT required if:

- Patient is alert and oriented.
- Suspicion of opioid ingestion through injection or inhalation
- It is preferred that the patient be left with an adult who can monitor their safety.
- Has been given information about resources for treatment and opioid rescue kit (if available)
- If there are any patient care concerns, **Contact Medical Control** for assistance.

BUPRENORPHINE

INDICATIONS*: Opioid overdose 18 years old or older, requiring administration of naloxone. After explanation of the treatment, the patient expresses interest in buprenorphine administration and is agreeable to treatment for Opioid addiction.*

EXCLUSIONS*: Patient is unwilling to give name AND date of birth, pregnancy status, methadone dose less than 5 days ago, altered mental status and unable to give consent.*

Perform Clinical Opioid Withdrawal Scale (COWS). If COWS score is greater than 5 **OR** the patient was opiate-free for 72 hours prior to the overdose, Administer Buprenorphine bundle.

- Administer 16 mg buprenorphine SL.
- Administer 4-8 mg ondansetron (Zofran) ODT or IV as needed for nausea.

If after 10 minutes the symptoms worsen or persist, **Contact Medical Control** to administer additional 8mg buprenorphine SL.

- Maximum dose of 24 mg buprenorphine.

Provide the patient Medication Assisted Treatment (MAT) brochure and provide a clinic appointment, transport to the hospital, or obtain a refusal of service.

See Appendix D Clinical Opioid Withdrawal Score (COWS)

HYPERTENSIVE CRISIS

INDICATIONS*: Three blood pressures measured five minutes apart with a diastolic BP of greater than 120 mmHg or a MAP greater than 150 mmHg, associated with any of the following: nausea/vomiting, headache, or visual disturbances.*

Contact Medical Control for consideration of the administration of 10 mg Labetalol (Trandate) IV slowly over two (2) minutes.

Reassess vital signs. If after ten (10) minutes of initial dose the diastolic BP remains greater than 120 mmHg, **Contact Medical Control** for the consideration of administration of a repeat dose of 10-20 mg Labetalol (Trandate) IV slowly over two (2) minutes.

For hypertension secondary to suspected pre-eclampsia:

INDICATIONS:

- pregnancy greater than 20 weeks gestation (up to 6 weeks post-partum) AND
- SBP greater than 160 or DBP greater than 110 lasting more than 15 minutes.
- Must also have associated pre-eclampsia symptoms:
    - headache
    - confusion
    - visual changes
    - epigastric pain
    - shortness of breath
    - focal neurological deficits

- **Contact Medical Control** for order to administer Labetalol (Trandate) 20 mg over 2 minutes. Target BP140/90.
    - **Contact Medical Control** for the consideration of administration of a repeat dose of 10-20 mg Labetalol (Trandate) IV 10 minutes after first dose.
- Administer 5 g Magnesium Sulfate IV over 20 minutes concurrent with first dose of Labetalol.

Withhold Labetalol for CHF, any heart block, bradycardia, suspected cocaine abuse, patients in cardiogenic shock, CVA, or asthmatics.
MAP = (2 x diastolic + systolic) / 3

SUSPECTED STROKE

***INDICATIONS**: Abnormalities in VAN Stroke Assessment altered mental status, seizure, speech deficit, facial droop, headache, paresthesia, and hemiparesis in the absence of trauma, weakness, ataxia, visual disturbances, nausea, vomiting, general malaise, abnormal pupillary function, or other symptoms of suspected cerebral ischemia or hemorrhage.*

Administer oxygen via nasal cannula at a quantity sufficient to maintain the oxygen saturation equal to 94%.

Place patient flat if tolerated (to augment cerebral perfusion), or in a low to semi-Fowler's position if airway or secretion concerns. In patients with thunderclap headache, blown pupil, or other signs of intracranial hemorrhage, raise HOB to semi-Fowler's position.

If blood sugar is less than 60 mg/dl, administer up to 25 g of dextrose IV.

- Follow Altered Mental Status Hypoglycemia Treatment Standing Order

Administer 1mg Glucagon IM, IN if the blood sugar is less than 60 mg/dl and an IV cannot be established.

Obtain family contact information, preferably a cell phone number.
Determine time of onset of symptoms. Onset is defined as the last time the patient was verified to be their neurologic baseline, or Last Known Well (LKW).

Perform VAN Stroke Assessment:

- Determine if patient has arm and/or leg drift, unilateral weakness, or paralysis. If no weakness noted, assessment ends.
  - Patient is **VAN negative.**

- If arm and/or leg drift, unilateral weakness, or paralysis is present, continue with the VAN Assessment.
  - **V – Visual Disturbance**: Does the patient have double-vision, visual field cut, or new loss of vision?
  - **A – Aphasia**: Does the patient have difficulty forming words, or difficulty understanding/following commands? Does the patient have difficulty recognizing objects correctly?
  - **N – Neglect**: Refers to patient's senses and gaze. Does the patient present with a gaze deviation or inability to cross midline? Is the patient unable to feel both sides at the same time when touched, unable to recognize their own arm, or ignoring one side?

- If patient has arm and/or leg weakness AND any visual/aphasia/neglect symptoms, patient is **VAN positive**.

- If patient has arm and/or leg weakness and NO visual/aphasia/neglect symptoms, patient is **VAN negative**.

VAN is a screening tool to identify patients with stroke secondary to emergent large vessel occlusion, who may benefit from mechanical thrombectomy. VAN negative patients may still have acute stroke.

Contact Medical Control for all suspected stroke patients. Early notification of Stroke Alert to receiving hospital is paramount with stroke patients.

Transport to nearest appropriate State of Delaware or Joint Commission certified Stroke Center without delay as follows and request prehospital stroke alert for the following categories:

- VAN Negative and LKW less than 4.5 hours ➡ go to nearest certified Stroke Center.
- VAN Positive and LKW less than 4.5 hours ➡ contact local medical control to discuss destination.
- VAN Positive and LKW greater than 4.5 hours but less than 22 hours (including wake up stroke or unknown LKW) or considering hemorrhagic stroke ➡ consider direct transport to certified Thrombectomy Capable or Comprehensive Stroke Center.

Communicate to receiving facility the use of anticoagulants.

Perform and interpret 12 lead ECG if time permits.

Appendix C: VAN Stroke Scale Page 97

SEIZURES (ACTIVE)

INDICATIONS*:* Generalized vs partial

If no IV access:

- Administer 10 mg midazolam (Versed) IM
- Check blood sugar.
- Obtain IV access.
- If blood sugar less than 60 mg/dl, administer up to 25 g dextrose IV **OR** administer 1 mg glucagon IM if an IV cannot be established.
- Follow Altered Mental Status Hypoglycemia Treatment Standing Order
- If patient continues to seize after 5 minutes, repeat 5mg midazolam (Versed) IM.

If IV established prior to seizure:

- Administer 5 mg midazolam (Versed) IV slowly.
- If blood sugar less than 60 mg/dl, administer up to 25 g dextrose IV.
    - Follow Altered Mental Status Hypoglycemia Treatment Standing Order
- If patient continues to seize after 5 minutes, repeat up to 5 mg midazolam IV.

A patient may be given a total of 3 doses of midazolam to control seizure.

For seizures secondary to eclampsia:

- Initiate all treatments above.
- Administer 5 g Magnesium Sulfate IV over 20 minutes concurrent with first dose of midazolam.

Contact Medical Control *for consideration of additional midazolam (Versed) if the patient continues to have seizures.*

ALLERGIC/ADVERSE REACTIONS/*DYSTONIC REACTION*

Severe Allergic Reaction

***INDICATIONS**: Generalized allergic manifestations such as urticaria or a possible allergic exposure with:*

- Airway obstruction (partial or complete)

OR

- Systolic blood pressure less than 90 mmHg with clinical evidence of shock

OR

- Gastrointestinal symptoms, such as severe abdominal pain, vomiting and diarrhea.

Give 0.5 mg epinephrine (1 mg/mL) IM, may repeat every 5 minutes times three (3), as needed.

Establish intravenous access using normal saline and administer a fluid bolus of 1000 mL.

Reassess patient – if acute respiratory obstruction persists or systolic blood pressure is less than 90 mmHg with clinical evidence of shock, consider administration of 0.25 mg epinephrine (0.1 mg/mL) * IV over a one-minute interval.

Administer a second intravenous bolus of 1000 mL normal saline if systolic blood pressure remains less than 90 mmHg with continued evidence of clinical shock.

Administer 50 mg diphenhydramine (Benadryl) IV/IM.

Administer 125 mg methylprednisolone (Solu-Medrol) IV/IM.

**Epinephrine 0.25 mg (0.1 mg/mL) may be mixed in a 100 mL bag of NSS and run wide open as an alternative to direct push of epinephrine.*

Moderate Allergic Reaction

***INDICATIONS**: Generalized allergic manifestations such as urticaria or history of an allergic exposure without airway compromise or shock. Gastrointestinal symptoms, such as abdominal pain, vomiting and diarrhea, may also occur in moderate allergic reactions.*

Consider the administration of 50 mg diphenhydramine (Benadryl) IV, IM, or PO.

Consider the administration of prednisone 60 mg PO in combination with Maalox 50 mg or other PO fluid.

Angioedema

INDICATIONS: *Angioedema is a soft, painless, non-itchy swelling that usually involves the lips, tongue, or cheeks. It typically develops rapidly and can become a serious event requiring emergency treatment if the swelling spreads to the larynx and results in severe breathing difficulty.*

Consider Tranexamic Acid 1gram Infusion.

Dystonic Reaction

INDICATIONS*: Reaction to a neuroleptic medication resulting in intermittent spasmodic or sustained involuntary contractions of muscles in the face, neck, trunk, pelvis, extremities, and the larynx.*

Consider the administration of 50 mg diphenhydramine (Benadryl) IV, IM, or PO.

NON-TRAUMATIC HYPOTENSION

INDICATIONS*: Pulse greater than 50 BPM AND systolic blood pressure less than 90 mmHg AND clinical evidence of shock (altered mental status, pale/cool/clammy skin, tachypnea, absent peripheral pulses, or poor capillary refill).*

Consider using the Shock Index (HR/SBP) (Appendix E) to determine the severity of the illness. Shock indexes greater than 1 (HR higher than SBP) are associated with increased mortality.

Consider stabilization of the patient on scene prior to extrication or transport.

Appropriately manage Airway, Breathing, and Unstable Bradycardia/Tachycardia prior to treating non-traumatic hypotension. If DFI is indicated, ensure adequate fluid and vasopressor resuscitation prior to DFI.

Initiate large bore IV or IO access and rapidly infuse 500mL bolus of NSS.

Reassess for signs of clinical improvement after each fluid bolus.

Repeat fluid bolus of NSS 500 mL up to 2000 mL total.

If no signs of clinical improvement after the initial fluid bolus and MAP is less than 65 mmHg, consider a 10-50 mcg/min **Nor**epinephrine infusion for continued hypotension. Begin infusion at 20 mcg/min. Titrate by 10 mcg/min every 5 minutes to maintain MAP greater than 65 mmHg. Continue NSS infusion concurrently with **Nor**epinephrine infusion.

- If unable to obtain IV access initially, do not delay obtaining IO access if appropriate.
- Withhold additional fluid if the patient develops signs of acute CHF/Pulmonary Edema.
- Consider additional IV access after initial resuscitation.

SEPSIS

INDICATIONS: *Suspicion of infection/sepsis AND 2 or more of the systemic inflammatory response syndrome (SIRS) criteria:*

Patients should have a EtCO2 monitored if two or more of the following are present:

- *Temperature greater than 38°C (100.4° F) or less than 36°C (96.8° F)*
- *Heart rate greater than 90 BPM*
- *Respiratory rate greater than 20*
- *Hypotension*

If EtCO2 less than 25 mm/Hg:

- Initiate two large bore IV catheters and rapidly infuse 1000 mL bolus of NSS.
- Withhold fluid if patient develops signs of acute CHF.
- Continue infusion of fluid up to 30 mL/kg bolus NSS

After a minimum of 1000 mL of fluid consider a 10-50 mcg/min norepinephrine infusion for continued hypotension not due to hypovolemia. Titrate norepinephrine to maintain MAP greater than 65 mmHg.

- Provide early notification of suspected sepsis patient to receiving hospital.

ACUTE CORONARY SYNDROMES (ACS)

INDICATIONS: *Classic anginal chest pain OR patients whose 12 lead is suspicious for ischemia. Suspect ACS for the following presentations: classic anginal chest pain, atypical chest pain, or anginal equivalents such as dyspnea, palpitations, syncope or pre-syncope, general malaise, or DKA. All of these patients should have 12 lead performed and interpreted.*

Administer 324 mg aspirin PO if the patient has not taken an equivalent dosage within the last 60 minutes, even if patient is pain free.

IV must be established prior to NTG administration for patients with a systolic BP less than 120 mmHg (use cautiously for patients not currently prescribed NTG.)

- Administer 0.4 mg nitroglycerin (NTG) SL. Repeat 0.4 mg NTG every 3-5 minutes until pain, signs of ischemia, or injury resolves.
- Apply 1” nitroglycerin paste if systolic blood pressure is greater than 120 mmHg.
- Discontinue NTG therapy if systolic blood pressure (SBP) is less than 90 mmHg.

Apply 1" nitroglycerin paste early in patient contact, even if patient is pain free.

If chest pain, signs of ischemia or anxiety continue after the administration of three (3) nitroglycerin and if systolic BP is greater than 90 mmHg, consider administration of up to 200 mcg fentanyl (administered in up to 100 mcg increments given every five (5) minutes).

If patient displays persistent ventricular ectopy (defined as runs of V-Tach or R-on-T PVCs) refractory to oxygen and NTG administration, consider administration of 150 mg amiodarone IV infused over 10 minutes. Withhold amiodarone if the heart rate or pulse is less than 50 beats per minute.

Perform serial 12 lead ECG throughout transport as indicated.

The 12 lead ECG may be deferred initially in order to stabilize the hemodynamically unstable patient.

Withhold nitrates and ***Contact Medical Control*** *if the patient relates taking sildenafil (Viagra/Revatio) or vardenafil (Levitra) within the last 24 hours or tadalafil (Cialis, Adcirca for pulmonary hypertension), or any other prescription erectile dysfunction drugs within the last 48 hours.*

ST ELEVATION MYOCARDIAL INFARCTION (STEMI)

INDICATIONS: *Suspicion of ACS and a prehospital 12 lead diagnosis of STEMI. Suspect STEMI for the following presentations: classic anginal chest pain, atypical chest pain, or anginal equivalents such as dyspnea, palpitations, syncope or pre-syncope, general malaise, or DKA. All of these patients should have 12 lead EKG performed and interpreted.*

Administer 324 mg aspirin PO if the patient has not taken an equivalent dosage within the last 60 minutes, even if patient is pain free.

Transport when practical to an emergent Percutaneous Coronary Intervention (PCI) capable facility for patients diagnosed with STEMI.

Notify receiving hospitals as soon as possible when STEMI is identified.

IV must be established prior to NTG administration for patients with a systolic BP less than 120 mmHg (use cautiously in patients not currently prescribed NTG).

- Administer 0.4 mg nitroglycerin (NTG) SL. Repeat 0.4 mg NTG every 3-5 minutes until 12 lead signs of injury resolve.
- Apply 1” nitroglycerin paste if systolic blood pressure is greater than 120 mmHg.
- Discontinue NTG therapy if systolic blood pressure (SBP) is less than 90 mmHg.

Apply 1" nitroglycerin paste early in patient contact, even if patient is pain free.

Consider administration of up to 200 mcg fentanyl (administered in up to 100 mcg increments given every five (5) minutes) if systolic BP is greater than 90 mmHg (may be administered as soon as IV is established).

If patient displays persistent ventricular ectopy (defined as runs of V-Tach or R-on-T PVCs) refractory to oxygen and NTG administration, consider administration of 150 mg amiodarone IV infused over 10 minutes. Withhold amiodarone if the heart rate or pulse is less than 50 beats per minute.

Perform serial 12 lead EKG throughout transport as indicated.

The 12 lead EKG may be deferred initially in order to stabilize the hemodynamically unstable patient.

Withhold nitrates and ***Contact Medical Control*** *if the patient relates taking sildenafil (Viagra/Revatio) or vardenafil (Levitra) within the last 24 hours or tadalafil (Cialis, Adcirca for pulmonary hypertension), or any other prescription erectile dysfunction drugs within the last 48 hours.*

HEMODYNAMICALLY COMPROMISING BRADYCARDIA

INDICATIONS*: Pulse less than 50 BPM with clinical evidence of shock (i.e., altered mental status, pale/cool/clammy skin, ischemic chest discomfort, systolic blood pressure less than 90 mmHg OR absence of radial pulses bilaterally).*

Obtain 12-lead EKG as soon as practicable.

Administer 1 mg atropine IV. Repeat 1 mg atropine IV every 3-5 minutes until a maximum of 3 mg of atropine is administered or the pulse rate is 50 BPM or greater.

Initiate transcutaneous cardiac pacing (TCP). Do not delay while awaiting IV access. Set rate at 80 per minute. Rapidly increase the output (MA) until capture occurs, or the maximum MA is reached.

- If electrical or mechanical capture is achieved, do not give atropine, unless capture is lost, and bradycardia recurs**.**

If the patient is experiencing discomfort due to pacing administer 0.25 mg/kg Ketamine IV/IO, repeat at 20 minutes if needed.

Infuse up to a 1000 mL bolus of NSS. Frequently reassess vital signs and lung sounds.

- Withhold fluid if patient develops signs of acute CHF.

Consider epinephrine IV 2-10 mcg/min if pacing and atropine prove to be ineffective. Titrate epinephrine infusion to a systolic BP of greater than 90 mm/Hg.

Contact Medical Control *for orders to administer calcium chloride and possibly sodium bicarbonate if the patient has a history of chronic renal failure and either hemodialysis or peritoneal dialysis.*

STABLE TACHYCARDIA

***INDICATIONS**: A wide complex tachycardia (QRS greater than 0.12 seconds) presumed to be ventricular tachycardia (VT), with a rate exceeding 150 BPM or a narrow complex tachycardia with a rate exceeding 120 BPM (QRS less than 0.12 seconds) other than sinus tachycardia. There should be no evidence of trauma, hypovolemia, fever or sepsis.*

For purposes of this Standing Order, STABLE is defined as a patient with a systolic blood pressure greater than 90 mmHg.

Obtain 12-lead EKG.

If the rhythm is a wide complex tachycardia at a rate exceeding 150 BPM:

- Administer 150 mg amiodarone IV infused over 10 minutes.

If the rhythm is a narrow complex tachycardia, other than sinus tachycardia, atrial fibrillation or atrial flutter, at a rate exceeding 150 BPM:

- Consider modified Valsalva maneuver. (Carotid massage may not be performed).
- Administer 6 mg adenosine (Adenocard) IV rapidly.
- If there is no response to the initial 6 mg dose, administer 12 mg adenosine.
- If there is no response to the second dose, administer 12 mg maximum adenosine.
- Administer 0.25 mg/kg diltiazem (Cardizem) IV (dose is 25 mg) over 2 minutes.
- If there is no response to the initial dose of diltiazem after 15 minutes, **Contact Medical Control** for consideration of administration of 0.35 mg/kg diltiazem IV (maximum dose of 35 mg) over 2 minutes.

If the rhythm is a narrow complex atrial fibrillation or atrial flutter at a sustained rate exceeding 120 BPM and the patient is without signs or symptoms of congestive heart failure:

- Administer 0.25 mg/kg diltiazem (Cardizem) IV (maximum dose is 25 mg) over 2 minutes.
- If there is no response to the initial dose of diltiazem after 15 minutes, **Contact Medical Control** for consideration of administration of 0.35 mg/kg diltiazem IV (maximum dose of 35 mg) over 2 minutes.

If diltiazem is not available:

- Metoprolol 5 mg IV given over 1-2 minutes. May be repeated every 5 minutes as needed for a total of three (3) doses or 15 mg.

***Contact Medical Control** for orders to administer calcium chloride and possibly sodium bicarbonate if the patient has a history of chronic renal failure and either hemodialysis or peritoneal dialysis.*

Adenosine: potentiated by dipyridamole (Persantine), use half (1/2) doses. Use with caution with patients on carbamazepine (Tegretol), digoxin and verapamil.

Use Diltiazem (Cardizem) with caution when patients are on digoxin.

UNSTABLE TACHYCARDIA

***INDICATIONS**: A wide complex tachycardia (QRS greater than 0.12 seconds) presumed to be ventricular tachycardia (VT), with a rate exceeding 150 BPM, or a narrow complex tachycardia (QRS less than 0.12 seconds) other than sinus tachycardia, with a rate exceeding 150 BPM. There should be no evidence of trauma, hypovolemia, fever or sepsis.*

For purposes of this Standing Order, UNSTABLE is defined as systolic blood pressure less than 90 mmHg OR radial pulses are absent bilaterally, with clinical evidence of shock. Patients with altered mentation and clinical evidence of shock are UNSTABLE, even if the systolic blood pressure is greater than 90 mmHg.

Obtain 12-lead EKG as soon as practicable.

Consider adenosine administration for narrow complex tachycardia if IV access is readily available.

Consider, only if IV is already established, the administration of up to 0.1 mg/kg (up to a max of 10 mg) etomidate (Amidate©) IV prior to cardioversion of an alert patient.

Perform synchronized cardioversion using 100 joules.

Perform synchronized cardioversion using 200 joules.

Perform synchronized cardioversion using 300 joules.

Perform synchronized cardioversion using 360 joules.

Contact Medical Control for additional cardioversion attempts past the fourth attempt.

Infuse up to a 1000 mL bolus of NSS.

Frequently reassess vital signs and lung sounds.

- Withhold fluid if patient develops signs of acute CHF

Upon successful conversion, perform and interpret 12 lead EKG.

For wide complex tachycardia, administer 150 mg amiodarone IV infused over 10 minutes:

- If there is no response to cardioversion,
- **OR** upon successful conversion,
- **AND** if needed for a recurrence.

***Contact Medical Control** for orders to administer calcium chloride and possibly sodium bicarbonate if the patient has a history of chronic renal failure and either hemodialysis or peritoneal dialysis.*

Biphasic devices may use FDA approved/recommended energy settings.

GENERAL ADULT CARDIAC ARREST BUNDLE OF CARE

Resuscitation should be initiated for all patients who do not meet the Withholding or Terminating Resuscitation or Guidelines Regarding Do Not Resuscitate Standing Order

This standing order includes intervention guidelines for all patients in cardiac arrest and may be used as a checklist for a "pit crew" team approach to ensure interventions in bundle are performed.

1. Confirm arrest – check pulse for up to 5-10 seconds.
2. Minimize patient movement but ensure adequate space to rotate compressors.
3. Initiate chest compressions:
    - Compress at least two inches and allow for complete chest recoil.
    - Perform continuous 100 – 120 compressions per minute.
        i. Turn on metronome or compression feedback device and set to continuous compressions.
        ii. Do not pause compressions for ventilation.
    - Pause compressions to check rhythm every two minutes for no more than 5-10 seconds. Charge defibrillator prior to rhythm check.
    - Interpret rhythm and apply applicable standing order:
        i. Ventricular Fibrillation/Pulseless Ventricular Tachycardia
        ii. Pulseless Electrical Activity
        iii. Asystole
        iv. Return of Spontaneous Circulation
    - Rotate compressors during each rhythm check OR earlier based on provider fatigue.
    - Apply mechanical CPR device based on local medical direction if available.
        i. Compressions should be interrupted no more than 10 seconds during application.
4. Provide ventilation with a BVM.
    - Ventilate on the upstroke of every 10th compression (8-10 breaths per minute)
    - Compress BVM with one hand.
    - Place an oral or nasal adjunct.
    - Use two-handed mask seal if personnel and space allow.
    - Monitor waveform capnography (BVM or nasal prong circuit)
    - If no capnography waveform, reassess mask seal, upper airway patency, and suction.
    - Monitor ETCO2 for compression quality. Attempt to maintain ETCO2 above 20 mmHg. Consider rotating compressors if ETCO2 decreases during compression cycle.
5. Obtain IV or IO access (IV preferred if accessible and timely)
6. Refer to Airway Management Protocol to consider placement of advanced airway.
7. Resuscitation should generally be performed on scene for at least 20 minutes prior to moving the patient unless there is an extenuating circumstance (space in the residence, safety threat, etc.) or ROSC.
    - Refer to Withholding/Terminating Resuscitation Standing Order for patients still in arrest after 20 minutes.

- Use of a mechanical CPR device is strongly recommended for transport of patients requiring ongoing CPR.
- Lights and sirens are not indicated when transporting patients in cardiac arrest.

8. Refer to rhythm-specific standing order:
    - Ventricular Fibrillation/Pulseless Ventricular Tachycardia
    - Pulseless Electrical Activity
    - Asystole
    - Return of Spontaneous Circulation
    - Withholding or Termination of Resuscitation

Place advanced airway

- If ventilation with BVM effective, defer advanced airway until after *at least* three two-minute cycles of compressions and rhythm checks, vascular access is obtained, and medications are administered (generally at least six minutes)
- If ventilation with a BVM is still unsuccessful after repositioning, suction, and reattempting attempting mask seal, place a supraglottic airway prior to vascular access.

If at any time the patient receiving high quality resuscitation presents with neurological responsiveness and/or consciousness, consider the administration of 0.5 mg/kg Ketamine IV/IO (maximum 50 mg) for the purpose of sedation.

PEDIATRIC AND ADULT TRAUMATIC CARDIAC ARREST

INDICATION: *Patients of at least 5 years of age who initially present as pulseless and apneic, secondary to penetrating traumatic injuries or exsanguination, that do not meet criteria for field pronouncement (injuries incompatible with life). Rapid assessment of signs of life including neurological function and cardiac electrical activity should be performed.*

Exceptions:

- Blunt Traumatic Arrest: **Contact Medical Control** in instances when patient is pulseless, apneic, and asystolic, and termination of resuscitative efforts may be considered.

Initiation of transport should NOT be delayed. Begin Treatment and continue resuscitation throughout transport. Scene time goals should remain consistent with other traumatic injuries.

CPR may be paused for a maximum of four minutes to complete the **rapid and simultaneous** management of reversible causes, such as hemorrhage control, restoration of circulating blood volume, airway management, and needle decompression.

Conventional resuscitation may occur simultaneously with the following lifesaving interventions, **but only** if it doesn't interfere with their application nor divert providers from other more effective duties.

Hemorrhage Control: Utilization of direct pressure, tourniquets, junctional tourniquets, and pelvic binders as indicated for cessation of hemorrhage.

Airway Management: Placement of advanced airway device and ventilation via BVM and capnography monitoring. For patients presenting with injuries resulting in inability to intubate or ventilate, consider surgical airway placement.

Needle Decompression (Bilateral):

- **Adults:** 14 g x 3.25" - ***Preferred Site:*** 5th Intercostal space at anterior axillary line
- **Pediatrics:** 14 g x 1.50" - ***Preferred Site:*** 4th Intercostal space at anterior axillary line

Volume Management: Initiation of 20mL/kg crystalloid solution rapidly infused.

Whole Blood: ***Contact Medical Control*** to consider administration of Whole Blood in traumatic cardiac arrest patients meeting criteria as outlined in the pediatric and adult Whole Blood protocols on pages 68-70.

CPR in the prehospital setting may be discontinued when the following criteria apply:

- Patients remain in cardiopulmonary arrest who, despite effective chest compressions AND
  - Resuscitative efforts are **no less than 20 minutes.**
  - Have not had any return of spontaneous circulation.
  - Have advanced airway placed (with EtCO2 of less than 10 mmHg)
  - Have received rhythm specific ACLS therapy.
  - With persistent asystole for at least 15 minutes, or
  - Persistent wide complex PEA with underlying causes being treated.
  - Absence of Hypothermia
  - A decision is made in conjunction with on-line medical control that resuscitation should be terminated and the DOPA protocol will be followed.

TERMINATION OF RESUSCITATIVE EFFORTS & TELEMETRIC PRONOUNCEMENT OF DEATH

INDICATIONS: *Upon arrival at the scene of a patient with an illness or injury, the paramedics will follow applicable standing orders. If resuscitative efforts have been initiated, paramedics should proceed with patient assessment.*

CPR shall be initiated unless one or more of the following criteria apply:

- Resuscitation would place the rescuer at significant risk of physical injury.

- The rescuer is presented with an apparently valid Delaware's Medical Orders for Scope of Treatment (DMOST) signed by a physician. Comparable forms from other states may be applicable and **Medical Control** should be contacted.

- Obvious signs of death are present:
  - **Injuries which are obviously incompatible with life**
    - Decapitation
    - Body fragmentation
    - Severe crush injury to head without vital signs
    - Severe crush injury to chest without vital signs
    - Severe thermal burns without vital signs
    - Gunshot wounds to the head without vital signs
  - **Decomposition of the body**
    - Skeletonization
    - Severe bloating without vital signs
    - Skin slough without vital signs
  - **Absence of signs of life***
    1. Pulselessness
    2. Apnea
    3. Fixed and dilated pupils
    4. Dependent lividity
    5. Generalized rigor mortis (Expected to begin 2-12 hours after presumed death)
    6. Asystole on the ECG monitor

* All must be present for a "medical patient" to be pronounced.
** In the case of blunt trauma patients, the medical control physician may waive requirement #4 and #5.

CPR in the prehospital setting may be discontinued when the following criteria apply:

- Patients remain in cardiopulmonary arrest who, despite effective chest compressions AND
  - Resuscitative efforts are no less than 20 minutes.
  - Have not had any return of spontaneous circulation.
  - Have advanced airway placed (with EtCO2 of less than 10 mmHg)
  - Have received rhythm specific ACLS therapy.
    - With persistent asystole for at least 15 minutes, or
    - Persistent wide complex PEA with underlying causes being treated.

    - Absence of Hypothermia
- A decision is made in conjunction with on-line medical control that resuscitation should be terminated and the DOPA protocol will be followed.

For patients not meeting the criteria for initiation of cardiopulmonary resuscitation, withhold resuscitation and initiate medical consultation in order to complete the State of Delaware's Dead on Paramedic Arrival (DOPA) documentation.

Resuscitation may be terminated without medical control during a Multi-Casualty Incident on patients with non-salvageable injuries as determined by START® Triage. This is reserved for events where EMS resources are required for stabilization of living patients.

- Formal DOPA protocol will be initiated once resources allow.

Only the medical control physician may pronounce a patient dead, while in direct contact with the paramedic. It is not acceptable for the information on death pronouncement to be transmitted from the paramedic to the physician through an intermediary. The medical control physician must be physically present at the radio or telephone to receive the information directly from the paramedic.

Once the medical control physician has pronounced the patient dead, the paramedic will notify the appropriate police department and the Division of Forensic Science if not already being completed by appropriate authority.

Removal of the decedent, once properly pronounced, is performed only if authorized by jurisdictional police agencies and the Medical Examiner.

Once the patient is pronounced dead, the paramedic will obtain a case number from the dispatch center. In situations where more than one patient has been pronounced dead, identification will be assured by using the case number followed by a letter, beginning with "A" and progressing in alphabetical order (i.e., case #234567-A, #234567-B, #234567-C, etc.).

The case number is to be used by the paramedic to identify the decedent to the medical control physician for purposes of completing the death certificate.

Upon pronouncement of a patient's death, the medical control physician will immediately complete a death certificate (under pronouncing physician section). The physician will include the assigned case number on the left upper margin of the death certificate. The death certificate will then be placed in a secure, but convenient location within the medical command facility, to be retrieved by the Medical Examiner's Investigator when the death falls within the jurisdiction of the Medical Examiner, or by the family-assigned funeral director in non-Medical Examiner's cases. A base report will be completed in the usual manner.

After the patient has been pronounced dead, the paramedic will place a tag or hospital type band around the patient's right ankle (any extremity is acceptable if right ankle is not present or accessible). The band should contain the following written information:

- Case/Incident number
- Paramedic identification number

- Medical command facility name
- Medical control physician identification number
- Time and date of death pronouncement
- Other information deemed appropriate by the paramedic crew

The paramedic will notify the responsible family member that the patient is dead. Paramedics are encouraged to utilize appropriate support services to assist family members in grieving.

Upon arrival of the police, paramedic supervisor or the investigator for the Medical Examiner, the paramedics and ambulance attendants will return to active status.

- In the case of a nursing home facility resident DOPA, the patient may be turned over to a Registered Nurse or on duty clinical supervisor and units may return to active status.
- Patient under Hospice care may be turned over to a Hospice representative.

Prior to completion of his/her work shift, the paramedic will file a complete, standard run report detailing in the usual manner the pertinent aspects of the case. This paramedic run report is to be completed within 12 hours or by the end of shift if a lessor timeframe.

The circumstances of death must be investigated by the Division of Forensic Science Medical Examiner and/or the police having jurisdiction over the geographic area of pronouncement. Should the death be deemed a Medical Examiner's case, the Division of Forensic Science Medical Examiner's shall be responsible for the transportation of the body and the collection and completion of all necessary legal documents.

Should the case not be deemed a Medical Examiner's case, the body may be transported by a licensed funeral director to the funeral home of the family's choosing. The collection and completion of all necessary legal documents shall be coordinated by the funeral director.

The decedent may be taken to a hospital emergency department in select circumstances.

GUIDELINES REGARDING DO NOT RESUSCITATE ORDERS

INDICATIONS: *Current guidelines for do not resuscitate orders.*

Living Will*

- Living wills do not apply to out-of-hospital care.

- A living will has no impact on the decision of whether or not to initiate or continue resuscitative efforts or any other care.

Do Not Resuscitate Order (DNR)

- **Contact Medical Control** immediately.

Prehospital Advance Care Directive (PACD)

- **Contact Medical Control** immediately.

Delaware Medical Orders for Life-Sustaining Treatment (DMOST)

- A DMOST form is a medical order sheet based on the person's current medical condition and wishes.
- The DMOST form will clearly indicate the patients wished concerning life-sustaining treatment and CPR.
- Comparable forms from other states may be applicable and **Medical Control** should be contacted.

*If a question should arise regarding DNR's, PACDs, DMOST or living wills at any time during treatment, **Contact Medical Control**.

VENTRICULAR FIBRILLATION (VF) and/or PULSELESS VENTRICULAR TACHYCARDIA (VT)

In the absence of effective CPR on arrival and when response time is greater than four (4) minutes, perform 2 minutes of CPR prior to first defibrillation or intubation.

For monitored patients with EMS witnessed VF or pulseless VT perform chest compressions only until pads are placed, then perform up to three (3) stacked shocks before resuming CPR.

Defibrillate using 360 joules every 2 minutes.

- Perform CPR between each defibrillation attempt.
- Ensure adequate pad contact and seal during defibrillation attempts. Press firmly on pads before each defibrillation attempt.

For patients with a history of chronic renal failure, or the paramedic strongly suspects underlying hyperkalemia:

- Administer 1 g calcium chloride IV.
- Follow with a 100 ml NSS flush if administering through same IV line.
- Administer 50 mEq sodium bicarbonate IV.

After the third defibrillation attempt, consider changing defibrillation vector (sternum/apex configuration to anterior/posterior or vice versa).

Administer 1 mg epinephrine (0.1mg/mL) IV. Repeat 1 mg epinephrine (0.1mg/mL) IV/IO every 3-5 minutes.

Administer 2 g magnesium sulfate IV/IO over 1-2 minutes if Torsade de Pointes is identified or if hypomagnesemia is suspected.

Administer 300 mg amiodarone IV/IO.

Refractory or Recurrent VF and/or pulseless VT: (***EXCLUSIONS:*** *Patient* less than *15 years old, traumatic cardiac arrest)*.

Definitions:

Refractory: *Ventricular fibrillation or pulseless ventricular tachycardia that fails to respond to 3 defibrillation attempts, 3 mg epinephrine, and 300 mg amiodarone.*

Recurrent: *Ventricular Fibrillation or pulseless ventricular tachycardia that recurs* greater than *4 times without sustained periods of ROSC.*

- Administer 0.5 mg/kg esmolol hydrochloride IV/IO. May repeat x1 after 5 minutes if needed.
- Administer 150 mg amiodarone 10 minutes after initial dose.
- Continue to utilize pad placement and joule settings that successfully converted rhythm previously in cases of Recurrent VF/ pulseless VT.
- Maximum dose epinephrine 6 mg total

Compressions will not be interrupted for longer than 10 seconds for intubation or other procedures. Intubation should be performed during pulse/rhythm check or during compressions and should be deferred until later in the resuscitation. Consider early use of rescue airway device for anticipated difficult intubation.

With return of spontaneous circulation:

- Administer 150 mg amiodarone IV infused over 10 minutes if patient has received one dose or less of amiodarone.
- Refer to Post Resuscitation Care Protocol

Guidelines

Biphasic devices may use FDA approved/recommended energy settings.

It is the consensus of the EMS medical directors that during transport to the hospital, lights and sirens are not medically indicated for cardiac arrest patients.

Reversible causes: hypovolemia, hypoxia, hydrogen ion (acidosis), hypo / hyperkalemia, hypothermia, tension pneumothorax, tamponade, toxins, thrombosis (pulmonary), thrombosis (cardiac).

ASYSTOLE / PULSELESS ELECTRICAL ACTIVITY (PEA)

This protocol is focused on the Medical Cardiac Arrest. Traumatic Cardiac Arrest should refer to the Traumatic Cardiac Arrest Protocol
In the absence of effective CPR on arrival and when response time is greater than four (4) minutes, perform 2 minutes of chest compressions prior to first defibrillation or intubation.

Administer 1 mg epinephrine (0.1 mg/mL) IV. Repeat 1 mg epinephrine (0.1 mg/mL) IV every 3 to 5 minutes if asystole or PEA continues.

For patients with a history of chronic renal failure, or the paramedic strongly suspects underlying hyperkalemia.

- Administer 1 g calcium chloride IV.
- Follow with a 100ml NSS flush if administering through same IV line.
- Administer 50 mEq sodium bicarbonate IV.

Infuse up to 1000 mL bolus of NSS.

Compressions will not be interrupted for longer than 10 seconds for intubation or other procedures. Intubation should be performed during pulse/rhythm check or during compressions and should be deferred until later in the resuscitation. Consider early use of rescue airway device for anticipated difficult intubation.

- EtCO2 less than 10 mmHg increase effectiveness of compressions
- EtCO2 above 20 mmHg is ideal for resuscitation.

Narrow Complex PEA (QRS less than 0.12 seconds):
Consider possible tension pneumo and perform bilateral chest needle decompressions
Consider mechanical causes such as cardiac tamponade**,** mechanical hyperinflation, PE, hypovolemia, AMI, or pump failure.

Wide Complex PEA QRS greater than 0.12 seconds or Asystole: Consider metabolic causes – Tricyclic OD, Severe hyperkalemia, Acidosis, Calcium Channel Blocker OD, Acute MI, Pump failure.

With return of spontaneous circulation or suspected Pseudo PEA:

- Maintain a MAP of 90 mmHg using an 10-50 mcg/min norepinephrine infusion.
- Refer to Post Resuscitation Care Protocol

Confirmed ROSC- Refer to SAVE-A-LIFE Appendix B Page 96

Consider termination of efforts in patients who despite effective chest compressions, airway management, three rounds of rhythm specific ACLS therapy, and no less than 20 minutes of resuscitation efforts remain in cardiac arrest without any return of spontaneous circulation.

- A decision is made in conjunction with on-line Medical Control that resuscitation should be terminated and the DOPA protocol will be followed.

A witnessed cardiac arrest in narrow complex PEA should be transported.

Systems utilizing POCUS may terminate efforts under guidance of their POCUS protocol, and in coordination with OLMC.

Guidelines
It is the consensus of the EMS medical directors that during transport to the hospital, lights and sirens are not medically indicated for cardiac arrest patients.

Reversible causes: hypovolemia, hypoxia, hydrogen ion (acidosis), hypo / hyperkalemia, hypothermia, tension pneumothorax, tamponade, toxins, thrombosis (pulmonary), thrombosis (cardiac).

REFUSAL OF SERVICE

INDICATIONS: *Paramedics often respond to scenes where the patient wishes to decline service. It is important that the paramedic obtains the patient's informed consent before leaving the scene; otherwise, the paramedic might be exposed to legal liability for abandonment of the patient.*

A patient is an individual who is sick, injured, wounded, or otherwise incapacitated or helpless and seeks immediate medical attention for whom EMS has been activated. A person that denies the need for medical treatment and/or transport, but any reasonable EMS provider can see that a person(s) has an obvious injury or illness, should be considered a patient and treated as such.

Contact Medical Control for patients presenting or having originally presented with:

- Suspicion of ongoing intoxication by drugs or alcohol
- Past medical history or suspicion of dementia
- Any intervention performed by any other healthcare provider
- A summons of EMS to a health care facility or call initiated by a health care provider.
- Suspicion of acute mental disease or suicidal or homicidal ideation
- Suspicion of a significant head injury
- Respiratory distress
- Abnormal vital signs (normal vital signs are defined as a heart rate between 60-110 BPM, systolic blood pressure greater than 100 mmHg, respiratory rate 12-20 BPM, and a SpO2 reading greater than 92% on room air)
- Altered mental status who remain altered.
- An age less than 18 years

Medical control is not required for all other patients unless concerns exist regarding the welfare of the patient. In the case of suspected patient coercion, domestic violence, abuse, etc. contact law enforcement.

Inform the patient about needed treatment and possible outcomes. Every effort should be made to persuade the patient to consent to needed health care. Consider involving family, medical control and law enforcement.

Coercing a patient or family into a Refusal of Services will lead to loss of EMS provider privilege by the State EMS Medical Director and a report to the Delaware Board of Medical Licensure and Discipline.

Discussion of refusal should be initiated by the patient or their representative.

Only EMS calls that are originally dispatched as "service call or public assist" can be entered into the Delaware Electronic Medical Reporting system as such.

Obtain a signed *Refusal of Service form* and document the informed consent process, concerns, and, if applicable, the physician number on the appropriate report(s).

ALS RELEASE TO BLS

INDICATIONS: A patient is an individual who is sick, injured, wounded, or otherwise incapacitated or helpless and seeks immediate medical attention for whom EMS has been activated. A person that denies the need for medical treatment and/or transport, but any reasonable EMS provider can see that a person(s) has an obvious injury or illness, should be considered a patient, and treated as such.

NOTE: The ALS provider must accompany patients in cases where ALS treatment is warranted, but the patient refuses to consent to these treatments. In these situations, if conditions change during transport, the patient may consent to treatment later.

- An ALS provider must perform a complete assessment and history on the patient. Some of the patient history may be provided by other responders on scene (i.e., BLS provider).
- After completing the assessment and history, the ALS provider may transfer the care to the BLS provider for transport to the hospital without contacting Medical Control UNLESS any of the following conditions exist:
    - Acute change in mental status
    - Respiratory distress
    - Chest pain of suspected cardiac origin
    - Suspicion of intoxication by drugs or alcohol
    - Abnormal vital signs (acceptable vital sign range for this protocol is defined as a heart rate between 60-110 BPM; systolic blood pressure between 100-180 mmHg: respiratory rate between 12-20 BPM; and a Sp02 reading of greater than 92% on room air)
    - Suspicion of significant head injury or traumatic injury
    - ALS was not initially dispatched but was later requested by BLS.
    - BLS has administered nitroglycerine, bronchodilator, or epinephrine.

- If the ALS provider performs any invasive procedure or provides medication, Medical Control must be consulted prior to transferring care.
- Prior to releasing the patient for BLS transport, the BLS provider must be given a full report related to patient condition, assessment findings and history. The attending BLS provider must agree to transport the patient without ALS accompanying. If any uncertainty exists on the part of the BLS provider, ALS must accompany the patient.
- A patient care report will be written for all cases in which a patient is released to BLS. In DEMRS, select “BLS Release” under Dispatch Information-Response Disposition. In the Vitals/Treatment – Protocols Used field, select “ALS Release to BLS.”
- In cases of multiple casualty incidents, standard MCI triage and transfer guidelines will apply.
    - Suspected hypoglycemia patients who become fully alert and oriented with stable vital signs that wish to be transported to a facility may be released to BLS without a call in to medical control if the BLS unit is carrying oral glucose.
    - An IV may be transported by BLS if converted to an IV lock.
    - Suspected opiate overdose patients that wish to be transported to a facility may be released to BLS without a call in to medical control if the BLS unit is carrying naloxone.

All cases of ALS-initiated release of patient care to BLS providers must be reviewed through the agencies’ Quality Improvement process.

PEDIATRIC GENERAL PATIENT CARE

INDICATIONS: *Any patient who is less than 15 years of age (neonates are defined as a patient age 30 days and under) requiring pre-hospital medical evaluation by a pre-hospital health care provider in the State of Delaware.*

A patient is an individual who is sick, injured, wounded, or otherwise incapacitated or helpless and seeks immediate medical attention for whom EMS has been activated. A person that denies the need for medical treatment and/or transport, but any reasonable EMS provider can see that a person(s) has an obvious injury or illness, should be considered a patient, and treated as such. The Pediatric General Patient Care protocol will be followed in conjunction with all other applicable protocols.

The most current version of the American Heart Association Guidelines for Cardiopulmonary Resuscitation is considered the standard for CPR within these protocols.

Respond using lights and sirens in accordance with Priority Medical Dispatch® (PMD®) protocols currently approved by Delaware EMS Medical Directors.

Perform scene survey.

Observe universal precautions.

- *Follow your agency's infection control policy.*

Consider the need for additional resources.

Determine responsiveness using AVPU.

Evaluate Airway, Breathing, Circulation, and Disability, Exposing the patient as necessary.

Secure a patent airway appropriately.

Manage cervical spine appropriately.

Treat life-threatening conditions as necessary per specific treatment protocols.

Contact Medical Control *for consideration of a needle chest decompression for suspected non-traumatic tension pneumothorax patients.*

Assess body systems as appropriate.

Monitor patient via the use of pulse oximetry and/or capnography (nasal prong/ET), as appropriate

Monitor blood glucose level as appropriate.

Administer oxygen as appropriate (maintain a SpO_2 of at least 92%).

Obtain medical history (HPI, PMH, allergies, and medications).

Evaluate blood pressure, pulses, respiratory rate, and tactile temperature. Reassess with a frequency indicated by patient condition.

Monitor cardiac rhythm and/or 12 lead ECG as appropriate.

Assign treatment priority and make transport decision.

Establish intravenous access with normal saline infused as appropriate.

Use the current Broselow tape or OEMS determined equivalent to estimate drug dosages.

Consider intraosseous access, if IV access cannot readily be obtained for Priority 1 patients in extremis that are in need of medication or fluid resuscitation. If IO access is obtained, all IV medications can be administered IO.

- Recommended anesthetic for infant/child responsive to pain:
- Observe recommended cautions/contraindications to using 2% preservative and epinephrine free lidocaine (intravenous lidocaine).
- Usual initial dose is 0.5 mg/kg, not to exceed 40 mg.
- Prime extension set with lidocaine.
- Note that the priming volume of the EZ-Connect® Extension Set is approximately 1.0 mL.
- For small doses of lidocaine, consider administering by carefully attaching syringe directly to needle hub (prime extension set with normal saline).
- Slowly infuse lidocaine over 120 seconds.
- Allow lidocaine to dwell in IO space 60 seconds.
- Flush with 2-5 mL of normal saline.
- Slowly administer subsequent lidocaine (half the initial dose) IO over 60 seconds.
- Repeat PRN.
- Consider systemic pain control for patients not responding to IO lidocaine.

For all other patients who are not in extremis, **Contact Medical Control** for consideration of intraosseous access if IV access cannot readily be obtained for all other Priority 1 patients.

Consider the insertion of an orogastric tube if the patient is successfully intubated.

Consider the administration of 2 mg Zofran for patients between 14 – 27 kg and 4 mg for patients greater than 27 kg Zofran (Ondansetron) ODT, IV or IM for nausea and/or vomiting.

Secure patient in ambulance using appropriate equipment per ambulance design and agency standard operating procedures.

Consider proposed receiving facility's diversion status and inform patient (family) as appropriate.

Transport patient to an appropriate medical facility via appropriate mode of transportation without delay. Transport should be made safely and, in a manner, as to prevent further injury through the appropriate use of lights and sirens or no lights and sirens. The highest medically trained practitioner engaged in patient care will determine the medically appropriate mode of transportation based upon the patient's presenting medical condition. This practitioner will communicate with the transporting EMS vehicle's operator and advise him/her as to the transport mode to be utilized.

Patients should be taken to the approved facility's emergency department, labor and delivery area, other specialty care area or to an inpatient bed if arranged prior to arrival at the facility. If there are questions or doubts as to the appropriate facility or point of delivery, the medical control physician will be the arbitrator. All unstable patients should be transported directly to an emergency facility.

Patients are to be transported to Delaware Office of EMS approved facilities within the EMS agency's usual operations area.

Responsibility of care does not end until transfer care of the patient to an appropriately trained health care provider and the patient care report is made available/complete in the approved electronic reporting system. Document relevant findings and treatments.

All IV bags that have been mixed with a medication must be labeled at time of ED disposition.

Priority I Patient suffering from an immediate life or limb threatening injury or illness. It is the consensus of the EMS medical directors that during transport to the hospital lights and sirens are not medically indicated for many Priority I patients.

Priority II Patients suffering from an injury or illness that if left untreated could potentially threaten life or limb. It is the consensus of the EMS medical directors that during transport to the hospital, lights and sirens are not medically indicated for Priority II patients.

Priority III Patient suffering from an injury or illness that requires medical attention but does not threaten life or limb. It is the consensus of the EMS medical directors that during transport to the hospital, lights and sirens are not medically indicated for Priority III patients.

"Any person, agency, organization, or entity who knows or in good faith suspects child abuse or neglect shall make a report in accordance with § 904 of this title (Title 16 of Delaware Code). For purposes of this section, "person" shall include, but shall not be limited to, any physician, any other person in the healing arts including any person licensed to render services in medicine, osteopathy or dentistry, any intern, resident, nurse, school employee, social worker, psychologist, medical examiner, hospital, health care institution, the Medical Society of Delaware or law enforcement agency."

Child Abuse Reporting Phone Contact:1-800-292-9582 or www.iseethesigns.org

If an EMS provider has reasonable cause to suspect that a person is a potential victim of human trafficking, report the concern. National Human Trafficking Resource Center Hotline 1-888-373-7888 (24 hours). The NHTRC call takers are trained to assist by discussing a case in a HIPAA compliant manner.

National Human Trafficking Resource Center Hotline 1-888-373-7888

The approved pharmacology manual should be used for medication reference.

It should be noted that the protocol above is a guideline to be followed in as much as it aids in providing appropriate and timely medical care. The ALS provider may change the order or omit steps listed above as dictated by sound judgment of the care provider and/or presentation of the patient(s).

The following information should be passed on in either verbal or written form at the time of patient transfer: HPI, PMH, allergies, medications, vital signs, SpO2, $EtCO_2$, cardiac rhythm, pre-hospital treatments, and patient's response to those treatments.

CO-oximetry may be performed as an option by agencies carrying CO monitoring equipment.

PEDIATRIC ACUTE RESPIRATORY DISTRESS

INDICATIONS: *Acute exacerbation of asthma and reactive airway disease; cough, shortness of breath, air hunger, wheezing, diminished breath sounds, retractions, and tachypnea.*

Contact Medical Control *prior to medication administration if the patient's heart rate is greater than 180 beats per minute.*

AGE less than 1 Year

- Administer up to 6 mL normal saline nebulized.
- **Contact Medical Control** for Albuterol/ipratropium bromide (Atrovent) dose.

AGE 1-5 Years

- Administer 2.5 mg Albuterol nebulized. Repeat once for continued respiratory distress.
- Administer 0.25 mg ipratropium bromide (Atrovent)

AGE 6-12 Years

- Administer 5 mg Albuterol nebulized. Repeat once for continued respiratory distress.
- Administer 0.25 mg ipratropium bromide (Atrovent)

AGE greater than 12 Years

- Administer 5 mg Albuterol nebulized. Repeat once for continued respiratory distress.
- Administer 0.5 mg ipratropium bromide (Atrovent)

For severe respiratory distress:

- Consider administration of 0.01 mg/kg epinephrine (1mg/mL) concentration IM, up to 0.3 mg.
- **Contact Medical Control** for consideration of administration of 50 mg/kg magnesium sulfate (up to a max dose of 2 g) IV infused over 10 minutes for continued severe respiratory distress.

For mild to moderate respiratory distress secondary to asthma:

- Consider the administration of prednisone 2 mg/kg PO (up to 60 mg) in combination with Maalox or other PO fluid OR

- If an IV has been placed for other reasons, 2 mg/kg methylprednisolone (Solu-Medrol) IV (up to 125 mg)

For suspected croup:

- Administer up to 6 mL normal saline nebulized.
- For continued respiratory distress, consider 0.5 mL/kg epinephrine (1 mg/mL) concentration, up to 5 mL.

PEDIATRIC ALTERED MENTAL STATUS

***INDICATIONS*:** Incomprehensible speech, inappropriate verbal responses, inability to follow verbal commands, decreased responsiveness, or unresponsiveness.

Ages 1 month to 14 years:

- Check blood sugar.
    - If blood sugar is less than 60 mg/dl, administer Dextrose 10% (D10) IV at 5 mL/kg **OR**
    - Administer glucagon if no IV access is available.
        - 0.5 mg if weight less than 20 kg
        - 1 mg if weight greater than 20 kg
- For respiratory depression secondary to suspected drug overdose:
    - Administer 0.1 mg/kg naloxone (Narcan), up to 2 mg, IV, IM, IO
    - Consider second dose of 0.1 mg/kg naloxone (Narcan), up to 2 mg, IV, IO

Neonates (ages 0 to 1 month)

- Check blood sugar
    - If blood sugar less than 40 mg/dl, administer Dextrose 10% IV at 5 mL/kg
- **DO NOT** administer naloxone (Narcan)

PEDIATRIC SEIZURES (ACTIVE)

If no IV/IO access:

- Administer 0.2 mg/kg midazolam (Versed) IM up to a maximum dose of 5 mg for patients up to 40 kg and 10 mg for patients greater than 40 kg.
- Check Blood sugar.
- Obtain IV access.
- If blood sugar less than 60 mg/dl, (40 mg/dl for neonate) administer 1 mg of glucagon IM (0.5mg less than 1 year of age).

If IV/IO established prior to seizure:

- Administer 0.2 mg/kg midazolam (Versed) IV up to a maximum dose of 5 mg. If blood sugar less than 60mg/dl, (40 mg/dl for neonate) administer up to 25 grams dextrose IV/IO
    - Dextrose 10% (D10) at 5mL/kg

PEDIATRIC SHOCK and HYPOTENSION

INDICATIONS: *Clinical evidence of shock including altered mental status, tachycardia, pale/cool/clammy skin, delayed capillary refill (greater than 2 seconds in warm environment), and/or absence of radial/brachial pulses bilaterally. Systolic BP indicators:*

- *Less than 60 mm Hg neonates (0-30 days)*
- *Less than 70 mm Hg in infants (1 month – 12 months)*
- *Less than 70 mm Hg + (2 x age in years) in children 1 – 10 years*
- *Less than 90 mm Hg in children greater than 10 years of age*

For heart rate less than 60 BPM refer to bradycardia protocol.

Infuse a 20 mL/kg (10 mL/kg for neonate) IV/IO fluid bolus of normal saline.

If signs of hypovolemic shock persist, boluses may be repeated at the same volume up to a maximum of 60 mL/kg (maximum of 30 mL/kg for neonate).

- Discontinue fluid bolus if signs of fluid overload develop.

See Appendix E: Shock Index Page 99

PEDIATRIC ALLERGIC REACTIONS

Severe Allergic Reaction

***INDICATIONS**: Generalized allergic manifestations such as urticaria or history of an allergic exposure with:*

- *Airway obstruction (partial or complete) **OR***
- *Clinical evidence of shock including altered mental status, confusion, delayed capillary refill, and cool, clammy, or mottled skin.*

Administer epinephrine 0.01 mg/kg (1 mg/mL) IM, up to 0.5 mg.

- Repeat every five minutes up to three (3) times as needed.

Administer normal saline 20 mL/kg IV/IO (10 mL/kg for neonates) if shock symptoms persist.

- Repeat two (2) additional times for a maximum of 60 mL/kg (30 mL/kg for neonates) as needed.

Administer 1 mg/kg diphenhydramine (Benadryl) IV/IO/IM, up to 50 mg.

Administer 2 mg/kg methylprednisolone (Solu-Medrol) IV/IO/IM up to 125 mg.

Moderate Allergic Reaction

***INDICATIONS**: Generalized allergic manifestations such as urticaria or history of an allergic exposure without airway compromise or shock. Gastrointestinal symptoms, such as abdominal pain, vomiting and diarrhea, may also occur in moderate allergic reactions.*

Age less than 1 year

- **Contact Medical Control** to consider administration of diphenhydramine (Benadryl) PO or IM.

Age greater than 1 year

- Consider administration of diphenhydramine (Benadryl) 1 mg/kg PO/IM, up to 25 mg

PEDIATRIC BRADYCARDIA

***INDICATIONS**: Heart rate less than 60 BPM with clinical evidence of shock including: altered mental status, pale/cool/clammy skin, delayed capillary refill, and/or absence of radial/brachial pulses bilaterally.*

- Ensure adequate oxygenation and ventilation.
    - Initiate BVM ventilation
- Begin chest compressions if the heart rate remains less than 60 beats per minute.

Administer 0.01 mg/kg epinephrine (1 mg/10 mL) IV. Repeat every 3-5 minutes.

Administer 0.02 mg/kg atropine for primary AV block. Minimum dose is 0.1 mg IV. Maximum single dose is 1 mg IV. May be repeated once in 3-5 minutes.

For symptomatic bradycardia continue CPR while administering medical treatment.

PEDIATRIC TACHYCARDIA

INDICATIONS: STABLE *is defined as a patient with signs of adequate tissue perfusion, not in cardiac arrest, and not displaying the signs or symptoms of slow capillary refill, altered mental status, shock or pulmonary edema.*

Obtain 12 lead EKG on all patients.

Wide complex tachycardia (QRS greater than 0.09 seconds) presumed to be ventricular tachycardia (VT), with a rate greater than 180 BPM in children more than 1 year old or greater than 220 BPM in children less than 1 year.

- **Unstable wide complex tachycardia:**
  - If the child is hypotensive, has acute altered level of consciousness, or signs of shock**, IMMEDIATE SYNCHRONIZED CARDIOVERSION** is indicated.
  - Synchronized cardioversion: 0.5 to 1 J/kg if this is not effective increase to 2 J/kg. Cardioversion should only be attempted a total of twice.

- **Stable wide complex tachycardia**:
  - If no hypotension, altered level, or signs of shock, and the rhythm is regular with monomorphic (all QRSs look alike)
  - **Contact Medical Control *for consideration of:***
    adenosine (Adenocard) 0.1 mg/kg IV max dose 6 mg. May repeat at 0.2 mg/kg IV max dose of 12 mg, if not effective

Narrow complex tachycardia (QRS less than 0.09 seconds) other than sinus tachycardia, with a rate greater than 180 BPM in children greater than 1 year old or greater than 220 BPM in children less than 1year who have tachycardia with a pulse. There should be no evidence of trauma, hypovolemia, fever or sepsis.

- **Unstable narrow complex tachycardia:**
  - If the patient exhibits signs of poor tissue perfusion, (delayed capillary refill, altered level of consciousness, shock or pulmonary edema) the following treatment modalities should be considered.
  - Synchronized cardioversion: 0.5 to 1 J/kg if this is not effective increase to 2 J/kg. Cardioversion should only be attempted a total of twice.
  - Consider sedation but not to delay cardioversion, 0.2mg/kg etomidate (Amidate®) to a max dose of 10 mg.

- **Stable narrow complex tachycardia** (SVT) at a rate exceeding 180 BPM in children Greater than 1 year old or 220 BPM in infants less than 1.
  - Consider Vagal maneuvers (Valsalva, ice packs applied to face; Do not perform carotid massage)
  - Administer fluid bolus of 20 mL/kg (10 mL/kg for neonates) of normal saline (if no signs of pulmonary edema)
  - Administer adenosine (Adenocard) 0.1 mg/kg IV max dose 6 mg. May repeat at 0.2 mg/kg IV max dose of 12 mg.

PEDIATRIC CARDIOPULMONARY RESUSCITATION GUIDELINES

INDICATIONS: *Current AHA guidelines reflect the importance of compressions for survival from cardiac arrest. EMS practice must evolve to address this important change.*

Compressions should begin as soon as possible following EMS arrival.

- Rapid movement to the patient by providers is critical.
- Treating the patient where they are found allows compressions to be started without delay. Safety issues should prompt patient movement.

Intubation can be delayed and BVM utilized for the first 6 minutes of CPR

High Quality CPR

- Perform continuous compression PIT CREW HIGH PERFORMANCE CPR.
- No pauses for ventilations.
- Ventilations on the upstroke of CPR.
- For CPR induced consciousness **Contact Medical Control.**

Compressions should be FAST, HARD, and DEEP at a rate of 100-120 compressions per minute and to a depth of at least one third the anterior-posterior (AP) diameter of the chest.

- Depth of 1 1⁄2 inches (4 cm) in infants
- Depth of 2 inches (5 cm) in children
- Faster or slower rates worsen patient outcome.
- Ensure complete recoil of the chest wall prior to the next compression.
- ETCO2 less than 15 mmHg, efforts should focus on improved CPR quality.
- No procedure (intubation, IV/IO start, etc.) should slow or stop compressions.
- Interruption for defibrillation should be minimal and compressions should resume AS SOON AS shock delivery is complete.
- Frequently switch providers performing chest compressions to maintain peak performance.

Ventilations

- Ventilate at 20-30 breaths per minute with low volume to decrease intrathoracic pressure.
- Patients should be bagged using a one-hand squeeze.
- Avoid excessive ventilation.

Complete a minimum of 20 minutes of compressions before moving patients off scene or initiating transport.

- Patient movement on stretchers prevents effective CPR.
- Effective CPR cannot be safely performed in a moving ambulance.

PEDIATRIC VENTRICULAR FIBRILLATION (VF) AND/OR PULSELESS VENTRICULAR TACHYCARDIA (VT)

In the absence of effective CPR on arrival and when response time is greater than four (4) minutes, perform 2 minutes of CPR prior to first defibrillation or intubation.

Defibrillate using 2 joules/kg.

Perform 2 minutes of CPR between each defibrillation attempt.

Second shock 4 joules/kg.

Third shock 6 joules/kg.

Fourth shock 8 joules/kg.

Subsequent shocks of 10 joules/kg or adult max

Administer 0.01 mg/kg epinephrine (0.1 mg/mL) IV. Repeat every 3-5 minutes for the duration of resuscitation.

Consider administration of 50 mg/kg magnesium sulfate IV if Torsades de Pointes is identified.

Administer 5 mg/kg amiodarone bolus IV (maximum 300 mg per dose). May be repeated twice every ten minutes if VF/VT continues. Total of all doses not to exceed 450 mg or a max total dose of 15 mg/kg.

Follow each medication administration with a single shock as per above energy guideline and 2 minutes of chest compressions.

Compressions will not be interrupted for longer than 10 seconds for intubation or other procedures. Intubation should be performed during pulse/rhythm check or during compressions and should be deferred until later in the resuscitation. Consider early use of rescue airway device for anticipated difficult intubation.

With return of spontaneous circulation **Contact Medical Control.**

Guidelines

- Biphasic devices use FDA approved/recommended energy settings.

- Ventilations
    - Ventilate at 20-30 breaths per minute at low volume to decrease intrathoracic pressure.
    - Patients should be bagged using a one-hand squeeze.

- Compressions
    - ETCO2 less than 15 mm Hg, efforts should focus on improving CPR quality.
    - Ensure proper depth and rate of compressions and minimize hands-off time.
    - Frequently switch providers performing chest compressions to maintain peak performance.

    - Ensure complete recoil of the chest wall prior to the next compression.

- It is the consensus of the EMS medical directors that during transport to the hospital, lights and sirens are not medically indicated for cardiac arrest patients.
- Reversible causes: hypovolemia, hypoxia, hydrogen ion (acidosis), hypoglycemia, hypo / hyperkalemia, hypothermia, tension pneumothorax, tamponade, toxins, thrombosis (pulmonary), thrombosis (cardiac).

PEDIATRIC ASYSTOLE / PULSELESS ELECTRICAL ACTIVITY (PEA)

In the absence of effective CPR on arrival and when response time is greater than four (4) minutes, perform 2 minutes of chest compressions prior to intubation.

Administer 0.01 mg/kg epinephrine (0.1 mg/mL) IV. Repeat epinephrine every 3-5 minutes.

Administer IV bolus of up to 20 mL/kg (10 mL/kg for neonates) NSS, boluses may be repeated at the same volume up to a maximum of 60 mL/kg (30 mL/kg for neonates).

Compressions will not be interrupted for longer than 10 seconds for intubation or other procedures. Intubation should be performed during pulse/rhythm check or during compressions and should be deferred until later in the resuscitation. Consider early use of rescue airway device for anticipated difficult intubation.

Guidelines

- Ventilations
    - Ventilate at 20-30 breaths per minute at low volume to decrease intrathoracic pressure.
    - Patients should be bagged using a one-hand squeeze.

- Compressions
    - ETCO2 less than 15 mm Hg, efforts should focus on improving CPR.
    - Ensure proper depth and rate of compressions and minimize hands-off time.
    - Frequently switch providers performing chest compressions to maintain peak performance.
    - Ensure complete recoil of the chest wall prior to the next compression.

- It is the consensus of the EMS medical directors that during transport to the hospital, lights and sirens are not medically indicated for cardiac arrest patients.
- Reversible causes: hypovolemia, hypoxia, hydrogen ion (acidosis), hypoglycemia, hypo / hyperkalemia, hypothermia, tension pneumothorax, tamponade, toxins, thrombosis (pulmonary), thrombosis (cardiac).

PEDIATRIC AND ADULT TRAUMA

General and Blunt Trauma

INDICATIONS*: This Trauma Protocol applies to patients with any of the following field triage criteria:*

If any of the conditions are present in abnormal vital signs, obvious injury or mechanism of injury/ evidence of high energy impact, transport to a Trauma Center. Consider air medical transport.

Vital Signs:

Adults:	Glasgow Coma Scale less than 13. Systolic BP less than 90 mmHg. Respiratory rate less than 10 or greater than 29.
Pediatrics:	Pediatric Glasgow Coma Scale less than 13 Refer to the Abnormal Vital Signs section of the Broselow tape *or OEMS determined equipment.*

Patients with abnormal vital signs should be transported preferentially to the highest-level trauma center practical.

Patients with GCS less than 13 or exhibiting new onset paralysis or paresis: consider direct transport to a Level I or II Trauma Center or a Maryland Level III with neurosurgical capability.

If NO for all elements in Vital Signs, proceed to Obvious Injury.

Obvious Injury:

- Penetrating injury to the torso, axilla, abdomen, head, neck, proximal extremities or groin.
- Major burns, inhalation injury, or trauma with burns.
- More than one proximal long bone fracture.
- Pelvic fracture (suspected on clinical grounds).
- Flail chest or other major chest injury
- Limb paralysis
- Major external hemorrhage.
- Amputation above wrist or ankle
- Crushed, degloved or mangled extremity.
- Open or depressed skull fracture
- AVPU scale: does not respond to voice.

Patients with obvious injury should be transported preferentially to the highest-level trauma center practical.

After evaluation of injuries proceed to the Mechanism.

Mechanism:

- Patient ejection (partial or complete) from vehicle
- Motorcycle crashes greater than 20 mph or rider thrown
- Death of passenger in same vehicle compartment

- Falls greater than 20 feet (adult)
- Falls greater than 10 feet (child) or 2-3 times the height of the child.
- Auto-pedestrian/ auto-bicycle injury-thrown, run over or with significant (greater than 20 mph) impact.
- Vehicle telemetry consistent with high-risk injury
- High risk auto crash: inner intrusion greater than 12" occupant/greater than 18" anywhere

Patients with any of the above mechanisms should be transported preferentially to the highest-level trauma center practical.

If NO for all elements in Mechanism, proceed to Extenuating Circumstances.

Extenuating Circumstances: (Not stand-alone criteria for the initiation of trauma protocol or helicopter transport.)

- Pregnancy greater than 20 weeks
- Renal dialysis
- Age less than 15 or greater than 55 years
- Other significant medical conditions- discuss with medical control.
- Time Sensitive extremity injuries
- Required by patient condition in the judgment of the prehospital provider.
- Anticoagulation medications and bleeding disorders (Factor deficiencies, ITP).

If YES to extenuating circumstances, **Contact Medical Control** and consider transport to a specific trauma hospital with necessary resources.

If NO to all above, routine transport.

When in doubt, transport to a trauma center.

Consider Pediatric and Adult airway management protocol.

If unable to intubate, resume ventilations via BVM pending placement of an appropriate airway device.

Consider needle chest decompression for suspected TENSION pneumothorax. Monitor all needle decompressions for kinking. Approved sites, in order of preference, are:

- **Adults:** 14 g x 3.25" - ***Preferred Site:*** 5th Intercostal space at anterior axillary line
- **Pediatrics:** 14 g x 1.50" - ***Preferred Site:*** 4th Intercostal space at anterior axillary line

Perform bilateral needle chest decompressions for trauma arrest patients (isolated penetrating head injuries excluded).

For clinical shock, administer 20 mL/kg (10 mL/kg for neonates) normal saline intravenously to a value of greater than:

- *=60 mm Hg neonates (0-30 days)*
- *=70 mm Hg in infants (1 month – 12 months)*
- *=70 mm Hg + (2 x age in years) in children 1 – 10 years*
- *=90 mm Hg for all patients greater than 10 years of age*

For suspected unstable pelvic fractures, apply pelvic compression device per manufacturer instructions.

Bandage burned areas using dry clean dressings only. Cover the patient and provide for an appropriate warm environment to prevent heat loss.

In cases of severe hemorrhage:

- Apply direct pressure to the hemorrhaging wound.
- If direct pressure is not adequate to control hemorrhage, a provider may use a tourniquet for hemorrhage that is anatomically amenable to tourniquet application and note time of application.
- For hemorrhage that cannot be controlled with above, apply approved hemostatic agent with direct pressure, or through packing of the wound with gauze either impregnated with hemostatic agent or not.
- If packing the wound, gauze must be inserted deeply and fully and can include multiple rolls of gauze.

For adults: In setting of hemorrhagic shock from trauma less than 3 hours old, administer 2 gm Tranexamic acid (TXA) slow IV/IO (avoid rapid administration) if a patient will likely need a blood transfusion (for example: presents with hemorrhagic shock, one or more major amputation, or evidence of severe bleeding) *

**Reference TCCC2020*

Transport considerations:

- Patients with hemorrhagic shock should be taken to the closest trauma center. Target scene time for the hemodynamically compromised trauma patient should not exceed 10 minutes.
- Head or spinal trauma patients with GCS less than 13 or exhibiting new onset paralysis or paresis; direct transport to a trauma center with neurosurgical capabilities is preferred.
- Patients who are less than 15 years of age should be transported to a pediatric trauma center when patient condition, time and distance allow.
- Burn patients should be evaluated at the nearest **trauma** center.
- Consider helicopter transport if ground transport to the appropriate hospital is expected to exceed 10 minutes.
- Patients in shock with deteriorating vital signs or ongoing airway compromise should be transported to the closest trauma center.

**Utilize ACS 2020 trauma triage guidelines*

Appropriate reasons for prolonged trauma scene times include extrication, awaiting BLS, securing scene safety, presence of multiple victims, awaiting helicopter touch down for transport to a higher-level trauma center, etc.

Use optional Junctional Tourniquet and iTClamp if available and indicated.

Penetrating Trauma

INDICATIONS*: Gunshot, knife or impaling injury to the neck, torso, or proximal extremity.*

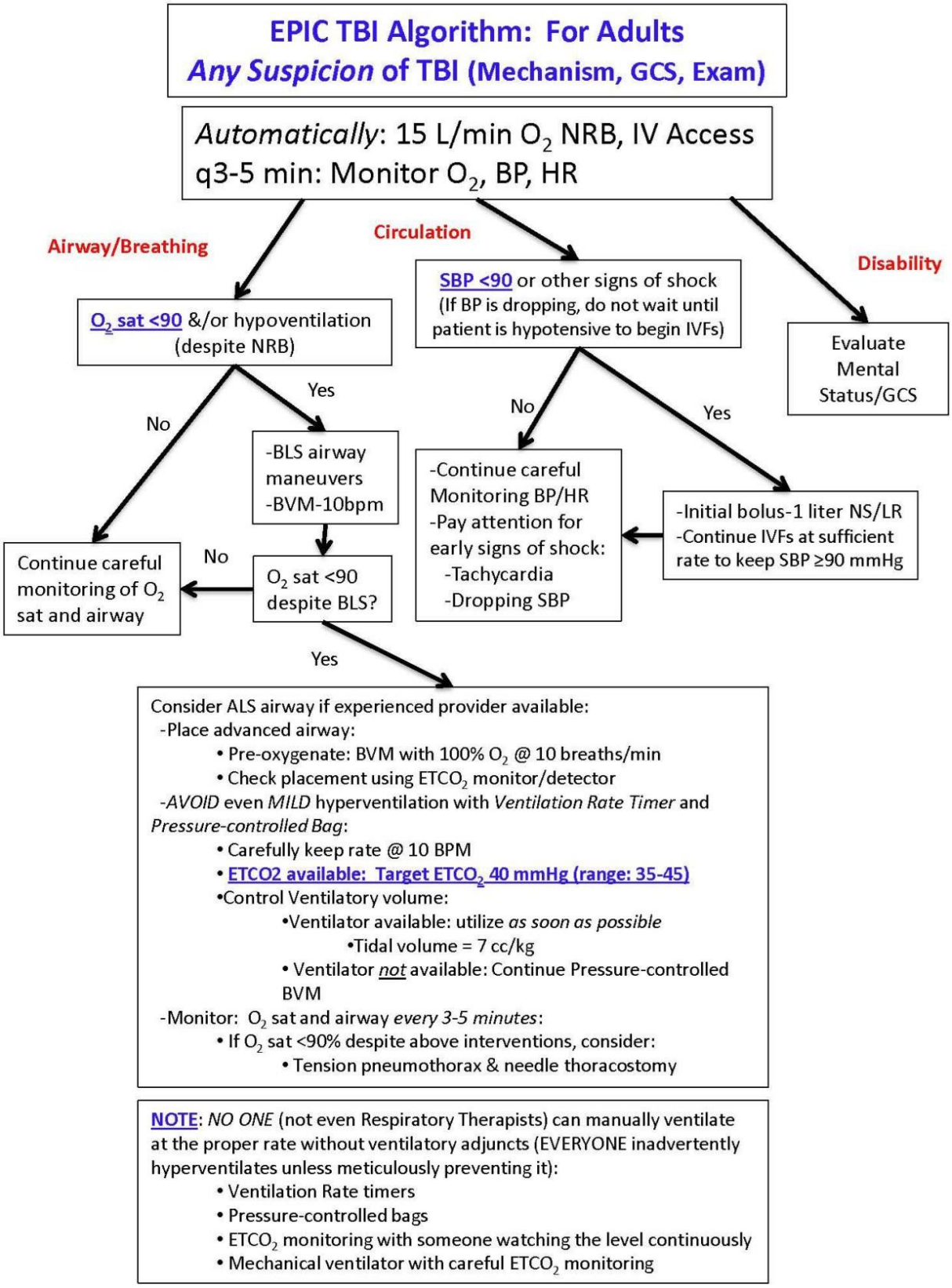
- Scene time: goal less than 5 minutes.
- Scene activities:
    - Hemorrhage control with tourniquets, hemostatic agents, wound packing, junctional tourniquets and iTClamps.
    - Open airway, apply nasal or oral airways as indicated.
    - Consider chest needle decompression.
    - Rapid movement to transport unit.
- Enroute activities
    - Advanced airway management
    - Obtain access via IV or IO and labs.
    - Expose and continue with trauma assessment.
    - For adult patients: Administer TXA for penetrating injury to the torso.
    - For adult patients: Administer TXA if a patient will likely need a blood transfusion (for example: presents with hemorrhagic shock, one or more major amputation, or evidence of severe bleeding) *
    - **Call Medical Control** for rapid short report:
        - Age & sex
        - Mechanism
        - Vital signs (HR & BP)
        - Airway & access
        - ETA

**Reference TCCC2020*

Head Trauma

INDICATIONS: *In patients with significant head injury (GCS 13 or less).*

- Maintain oxygen saturation above 90%
- Maintain end tidal CO2 at 35-45 (target 40)
    - Use nasal capnography if not intubated.
    - DO NOT hyperventilate if levels are in this range.
- Maintain systolic blood pressure greater than 100 mm Hg in adults.
    - Treat hemorrhagic shock
    - Fluid resuscitate if blood pressure is declining
        - In adult patients initiate 1 liter fluid resuscitation if approaching SBP of 90 mm Hg
- If possible, elevate the patient's head above 30 degrees.


EPIC TBI Algorithm: For Adults
Any Suspicion of TBI (Mechanism, GCS, Exam)
Automatically: 15 L/min O2 NRB, IV Access
q3-5 min: Monitor O2, BP, HR
Airway/Breathing
Circulation
Disability
O2 sat <90 &/or hypoventilation (despite NRB)
SBP <90 or other signs of shock (If BP is dropping, do not wait until patient is hypotensive to begin IVFs)
Evaluate Mental Status/GCS
Yes
No
No
Yes
-BLS airway maneuvers
-BVM-10bpm
-Continue careful Monitoring BP/HR
-Pay attention for early signs of shock:
-Tachycardia
-Dropping SBP
-Initial bolus-1 liter NS/LR
-Continue IVFs at sufficient rate to keep SBP ≥90 mmHg
Continue careful monitoring of O2 sat and airway
No
O2 sat <90 despite BLS?
Yes
Consider ALS airway if experienced provider available:
-Place advanced airway:
• Pre-oxygenate: BVM with 100% O2 @ 10 breaths/min
• Check placement using ETCO2 monitor/detector
-AVOID even MILD hyperventilation with Ventilation Rate Timer and Pressure-controlled Bag:
• Carefully keep rate @ 10 BPM
• ETCO2 available: Target ETCO2 40 mmHg (range: 35-45)
•Control Ventilatory volume:
•Ventilator available: utilize as soon as possible
•Tidal volume = 7 cc/kg
• Ventilator not available: Continue Pressure-controlled BVM
-Monitor: O2 sat and airway every 3-5 minutes:
• If O2 sat <90% despite above interventions, consider:
• Tension pneumothorax & needle thoracostomy
NOTE: NO ONE (not even Respiratory Therapists) can manually ventilate at the proper rate without ventilatory adjuncts (EVERYONE inadvertently hyperventilates unless meticulously preventing it):
• Ventilation Rate timers
• Pressure-controlled bags
• ETCO2 monitoring with someone watching the level continuously
• Mechanical ventilator with careful ETCO2 monitoring

ADULT BLOOD ADMINISTRATION

INDICATIONS*: This protocol is for use in the hemodynamically unstable patient, presenting with signs or symptoms of hemorrhagic shock with suspected need for massive blood transfusion due to suspected marked internal and, or external blood loss presenting with sustained tachycardia greater than 110 BPM or sustained hypotension less than 90 mmHg, or a shock index greater than 1.0 (Calculated by HR/SBP), or ETCO2 less than 25.*

***Do not delay transport to initiate blood products. ***

Traumatic Hemorrhage:

- Isotonic Crystalloids (0.9 Sodium Chloride)
- Tranexamic Acid 2 grams IV/IO
- Consider Blood Transfusion with Online Medical Control (OLMC)
- Calcium Chloride 1g IV/IO over 3 minutes after each unit of transfused blood product

Upper/Lower GI Hemorrhage:

- Isotonic Crystalloids
- Consider Blood Transfusion with OLMC
- Calcium Chloride 1g IV/IO over 3 minutes after each unit of transfused blood product

Post-Partum Hemorrhage:

- Isotonic Crystalloids
- Tranexamic Acid 2 grams IV/IO
- Consider Blood Transfusion with OLMC
- Calcium Chloride 1g IV/IO over 3 minutes after each unit of transfused blood product

Administration of blood products is optional, as approved by the jurisdictional medical director

TRANSFUSION OF BLOOD PRODUCTS

The paramedic must contact online **medical control** (OLMC) and obtain orders to administer blood products. The paramedic must **speak directly** to the medical control physician. With OLMC approval, Low Titer O Positive Whole Blood (LTOWB) may be administered in accordance with the following indications and the following guidelines:

- Indications for transfusion
    - Hemorrhagic Shock: Patients with ongoing, or suspected ongoing, major hemorrhage, based on their presenting injury or diagnosis, and with the clinical signs of shock (tachycardia, delayed capillary refill, hypotension, or mental status changes) should be given blood (LTOWB).
- Baseline vital signs should be obtained prior to blood administration, with continuous monitoring throughout the transfusion. Vitals signs, including temperature should be documented every 5 minutes.
- Blood Type: Low Titer O Positive Whole Blood

- General Guidelines
    - When not being administered, blood shall be stored in a biothermal grade cooler. Blood must be stored between 1-6 Degrees Celsius. The temperature of the stored blood must be monitored constantly. Any deviations in the storage temperature beyond the therapeutic range could result in wasted product.
    - Prior to administration, two paramedics must check and verify blood type, Rh factor, unit numbers, and expiration date.
    - In adults, blood should be administered through a large bore (at least 18 gauge) peripheral IV, or intraosseous needle. Smaller bore, or intraosseous needle is acceptable in children.
    - Blood should be administered with 0.9% Normal Saline through blood tubing with a filter.
    - Rapid Infusion and warming devices should be used to facilitate the rapid infusion of the blood product.
    - After the transfusion is complete, amount transfused, and patient's response should be documented.
    - All unused blood products and empty blood product bags should be left with the receiving facility.
- Transfusion Reaction
    - If signs of a transfusion reaction develop [fever, chills, hypotension, dyspnea, tachycardia, pain at the transfusion site, hives, etc.], stop the transfusion immediately.
    - Consider the Allergic/Adverse Reactions/Dystonic Reaction Protocol
    - The unit of blood, the IV bags, and all tubing must be discontinued and sent to the blood bank upon arrival at the receiving hospital.
    - **Notify Medical Control** immediately for all possible transfusion reactions.

Refer to Appendix E – Shock Index Page 99-100

PEDIATRIC BLOOD ADMINISTRATION

INDICATIONS: *This protocol is for use in the hemodynamically unstable trauma patient ages 5 to 15, presenting with signs or symptoms of hemorrhagic shock with suspected need for massive blood transfusion due to suspected marked* ***internal*** *and, or external* ***blood loss****.*

Signs of shock include: Capillary reperfusion >2 sec, change in mental status, absence of brachia/radial pulses, or pale/cool/clammy skin.

Must have traumatic mechanism with signs of hemorrhagic shock and one of the following:

- Elevated pediatric age adjusted shock index (SIPA) **OR**
- Systolic BP <70 **OR**
- ETCO2 < 25 **OR**
- Traumatic arrest witnessed by first responders **OR**
- Traumatic arrest with PEA

Transfusion:

- Transfuse 10ml/kg of whole blood. May repeat x1. Max dose 1 unit of whole blood
- Tranexamic Acid 15mg/kg IV/IO. Max of 1g.

Refer to Appendix E – Shock Index Page 99-100

PEDIATRIC AND ADULT SMOKE INHALATION

INDICATIONS: *Patients who have been found unconscious or in cardiac arrest after being rescued from a smoke inhalation situation (i.e., soot-stained face and airways, history of confinement in smoke-filled environment). This standing order also applies to firefighters who collapse with sudden cardiac arrest or unconsciousness after being involved with interior structural firefighting operations.*

Consider any decontamination to render the patient safe for treatment.

Initiate standard resuscitation procedures:

- Assess and manage the airway appropriately.
- Ensure adequate ventilation and oxygenation.
- Provide circulatory support (treat for shock, initiate CPR) as required.

Optional equipment: Determine pulse co-oximetry.

Assess and treat other causes of altered mental status (i.e., hypoglycemia, narcotic overdose).

If patient remains unconscious or in cardiac arrest, consider administration of 5 g (2.5 g for children ages 3 to 12 years, and 1.25 g for children 3 years of age and younger) hydroxocobalamin (Cyanokit) over 15 minutes if available. Prior to administering hydroxocobalamin:

- Draw venous blood sample.
- Estimate body surface area burn percentage.

Services who stock hydroxocobalamin are encouraged to carry it in a manner that enables the drug's deployment to the scene of working structure fires with patients and incidents with extensive interior firefighting operations (for firefighter rehab).

POST RESUSCITATION CARE WITH TARGETED TEMPERATURE MANAGEMENT

INDICATIONS: *Return of Spontaneous Circulation (ROSC) in an intubated (advanced airway rescue device acceptable) cardiac arrest patient. If at any time during this protocol the patient has a loss of spontaneous circulation, discontinue cooling and treat with appropriate standing order.*

Exclusions:

- Primary traumatic arrest
- Arrest as the result of medical or traumatic hemorrhage
- Purposeful response to painful stimuli (only excludes TTM)
- Less than 18 years of age

Maintain a MAP of 90 mmHg using a 10-50 mcg/min norepinephrine infusion. Perform and interpret a 12 lead ECG.

Conduct a neurological assessment:

- Assess pupils (size, reactivity, equality)
- Motor response to pain

Implement Targeted Temperature Management:

- **Contact Medical Control** for implementation of hypothermia on patients less than or equal to 18 years of age or those that have an obviously gravid uterus.
- Patients must be transported to an induced hypothermia capable facility with preference given to a facility that can also perform percutaneous cardiac intervention (PCI).
- Expose patient and apply ice packs to axilla, groin and neck.
- Administer intravenous bolus of cold normal saline 30 mL/kg IV with a maximum of 2 liters.

Guidelines

- *Patients develop metabolic alkalosis with cooling, do not hyperventilate.*
- *It is important to report the neurological assessment to the receiving facility.*
- *Cold saline should be stored at a temperature of 4° Celsius (approximately 40° Fahrenheit).*

SELECTIVE SPINAL MOTION RESTRICTION

INDICATIONS: *Apply this guideline to all patients involved in known or suspected blunt trauma.*

Implement spinal motion restriction (rigid collar) in the following circumstances:

- Significant multiple system trauma.
- Severe head or face trauma.
- If altered mental status (including drugs, alcohol, and trauma) and:
    - No history available
    - Found in setting of possible trauma (e.g., lying at the bottom of stairs or in street)
- Loss of consciousness after trauma.
- Any fall with evidence of striking head.
- Spinal pain or tenderness, including any neck pain with a history of trauma.
- Numbness or weakness in any extremity after trauma
- Patient with significantly painful distracting injury.

For Patient transport:

- If ambulatory, allow patient to move to stretcher mattress with minimal spinal motion.
- If non-ambulatory, use backboard, scoop/orthopedic stretcher, vacuum mattress, or another device to move patient to stretcher with minimal spinal motion
- Use CID may be used to further restrict spinal motion.
- Transport on stretcher mattress without backboard if patient ambulatory or if scoop/orthopedic stretcher and be removed with minimal patient motion.
- Use of a scoop/orthopedic stretcher, backboard or Reeves stretcher is required for patients being transported by pre-hospital aviation.

Note*: Penetrating trauma to the extremities or core (below the clavicles) without neurologic deficit does not require board or collar.*

In certain situations, the long backboard will still be used as an extrication/moving device but plays no significant role in restricting spinal motion. If a backboard is utilized during extrication, the EMS crew may, at its discretion, remove the board prior to transport.

PATIENT RESTRAINT

INDICATIONS: *Patient care remains the primary responsibility of the EMS provider. The method of restraint shall not restrict the adequate monitoring of vital signs, ability to protect the patient's airway, compromise peripheral neurovascular status or otherwise prevent appropriate and necessary therapeutic measures. It is recognized that evaluation of many patient parameters requires patient cooperation and thus may be difficult or impossible.*

Soft restraints are to be used only, when necessary, in situations where the patient is potentially violent and may be of danger to themselves or others. Patients who are clinically competent retain a right to refuse transport. EMS providers must remember that aggressive violent behavior may be a symptom of medical conditions such as but not limited to:

- Head trauma
- Alcohol/drug related problems
- Metabolic disorders (i.e., hypoglycemia, hypoxia, etc.)
- Psychiatric/stress related disorders

All restraints should have the ability to be quickly released, if necessary, in an emergency.

It is medically acceptable to have a police officer follow a restrained patient's ambulance to the hospital in their police vehicle, if they maintain a position and contact with the transporting ambulance that will allow the officer to quickly release any restraining device that requires a key or special releasing device that they have applied in the event of a sudden deterioration in a restrained patient's condition.

This policy is not intended to negate the need for law enforcement personnel to use appropriate restraint equipment to establish scene control or allow safe transport of patients who are in the custody of law enforcement.

Patients should be transported in the supine position to ensure adequate respiratory and circulatory monitoring and management.

The prone position ***shall not be used***. This position carries a higher risk of patient injury or death.

All restrained patients should be placed on a stretcher with adequate foam padding particularly underneath the head. Extremity restraints should be secured to the stationary portion of the stretcher frame.

Stretcher straps should still be placed on all patients as these are analogous to seatbelts during transport.

Restraints that use multiple knots or that may restrict chest wall motion are prohibited.

Restrained extremities should be monitored for color, sensory and motor function, pulse quality, and capillary refill at the time of application and frequently thereafter. The patient's respiratory status, pulse oximetry, or waveform capnography should be monitored during transport.

After addressing and/or treating medical causes of aggressive or violent behavior, Consider the following spectrum of agitation and treat appropriately:

- **Mild Agitation** ("Agitated but cooperative")
  - Follow General Patient Care Protocol and utilize de-escalation techniques.

- **Moderate Agitation** ("Disruptive without danger")
  - Consider the administration of 2.5-5 mg Droperidol (Insapsine) IV/IM
    ** Lower dose for elderly.
    - **AND/OR**
  - Consider the administration up to 2.5-5 mg midazolam (Versed) IV/IM
    ** Lower dose for elderly.
    - **AND/OR**
  - Consider the administration of 50 mg diphenhydramine (Benadryl) IV/IM
    ** Lower dose for elderly.

- **Extreme Agitation** ("Violent and dangerous")
  - Administer 5 mg/kg IM ketamine (Ketalar)
    - After ketamine administration, prepare for hypersecretion/salivation.
      - If hypersecretion/salivation occurs, consider:
        - Atropine 0.5mg IV (if safe and available)
        - Atropine 0.5 mg IM
    - Consider the administration up to 5 mg midazolam (Versed) IM for continued violent behavior.

Patients should receive full monitoring including ECG, Pulse Oximetry, EtCO2, and NIBP with frequent reassessment and serial vital signs.

Restraint documentation on the EMS report shall include:

- Reason for restraint
- Agency responsible for restraint application (i.e., EMS, Police)
- Documentation of serial cardio-respiratory status and peripheral neurovascular status

Consider Active/passive cooling for Hyperthermic or Hypermetabolic patients.

Consider IV Hydration

Contact Medical Control for management of pediatric patients.

This policy is not intended for the inter-facility transport of medically cleared involuntarily committed psychiatric patients.

PEDIATRIC AND ADULT AIRWAY MANAGEMENT

***INDICATIONS**: Respiratory failure, inadequate ventilatory effort with minimal air exchange, severe dyspnea with an increased or decreased respiratory rate, retractions, difficulty speaking, extreme agitation, anxiousness, absent respirations, altered mental status, or situations where airway protective reflexes are lost (loss of gag reflex). Central cyanosis may be noted.*

Refer to Drug Facilitated (DFI) Guidelines for program requirements.

Insert appropriately sized basic airway adjunct.

Begin hemodynamic resuscitation prior to initiating DFI.

Suction as needed throughout intubation procedure.

Assess the airway using the HEAVEN. (**H**ypoxemia, **E**xtremes of size, **A**natomic challenges, **V**omit/blood/fluid, **E**xsanguination/anemia and **N**eck mobility issues).

Perform endotracheal intubation and ventilate with 100% oxygen.

Contact Medical Control for implementation of Drug Facilitated Intubation (DFI).

DFI Absolute Contraindications:

- Any patient where it is anticipated that they cannot be effectively ventilated with a bag valve-mask after paralysis.
- Entrapped patients with inadequate access to the patient and airway.

DFI Relative Contraindications:

- Degenerative or dystrophic neuromuscular disease (Amyotrophic lateral sclerosis, Guillain-Barre disease, myasthenia gravis or muscular dystrophy).
- Severe trauma to the mouth, upper, or lower airways.
- Stridor or potential obstructed airway.
- Morbidly obese patient.
- Small mouth, short neck, or large tongue.
- No rescue airway.
- Children with special health care needs (motor dysfunction).

DFI Preparation:

- Two certified ALS providers, one with credentials for DFI must be present. At least one must be a Delaware Certified Paramedic.
- Pre-treat the patient with 100% oxygen prior to the DFI process.
    - Apply Standard NC with flow at max flow rate and Etco2 NC in conjunction with the standard NC for capnography.
- Assess for contraindications and for difficult airway anatomy.
- Rate the patient's neurological status (Glasgow Coma Scale).
- Apply and continuously monitor ECG, SpO_2, BP and EtCO2
- Ensure functioning IV or IO. (Two functioning IVs recommended.)
- Ensure crew resource management and a universal agreement to proceed.

DFI Process:

- Confirm readiness of suction, laryngoscope blade, endotracheal tube, syringe, and verification tools
- Confirm availability of the appropriate OEMS approved rescue airway devices
- Prepare for post intubation analgesia and sedation.
- Assure continuous ECG, SpO2, BP, and EtCO2 monitoring.
- Perform Crew Resource "Timeout"
- Administer Ketamine 2 mg/kg IV/IO for sedation **prior to paralysis.**
    - Allow 30-60 seconds for continued oxygenation/nitrogen washout.
- Administer Rocuronium 1mg/kg IV/O for paralysis.
    - Allow for optimal paralysis (30-60 seconds) prior to inserting the blade into the patient's oral cavity.
- Make no more than 3 attempts to intubate the patient.
    - No more than 2 attempts per paramedic.
    - *An attempt is considered an insertion of the laryngoscope blade into the oral cavity followed by a maneuver to pass the endotracheal tube through the vocal cords.*

Verify appropriate placement via:

- Visualization by two providers via video laryngoscopy
- EtCO2 waveform
- Confirmed bilateral lung sounds and absent epigastric sounds.
- Perform post intubation time out.
- Confirm placement and secure the endotracheal tube.

Post Intubation Management:

Document proper endotracheal tube placement via the following methods:

- Visualization of tube passing through the vocal cords
- Capnography with waveform reading should be used to continuously monitor waveform on intubated patients throughout the duration of the transport. A printout or event marker documenting the capnography with waveform should be obtained:
    - At time of tube placement
    - At any time of patient movement or transfer to another unit.
    - At time of transfer to receiving facility's stretcher
- Visualization of the chest rising and falling with ventilations.
- Clearing of the ET tube with lung inflation and misting of the tube with lung deflation.
- Adequate SpO2 reading.
- Presence of bilateral breath sounds and absence of air sounds over the epigastrium.

- A printout of the trend report with the patient's heart rate, pulse oximetry and capnography readings will be presented to the receiving physician and copied for the agency's EMS medical director, regardless of intubation success.

Post Intubation Sedation/Paralysis:

- Consider Ketamine IV
    - Adult/Peds: 2 mg/kg
        - May repeat 20 minutes after initial dose PRN.
        - **Contact Medical Control** if additional doses are needed.
- An intubated patient may receive 100 mcg of Fentanyl as an initial dose.
    - **Pediatric**: 2 mcg/kg up to 50 mcg
- Repeat dosing of 100 mcg of Fentanyl every 10 minutes is permitted if needed.
    - **Pediatric**: 2 mcg/kg up to 50 mcg
- Maximum total 400 mcg Fentanyl permitted. **Contact medical control** for additional doses.
- Consider Versed IV
    - Adult: 2-5 mg
    - **Pediatric:** 0.2 mg/kg (up to 5 mg)

Consider the insertion of a nasogastric or orogastric tube for gastric distention for intubated patients.

Failed Intubation:

If unable to intubate but can ventilate, resume ventilations via BVM pending insertion of an approved rescue airway device.

- Insert an approved rescue airway device.
- Confirm placement and secure the rescue airway device.
    - Apply capnography and provide continual monitoring.

A patient with a confirmed rescue airway may receive an initial dose of 100 mcg Fentanyl.

- Repeat dosing of 100 mcg of Fentanyl every 10 minutes is permitted if needed.
    - **Pediatric**: 2mcg/kg up to 50 mcg
- Maximum total 400 mcg Fentanyl permitted. **Contact medical control** for additional doses.
- Consider Ketamine IV
    - Adult/Peds: 2 mg/kg
        - May repeat 20 minutes after initial dose PRN.
        - Contact Medical Control if additional doses are needed.
- Consider Versed IV
    - Adult: 2-5 mg
    - Pediatric: 0.2 mg/kg (up to 5 mg)

Failed Airway:

- If unable to intubate and cannot ventilate, perform a surgical cricothyrotomy or needle cricothyrotomy.

Ventilator Management (device dependent):

- Ventilators shall not be used when a patient is in cardiac arrest.
- Set initial rate of 12-20 breaths per minute with an ETCO2 Target of 35-45 mmHg.
    - *Titrate rate to obtain an ETCO2 as close to 35-45 mmHg for perfusing patients.*
- Set Tidal Volume to 4-6 mL/kg ideal body weight (Adult Minimum 350 mL – Max 600mL)
    - *Texts recommend using a lower tidal volume to avoid lung injury.*
- FiO2: Set to 100%
- PEEP: Begin at 5 mmHg. May increase up to 10 cmH2O for trauma, pulmonary edema, ARDS, and non-fatal drowning patients.
    - *Texts recommend increasing PEEP as a first measure to improve oxygenation before increasing tidal volume or FiO2.*
- I/E ratio: Utilize 1:2
- Monitor mean airway pressure (MAP), peak inspiratory pressure (PIP), and expired tidal volume (VTe).
- When not contraindicated (e.g., cervical spine trauma patients), the patient should be positioned with the head of the stretcher elevated 30-45 degrees.
- Utilize DOPE mnemonic (Displacement, Obstruction, Pneumothorax, and Equipment).
    - If at any time the ventilator should fail or an alarm is receiving that cannot be corrected, immediately ventilate the patient with a bag-valve mask attached to 100% oxygen.
- **Contact Medical Control** for ventilator titrations outside of these parameters.

**The use of transport ventilators may be performed by agencies approved by the Office of Emergency Medical Services*

Oral endotracheal intubation is the preferred route of intubation. If unable to perform oral intubation, consider using an age-appropriate rescue airway.

Capnography with waveform is to be obtained and printed upon placement of the endotracheal tube, upon any movement of the patient (i.e., transfer to the stretcher or ambulance), and upon transfer of patient care to the receiving facility.

QA/QI Parameters: 2 attempts per paramedic; 3 attempts per patient; (an attempt is considered an insertion of the laryngoscope blade into the oral cavity followed by a maneuver to pass the endotracheal tube through the vocal cords); greater than the above attempts requires medical control approval and a variance report.

QA/QI Screen: at least three (3) endotracheal attempts per paramedic per year; at least 80% success rate; review of intubation trending data; agency EMS medical director determines if paramedic performance requires remediation; plan of remediation determined by EMS medical director in consultation with the paramedic's administration.

PEDIATRIC AND ADULT PAIN MANAGEMENT

MILD PAIN

INDICATIONS: Pain of musculoskeletal injury origin

Consider Acetaminophen If pain management efforts are unsuccessful, consider the administration of acetaminophen 975-1000 mg PO.

Pediatric: 15 mg/kg up to adult max dose.

Contraindications: Allergy, liver disease or injury, reduced hepatic function, heavy alcohol abuse.

MODERATE TO SEVERE PAIN

INDICATIONS*:* Pain as assessed by physical presentation and age-appropriate pain scale*.*

Consider Ketorolac (Toradol)

Contraindications: Active, or suspicious bleeding, suspected head injury, multisystem trauma, pregnancy. Allergy to NSAIDS.

Adult Patients: 15 mg IV/IM (May cause local irritation)

Pediatric: 0.5 mg/kg, max 15 mg IV/IM

Consider Fentanyl

Contraindications: Systolic blood pressure less than 90 mmHg (70 + (2x age in years) mmHg in the pediatric patient). Pregnancy.

Adult Patients: 50 - 100 mcg Fentanyl IV/IM/IN.

After five (5) minutes and with continued moderate to severe pain, administer 50 - 100 mcg Fentanyl IV/IM/IN.

Maximum total 400 mcg Fentanyl permitted. **Contact medical control** for additional doses.

Pediatric: 1 mcg/kg Fentanyl IV/IM/IN up to a max dose of 50 mcg.

Contact Medical Control for additional doses of Fentanyl

Consider monitoring capnography.

Consider Ketamine (Ketalar) for severe pain from extrication/burns/orthopedic injuries.

Adult Patients: 0.25 mg/kg IV over 5 minutes. Max dose of 25 mg IV

Acetaminophen (Tylenol)

***INDICATIONS**:* Pain of musculoskeletal injury origin

Contraindications:

Do not use if allergic, liver disease, reduced hepatic function or heavy alcohol abuse.

Precautions:

Pregnancy and thrombocytopenia

Side Effects:

Nausea/vomiting and abdominal pain

Ketorolac (Toradol)

Ketorolac (Toradol) is a nonsteroidal ant-inflammatory drug. An anti-inflammatory drug that also exhibits peripherally acting non-narcotic analgesic activity by inhibiting prostaglandin synthesis.

***INDICATIONS**: Moderate to severe pain in patients greater than 2 years of age.*

Contraindications:

Do not use Toradol if the patient is allergic to ASA or NSAIDs, or if they are taking any blood thinning or anticoagulants.

Do not use in patients that have multi-system trauma, or active, uncontrolled hemorrhaging.

Do not use if they have severe renal disease or kidney transplant.

Do not use if they have a bleeding or blood clotting disorder.

Do not use if they have a closed head injury or bleeding in brain.

Do not use if pregnant.

Do not use if they are breast-feeding.

Adverse Effects:

Nausea, vomiting, bloating, gas, loss of appetite, sweating, dizziness, drowsiness, blurred vision, dry mouth, irritation at the injection site and abnormal tastes may also occur.

Dosing:

15mg- IV/IM (May cause local irritation)

SUSPECTED EMERGING INFECTIOUS DISEASE (EID)

Modified Patient Care Guidelines for COVID-19

INTRODUCTION: *An emerging infectious disease (EID) may pose challenges that impact standard medical treatment protocols. COVID-19 is an example of an EID that forces often dynamic changes to the way care is provided to the patients. The following are some suggested treatment modifications during a declared epidemic of a viral illness. (Note: infectious diseases may be dynamic, and providers are encouraged to frequently check the Delaware Division of Public Health website for the most up-to-date information including specifics on presentations, protection methods and epidemiology.)*

Personal Protective Equipment (PPE):

- All providers will utilize personal protective equipment (PPE) appropriate to the risks presented – N95 respirator or surgical mask, eye protection / face shield, gown, gloves.
- Don PPE before proceeding with patient care. This includes providing care for all levels of patient acuity (i.e., don PPE before beginning resuscitation of a cardiac arrest with suspected EID).

Airway and Respiratory Considerations:

- Many airway management procedures involve aerosol-producing processes and thus pose potential exposure risks to providers.
- For hypoxic patients, the first attempts to improve oxygenation should be by providing supplemental oxygen.
- Oxygen therapy may be delivered underneath surgical masks.
    - Place a mask over a patient receiving oxygen via nasal cannula or non-rebreather masks.
    - May use higher than normal flow rates (up to 6 lpm) with nasal cannula under surgical mask.
- Advance further into respiratory management (bronchodilators, NIMV, intubation, etc.) only if initial attempts at improving oxygenation are not working.
- If the patient has a prescribed meter-dose-inhaler (MDI) containing a beta-adrenergic agonist medication (Albuterol, Combivent, etc.), administer the patient's MDI in lieu of a nebulizer treatment.
    - Consider doses of 4-6 puffs repeated every 5 minutes as needed.
    - Use a spacer device if available.
- Limit the use of nebulized medications.
    - Use as indicated for patients in significant respiratory distress secondary to bronchoconstriction who do not respond to initial oxygen administration.
    - Use nebulizers via facepiece masks instead of T-pieces.
    - Perform required nebulizer treatments in well-ventilated areas (outside if appropriate).
- Limit the use of NIMV to patients in significant distress or to those who do not respond to initial oxygen administration methods.
    - Use NIMV only in well-ventilated areas.
- Consider skipping NIMV and proceeding directly to intubation for patients in extremis.
- For patients with impending respiratory failure, consider epinephrine (1mg/mL) 0.3-0.5 mg (0.3-0.5 mL) IM. Consider reducing epinephrine dose to 0.15 mg (0.15 mL) IM for patients greater than 60 years or age or those with known history of coronary disease.

Advanced Airway Management / Cardiac Arrest Considerations:

- Use a viral/bacterial filter between the patient and the ventilation device.
    - Insert between with face mask and BVM if patient has not had an advanced airway placed.
    - Insert between endotracheal tube/supraglottic airway and BVM in cases where an advanced airway has been placed.
- Video laryngoscopy (VL) may allow providers to maintain a safer distance away from the patient's airway during intubation.
- If appropriate, avoid a more invasive procedure such as intubation by using an alternative supraglottic airway.
- Consider the use of passive oxygenation instead of positive pressure ventilation for the initial management of the cardiac arrest patient.
    - While performing uninterrupted chest compressions, apply a non-rebreather mask to the patient. Provide oxygen at 15 lpm.
    - Consider withholding BVM ventilations until a definitive airway has been established.

Other Treatment Considerations:

- Some anecdotal accounts report problems with standard care practices:
    - Use caution with the use of steroids in COVID-19 patients.
    - Consider using smaller fluid boluses when managing COVID-19 patients (less than the standard 20 mL/kg outlined by protocol).

Transport Considerations:

- If patient condition permits, limit EMS provider presence in the rear passenger compartment.
- Separate cab from patient care compartment. This may be accomplished by closing an access door between the two compartments. If vehicle design does not allow for this separation, provide some type of physical barrier – plastic sheeting.
- If cab is isolated from patient care compartment, driver should doff PPE and perform hand hygiene prior to beginning transport.
- If the cab cannot be isolated from the patient care compartment, the driver should wear an appropriate mask during transport. Consider opening up driver compartment windows to provide airflow.
- Engage ventilation system in rear patient care compartment. If vehicle design permits, open vent windows to provide adequate air flow and ventilation.
- Limit or prohibit family members from accompanying patient in ambulance. Note: transport of special populations (i.e., parents with children) may be necessary.

Patient Delivery:

- Notify receiving facility early with suspected EID cases.
- When medically appropriate and available, patients should be wearing a face mask on delivery to a medical facility.
- Receiving facility may direct EMS to deliver patient to an alternate site (i.e., triage tent set up at ED door).
- Upon arrival, if possible, discontinue aerosol-generating procedure prior to entering ED.
    - If patient's clinical presentation prevents this, the driver or another provider should enter the ED, contact staff, and receive direction on how to best conduct patient transfer of care.

- Limit number of EMS personnel near patient while providing appropriate care and transfer.

Return to Service:

- EMS providers should don appropriate PPE before decontaminating the ambulance.
- Leave all doors of the ambulance open to allow for adequate ventilation.
- Decontaminate all surfaces in the ambulance following standard decontamination procedures.
- Decontaminate all equipment (i.e., cardiac monitors, pulse oximeters, oxygen administration equipment, gear bags, and stretchers) before replacing in ambulance.
- After delivery of patient and vehicle/equipment decontamination, EMS providers should enter a clean area and doff PPE following agency and facility policies.
- Doff all PPE in a manner that limits or prevents secondary contamination.
- Following removal of PPE, EMS provider must conduct hand hygiene.

Note:

- Remember, as the pandemic incident progresses, in addition to seeing patients suffering from the effects of the infectious disease, providers will also be treating their "standard" patient volume.
- For patients not suspected as being infected, standard care following the appropriate patient care standing order is indicated.
- Providers must always exercise a common-sense approach to patient treatment. Provide a level of care that is appropriate to the patient's condition as well as fitting the operational situation that presents. For example, not every patient requires applying a cardiac monitor and risking a secondary exposure through such a contaminated device.

MANDATORY ALS EQUIPMENT INVENTORY

ALS Equipment	Minimum
ALS Radio/cell phone for base station communication	1
EKG monitor/defibrillator w/ 12 lead capability (adult and pediatric) W/ trend capability for HR, PO & EtCO2	1
Pulse Oximeter (adult and pediatric)	1
Capnography - electronic with waveform capable of ET and nasal (optional) CO2 determinations	1 ea. pediatrics & adults
CO-oximetry device (optional)	1
Spare EKG paper	1 roll
Monitoring electrodes	18
Monitoring cables	1 set
Defibrillation pads* (adult (1) and pediatric (1)) (Combi pads)	2 pair
Pacemaker pads*	1 pair
Glucometer	1
Pelvic compression device	1
Broselow tape or OEMS approved equivalent	1

Intravenous Equipment	Minimum
Catheter, 24g Catheter, 22g	4
Catheter, 20g	4
Catheter, 18g	4
Catheter, 16g	4
Catheter, 14g, greater than 5cm length (chest decompression)	4
I/O needles (w/depth control mechanism for pediatrics and adults) Adult I/O needles should be available for humerus and tibial placement.	2
Administration set, 10-15gtt/mL	2
Administration set, 60 gtt/mL	2
Normal Saline solution, 1000mLmL	
Normal Saline solution, 500mLmL	1
Blood draw device with appropriate blood tubes (optional)	2
Tourniquets capable of arterial occlusion	2
OEMS approved Hemostatic Agents	1
Site preparation material	2

MANDATORY ALS EQUIPMENT INVENTORY (cont.)

Intubation Equipment	Minimum
Nasopharyngeal airways	1 set
Oropharyngeal airways (0-6)	1 set
Endotracheal tubes (2.5,3,3.5,4,5,6,7,8,9) cuffed if available	1 ea.
OEMS Approved rescue airway devices adult and pediatric At least one device: (e.g., LMA, Combitube. i-gel® supraglottic airway or King LT)	1 ea.
Video Laryngoscope (optional for non-911 response agencies)	1
Miller Blades (0,1,2,3,4)	1 set
Macintosh blades (1,2,3,4)	1 set
Laryngoscope handle, adult	1
Laryngoscope handle, pediatric	1
Magill Forceps, adult	1 pair
Magill forceps, pediatric	1 pair
NIMV equipment (optional for aviation)	1 set
Stylet, adult and pediatric	1
Gastric tubes (8,10,12,14,16,18)	1 set
Pertrach, Quicktrach or other approved surgical kit (4.0 mm)	1 kit
Tape, adhesive or twill	1 roll
Syringes, 20mLmL	1
Bougie-flex guide intubation aid (adult and Pediatric 1 each)	2
Water based lubricant (6 packets)	1 tube
Spare laryngoscope bulb	2
Spare laryngoscope batteries	2

Additional Equipment	Minimum
Dental repair kit (TEMS Protocol)	1
Transport Ventilator (optional) Mechanical chest compression device (optional) Thermometer (agency medical director approved)	1
Chest seals (optional)	1
Junctional Tourniquet (optional)	1
IV infusion pumps (optional for 911 response agencies)	1

MEDICATION LIST

Acetaminophen (Tylenol)
Adenosine (Adenocard)
Albuterol (Proventil, Ventolin)
Amyl Nitrite*
Amiodarone (Cordarone)
Aspirin
Atropine
Buprenorphine
Calcium chloride
Calcium Gluconate*
Dexamethasone (Decadron, Hexadrol) may be substituted for Solu-Medrol (20 mg=125 mg Solu-Medrol)
Dextrose
Diazepam*
Diltiazem (Cardizem)
Diphenhydramine (Benadryl)
Dopamine
Droperidol
Epinephrine
Esmolol hydrochloride (Brevibloc) 10 mg/mL injection solution (Optional)
Etomidate (Amidate) ..... 80 mg per bag maximum
Fentanyl (Sublimaze)
Glucagon
Haloperidol (Haldol)
Hydroxocobalamin (Cyanokit)
Ipratropium (Atrovent)
Ketamine (Ketalar) 500mg/5ml
Ketorolac
Labetalol (Trandate)
Lidocaine (Xylocaine)
Magnesium Sulfate
Metoprolol (Lopressor)
Methylprednisolone (Solu-Medrol)

MEDICATION LIST (cont.)

Midazolam (Versed)..... 20 mg per bag maximum

Morphine..... may be substituted for Fentanyl (1 mg = 10 mcg)

Naloxone (Narcan)

Nitroglycerine

Norepinephrine

Ondansetron (Zofran)

Oxygen

Pralidoxamine*

Prednisone

Rocuronium (Zemuron)

Sodium bicarbonate

Sodium nitrite*

Sodium thiosulfate*

Succinylcholine (OEMS approved RSI agencies)

Tranexamic Acid (TXA)

Vaccine and Immunization agents (authorized by the Director of Public Health, State EMS Director and State EMS Medical Director as stated in Paramedic Scope of Practice)

Vecuronium (OEMS approved agencies)

**Toxmedic protocols*

ALS INTER-FACILITY TRANSPORT

1.0 Purpose:

To delineate the requirements and responsibilities of the various agencies and individuals responsible for the inter-facility care of ALS and critical care transport (CCT) initiating within Delaware.

2.0 Justification:

The environment and needs of patients who are transported within the healthcare system are different from those of patients who are being treated / transported in the prehospital setting. Paramedics operating within the inter-facility component of the Delaware Emergency Medical Services system will adhere to the requirements within. Inter-facility paramedics will operate with an expanded scope of practice.

3.0 Definitions:

ALS Inter-facility unit: Ambulance capable of providing paramedic level care as defined by the paramedic Statewide Standard Treatment Protocols.

Critical Care Transport (CCT): An inter-facility patient transfer that requires the paramedic to perform additional ALS skills as defined by the expanded scope of practice approved by the Delaware Office of EMS.

Specialty Care Transport Unit (SCTU): Ambulance capable of providing critical care transports staffed by an inter-facility paramedic and/or registered nurse. The SCTU will contain equipment to facilitate critical care transports.

4.0 ALS Inter-Facility Specific Protocols

4.1 ADULT AND PEDIATRIC GENERAL CARE
4.2 VENTILATOR MANAGEMENT
4.3 MANAGEMENT OF PREVIOUSLY INTIATED CONTINUOUS IV INFUSIONS
4.4 BLOOD PRODUCT ADMINISTRATION

APPENDICIES

Appendix

A. Ideal/Predicated Body weight Tables
B. SAVE-A-LIFE
C. VAN Stroke Assessment
D. Clinical Opioid Withdrawal Scale (COWS)
E. Shock Index – Adult and Pediatric Age Adjusted
F. Hospital Contacts

4.1 ADULT AND PEDIATRIC GENERAL PATIENT CARE

INDICATIONS: Any patient requiring inter-facility transport that would require the level of care provided by a Delaware inter-facility paramedic.

The *Adult and Pediatric General Patient Care* protocol will be followed in conjunction with all other applicable protocols.

The ALS Inter-facility Transport protocols are in effect only in the inter-facility environment and may not be applied into the pre-hospital environment without OEMS approval.

Perform scene size-up.

Perform a patient assessment.

Consider the need for additional resources (e.g., a SCTU staffed with a registered nurse).

Receive a verbal report on the patient's conditions from the referring health care practitioner or their licensed designee.

Obtain the necessary patient records and patient belongings to accompany the patient to the receiving facility.

Ensure that a physician has agreed to receive the patient at the destination facility and appropriate transfer forms (e.g., EMTALA, medical necessity certification, and consent) have been properly completed, signed, and dated.

If the patient experiences a change in condition or circumstance, they may be diverted back to the sending facility or the closest appropriate emergency department.

Maintain therapies initiated at the sending facility in the transport environment and prevent inadvertent cessation of therapy or monitoring during patient movement/transport.

Protect the patient from environmental exposures of heat, cold, sound, light, and vibration.

Utilize the appropriate mode and method of transport.

Contact Medical Control if patient's condition deteriorates, if there are questions about the legality or ethics of the patient transfer, or if the patient is receiving care unfamiliar to the paramedic.

Transfer the patient to the receiving facility.

Provide a patient report to the receiving nurse and/or physician.

Transfer accompanying patient records and patient belongings to the receiving nurse and/or physician.

Complete a patient care report.

4.2 VENTILATOR MANAGEMENT

INDICATIONS: Patients that require mechanical ventilation who have been intubated or have a surgical airway.

Assess patient (physical exam, receive sending report, review pertinent records).

Confirm patency of airway or trach.

Confirm that appropriate alarms are turned on and set to appropriate parameters.

Continuous waveform capnography must be monitored on all patients that are receiving invasive mechanical ventilation.

A bag-valve mask and oxygen source must accompany the ventilated patient during transport. This includes moving from the bedside to the ambulance and from the ambulance to the receiving bed.

For the patient currently mechanically ventilated:

When appropriate, the inter-facility paramedic should use the established ventilator settings from the referring facility.

It is imperative to critically evaluate the appropriateness and effectiveness of these settings prior to continuing them during transport.

If at any time the ventilator should fail or an alarm is receiving that cannot be corrected, immediately ventilate the patient with a bag-valve mask attached to 100% oxygen.

Utilize DOPE mnemonic (Displacement, Obstruction, Pneumothorax, and Equipment).

Verify airway placement and effectiveness (pulse ox, breath sounds, ETCO2, waveform capnography)

When not contraindicated (e.g., cervical spine trauma patients), the patient should be positioned with the head of the stretcher elevated 30-45 degrees.

Consider the value and limitation of recent (within 60 minutes) arterial blood gas (ABG) values.

Titration of ventilator settings based on ETCO2 reading that have not correlated to a reliable ABG is not supported by evidence-based research.

Monitor mean airway pressure (MAP), peak inspiratory pressure (PIP), and expired tidal volume (VTe).

Ensure that plateau pressure does not exceed 35 cm H2O.

For the patient not currently mechanically ventilated (e.g., intubation during transport):

Utilize volume assist control or SIMV mode.

Set tidal volume at 4-8 mL/kg of ideal body weight (IBW)

Texts recommend using a lower tidal volume to avoid lung injury.

Set initial rate of 12-20 breaths per minute with an ETCO2 target of 35-45 mmHg

Patients that are head injured and are showing signs of impending ventilation should be ventilated with a target ETCO2 of 30-35 mmHg.

PEEP: 5 mmHg. May increase up to 10 cmH2O for pulmonary edema, ARDS, and non-fatal drowning patients.

Texts recommend increasing PEEP as a first measure to improve oxygenation before increasing tidal volume or FiO2.

FiO2: Set to 1.0. **Contact Medical Control** for FiO2 titration for patients not experiencing hypoxia.

Texts suggest targeting the SpO2 between 94% and 96% as a means of reducing lung injury.

I/E ratio: Utilize 1:2, consider 1:3 for patients with bronchoconstriction.

Contact Medical Control for other ventilator settings than what is outlined by this protocol in a patient that previously was not receiving mechanical ventilation.

The Inter-facility paramedic may utilize an appropriately equipped ventilator to provide the following modes:

- Volume and pressure assist control.
- SIMV
- NIMV with a pressure of 5-15 cmH2O
- Pressure Support (matched to patient settings)
- Bi-Level (matched to patient settings)
- High flow nasal cannula
- *Oscillation and APRV are typically not able to be performed on a transport ventilator. These patients require RN and/or respiratory therapist staffing and an appropriate ventilator capable of performing these functions.*

Consider the use of sedatives, anxiolytics, analgesics, and paralytics as needed per the Statewide Standard Treatment Protocols for the intubated patient not tolerating mechanical ventilation.

For patients being ventilated with bi-level NPPV (BiPAP) at the sending facility, maintain settings found at bedside. Contact Medical Control for changes to BiPAP settings.

For non-intubated patients that develop acute respiratory distress during transport and require non-invasive ventilation, the inter-facility paramedic shall utilize pressure support ventilation.

Transport of mechanically ventilated neonates is not within the scope of practice for inter-facility paramedics. Pediatric patients weighing less than 10 kg may not be ventilated using most transport ventilators and require the use of a pediatric specialty team.

4.3 MANAGEMENT OF PREVIOUSLY INITIATED CONTINUOUS IV INFUSIONS

INDICATIONS: Any patient requiring an inter-facility transport that has an intravenous medication infusion during the out-of-facility transport time.

Inter-facility paramedics encountering medication infusions may continue the infusion via a continuous infusion pump. The "dose/rate" calculator on the infusion pump must be used for all titratable infusions.

The paramedic shall verify and document the ordered dose and rate of the medication. The paramedic shall verify and document the medications' written titration orders and hemodynamic parameters for all titratable infusions. If the dose or rate is outside of standard parameters **contact Medical Control** prior to the initiation or continuation of medication.

If the patient's needs during transport exceed the capabilities of the ALS interfacility unit, consider the need for additional specialty transport resources including critical care transport.

Verify that the patient does not have a known allergy to that medication or class of medications.

If the patient has an allergy to that medication or class of medications, contact Medical Control.

If the above parameters are met, continue administration of the medication at the same dose and rate, using an OEMS approved transport pump, as ordered at the referring facility.

Monitor the patient for signs of allergic reaction. If signs of an allergic reaction occur, stop the infusion, follow appropriate protocols, and **contact Medical Control**.

4.4 BLOOD PRODUCT ADMINISTRATION

INDICATIONS: Patients receiving whole blood, packed red blood cells (PRBC), fresh frozen plasma (FFP), cryoprecipitate, or albumin as prescribed by a licensed medical practitioner from the referring facility and will require continuous infusion during transport.

The inter-facility paramedic may initiate any blood product infusion after confirming the blood product order with a registered nurse or physician at the sending facility. Any additional units sent with the interfacility paramedic must be verified by the paramedic and hospital staff prior to departure.

IMMEDIATELY stop blood product infusion at the first sign of a transfusion reaction and contact Medical Control.

The inter-facility paramedic will initiate the Allergic Reaction protocol if needed for the patient experiencing a severe transfusion reaction and/or signs of anaphylaxis.

Review the most recent hemoglobin, hematocrit, and prothrombin time. These values should be documented on the patient care report (PCR).

Obtain a copy of the blood transfusion order form to include signatures of registered nurses verifying the correct patient information and blood product being transfused.

Verify the product, group, Rh type, date, time, unit number, and volume amount and document on the PCR.

Blood products must be administered via an OEMS approved transport pump.

Any change in rate of administration of blood products requires an order from Medical Control.

Continually monitor for signs of transfusion reaction:

- Temperature elevations
- Hives
- Itching
- Rash

APPENDICIES

Appendix A

Ideal/Predicted Body Weight Tables (ARDSnet)

Table 1: Women

HEIGHT	PBW	4 ml	5 ml	6 ml	7 ml	8 ml
4' 0" (48)	17.9	72	90	107	125	143
4' 1" (49)	20.2	81	101	121	141	162
4' 2" (50)	22.5	90	113	135	158	180
4' 3" (51)	24.8	99	124	149	174	198
4' 4" (52)	27.1	108	136	163	190	217
4' 5" (53)	29.4	118	147	176	206	235
4' 6" (54)	31.7	127	159	190	222	254
4' 7" (55)	34	136	170	204	238	272
4' 8" (56)	36.3	145	182	218	254	290
4' 9" (57)	38.6	154	193	232	270	309
4' 10" (58)	40.9	164	205	245	286	327
4' 11" (59)	43.2	173	216	259	302	346
5' 0" (60)	45.5	182	228	273	319	364
5' 1" (61)	47.8	191	239	287	335	382
5' 2" (62)	50.1	200	251	301	351	401
5' 3" (63)	52.4	210	262	314	367	419
5' 4" (64)	54.7	219	274	328	383	438
5' 5" (65)	57	228	285	342	399	456
5' 6" (66)	59.3	237	297	356	415	474
5' 7" (67)	61.6	246	308	370	431	493
5' 8" (68)	63.9	256	320	383	447	511
5' 9" (69)	66.2	265	331	397	463	530
5' 10" (70)	68.5	274	343	411	480	548
5' 11" (71)	70.8	283	354	425	496	566
6' 0" (72)	73.1	292	366	439	512	585
6' 1" (73)	75.4	302	377	452	528	603
6' 2" (74)	77.7	311	389	466	544	622
6' 3" (75)	80	320	400	480	560	640
6' 4" (76)	82.3	329	412	494	576	658
6' 5" (77)	84.6	338	423	508	592	677
6' 6" (78)	86.9	348	435	521	608	695
6' 7" (79)	89.2	357	446	535	624	714
6' 8" (80)	91.5	366	458	549	641	732
6' 9" (81)	93.8	375	469	563	657	750
6' 10" (82)	96.1	384	481	577	673	769
6' 11" (83)	98.4	394	492	590	689	787
7' 0" (84)	100.7	403	504	604	705	806

Table 2: Men

HEIGHT	PBW	4 ml	5 ml	6 ml	7 ml	8 ml
4' 0" (48)	22.4	90	112	134	157	179
4' 1" (49)	24.7	99	124	148	173	198
4' 2" (50)	27	108	135	162	189	216
4' 3" (51)	29.3	117	147	176	205	234
4' 4" (52)	31.6	126	158	190	221	253
4' 5" (53)	33.9	136	170	203	237	271
4' 6" (54)	36.2	145	181	217	253	290
4' 7" (55)	38.5	154	193	231	270	308
4' 8" (56)	40.8	163	204	245	286	326
4' 9" (57)	43.1	172	216	259	302	345
4' 10" (58)	45.4	182	227	272	318	363
4' 11" (59)	47.7	191	239	286	334	382
5' 0" (60)	50	200	250	300	350	400
5' 1" (61)	52.3	209	262	314	366	418
5' 2" (62)	54.6	218	273	328	382	437
5' 3" (63)	56.9	228	285	341	398	455
5' 4" (64)	59.2	237	296	355	414	474
5' 5" (65)	61.5	246	308	369	431	492
5' 6" (66)	63.8	255	319	383	447	510
5' 7" (67)	66.1	264	331	397	463	529
5' 8" (68)	68.4	274	342	410	479	547
5' 9" (69)	70.7	283	354	424	495	566
5' 10" (70)	73	292	365	438	511	584
5' 11" (71)	75.3	301	377	452	527	602
6' 0" (72)	77.6	310	388	466	543	621
6' 1" (73)	79.9	320	400	479	559	639
6' 2" (74)	82.2	329	411	493	575	658
6' 3" (75)	84.5	338	423	507	592	676
6' 4" (76)	86.8	347	434	521	608	694
6' 5" (77)	89.1	356	446	535	624	713
6' 6" (78)	91.4	366	457	548	640	731
6' 7" (79)	93.7	375	469	562	656	750
6' 8" (80)	96	384	480	576	672	768
6' 9" (81)	98.3	393	492	590	688	786
6' 10" (82)	100.6	402	503	604	704	805
6' 11" (83)	102.9	412	515	617	720	823
7' 0" (84)	105.2	421	526	631	736	842

Appendix B

SAVE-A-LIFE

S Stabilize
- Staying on scene vs rapid depart

A Airway
- Focus on compressions
- Lower airway priority ○ If still unresponsive, establish a more definitive airway before transport

V Vitals: frequency
- Change automatic to q3 minutes

Vascular Access
- Establish at least one IV if IO only

E External Cooling
- Begin the use of ice packs

A Amiodarone
- Post VF/VT arrest ○ Second dose was not 100%

- Avoid re-arrest/VF

L Levophed (NOREPINEPHRINE)
- Focus on CPP
- GOAL MAP over 90

LUCAS
- External CPR for transport safety

I Internal Cooling
- 4° C Saline

F Follow-up Vitals
- Before departure, check stability

E EKG
- Destination may be impacted
- Prefer delayed for accuracy

Appendix C

Suspected Stroke Assessment Tool
VAN Stroke Assessment

Instruction			Result
Arm and/or leg drift, unilateral weakness, or paralysis – **NO** weakness noted			**VAN** Negative
Arm and/or leg drift, unilateral weakness, or paralysis – **Weakness noted**			Continue with **VAN** assessment
V	**Visual Disturbance**	Double-vision, visual field cut, or new loss of vision?	
A	**Aphasia**	Difficulty forming words, or understanding/following commands? Difficulty recognizing objects correctly?	
N	**Neglect**	Present with a gaze deviation or inability to cross midline? Unable to feel both sides at the same time when touched? Unable to recognize their own arm, or ignoring one side?	
Arm and/or leg weakness **AND** visual/aphasia/neglect symptoms			**VAN** Positive
Arm and/or leg weakness and **NO** visual/aphasia/neglect symptoms			**VAN** Negative

Transport to the nearest appropriate State of Delaware or Joint Commission certified Stroke Center without delays and request prehospital stroke alert for the following categories:

- VAN negative and LKW less than 4.5 hours → go to nearest certified Stroke Center.
- VAN positive and LKW less than 4.5 hours → contact local medical control to discuss destination.
- VAN positive and LKW greater than 4.5 hours (including wake up stroke or unknown LKW) or considering hemorrhagic stroke → consider transport to certified Thrombectomy Capable or Comprehensive Stroke Center.

Appendix D

Clinical Opiate Withdrawal Scale (COWS)

For each item, circle the number that best describes the patient's signs or symptoms. Rate on just the apparent relationship to opiate withdrawal. For example, if heart rate is increased because the patient was jogging just prior to assessment, the increase pulse rate would not add to the score.

Resting Pulse Rate: _____beats/minute *Measured after patient is sitting or lying for one minute* 0 pulse rate 90 or below 1 pulse rate 81-100 2 pulse rate 101-120 4 pulse rate greater than 120	**GI Upset:** *over last ½ hour* 0 no GI symptoms 1 stomach cramps 2 nausea or loose stool 3 vomiting or diarrhea 5 multiple episodes of diarrhea or vomiting
Sweating: *over past ½ hour not accounted for by room temperature or patient activity.* 0 no report of chills or flushing 1 subjective report of chills or flushing 2 flushed or observable moistness on face 3 beads of sweat on brow or face 4 sweat streaming off face	**Tremor:** *observation of outstretched hands* 0 no tremor 1 tremor can be felt, but not observed 2 slight tremor observable 4 gross tremor or muscle twitching
Restlessness: *observation during assessment* 0 able to sit still 1 reports difficulty sitting still, but is able to do so 3 frequent shifting or extraneous movements of legs/arms 5 unable to sit still for more than a few seconds	**Yawning:** *observation during assessment* 0 no yawning 1 yawning once or twice during assessment 2 yawning three or more times during assessment 4 yawning several times/minute
Pupil size: 0 pupils pinned or normal size for room light 1 pupils possibly larger than normal for room light 2 pupils moderately dilated 5 pupils so dilated that only the rim of the iris is visible	**Anxiety or Irritability:** 0 none 1 patient reports increasing irritability or anxiousness 2 patient obviously irritable or anxious 4 patient so irritable or anxious that participation in the assessment is difficult
Bone or Joint aches: *if patient was having pain previously, only the additional component attributed to opiates withdrawal is scored.* 0 not present 1 mild diffuse discomfort 2 patient reports severe diffuse aching of joints/muscles 4 patient is rubbing joints or muscles and is unable to sit still because of discomfort	**Gooseflesh skin:** 0 skin is smooth 3 piloerection of skin can be felt or hairs standing up on arm 5 prominent piloerection
Runny nose or tearing: *not accounted for by cold symptoms or allergies* 0 not present 1 nasal stuffiness or unusually moist eyes 2 nose running or tearing 4 nose constantly running or tears streaming down checks	Total Score: _____ The total score is the sum of all 11 items

Score: 5-12 = mild; 13-24 = moderate; 25-36 = moderately severe; more than 36 = severe withdrawal

Source: Wesson, D. R., & Ling, W. (2003). The Clinical Opiate Withdrawal Scale (COWS). J Psychoactive Drugs, 35(2), 253–9.

Appendix E

Shock Index *(HR/SYS BP)*

Heart Rate (bpm)

Systolic Blood Pressure (mmHg)	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
40	1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	4.50
50	0.80	1.00	1.20	1.40	1.60	1.80	2.00	2.20	2.40	2.60	2.80	3.00	3.20	3.40	3.60
60	0.67	0.83	1.00	1.17	1.33	1.50	1.67	1.83	2.00	2.17	2.33	2.50	2.67	2.83	3.00
70	0.57	0.71	0.86	1.00	1.14	1.29	1.43	1.57	1.71	1.86	2.00	2.14	2.29	2.43	2.57
80	0.50	0.63	0.75	0.88	1.00	1.13	1.25	1.38	1.50	1.63	1.75	1.88	2.00	2.13	2.25
90	0.44	0.56	0.67	0.78	0.89	1.00	1.11	1.22	1.33	1.44	1.56	1.67	1.78	1.89	2.00
100	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20	1.30	1.40	1.50	1.60	1.70	1.80
110	0.36	0.45	0.55	0.64	0.73	0.82	0.91	1.00	1.09	1.18	1.27	1.36	1.45	1.55	1.64
120	0.33	0.42	0.50	0.58	0.67	0.75	0.83	0.92	1.00	1.08	1.17	1.25	1.33	1.42	1.50
130	0.31	0.38	0.46	0.54	0.62	0.69	0.77	0.85	0.92	1.00	1.08	1.15	1.23	1.31	1.38
140	0.29	0.36	0.43	0.50	0.57	0.64	0.71	0.79	0.86	0.93	1.00	1.07	1.14	1.21	1.29
150	0.27	0.33	0.40	0.47	0.53	0.60	0.67	0.73	0.80	0.87	0.93	1.00	1.07	1.13	1.20
160	0.25	0.31	0.38	0.44	0.50	0.56	0.63	0.69	0.75	0.81	0.88	0.94	1.00	1.06	1.13
170	0.24	0.29	0.35	0.41	0.47	0.53	0.59	0.65	0.71	0.76	0.82	0.88	0.94	1.00	1.06
180	0.22	0.28	0.33	0.39	0.44	0.50	0.56	0.61	0.67	0.72	0.78	0.83	0.89	0.94	1.00

Shock Index – PEDIATRIC Age Adjusted

Age	HR	SBP	SIPA cutoff value
1–3 years	70–110	90–110	1.2
4–6 years	65–110	90–110	1.2
7–12 years	60–100	100–120	1.0
>12 years	55–90	100–135	0.9

SIPA, shock index, pediatric age-adjusted; HR, heart rate; SBP, systolic blood pressure.

APPENDIX F

Hospital Contacts

New Castle County	
Christiana E.D.	302-733-1638 or 1621
Christiana E.D. Middletown	302-203-1323
Christiana E.D. Union	443-406-1370
Wilmington E.D.	302-428-4556
Saint Francis E.D.	302-421-4333
Nemours (A.I. DuPont) E.D.	302-651-4183
Christiana Medic Room	302-733-1617
NCC Fireboard	302-571-7331
Kent County	
Bayhealth Kent E.D.	302-744-7122
Bayhealth Smyrna	302-659-2190
Kent General Medic Room	302-744-6953
Dover Dispatch	302-736-7111
Kent Center	302-734-6040
Sussex County	
Bayhealth Sussex E.D.	302-430-5720 or 5721
Bayhealth Milton	302-725-3500
Tidal Health E.D.	302-629-6611 x2555
Beebe E.D.	302-645-3554
South Coastal E. D.	302-291-6900
Bayhealth Sussex Medic Room	302-430-5654
Rehoboth Beach Dispatch	302-227-2577
Sussex Fireboard	302-855-2970
Out of State	
Crozer E.D.	610-447-2186 or 2188
P.R.M.C. E.D.	410-543-7100
State Offices & Hotlines	
DE Office of EMS	302-223-2700
Delaware Victim Services	800-842-8461
Division of Long-Term Care hotline	877-453-0012
Adult Protective Services	800-223-9074
Child Abuse Reporting Hotline	800-292-9582
Domestic Violence	302-678-3886
Poison Control	800-222-1222