2010

District of Columbia Fire and EMS Department
Pre-Hospital Treatment Protocols
ALS / BLS

James J. Augustine
Assistant Chief
Medical Director

Dennis L. Rubin
Fire and EMS Chief

Effective
March 15, 2010

This Page Intentionally Blank

TABLE OF CONTENTS

Page #

Introduction
Foreword 8
Guidelines for Use 9

General Patient Management
Medical Control 11
General Patient Care (**Adult - Ped.**) 12
Clinical Priorities (**Adult - Ped.**) 19
Hospital Capabilities Chart 21
Medical Communications 22
Transfer of Care Policy 23
Consent / Refusal of Care Policy 25
Air Transport Utilization 29

Treatment Protocols - Cardiac Emergencies
Acute Coronary Syndrome (ACS) / Chest Pain 31
Asystole / Agonal (**Adult - Ped.**) 33
Pulseless Electrical Activity (PEA) (**Adult - Ped.**) 36
Ventricular Fibrillation / Pulseless V-Tachycardia (**Adult - Ped.**) 39
Wide Complex Tachycardia / V-Tach (**Adult - Ped.**) 44
Narrow Complex Tachycardia (**Adult - Ped.**) 46
Return of Spontaneous Circulation (ROSC) (**Adult - Ped.**) 48
Bradycardia (**Adult - Ped.**) 50
Acute Pulmonary Edema (CHF) (**Adult - Ped.**) 52

Treatment Protocols - Respiratory Emergencies
Airway Obstruction (**Adult - Ped.**) 55
Bronchospasm Asthma / COPD (**Adult - Ped.**) 56
Croup / Upper Airway Compromise (**Pediatric**) 58
Respiratory Failure / Arrest (**Adult - Ped.**) 59

Treatment Protocols - Medical Emergencies
Abdominal Pain (Non-traumatic) (**Adult - Ped.**) 61
Altered Mental Status / Syncope / Unconscious (**Adult - Ped.**) 62
Anaphylaxis / Allergic Reaction (**Adult - Ped.**) 65
Brain Attack / CVA 68
Hypertensive Crisis 70
Hypoperfusion (Non-Traumatic) (**Adult - Ped.**) 71
Pain Management (**Adult - Ped.**) 73
Seizures (**Adult - Ped.**) 75

Treatment Protocols – Environmental Emergencies
Hyperthermia (**Adult - Ped.**) 77
Hypothermia (**Adult - Ped.**) 79
Drowning / Near Drowning (**Adult - Ped.**) 81

TABLE OF CONTENTS

Page #

Treatment Protocols – Toxicology Emergencies
Overdose / Poisoning (**Adult - Ped.**) 83
Envenomations / Bites / Stings (**Adult - Ped.**) 85
Carbon Monoxide (CO) Exposure (**Adult - Ped.**) 87
Smoke Inhalation (Cyanide Exposure) (**Adult - Ped.**) 89

Treatment Protocols – OB/GYN Emergencies
Management of Uncomplicated Delivery 91
Pre-Eclampsia / Eclampsia 92
Prolapsed Cord 93
Limb Presentation 94
Breech Delivery 95
Uterine Inversion 96
Management of Vaginal Hemorrhage 97
Newborn Resuscitation 98

Treatment Protocols – Trauma Emergencies
Amputations (**Adult - Ped.**) 101
Burns – Thermal / Chemical (**Adult - Ped.**) 103
Burns – Electrocution / Lightning Injuries (**Adult - Ped.**) 105
Crush Injuries / Compartment Syndrome (**Adult - Ped.**) 107
Eye Injuries (**Adult - Ped.**) 109
Single / Multiple System Trauma (**Adult - Ped.**) 110
Traumatic Cardiac Arrest (**Adult - Ped.**) 112
Trauma in Pregnancy 114
Traumatic Brain Injuries (TBI) (**Adult - Ped.**) 116
Selective Spinal Immobilization (**Adult - Ped.**) 118
Trauma Decision Tree Algorithm (**Adult - Ped.**) 119

Special Care Protocols
Behavioral / Psychological Emergencies (**Adult - Ped.**) 121
Termination of Resuscitation 123
Presumed Dead on Arrival (PDOA) (**Adult - Ped.**) 125
Do Not Resuscitate (DNR)/ Comfort of Care 126
Children with Special Healthcare Needs 129
Suspected Child / Elderly Abuse 132
Personal Protective Equipment (PPE)/ Exposure Control 134

Page #

Major Incident Operations
Mass Casualty Incidents/ START and JumpSTART Triage 135
Incident Rehabilitation 138
WMD Emergencies 140
- Chemical 140
- Biological 142
- Radiological 142

Pandemic Influenza 144

Medical Procedures
Airway Management
Capnography (**ALS - BLS**) 145
Carbon Monoxide (CO) Oximeter (**ALS - BLS**) 148
Continuous Positive Airway Pressure (CPAP) (**ALS**) 149
Needle Cricothyroidotomy (Quicktrach) (**ALS**) 150
Drug-Assisted Intubation (**ALS**) 151
King LT-D Airway Device (**ALS - BLS**) 152
Meconium Suctioning (**ALS**) 154
Nasotracheal Intubation (**ALS**) 155
Needle Thoracostomy (**ALS**) 157
Orotracheal Intubation (**ALS**) 158
Endotracheal Tube Introducer (Bougie) (**ALS**) 159
Pulse Oximetry (**ALS - BLS**) 161
Stoma Airway Maintenance (**ALS - BLS**) 162

Cardiac Management
Defibrillation - Automated (AED) (**ALS - BLS**) 164
Defibrillation - Manual (**ALS**) 165
EKG - 12 lead (**ALS**) 166
Synchronized Cardioversion (**ALS**) 168
Transcutaneous Cardiac Pacing (**ALS**) 169

Venous Access Management
Blood Glucose Analysis (**ALS - BLS**) 170
Venous Access - Existing Catheters (**ALS**) 171
Venous Access - External Jugular (**ALS**) 172
Venous Access - EZ-IO™ (**ALS**) 173
Venous Access - Intraosseous (Jamshidi) (**ALS**) 175

EMS Procedures
Broselow™ Pediatric Emergency Tape (**ALS - BLS**) 176
Spinal Immobilization (**ALS - BLS**) 177
Helmet Removal (**ALS - BLS**) 178
Physical Restraint (**ALS - BLS**) 180

Page #

Medication Administration

Endotracheal Drug Administration (**ALS**) 182
Intranasal Medication Administration (**ALS - BLS**)..... 183
Medication Administration - IV/IO/IM/SQ/Nebulized (**ALS - BLS**) 184

Medication Formulary

Approved Medication List 187
Activated Charcoal 188
Adenosine (Adenocard)..... 189
Albuterol Sulfate (Proventil)..... 190
Amyl Nitrate (**WMD**) 191
Aspirin (Acetylsalicylic Acid)..... 192
Atropine Sulfate..... 193
Calcium Chloride 10%..... 195
Dextrose 50%, 25%, 10% 196
Diphenhydramine HCL (Benadryl) 197
Dopamine (Intropin) 198
Epinephrine HCL 1:1,000 / 1:10,000 (Adrenalin)..... 199
Furosemide (Lasix) 201
Glucagon HCL..... 202
Glucose (Oral)..... 203
Haloperidol (Haldol) 204
Hydroxocobalamin (Cyanokit) 205
Ipratropium Bromide (Atrovent) 206
Lidocaine HCL (Xylocaine)..... 207
Magnesium Sulfate 208
Methylprednisolone Sodium Succinate (Solu-Medrol)..... 210
Midazolam HCL (Versed) (**Controlled Substance**)..... 211
Morphine Sulfate (**Controlled Substance**)..... 212
Naloxone HCL (Narcan) 213
Nitroglycerin (Nitrostat)..... 214
Ondansetron (Zofran)..... 215
Oxygen..... 216
Pralidoxime Chloride / 2-Pam CL (**WMD**)..... 217
Sodium Bicarbonate..... 218
Sodium Chloride 0.9% 219
Sodium Nitrate (**WMD**) 220
Sodium Thiosulfate (**WMD**) 221
Tetracaine Hydrochloride 222
Thiamine HCL (Vitamin B_1) 223

Page #

Appendix

Abdominal Pain Differential 224
Chest Pain Differential 225
Glasgow Coma Score Chart 227
Dopamine Infusion Chart 228
Lidocaine Infusion Chart 229
Epinephrine Infusion Chart 230
Normal Vital Signs Chart 231
APGAR Scoring Chart 232
ET, Suction and, Orogastric Tube Size Chart 233
Burn Assessment Chart 234
Infectious Diseases 235
Abbreviations (approved for use) 237

These protocols were developed under the guidelines of the Medical Director for the District of Columbia Fire and EMS Department. The sources of the manual represent the consolidation of medical procedures and emergency pre-hospital guidelines and publications from many local and national sources.

The following is an adaptation of the protocol for EMS approved by the District of Columbia Department of Health (DOH). The Scope of Practice will meet or exceed the standards of the Department of Transportation (DOT) and the National Registry of EMT's. This Pre-Hospital Patient Care Manual establishes the recommended guidelines for patient care that should be provided by all Emergency Medical Services providers under the authority of the Medical Director of the District of Columbia Fire and EMS Department.

The following procedures are to be used as guidelines for operation during EMS responses that require medical direction and those covered by standing orders. They are also intended to be guidelines to ensure that personnel are trained in proper patient care. Procedures are not considered rigid rules, but rather established standards against which EMS practice can be measured.

Treatment protocols are specific orders directing the actions pertaining to techniques and/or medications used by EMS personnel who are required to practice under direct supervision of a physician with Medical Control Authority. Treatment protocols may and should be initiated without prior direct Medical Control contact unless specifically specified. It is imperative that if a situation that is not covered in these protocols exists, contact must be established with Medical Control for confirmation of medical care and further medical direction.

Our objective is not only to serve the citizens and visitors of the Nation's Capital, but also to give them our best possible service. Thank you for your hard work and dedication to duty that will allow the District of Columbia Fire and EMS Department to become one of the top providers of Emergency Medical Services in the country.

Dennis L. Rubin
Fire and EMS Chief
District of Columbia Fire and EMS Department

James J. Augustine, MD
Assistant Chief, Medical Director
District of Columbia Fire and EMS Department

Pierre Vigilance, MD
Director
District of Columbia Department of Health

Brian W. Amy, MD
EMS Program Medical Director
Department of Health, Health Emergency Preparedness and Response Administration

General Overview

The purpose of this protocol manual is to provide EMS personnel with guidelines in the pre-hospital treatment of the majority of patients. Providers should rely on knowledge gained from training, consultation with medical control, and common sense when encountering situations not covered in these protocols. Always do what is right for the patient and within your scope of practice. Deviation from this manual requires documentation in the patient care report, and completion of a Special Report to the Medical Director.

This manual is divided into three main sections as follows: Treatment Protocols, Medical Procedures, and Medication Formulary. The Treatment and Medical Procedures sections are further divided into subsections for ease of use.

Treatment Protocol Section

The treatment protocol section provides guidance for the pre-hospital treatment of the majority of patients. This section is also organized around certification levels listed in headings. The treatments are outlined in chronological steps. The order of the steps should be considered as suggestions rather than requirements. Using the steps out of order or electing not to use a specific step is not considered deviation from protocol unless doing so would cause foreseeable harm to the patient.

Interpreting Headings in Treatment Protocol Sections
ALL PROVIDER LEVELS (For BLS and ALS Providers)
ADVANCED LIFE SUPPORT PROVIDERS (For ALS Providers)
MEDICAL CONTROL OPTIONS (By Physician orders only)

Medical Procedures Section

The medical procedures section lists the indications and contraindications, and describes the procedure and any special notes for the majority of skills used by field providers. Skills within each subcategory have a heading that indicates the provider level that is allowed to utilize the skill.

Medication Formulary

The medication formulary lists indications, dosage, contraindications, side effects, and any special notes for all medications that are permitted to be administered in the field. Keep in mind many of the contraindications listed for specific drugs are relative to the patient's condition. Contact Medical Control if there is a concern regarding a listed contraindication.

Emergency Medical Services for Children (EMSC) Bear

The EMC Bear symbolizes when Pediatric Care is warranted and Medical Control is required.

Medical Control may be contacted at any step in patient care, and if a patient's condition is unusual and is not covered by a specific protocol. When a patient's presentation is atypical and the protocol treatment may not be the best treatment for the patient or in any situation where the EMS provider is not sure about the best treatment for the patient contact Medical Control.

Each hospital will serve as its own Medical Control for patients being transported to them. When Medical Control is required, providers should ask to speak to the Emergency Physician. If genuinely unable to contact Medical Control, proceed with standing orders only, **DO NOT** initiate Medical Control options. Providers should make every effort to utilize Hospitals 5, 8 or 13 as a back-up for adult patients. In the event of a communications failure, notify the receiving Emergency Department and the ELO upon arrival.

Purpose of Medical Control contact:

- EMS personnel will provide care within their scope of practice and will follow Department of Health-approved protocols or Medical Control orders when delivering EMS care.
- Medical Control must order any ALS or BLS treatment (medication or procedure) that EMS provides when that treatment is not included in or is a deviation from the approved protocols.
- In certain circumstances, as defined by the protocols, Medical Control shall be contacted by EMS (BLS or ALS) personnel.
- Protocols cannot adequately address every possible patient scenario. EMS personnel can contact Medical Control when confronted with a situation that is not addressed by the protocols or when the EMS personnel have any doubt about the appropriate care for a patient.

Contact with Medical Control may be particularly helpful in the following situations:

- Patients who are refusing treatment or transport.
- Patients with time-dependent illnesses or injuries who may benefit from transport to a specific facility with special capabilities (e.g. acute stroke, acute ST-elevation MI).
- Patients with conditions that have not responded to the usual protocol treatments.
- Patients with unusual presentations that are not addressed in protocols.
- Patients with rare illnesses or injuries that are not frequently encountered by EMS personnel.
- Patients who may benefit from uncommon treatments (e.g. unusual overdoses with specific antidotes).

I. Initial Scene Survey

1. Survey the scene for possible hazards and re-survey periodically.
2. Protect yourself first, then victims, from hazards. Do not become a victim.
3. Identify all potential patients.
4. Assess mechanism of injury and/or nature of illness.
   - Medical – determine nature of the illness from the patient, family or bystanders. Why EMS was activated?
   - Trauma – determine the mechanism of injury from the patient, family or bystanders, and inspection of the scene.
5. Identify mechanism of injury, if applicable. If injury or illness is the result of exposure to a hazardous chemical, the patient should be completely decontaminated before treatment.
6. If there is more than one patient, prioritize them using the START method. If inadequate resources are available to treat multiple, severely injured patients, treat cardiac arrest victims last.
7. Summon additional resources as necessary to manage the incident. Additional resources include, but are not limited to: fire, rescue, advanced life support, or law enforcement.

II. Initial Patient Assessment

1. Form a general impression of the patient (sick/not sick; hurt/not hurt).
2. Determine the chief complaint/apparent life threats.
3. Assess mental status (AVPU)
   - **A**----Alert
   - **V**----Responsive to verbal stimulus
   - **P**----Responsive to painful stimulus
   - **U**----Unresponsive
4. Briefly note body position and extremity movement.

Airway

1. Assess airway status. **If cervical spinal trauma is suspected, manually stabilize the spine.** If the airway is blocked, adjust the head or jaw position to relieve the obstruction.
2. Inspect the mouth for foreign objects, vomitus or blood. If present, remove it, suction. Utilize mechanical aids such as direct laryngoscopy (ALS), or any other approved method of obstruction relief.

3. If none of these are successful, advanced life support providers should consider advanced airway alternatives.
4. When the airway is open, insert an oral or nasopharyngeal airway as tolerated.

Breathing and Ventilation

1. Assess adequacy of breathing. If the patient's respiratory rate is normal or near normal, administer oxygen as per the specific protocol.
2. If the patient's respiratory rate is unusually rapid or slow for the age, size and condition of the patient, or if the patient is not breathing, ventilate with a bag-valve-mask.
3. Seal sucking wounds with gloved hand, then an occlusive dressing.
4. Splint flail segments with gloved hand, then a heavy bulky dressing.
5. If tension pneumothorax is suspected, perform an immediate needle thoracostomy (ALS).
6. Frequently reassess the patient's breathing.

Circulation

1. Assess for the presence of a pulse. If absent, immediately begin CPR and proceed with cardiac resuscitation. If the patient is very cold, assess the pulse for 45 seconds before determining that it is absent.
2. Heart rate: compare to normal rate for age and situation.
3. Central/truncal pulses (brachial, femoral, carotid): strong, weak or absent.
4. Distal/peripheral pulses: present/absent, thready, weak, strong.
5. Check perfusion by evaluating skin color, temperature, and moisture
6. Hydration status: anterior fontanel in infants, mucous membranes, skin turgor, crying tears, urine output history.
7. Identify the priority of the patient based on assessment findings.
8. Determine patient disposition. Expedite transport for high priority patients.
9. Continue to assess and provide care.

Disability

1. Evaluate neurological status by noting:
   - Mental status and level of consciousness.
   - Presence or absence of movement in the extremities, either spontaneously or in response to stimuli.
   - Pupil size and reactivity.
   - General evidence of trauma to the head or neck.
2. Initiate spinal movement restrictions, if indicated.

Expose and Examine

1. Remove as much clothing as necessary to determine the presence or absence of an emergency condition or injury.
2. Proceed to the Focused History and Physical Exam.

III. Focused History

1. Conduct the physical examination.
2. Medical (unresponsive patient): perform a rapid physical examination to determine life-threatening problems.
3. Medical (responsive patient): assess body systems related to the patient's complaints.
4. Trauma (significant mechanism of injury MOI): perform rapid trauma physical examination to determine life-threatening injuries. Perform a detailed physical examination en route to the hospital or at the landing zone (fly-out) only after lifesaving assessments and interventions have been completed.

Baseline Vital Signs

1. Respiratory rate, depth, equality and rhythm (pattern).
2. Pulse rate and quality (strength, rhythm, equality). **DO NOT** utilize pulse oximeter as a sole means for determining heart rate.
3. Skin color, temperature and moisture.
4. Capillary refill status (for adults, not a substitute for blood pressure).
5. Obtain blood pressure. The initial blood pressure should be obtained by auscultation on all patients. Subsequent blood pressures can be obtained manually or by electronic non-invasive blood pressure devices.
6. Vital signs should be monitored at a minimum of every 5 minutes for all critical patients and every 15 minutes for all other patients.

7. Normal Vital Signs:

	Respirations	Pulse	Systolic BP*
Adult	12 - 20	60 -100	90 - 140
Adolescent	12 - 24	60 -100	>90
Children (1 to 10 years)	22 - 34	80 -140	>75
Infants (1 month to 1 year)	24 - 40	90 -150	>70
Neonate (0 to 28 days)	30 - 60	100 -160	>60

* For children 1 to 10 years of age, you can determine the lower limit of an acceptable blood pressure using the following formula:

Minimal systolic blood pressure = 70 + (2 × age in years).

8. In addition to obtaining vital signs, providers should perform these additional skills to assist with patient assessment as needed:
   - Cardiac Monitoring (ALS)
   - 12 Lead EKG (ALS)
   - Pulse Oximetry
   - Capnography
   - Blood Glucose Monitoring
   - Temperature as needed
9. Investigate the history of the present illness or event. You may use the mnemonic, “OPQRST”.
   - **O**nset – When did the pain/discomfort begin?
   - **P**rovocation/Palliative – What worsens or lessens the pain/discomfort?
   - **Q**uality – What does the pain/discomfort feel like?
   - **R**egion/**R**adiation/**R**eferral – Where is the pain/discomfort? Does it move anywhere?
   - **S**everity – How severe is the pain/discomfort?
   - **T**iming – How long/often has this been occurring?
10. Inquire about pertinent past medical history. You may use the acronym, “SAMPLE”.
    - **S**igns/**S**ymptoms
    - **A**llergies
    - **M**edication
    - **P**ast medical history
    - **L**ast oral intake
    - **E**vents leading up to illness or injury
11. Inquire about current health status.

IV. Focused Physical Examination

1. Performed to detect non-life threatening conditions and to provide care for those conditions/injuries. Perform enroute to the medical facility if the patient is unstable.
2. Inspect and palpate each of the major body systems for the following:
   - **D--Deformities**
   - **C--Contusions**
   - **A--Abrasions**
   - **P--Penetrations/punctures**
   - **B—Burns**
   - **T--Tenderness**
   - **L--Lacerations**
   - **S--Swelling/edema**
   - **I--Instability**
   - **C--Crepitus**

Head

1. Inspect facial features for symmetry.
2. Note color of face.
3. Note presence of swelling or excessive perspiration.
4. Assess the pupils and observe their size, equality and reactivity.
5. If evidence of head trauma, have suction ready and prepare for seizure activity.

Neck

1. Inspect the neck of the upright patient for jugular venous distention.
2. Observe supra-sternal areas for retractions or use of accessory muscles.
3. Note the trachea's position.

Chest

1. Observe chest wall movement for symmetry, and auscultate breath sounds on both sides of the chest. Assess rate, depth and pattern of breathing, as well as the integrity of the chest wall.
2. Control serious external bleeding.

Abdomen and Pelvis

1. Palpate abdomen for pain, guarding, pulsations, masses, distention, rigidity and tenderness; and, using gentle pressure, the pelvis for crepitus and instability. (These indicate potential sources of significant blood loss).
2. Control serious external bleeding.

Extremities

1. Inspect and palpate extremities for tenderness, gross deformity, swelling, lacerations and abrasions. Note motor, sensory, and vascular integrity in each extremity. Dress and splint extremity injuries as required and as time allows. When possible, elevate injured extremities.

Back

1. Examine the patient's back, if possible, for gross deformities or penetrating injuries.
2. Initiate spinal movement restrictions if indicated.

V. Ongoing Assessment

1. To effectively maintain awareness of changes in the patient's condition, repeated assessments are essential and should be performed **at least every 5 minutes on the unstable patient**, and **at least every 15 minutes on the stable patient.**
2. Reassess mental status.
3. Reassess airway.
4. Reassess breathing for rate and quality.
5. Reassess circulation including pulses, hemorrhage control and skin perfusion.
6. Re-establish patient priority.
7. Reassess and record vital signs.
8. Repeat focused assessment regarding patient complaint or injuries.
9. Assess interventions.
10. Assess response to management.
11. Maintain or modify management plan.

VI. Transport Decision

1. For medical or minor trauma patients ≤18 years of age, transport to a medical facility capable of handling pediatric patients. Sexual assault patient's ≤18 years of age should be transported to Children's National Medical Center (CNMC).
2. For trauma alert or burn patients ≥15 years of age (adult sized), transport to a trauma or burn facility capable of handling adult patients. Patients <15 years of age should be transported to Children's National Medical Center (CNMC).

VII. Special Considerations

1. This protocol manual defines adult and pediatric patients based on age and/or weight:
   - Adult: ≥15 years of age.
   - Pediatric: <15 years of age.
2. Medication dosing for pediatric patients:
   - Pediatric doses apply to pediatric patients weighing less than 45 kg (100 lbs).
   - For pediatric patients equal to or greater than 45 kg (100 lbs), utilize adult dosing.
3. Initial assessment may take 30 seconds or less in a medical patient or victim of minor trauma. In the severely traumatized patient, however, assessment and treatment of life threatening injuries evaluated in the initial assessment may require rapid intervention, with treatment and further assessment en route to the hospital.
4. In the patient that is awake, the initial assessment may be completed by your initial greeting to the patient. This may make it clear that the ABC's are stable and emergency intervention is not required before completing assessment.
5. Neck should be immobilized and secured during airway assessment or immediately following initial assessment if indicated.
6. Vital signs should be obtained during the focused and detailed assessment. If immediate intervention for profound shock or hypoventilation is required, this may need to be initiated before numerical vital signs are taken.

After assessment of a patient, the ALS or BLS provider must assign a treatment priority. The following examples of priorities are not inclusive and sound judgment should be used when assessing patients.

I. Priority 1: Unstable Patients

1. Cardiac Arrest.
2. Post arrest with successful resuscitation.
3. Unconscious or GCS <13 and does not respond to therapy.
4. Moderate to severe respiratory distress with a respiratory rate >24, cyanosis, use of accessory muscles, or altered mental status.
5. Hypotensive (BP <90 systolic) with signs and symptoms of hypoperfusion.
6. Hypertensive (BP >220 systolic or >120 diastolic) with altered mental status or neurological deficit.
7. Cardiac related chest pain unrelieved by therapy with hypotension or cardiac dysrhythmia.
8. Suspected acute myocardial infarction.
9. Obstructed or uncontrolled airway.
10. Continuous vaginal hemorrhage with signs and symptoms of hypoperfusion.
11. Abnormal deliveries.
12. Evidence of prolapsed cord.
13. Eclampsia.
14. Allergic reaction with acute respiratory distress and hypotension (BP <90 systolic).
15. Status epilepticus.
16. Uncontrolled hemorrhage following trauma.
17. Multiple trauma patient(s).
18. Unstable chest injuries.
19. Penetrating wounds head, neck, chest, abdomen or pelvis.

20. Burn patients:
    - Respiratory burns.
    - 2nd degree burn with greater than 20% BSA any age.
    - Any 3rd degree burn larger than 1% BSA, or the size of the patient's hand.
    - Electrical burns.
    - Chemical burns.
    - 2nd or 3rd degree burns hands, face, feet or perineum.
21. Acute neurological deficit less than four (4) hours.
22. Unstable fracture with neurovascular compromise.
23. Any patient that is deemed unstable by the senior provider.

II. Priority 2: Potentially Unstable Patients

1. Cardiac related chest pain.
2. Respiratory distress (mild to moderate).
3. Hypertensive (BP >220 systolic or >120 diastolic) without signs and symptoms.
4. Patients involved in trauma with a GCS of 15, without signs and symptoms of hypoperfusion and associated with one of the below:
    - MVC >40 mph.
    - Hit by vehicles >20 mph.
    - Patients thrown from moving vehicles.
    - Rollover MVC.
    - Falls ≥20 feet without altered mental status or hypoperfusion.
5. Burn patients.
    - 2nd degree burns 10-20% BSA any age.
6. Any patient that is deemed potentially unstable by the senior provider.

III. Priority 3: Stable Patients

1. Uncomplicated fractures.
2. Minor burns.
3. Lacerations requiring suturing, with bleeding controlled.
4. Seizure patients with a return of a GCS 15.
5. Any patient that is deemed stable by the senior provider.

HOSPITAL CAPABILITIES CHART

Medical Facility	Hospital Number	Adult Medical	Adult Major Trauma	Pediatric Medical	Ped. Major Trauma <15 yrs	Critical Burns	STEMI Facility	Stroke Center	Hyperbaric Medicine	Obstetrics	Adult Sexual Assault Center	Ped. Sexual Assault Center
United Medical Center	01	√		√						√		
Childrens National Medical Center	02			√	√	√						√
Medstar	04		√			√						
Howard University Hospital	05	√	√	√			√			√		
Georgetown University Hospital	07	√		√				√		√		
George Washington University Hospital	08	√	√				√	√	√	√		
Providence Hospital	10	√								√		
Sibley Hospital	12	√								√		
Washington Hospital Center	13	√					√	√		√	√	
Walter Reed Army Medical Center	14	√										
Veterans Administration Hospital	15	√										
Prince Georges Hospital Center	16	√	√	√			√			√		
Holy Cross Hospital	17	√		√			√	√		√		
Washington Adventist Hospital	19	√		√						√		
Southern Maryland Hospital	20	√		√			√			√		
Fort Washington Hospital	21	√										
Suburban Hospital	22	√	√	√			√	√		√		
Doctors Hospital	25	√		√								
Inova Arlington Hospital	26	√										
Inova Alexandria Hospital	27	√										
Inova Fairfax Hospital	29	√	√	√			√	√		√		

Medical communications is a vital component of pre-hospital care. Information reported should be concise and provide an accurate description of the patient's condition as well as treatment rendered. Therefore, a complete patient assessment and set of vital signs should be completed prior to contacting Medical Control or a receiving facility. Regardless of the destination, early and timely notification of Medical Control or the receiving hospital is essential for prompt care to be delivered by all involved.

1. Medical communications with Medical Control or a receiving facility should be conducted for every Priority 1 or 2 patient.
2. Contact Medical Control as soon as feasible in accordance with protocols for medication or treatment modality orders. For seriously injured or critically ill patients notification of the receiving facility is required. It is preferred that this be accomplished by the transport unit, however, notification through the Office of Unified Communications is acceptable.
3. When communicating with Medical Control or a receiving facility, a verbal report should include these essential elements:
   - Identify unit, level of provider and name.
   - Destination hospital and ETA.
   - Patient's age, sex.
   - Mental status.
   - Patient's chief complaint.
   - Brief pertinent history of the present illness.
   - Baseline vital signs to include EKG, glucose, or other pertinent assessments.
   - Pertinent findings of the physical exam.
   - Past medical history, current meds and allergies.
   - Treatment rendered in the field.
   - Patient response to emergency care given.
   - Orders requested, repeat granted orders back to physician.
   - If Medical control is obtained, document the physician's name.
4. Advise receiving facility of change occurring in patients condition en route to the medical facility.
5. When transmitting patient information, **DO NOT** include personal or sensitive information (e.g. name, social security number, address, race, etc).

Responsibility for patient care in the pre-hospital setting may be transferred between pre-hospital personnel according to established procedures. These procedures are applicable for turnover responsibility to or from EMS providers or to hospital staff.

I. ALS Provider Transfer of Care to and equal or higher level provider

1. Non-transport ALS provider to transporting ALS provider
   - When first on-scene, the non-transporting ALS provider should transfer patient care authority upon arrival of the transporting ALS provider.
   - When the transferring ALS provider has initiated ALS care and the transfer of care might negatively affect patient care, the non-transporting ALS provider should maintain patient care authority during transport.
   - The transferring ALS provider should provide the transporting ALS provider a full patient report to include vital signs and physical assessment if applicable.

II. ALS Provider Transfer of Care to a BLS provider

1. Patients must be stable with complaints that would be cared for at the BLS level. Prior to transferring care to the BLS provider, the examining paramedic will reasonably determine that there are no anticipated changes in the patient's present condition that would deem the patient unstable. No patient will be turned over to BLS care once ALS interventions have been initiated. (An exception to this rule can be made in a Mass Casualty or disaster scenario.)
2. Transfer of care can take place if:
   - The patient has a patent airway, maintained without assistance or adjuncts.
   - The patient is hemodynamically stable. Vital signs should be steady and commensurate with the patient's condition.
   - The patient is at his or her baseline mental status and not impaired as a result of medications or drug ingestion.
   - No mechanism or injury warrants a trauma alert or activation.
   - No cardiac, respiratory, or neurological complaints that warrant ALS intervention exist.
   - The ALS provider provides the BLS provider with a full patient report to include vital signs and physical assessment.
   - The EMT who will be in attendance is comfortable with the patient's condition and will assume care.

III. Transfer of Care at the Medical Facility

1. Upon arriving at a receiving facility, EMS providers will not initiate new medical care once they cross the threshold of the facility. Examples include, spiking new IV bags, starting O_2, immobilization, and restraint application.
2. EMS providers will continue any and all pre-hospital care initiated during the transport until the patient has been triaged or until the time-limit detailed below is reached, whichever occurs first. Examples include pre-hospital O_2; maintaining IV's begun in the field until they run out, and maintaining of splints applied in the field.
3. Hospitals will designate personnel to assess patients brought by EMS transport units with the goal of transferring care and releasing the unit within 25 minute of the patient's arrival to the Emergency Department (ED). Transfer of care includes movement of the patient to the hospital-owned equipment, i.e. bed, stretcher, waiting room etc.
4. Transfer of care will be document by the EMS provider who will submit a completed patient care report (PCR) to hospital triaging personnel. The triaging personnel will be expected to sign the patient care report (PCR).
5. In the event that transfer of care is delayed for longer than 25 minutes, the EMS provider will contact the EMS Liaison Officer (ELO), who will in-turn contact the authorized hospital point of contact and attempt to resolve the delay in patient transfer until release.
6. If the EMS provider is still unable to obtain a signature, this fact will be documented by the EMS provider in lieu of the signature itself, and the ELO will inform the authorized hospital personnel that the process outlined in paragraph 7 below will be the followed.
7. Patients that have been assessed by hospital personnel and are placed in a stable category will be escorted to the waiting room intake by EMS personnel and presented to the hospital's ambulatory patient intake personnel. The EMS crew will then go back in service.

I. Purpose:

To establish guidelines for the management and documentation of situations where patients refuse treatment or transportation, or insist on transportation to a destination other than that recommended by the EMS provider.

II. Guidelines:

1. Obtain Consent
   A. Informed Consent – when a competent patient or guardian is informed of the potential benefits and risks of a process or procedure, alternatives to that procedure, and the possible consequences related to each.
   B. Expressed Consent – written or verbal request to be evaluated and treated.
   C. Implied Consent – when a patient is unable to express consent because of altered mental status or severe distress.
2. Patient Assessment
   A. Providers should attempt to obtain a history and perform a physical assessment in as much detail as is permitted by the patient.
   B. Conduct Three Assessments: Providers should attempt to assess the following three major areas prior to permitting a patient to refuse care and/or transportation:
      - Legal competence
        - Ensure that the patient is at least 18 years of age in order to refuse care.
        - Or, if a minor, patient may refuse care if he or she is married, is a parent, or is currently pregnant.
        - Patients subject to a court decree of incapacity are not legally competent to refuse care.
      - Mental competence
        - Start with the presumption that all patients are mentally competent unless your assessment clearly indicates otherwise.
        - Ensure that patient is oriented to person, place, time and purpose.
        - Establish that patient is not a danger to himself or others.
        - Ensure that patient is capable of understanding the risks of refusing care or transportation and any proposed alternatives.
        - Check to be sure that patient is exhibiting no other signs or symptoms of potential mental incapacity, including drug or alcohol intoxication, unsteady gait, slurred speech, etc.

- Medical or situational competence
  - Ensure that patient is suffering from no acute medical conditions that might impair his or her ability to make an informed decision to refuse care or transportation.
  - If possible, rule out conditions such as hypovolemia, hypoxia, head trauma, unequal pupils, metabolic emergencies (e.g., diabetic shock); hypothermia, hyperthermia, etc.
  - Attempt to determine if patient lost consciousness for any period of time.

III. Medical Control

1. Contact Medical Control for:
   A. Refusals of ALS care.
   B. Patients that you believe are in need of further medical attention yet refuses care; medical control may be able to help persuade patient.
   C. Any refusal where required by protocol.
   D. Each hospital will serve as its own Medical Control. Contact the hospital for situations when they are on diversion or closure, but the patient specifically requests transport there. Such as a patient who is post-operative from the facility and requests transport back to that hospital.

IV. Who May Refuse Care

1. The Patient:
   A. If patient is legally, mentally and situationally competent, the patient has a right to refuse care. Obtain refusal signature.
   B. Implied consent -- if patient is unconscious and seriously injured or in need of further medical attention, treat and transport patient despite patient's inability to consent or the unavailability of another party to provide consent.
2. Parent:
   A. A custodial parent (i.e., a parent with a legal right to custody of a minor child) may refuse care on behalf of a minor child. Obtain refusal signature from parent.
   B. A parent of a patient who is 18 years of age or older may not refuse care on behalf of his or her child (unless the parent also happens to be a legal guardian – see below).

C. A minor (i.e., under 18 years of age) may refuse care for his or her child. Obtain refusal signature from the minor parent.

3. Guardian:

   A. A legal guardian is one who is appointed by a court to act as "guardian of the person" of an individual who has been found by a court to be incapacitated.

   B. Legal guardian may also be appointed in lieu of parents for a minor. If a person indicates they are a legal guardian to the patient, attempt to obtain documentation of this fact (court order, etc.). If no such documentation is available, you may obtain refusal signature from the guardian as long as you do so in good faith and do not have any evidence or knowledge that the person is misrepresenting himself as a legal guardian of the patient.

4. Health Care Agent ("Attorney in Fact"):

   A. A person appointed by the patient in a durable power of attorney document may refuse care on behalf of the patient if the power of attorney contains such authorization.

   B. Attempt to obtain a copy of the durable power of attorney document to attach to the patient care report (PCR). If no such documentation is available, you may obtain refusal signature from a health care agent ("attorney-in-fact") as long as you do so in good faith and do not have any evidence or knowledge that the person is misrepresenting himself as the health care agent or "attorney-infact" of the patient.

5. Incompetent Patient:

   A. If a patient is incompetent, and no other authorized individual is available to provide a refusal signature, the patient may be treated and transported as long as you act in good faith and without knowledge that the patient or authorized individual would refuse care.

   B. Take all reasonable steps to secure treatment or transportation for a patient who is legally or mentally incompetent to refuse care, but do not put yourself or your crew in jeopardy.

V. Refusal Procedures

1. If patient refuses care, or insists on being transported to a facility that is on diversion, closure or a facility other than the destination recommended by EMS personnel, have the patient or designee complete the refusal of treatment or transport section of the patient care report (PCR).

   A. Conduct a thorough patient assessment to include vital signs.

   B. Contact Medical Control if necessary.

C. Review form with patient or designee.

D. Provide detailed explanation of possible risks and danger signs to patient or other designee.

E. Inform the patient to call 911, call their doctor or go to an emergency department if symptoms persist or get worse or any of the danger signs you inform them of appear.

F. Obtain the signature of the patient or designee. If the patient refuses to sign, document this fact on the patient care report (PCR).

G. Have the patient or designee date the patient care report (PCR).

H. Obtain signature of a witness; preferably the witness should be someone who witnessed your explanation of risks and benefits to the patient, and who watched the patient sign the form. Witnesses may include law enforcement personnel. All witnesses should be 18 years of age or older if possible.

I. Complete the patient care report and include the following documentation:
   - Competency assessments.
   - Results of history and physical exam to include:
     - Vital signs.
     - EKG, if required.
     - Blood glucose readings, if required.
   - The clinical symptoms upon which the need for transport was based.
   - Information provided to fully inform the patient and/or other authorized individual of the consequences of their refusal of treatment/transport.
   - The patient understands the risk and complications of his/her choice to refuse.
   - Medical Control instructions, if any.
   - Alternatives offered by EMS.
   - Crew signatures on the patient care report (PCR).

Air-Medical transport will be utilized when available if conditions are favorable to reduce transport time for critically ill or injured patients. It is important to consider the risk/benefit ratio when making this decision.

Basic considerations for air transport:

- Would the amount of time needed to transport a patient by ground transportation to an appropriate medical facility pose a threat to the patient's survival and/or recovery?
- Would weather, road conditions, or other factors affecting the use of ground transportation seriously delay the patient's access to tertiary medical care?
- Does the available ground ambulance have the clinical skills, equipment or extra personnel to care for the patient during transport from the scene?
- If the seriously injured patient is trapped, would the extrication time allow for the helicopter to arrive at the scene and speed delivery of the patient to a trauma receiving facility?

Indications for requesting Aeromedical evacuation of a patient include:

- Patient injury evaluation by the first-arriving Paramedic meets criteria for trauma center destination.
- The scene of injury is more than 30 minutes lights-and-siren driving time to the trauma center destination (distance, traffic, and weather conditions considered).
- Patient extrication, vital on-scene care, and ground transport time is estimated to be greater than the time span from requesting Aeromedical service to Aeromedical patient arrival at the trauma center.
- A mass-casualty incident (MCI) in which awaiting sufficient numbers of ground transport units for critical patient(s) would result in a transport time delay that exceeds the time span from request of Aeromedical service to Aeromedical patient arrival at the designated trauma center.

Contraindications for requesting Aeromedical evacuation of a patient include:

- Patients in cardiac arrest.
- Patients contaminated by hazardous materials.
- Patients with violent or erratic behavior.

Helicopter safety and landing zones:

- When a helicopter has been requested, indicate a safe landing zone by taking into account, crowds, trees and overhead hazards.
- Never approach a helicopter until instructed by the flight crew to do so.
- If the rotors are turning, never approach a helicopter from the rear or from above.

This protocol applies to adult patients with non-traumatic chest pain that is suspected cardiac in etiology. The overall goal is to provide therapy in an effort to reduce ischemia, provide pain relief and rapidly identify and treat a patient suffering from a suspected cardiac event.

ALL PROVIDER LEVELS

1. Initiate General Patient Care.
2. Administer supplemental **Oxygen** maintaining a SpO_2 >96%. In chest pain patients, administer **Oxygen** by nasal cannula at 2-4 lpm.
3. Place the patient in a position of comfort.
4. BLS providers should assist patients in taking their own previously prescribed **Nitroglycerin** if the patient's systolic blood pressure is ≥100 mmHg.
5. Administer **Aspirin 324 mg** PO (chewed and swallowed) if not taken during the previous 24 hours or has a known allergy.
6. Establish an **IV** of Normal Saline KVO or Saline Lock. ***EMT may initiate IV access if module completed***.

ADVANCED LIFE SUPPORT PROVIDERS

1. Provide **continuous EKG monitoring**. Treat life threatening dysrhythmias as indicated.
2. Obtain **12 lead EKG's** pre-treatment and post-treatment. If myocardial injury is suspected because of ST elevation which is evident in two or more contiguous leads, the patient shall be transported to the nearest cardiac interventional facility (STEMI Facility).
3. Administer **Normal Saline Boluses of 250 mL** as needed to maintain or restore perfusion in cases of hypoperfusion with or without right ventricular involvement (RVI). Continuously assess lung sounds and monitor vital signs before and after administration. Maximum total of 2000 ml.
4. Administer **Nitroglycerin 0.4 mg** SL every 3-5 minutes as long as the patients symptoms persist and the systolic blood pressure is ≥100 mmHg. No more than 3 doses (1.2 mg) of Nitroglycerin shall be administered without **Medical Control** order.
5. Apply **Nitroglycerin paste 0.5"** for persistent symptoms after 2 SL doses of Nitroglycerin have been previously administered. Ensure that the systolic blood pressure is ≥100 mmHg prior to application.

6. **"Caution" Withhold Nitroglycerin and consult Medical Control if**:
   - **The patient has a systolic blood pressure <100 mmHg**.
   - **The patient has taken erectile dysfunction medications within the past 24 hours (Viagra, Cialis, or Levitra)**.
   - **After confirmation from a right sided EKG, the patient has a suspected inferior wall MI with right ventricular involvement (RVI)**.
7. Administer **Morphine Sulfate 2 mg IV**, up to a maximum of 6 mg for chest pain not relieved by Nitroglycerin that is likely of cardiac etiology.
   - **Withhold from patients suffering from suspected or actual cocaine induced chest pain with agitation**.
   - **If the patient exhibits signs / symptoms of hypoperfusion omit Morphine Sulfate**.
8. For nausea / vomiting consider **Ondansetron (Zofran) 4mg IV**.

Wall affected	Leads	Artery(s) involved	Reciprocal changes
Anterior	$V_2 – V_4$	Left coronary artery, Left anterior descending (LAD)	II, III, AVF
Anterolateral	I, AVL, $V_3 – V_6$	Left anterior descending (LAD) and diagonal branches, circumflex and marginal branches	II, III, AVF
Anteroseptal	$V_1 – V_4$	Left anterior descending (LAD)	
Inferior	II, III, AVF	Right coronary artery (RCA)	I, AVL
Lateral	I, AVL, V_5, V_6	Circumflex branch or left coronary artery	II, III, AVF
Posterior	V_8, V_9	Right coronary artery (RCA) or circumflex artery	$V_1 – V_4$ ST segment depression (R > S in V_1 and V_2).
Right ventricular	V_4R	Right coronary artery (RCA)	-----

MEDICAL CONTROL OPTIONS

1. **Midazolam (Versed) 2-5 mg IV/IN**, up to a maximum single dose of 5 mg in lieu of Morphine Sulfate, if chest pain is suspected due to CNS stimulants (cocaine, methamphetamine, etc.).
2. Administration of additional doses of Nitroglycerin SL.
3. **Dopamine infusion 5-20 mcg/kg/min** for persistent hypoperfusion.

This protocol applies to patients experiencing a non-traumatic cardiac arrest. Patients ≥12 years of age or shows signs of puberty, should follow adult resuscitation guidelines. If the patient meets the criteria for being presumed dead on arrival (PDOA), resuscitative efforts shall **not** be attempted and notification of Metropolitan Police Department (MPD) shall be made. If at any time the patient has a return of spontaneous circulation (ROSC), refer to the ROSC protocol.

ALL PROVIDER LEVELS

1. Initiate General Patient Care ensuring that the patient is pulseless and apneic (agonal).
2. Initiate immediate **CPR** with an oral airway, **BVM and 100% oxygen** (≥15 lpm).
3. In cases of an un-witnessed cardiac arrest, CPR shall be performed for at least 2 minutes at a rate of 100 compressions per minute. This will be 5 cycles of CPR:

Adult	***Pediatric***
30:2	**15:2**

   - When performing compressions, providers are to "push hard and fast" allowing the chest to fully recoil.
4. Attach **AED** and analyze the rhythm. If "no shock" is advised, immediately continue CPR. Reassess rhythm after 2 minutes or 5 cycles of CPR:

Adult	***Pediatric***
30:2	**15:2**

   - ALS providers should utilize their manual cardiac monitor / defibrillator to confirm asystole in two or more leads.
5. Initiate advanced airway management if the airway cannot be managed properly utilizing BLS airway maintenance.
   - ALS providers should utilize advanced airway management with **ET intubation** and attach **$ETCO_2$** device.
6. Establish an **IV** of Normal Saline KVO. ***EMT may initiate IV access if module completed***. Consider fluid boluses.
   - ALS providers can initiate **IO access**.

ADVANCED LIFE SUPPORT PROVIDERS

- Administer **Epinephrine** every 3-5 minutes for the duration of the arrest.

Adult	***Pediatric***
1:10,000 1 mg IV/IO or **1:1,000 2 mg ET**. Diluted with 5 mL saline.	**1:10,000 0.01 mg/kg IV/IO** or **1:1,000 0.1 mg/kg ET**. Diluted with 1-5 mL saline.

- Administer **Atropine** every 3-5 minutes:

Adult	***Pediatric***
1 mg IV/IO or **2 mg ET**, up to a maximum of **3 mg IV/IO** or **6 mg ET**.	**Not indicated under these guidelines**.

- Consider **Sodium Bicarbonate 1 mEq/kg IV/IO** if the patient is suspected to have been in cardiac arrest >10 minutes. ***Flush the IV line after administration***.
- Identify and treat the following contributing factors (6 H and 5 T's).

Causes	**Treatment**
Hypovolemia	**Normal Saline Boluses**.
Hypoxia	Ventilate with 100% Oxygen.
Hyperkalemia (dialysis patient)	**Calcium Chloride** and **Sodium Bicarbonate**. After administration of either medication ensure that the IV line is completely flushed.
Hypoglycemia	**Dextrose**.
Hypothermia	Remove clothing with gradual re-warming. Handle patient gently.
Hydrogen Ion (acidosis)	**Normal Saline Boluses**. **Sodium Bicarbonate**.
Tension Pneumothorax	Needle Thoracostomy.
Cardiac Tamponade	**Normal Saline Boluses** and rapid transport. In-hospital pericardiocentesis.
Thrombosis	In-hospital fibrinolysis.
Trauma	Provide treatment per trauma protocols.
Toxins	**Sodium Bicarbonate** for tricyclic. **Calcium Chloride** for calcium channel blockers. **Glucagon** for beta blockers.

MEDICAL CONTROL OPTIONS

1. Consider ***Termination of Resuscitation***.
2. Contact Medical Control for further orders when necessary.

This protocol applies to patients experiencing a non-traumatic cardiac arrest. Patients ≥12 years of age or shows signs of puberty, should follow adult resuscitation guidelines. The goal of managing a patient in pulseless electrical activity (PEA) is to identify and treat the patient's contributing cause of arrest. If at any time the patient has a return of spontaneous circulation (ROSC), refer to the ROSC protocol.

ALL PROVIDER LEVELS

1. Initiate General Patient Care ensuring that the patient is pulseless and apneic (agonal).
2. Initiate immediate **CPR** with an oral airway, **BVM and 100% oxygen** (≥15 lpm).
3. In cases of an un-witnessed cardiac arrest, CPR shall be performed for at least 2 minutes at a rate of 100 compressions per minute. This will be 5 cycles of CPR:

Adult	***Pediatric***
30:2	**15:2**

   - When performing compressions, providers are to "push hard and fast" allowing the chest to fully recoil.
4. Attach **AED** and analyze the rhythm. If "no shock" is advised immediately continue CPR. Reassess rhythm after 2 minutes or 5 cycles of CPR:

Adult	***Pediatric***
30:2	**15:2**

   - ALS providers should utilize their manual cardiac monitor / defibrillator.
5. Initiate advanced airway management if the airway cannot be managed properly utilizing BLS airway maintenance.
   - ALS providers should utilize advanced airway management with **ET intubation** and attach **ETCO$_2$** device.
6. Establish an **IV** of Normal Saline KVO. ***EMT may initiate IV access if module completed***.
   - ALS providers can initiate **IO access**.

7. Consider **Normal Saline boluses**:

Adult	***Pediatric***
250 mL as needed to maintain or restore perfusion. Maximum total of 2000 mL.	**20 mL/kg** as needed to maintain or restore perfusion. Maximum of 3 boluses.

ADVANCED LIFE SUPPORT PROVIDERS

1. Administer **Epinephrine** every 3-5 minutes for the duration of the arrest.

Adult	***Pediatric***
1:10,000 1 mg IV/IO or **1:1,000 2 mg ET**. Diluted with 5 mL saline.	**1:10,000 0.01 mg/kg IV/IO** or **1:1,000 0.1 mg/kg ET**. Diluted with 1-5 mL saline.

2. If the PEA rate is <60, administer **Atropine** every 3-5 minutes:

Adult	***Pediatric***
1 mg IV/IO or **2 mg ET**, up to a maximum of **3 mg IV/IO** or **6 mg ET**.	**Not indicated under these guidelines**.

3. Consider **Sodium Bicarbonate 1 mEq/kg IV/IO** if the patient is suspected to have been in cardiac arrest >10 minutes. ***Flush the IV line after administration***.
4. Identify and treat the following contributing factors (6 H and 5 T's).

Causes	**Treatment**
Hypovolemia	**Normal Saline Boluses**.
Hypoxia	Ventilate with 100% Oxygen.
Hyperkalemia (dialysis patient)	**Calcium Chloride** and **Sodium Bicarbonate**. After administration of either medication ensure that the IV line is completely flushed.
Hypoglycemia	**Dextrose**.
Hypothermia	Remove clothing with gradual re-warming. Handle patient gently.
Hydrogen Ion (acidosis)	**Normal Saline Boluses**. **Sodium Bicarbonate**.
Tension Pneumothorax	Needle Thoracostomy.

Cardiac Tamponade	**Normal Saline Boluses** and rapid transport. In-hospital pericardiocentesis.
Thrombosis	In-hospital fibrinolysis.
Trauma	Provide treatment per trauma protocols.
Toxins	**Sodium Bicarbonate** for tricyclic. **Calcium Chloride** for calcium channel blockers. **Glucagon** for beta blockers.

MEDICAL CONTROL OPTIONS

1. Consider **Dopamine infusion 5-20 mcg/kg/min** for patients that are deemed pulseless and have substantial electrical activity. *Research has shown that some patients that are pulseless with electrical activity occasionally have mechanical contractions that are too weak to detect palpable pulses or produce a blood pressure*.

This protocol applies to patients that are pulseless and exhibiting a wide complex tachycardia or ventricular fibrillation. Patients ≥12 years of age or shows signs of puberty, should follow adult resuscitation guidelines. If at any time the patient has a return of spontaneous circulation (ROSC), refer to the ROSC protocol.

ALL PROVIDER LEVELS

1. Initiate General Patient Care ensuring that the patient is pulseless and apneic (agonal).
2. Initiate immediate **CPR** with an oral airway, **BVM and 100% oxygen** (≥15 lpm).
3. In cases of an un-witnessed cardiac arrest, CPR shall be performed for at least 2 minutes at a rate of 100 compressions per minute. This will be 5 cycles of CPR:

Adult	***Pediatric***
30:2	**15:2**

   - In the event of a witnessed cardiac arrest by Fire and EMS, immediately attach defibrillator and apply three stacked shocks at **360 J** in adult patients if indicated.
   - When performing compressions, providers are to “push hard and fast” allowing the chest to fully recoil.
4. In the un-witnessed cardiac arrest after 2 minutes of CPR, attach **AED** and analyze the rhythm. If “no shock” is advised immediately continue CPR. Reassess rhythm after 2 minutes or 5 cycles of CPR:

Adult	***Pediatric***
30:2	**15:2**

   - ALS providers should utilize their manual cardiac monitor / defibrillator and **defibrillate** if the patient is in a “shockable” rhythm. Immediately continue CPR post defibrillation.

Adult	***Pediatric***
360 J.	**2 J/kg (manual) or AED**.

   - BLS providers are to continue with “shock” and CPR therapy for the remainder of the arrest, until the rhythm is no longer “shockable” or until patient care is taken over by ALS providers.

5. Initiate advanced airway management if the airway cannot be managed properly utilizing BLS airway maintenance.
   - ALS providers should utilize advanced airway management with **ET intubation** and attach **$ETCO_2$** device.
6. Establish an **IV** of Normal Saline KVO. ***EMT may initiate IV access if module completed***.
   - ALS providers can initiate **IO access**.

ADVANCED LIFE SUPPORT PROVIDERS

1. Administer **Epinephrine** every 3-5 minutes for the duration of the arrest.

Adult	***Pediatric***
1:10,000 1 mg IV/IO or **1:1,000 2 mg ET**. Diluted with 5 mL saline.	**1:10,000 0.01 mg/kg IV/IO** or **1:1,000 0.1 mg/kg ET**. Diluted with 1-5 mL saline.

2. Repeat **defibrillation** for recurrent VF/VT after 2 minutes of quality CPR and after each drug administration is circulated for at least 60 seconds.

Adult	***Pediatric***
360 J.	**4 J/kg**.

3. Administer **Lidocaine**:

Adult	***Pediatric***
1 mg/kg IV/IO every 5 minutes, up to a maximum total dose of **3 mg/kg**. **2 mg/kg ET**, up to a maximum total dose of **6 mg/kg**.	**1 mg/kg IV/IO** every 5 minutes, up to a maximum total dose of **3 mg/kg**.

4. Administer **Magnesium Sulfate** for suspected Torsades de Pointes or hypomagnesemia.

Adult	***Pediatric***
2 gm slow IV/IO. Mix 2 gm in 10 mL of Normal Saline and administer over 2 minutes.	**25-50 mg/kg IV/IO**, up to a maximum single dose of **2 gm**.

5. Consider **Sodium Bicarbonate 1 mEq/kg IV/IO** if the patient is suspected to have been in cardiac arrest >10 minutes. ***Flush the IV line after administration***.

MEDICAL CONTROL OPTIONS

1. Contact Medical Control for further orders when necessary.

PEDIATRIC

- BLS Algorithm, Initiate CPR for 2 minutes if un-witnessed
- Attach AED, monitor/defibrillator

- Analyze patient **(AED)**
- Check rhythm → **VF/VT**

- Administer **defibrillation at 2 J/kg**. **(manual) or AED**.
- Resume CPR Immediately for 2 minutes.

Give 5 cycles of CPR

- Analyze patient **(AED)**
- Check rhythm → **VF/VT**

During any rhythm check:

- If asystole *or* PEA refer to the appropriate protocol.
- If a palpable pulse is present administer appropriate treatment and medications as required per the ROSC protocol.

Continue CPR while the defibrillator is charging.

- Administer **defibrillation at 4 J/kg (manual) or AED**.
- Resume CPR immediately and continue for 2 minutes.
- BLS providers are to continue with the shock and CPR regiment until an ALS provider assumes patient care or the patient arrives at the Emergency Department.

ALS Providers should continue with the following:

- Administer **Epinephrine 1:10,000 0.01 mg/kg IV/IO** or **Epinephrine 1:1,000 0.1 mg/kg ET every 3-5 minutes**.

Give 5 cycles of CPR

- Check rhythm → **VF/VT**

Continue CPR while the defibrillator is charging.

- Administer **defibrillation at 4 J/kg (manual) or AED**.
- Resume CPR immediately and continue for 2 minutes.
- Administer **Lidocaine 1 mg/kg IV/IO every 5 minutes.** Repeat in 5 minutes for a maximum total dose of **3 mg/kg**.
- Administer **Magnesium Sulfate 25-50 mg/kg slow IV/IO** for suspected Torsades de Pointes or hypomagnesium. Max 2 gm.
- Consider **Sodium Bicarbonate 1 mEq/kg IV/IO** if the patient is suspected to have been in cardiac arrest >10 minutes.

Give 5 cycles of CPR

- Check rhythm → **VF/VT**
- Continue with Drug – Shock and CPR regiment.

Consult **Medical Control** for additional orders.

ADULT

- BLS Algorithm, Initiate CPR for 2 minutes if un-witnessed
- In the event of a witnessed cardiac arrest by Fire and EMS, immediately attach defibrillator and apply three stacked shocks at **360 J** in adult patients if indicated.
- In the un-witnessed cardiac arrest after 2 minutes of CPR Attach AED, monitor/defibrillator.

- Analyze patient **(AED)**
- Check rhythm → **VF/VT**

- Administer **defibrillation at 360 J (manual) or AED**.
- Resume CPR Immediately for 2 minutes.

Give 5 cycles of CPR

- Analyze patient **(AED)**
- Check rhythm → **VF/VT**

During any rhythm check:

- If asystole *or* PEA refer to the appropriate protocol.
- If a palpable pulse is present administer appropriate treatment and medications as required per the ROSC protocol.

Continue CPR while the defibrillator is charging.

- Administer **defibrillation at 360 J (manual or AED)**.
- Resume CPR immediately and continue for 2 minutes.
- BLS providers are to continue with the shock and CPR regiment until an ALS provider assumes patient care or the patient arrives at the Emergency Department.

ALS Providers should continue with the following:

- Administer **Epinephrine 1:10,000 1 mg IV/IO every 3-5 minutes** for the duration of the arrest.

Give 5 cycles of CPR

- Check rhythm → **VF/VT**

Continue CPR while the defibrillator is charging.

- Administer **defibrillation at 360 J (manual or AED)**.
- Resume CPR immediately and continue for 2 minutes.
- Administer **Lidocaine 1 mg/kg IV/IO every 5 minutes.** Repeat in 5 minutes for a maximum total dose of **3 mg/kg**.
- Administer **Magnesium Sulfate 2 gm slow IV/IO** for suspected Torsades de Pointes or hypomagnesium.
- Consider **Sodium Bicarbonate 1 mEq/kg IV/IO** if the patient is suspected to have been in cardiac arrest >10 minutes.

Give 5 cycles of CPR

- Check rhythm → **VF/VT**
- Continue with Drug – Shock and CPR regiment.

Consult **Medical Control** for additional orders.

This protocol applies to patients with a pulse, experiencing a wide complex tachycardia with or without hemodynamic compromise.

ALL PROVIDER LEVELS

1. Initiate General Patient Care.
2. Administer supplemental **Oxygen** maintaining a SpO_2 >96%.
3. Place the patient in a position of comfort.
4. Establish an **IV** of Normal Saline KVO or Saline Lock. ***EMT may initiate IV access if module completed***.

ADVANCED LIFE SUPPORT PROVIDERS

1. Provide **continuous EKG monitoring**.
2. Obtain **12 lead EKG's** pre-treatment and post-treatment if time and patient condition permits.
3. If the patient has a GCS ≤14 or the patient appears hemodynamically unstable, proceed immediately to a sedation option if time and patient condition permits.
   - **Midazolam (Versed)**:

Adult	***Pediatric***
2-5 mg IV/IN, up to a maximum dose of **5 mg**.	**0.1 mg/kg IV/IN**, up to a maximum single dose of **5 mg**.

4. Perform **Synchronized Cardioversion** for patients that are unstable:

Adult	***Pediatric***
100 J, 120 J, 150 J and 200 J.	**0.5 J/kg, 1 J/kg and 2 J/kg**.

5. If the rhythm converts to a non-lethal rhythm, monitor the patients EKG and vital signs.
6. If the rhythm fails to convert after synchronized cardioversion, proceed to antiarrhythmic medication administration **(Lidocaine)**.

7. Administer **Lidocaine**:

Adult	***Pediatric***
1 mg/kg IV every 5 minutes, up to a maximum total dose of **3 mg/kg**.	**1 mg/kg IV** every 5 minutes, up to a maximum total dose of **3 mg/kg**.

8. Administer **Magnesium Sulfate** for suspected Torsades de Pointes or hypomagnesemia.

Adult	***Pediatric***
2 gm slow IV Infusion. Mix **2 gm** in 100 mL of Normal Saline. Utilize a 10 gtts set and run at 50 gtts/min over 20 minutes.	**25-50 mg/kg IV** over 20 minutes, up to a maximum single dose of **2 gm**.

MEDICAL CONTROL OPTIONS

1. **Lidocaine infusion:**

Adult	***Pediatric***
2 mg/min.	**20-50 mcg/kg/min**.

This protocol applies to patients exhibiting a narrow complex supraventricular tachycardia with a heart rate ≥180 in adults and children or ≥220 in infants with or without hemodynamic compromise.

ALL PROVIDER LEVELS

1. Initiate General Patient Care.
2. Administer supplemental **Oxygen** maintaining a SpO_2 >96%.
3. Place the patient in a position of comfort.
4. Establish an **IV** of Normal Saline KVO or Saline Lock. ***EMT may initiate IV access if module completed***.

ADVANCED LIFE SUPPORT PROVIDERS

1. Provide **continuous EKG monitoring**.
2. Obtain **12 lead EKG's** pre-treatment and post-treatment if time and patient condition permits.
3. If the patient has a GCS ≤14 or the patient appears hemodynamically unstable, proceed immediately to a sedation option if time and patient condition permits.
   - **Midazolam (Versed)**:

Adult	***Pediatric***
2-5 mg IV/IN, up to a maximum dose of **5 mg**.	**0.1 mg/kg IV/IN**, up to a maximum single dose of **5 mg**.

4. Perform **Synchronized Cardioversion** for patients that are unstable:

Adult	***Pediatric***
100 J, 120 J, 150 J and 200 J.	**0.5 J/kg, 1 J/kg and 2 J/kg**.

5. If the rhythm converts to a non-lethal rhythm, monitor the patients EKG and vital signs.
6. If the patient is in a narrow complex tachycardia without evidence of A-Fib / A-Flutter and is hemodynamically stable without critical signs and symptoms attempt **vagal maneuvers first**.

7. Administer **Adenosine** in the absence of atrial fibrillation, atrial flutter or multifocal atrial tachycardia (MAT).

Adult	***Pediatric***
6 mg rapid IV followed by a rapid 20 mL Normal Saline bolus. Repeat **12 mg rapid IV** after 2 minutes if the rhythm fails to convert after the initial dose. May repeat once more at **12 mg** if the rhythm fails to covert after the 2nd dose.	**Contact Medical Control**.

- **Withhold Adenosine if the patient has a history of Wolff Parkinson White Syndrome (WPW) or if delta waves are present**.

8. If the patient begins to deteriorate or exhibit signs of rate related cardiovascular compromise, revert to **Synchronized Cardioversion**.

MEDICAL CONTROL OPTIONS

1. Contact Medical Control for further orders when necessary.

This protocol applies to patients who have a return of spontaneous circulation (ROSC) after cardiac arrest.

ALL PROVIDER LEVELS

1. Initiate General Patient Care.
2. Administer supplemental **Oxygen** maintaining a SpO_2 >96%. If respiratory effort is inadequate provide ventilatory assistance with a BVM and 100% Oxygen.
3. Initiate advanced airway management if the airway cannot be managed properly utilizing BLS airway maintenance.
   - ALS providers should utilize advanced airway management with **ET intubation** and attach **$ETCO_2$** device, maintaining a level of 35-45 mmHg.
4. Establish an **IV** of Normal Saline if not previously performed. ***EMT may initiate IV access if module completed***. Provide **Normal Saline Boluses** if hypoperfusion is present:

Adult	***Pediatric***
250 mL as needed to maintain or restore perfusion. Maximum total of 2000 mL.	**20 mL/kg** as needed to maintain or restore perfusion. Maximum of 3 boluses.

ADVANCED LIFE SUPPORT PROVIDERS

1. Provide **continuous EKG monitoring**.
2. Obtain a **12 lead EKG** if time and patient condition permits.
3. If the patient was resuscitated during an episode of VF/VT without profound bradycardia or high-grade heart block (2nd degree Type II or 3rd degree) :
   - Without previously receiving antiarrhythmic medications administer **Lidocaine**:

Adult	***Pediatric***
1 mg/kg IV/IO.	**1 mg/kg IV/IO**.

   - With Lidocaine, establish a **Lidocaine infusion**:

Adult	***Pediatric***
Medical Control Option.	**Medical Control Option**.

4. If the patient was resuscitated from any other rhythm and returns to a rhythm displaying bradycardia with hypotension:
   - Administer **Normal Saline boluses**, reassess rate and blood pressure.

Adult	***Pediatric***
250 mL as needed to maintain or restore perfusion. Maximum total of 1000 mL.	**20 mL/kg** as needed to maintain or restore perfusion. Maximum of 3 boluses.

5. If bradycardia still does not resolve, administer the following medications:

Adult	***Pediatric***
Atropine 0.5 mg IV/IO.	**Epinephrine 1:10,000 0.01 mg/kg IV/IO**. If bradycardia is due to increased vagal tone or primary AV block administer **Atropine 0.02 mg/kg IV/IO**. Minimum dose of **0.1 mg** and a maximum dose of **0.5 mg** in a child and **1 mg** in an adolescent.

6. If no change after medication administration, proceed immediately to **Transcutaneous Pacing (TCP)**:

Adult	***Pediatric***
Rate 80, 20 mA. Increase at 5 mA increments until capture is obtained.	**Rate 100, 5 mA**. Increase at 5 mA increments until capture is obtained.

MEDICAL CONTROL OPTIONS

1. **Dopamine infusion 5-20 mcg/kg/min** for persistent hypoperfusion.
2. **Lidocaine infusion:**

Adult	***Pediatric***
2 mg/min.	**20-50 mcg/kg/min**.

3. Medical Control may ask to initiate the therapeutic hypothermia protocol **(Future Use)**.

This protocol applies to patients experiencing bradycardia for their specific age group with signs and symptoms of hypoperfusion and/or hypoventilation.

ALL PROVIDER LEVELS

1. Initiate General Patient Care.
2. Administer supplemental **Oxygen** maintaining a SpO_2 >96%.
3. For patients <12 months of age with signs and symptoms of hypoperfusion and a heart rate of <60 beats per minute: Initiate chest compressions after 2 minutes of aggressive oxygenation / ventilation.
4. Establish an **IV** of Normal Saline KVO or Saline Lock. ***EMT may initiate IV access if module completed***.
5. If the patient presents with signs and symptoms of hypoperfusion administer **Normal Saline Boluses**:

Adult	***Pediatric***
250 mL as needed to maintain or restore perfusion. Maximum total of 1000 mL.	**20 mL/kg** as needed to maintain or restore perfusion. Maximum of 3 boluses.

ADVANCED LIFE SUPPORT PROVIDERS

1. Provide **continuous EKG monitoring**.
2. Obtain **12 lead EKG's** pre-treatment and post-treatment if time and patient condition permits.
3. If the patient is symptomatic without high-degree heart block (2nd degree Type II or 3rd degree) administer:

Adult	***Pediatric***
Atropine 0.5 mg IV. Repeat **Atropine 0.5 mg IV** in 5 minutes if the patient remains symptomatic.	**Epinephrine 1:10,000 0.01 mg/kg IV/IO**. If bradycardia is due to increased vagal tone or primary AV block administer **Atropine 0.02 mg/kg IV/IO**. Minimum dose of **0.1 mg** and a maximum dose of **0.5 mg** in a child and **1 mg** in an adolescent.

4. If the patient remains symptomatic, consider a sedation option if time and patient condition permits.
   - **Midazolam (Versed)**:

Adult	***Pediatric***
2-5 mg IV/IN, up to a maximum dose of **5 mg**.	**0.1 mg/kg IV/IN**, up to a maximum single dose of **5 mg**.

5. Initiate **Transcutaneous Pacing (TCP)**:

Adult	***Pediatric***
Rate 80, 20 mA. Increase at 5 mA increments until capture is obtained.	**Rate 100, 5 mA**. Increase at 5 mA increments until capture is obtained.

6. If the patient is symptomatic with a high-degree heart block (2nd degree Type II or 3rd degree), proceed immediately to **Transcutaneous Pacing (TCP)**.

MEDICAL CONTROL OPTIONS

1. **Dopamine infusion 5-20 mcg/kg/min** for persistent hypoperfusion and/or bradycardia.
2. **Epinephrine infusion** for persistent hypoperfusion and/or bradycardia.

Adult	***Pediatric***
2-10 mcg/min.	**0.1-1 mcg/kg/min**.

This protocol applies to patients experiencing pulmonary edema secondary to congestive heart failure (CHF). The goal is to ultimately reduce the preload and afterload pressures of the myocardium. In pediatric patients, congenital heart defects are generally the culprit of CHF. Contact medical control before any medication therapy is rendered to pediatric patients.

ALL PROVIDER LEVELS

1. Initiate General Patient Care.
2. Administer supplemental **Oxygen** maintaining a SpO_2 >96%. If respiratory effort is inadequate provide ventilatory assistance with a BVM and 100% Oxygen.
3. Place the patient in a position of comfort.
4. Establish an **IV** of Normal Saline KVO or Saline Lock. ***EMT may initiate IV access if module completed***.

ADVANCED LIFE SUPPORT PROVIDERS

1. If the patient is conscious and in moderate to severe respiratory distress with adequate respiratory effort, apply **Continuous Positive Airway Pressure Device (CPAP)** and titrate to a pressure of:

Adult	***Pediatric***
10 cmH_2O.	**Medical Direction required**.

2. Provide **continuous EKG and $ETCO_2$ monitoring**.
3. Obtain a **12 lead EKG** if time and patient condition permits. If myocardial injury is suspected because of ST elevation which is evident in two or more contiguous leads. The patient shall be transported to the nearest cardiac interventional facility (STEMI Facility).
4. Administer **Nitroglycerin**:

Adult	***Pediatric***
0.4 mg SL every 5 minutes as long as the patients symptoms persist and the systolic BP is ≥140 mmHg. Do not administer more than 4 doses (1.6 mg) of Nitroglycerin without Medical Control order.	**Not indicated under these guidelines**.

5. Apply **Nitroglycerin paste**:

Adult	***Pediatric***
1" for persistent symptoms after 2 doses (0.8 mg) of Nitroglycerin has been previously administered. Ensure that the systolic blood pressure is ≥140 mmHg prior to application.	**Not indicated under these guidelines**.

5. **"Caution" Withhold Nitroglycerin and consult Medical Control if**:
   - **The patient has a systolic blood pressure <100 mm/Hg**.
   - **The patient has taken erectile dysfunction medications within the past 24 hours (Viagra, Cialis, or Levitra)**.
6. Administer **Furosemide (Lasix)**:

Adult	***Pediatric***
40 mg IV over 2 minutes if the patients systolic BP is ≥140 mmHg. If the patient is currently prescribed Furosemide or any other diuretic, administer **Furosemide 80 mg IV**.	**Contact Medical Control**.

   - **In the event that a patient suffers from chronic renal failure and does not produce urine, omit Lasix administration and provide aggressive medication therapy directed toward vascular dilatation such as Nitroglycerin (Adult Only) and Morphine**.
7. Administer **Morphine Sulfate**:

Adult	***Pediatric***
2 mg IV, up to a maximum of **10 mg** as long as the patients systolic BP is ≥140 mmHg.	**Contact Medical Control**.

8. In instances where bronchospasm is present with wheezing, administer **Albuterol 2.5 mg** via nebulizer.

MEDICAL CONTROL OPTIONS

1. **Dopamine infusion 5-20 mcg/kg/min** for persistent hypoperfusion.

This Page Intentionally Blank

This protocol applies to patients with a suspected or actual foreign body airway obstruction or airway obstructions due to trauma, burns, or severe anaphylactic reactions. Do not delay transport for patients that are unconscious with a complete airway obstruction. Perform BLS and/or ALS skills en route to the medical facility.

ALL PROVIDER LEVELS

1. Initiate General Patient Care.
2. If the patient is experiencing an incomplete / partial airway obstruction, encourage the patient to cough in an attempt to relieve the obstruction.
3. If the patient in conscious and the airway is completely obstructed due to a foreign body, perform **BLS obstructed airway techniques** until the obstruction is relieved or the patient goes unconscious.
4. If the patient is unconscious, perform BLS obstructed airway techniques while utilizing **BVM and 100% oxygen** (≥15 lpm).
5. Provide immediate transportation to the nearest appropriate medical facility if the foreign body obstruction is not relieved or closed due to trauma or severe anaphylaxis. Monitor the patient for cardiac arrest.

ADVANCED LIFE SUPPORT PROVIDERS

1. If the patients airway is still obstructed due to a foreign body and is unconscious, perform the following advanced airway techniques in order:
   - Perform **Direct Laryngoscopy** and remove any foreign body obstruction seen with Magill forceps if possible.
   - Perform an emergent **Needle Cricothyroidotomy**. ***This is the last resort when a foreign body airway obstruction is present***.
2. If the patients airway is obstructed due to trauma, burns, or severe anaphylaxis:
   - Perform an emergent **Needle Cricothyroidotomy**.

MEDICAL CONTROL OPTIONS

1. Contact Medical Control for further orders when necessary.

This protocol applies to patients experiencing respiratory distress associated with Asthma or COPD.

ALL PROVIDER LEVELS

1. Initiate General Patient Care.
2. Administer supplemental **Oxygen** maintaining a SpO_2 >96%.
   - For patients with a history of COPD, administer the patients prescribed dose of **Oxygen**. If severe distress is present, administer 100% supplemental Oxygen.
3. Place the patient in a position of comfort.
4. Establish an **IV** of Normal Saline KVO or Saline Lock for patients that are experiencing significant respiratory distress and those with a significant cardiac history. ***EMT may initiate IV access if module completed***.
5. If the patient presents with respiratory distress with suspected bronchospasm / wheezing, administer a combination of **Albuterol** and **Ipratropium Bromide (Atrovent)** via nebulizer one time only for pre-hospital care.

Adult	***Pediatric***
Albuterol 2.5 mg and **Atrovent 500 mcg**.	**Albuterol 2.5 mg** and **Atrovent 500 mcg**. Patient's 1-2 yrs administer **Atrovent 250 mcg**.

   - BLS providers can administer one additional **Albuterol 2.5 mg** via nebulizer if the patient's symptoms are still present.
6. If the patient with a history of asthma, without a significant cardiac history (MI, etc.) and still presents with respiratory distress and is in extremis, administer **Epinephrine**:

Adult	***Pediatric***
BLS: Epinephrine 1:1,000 0.3 mg IM via auto-injector. **ALS: Epinephrine 1:1,000 0.3-0.5 mg SQ**.	**BLS: Epinephrine 1:1,000 0.15 mg IM** via Epi-pen Jr ≤3 yrs. **ALS: Epinephrine 1:1,000 0.01 mg/kg SQ**.

ADVANCED LIFE SUPPORT PROVIDERS

1. Provide **continuous EKG and $ETCO_2$ monitoring**.
2. Providers may repeat **Albuterol 2.5 mg via nebulizer** to a total of 3 doses or 7.5 mg. Contact Medical Control for subsequent doses.

3. For COPD patients experiencing significant respiratory distress, consider **Continuous Positive Airway Pressure Device (CPAP)** and titrate to a pressure of **5 cmH_2O** with an in-line nebulizer.
   - **Some COPD patients have lung problems that may be worsened by CPAP. If the patient worsens on CPAP, it must be removed immediately.**
4. Consider administration of **Methylprednisolone (Solu-Medrol)**:

Adult	***Pediatric***
125 mg IV/IM.	**1 mg/kg IV/IM**, up to a maximum single dose of **40 mg**.

5. Consider a **Normal Saline Bolus** for patients that require hydration without signs of pulmonary edema.

Adult	***Pediatric***
250 mL.	**20 mL/kg**.

MEDICAL CONTROL OPTIONS

1. Consider administration of **Magnesium Sulfate**:

Adult	***Pediatric***
2 gm slow IV Infusion. Mix **2 gm** in 100 mL of Normal Saline. Utilize a 10 gtts set and run at 50 gtts/min over 20 minutes.	**25-50 mg/kg IV** over 20 minutes, up to a maximum single dose of **2 gm**.

2. Consider additional or continuous doses of Albuterol as needed.

This protocol applies to pediatric patients that present with a loud cough that mimics the "bark of a seal", respiratory distress, grunting, wheezing or stridor on inspiration. The major concern of this illness is the possibility of airway obstruction.

ALL PROVIDER LEVELS

1. Initiate General Patient Care.
2. Administer supplemental **Oxygen** maintaining a SpO_2 >96%. If respiratory effort is inadequate provide ventilatory assistance with a BVM and 100% Oxygen.
3. Move the patient to a cool environment.
4. Consider establishing an **IV** of Normal Saline KVO or Saline Lock. ***EMT may initiate IV access if module completed***.
5. If the patient presents with respiratory distress with clinical evidence of croup, administer **Normal Saline 3 mL** via Nebulizer. Repeat 2 additional times as necessary if the patient improves with the initial administration.

ADVANCED LIFE SUPPORT PROVIDERS

1. Provide **continuous EKG and $ETCO_2$ monitoring**.
2. If the patient is unconscious or impending respiratory failure, administer **Epinephrine 1:1000 0.01 mg/kg SQ**.
3. If no improvement after nebulized saline, administer **Epinephrine 1:1000 0.5 mL** (diluted in 3 mL Normal Saline) via nebulizer.
4. Consider **Albuterol 2.5 mg via nebulizer** to a total of 3 doses or 7.5 mg for evidence of lower airway bronchoconstriction. Contact Medical Control for subsequent doses.

MEDICAL CONTROL OPTIONS

1. Contact Medical Control for further orders when necessary.

This protocol applies to patients who exhibit signs and symptoms of respiratory failure with impending or actual respiratory arrest.

ALL PROVIDER LEVELS

1. Initiate General Patient Care.
2. Administer supplemental **Oxygen** maintaining a SpO_2 >96%. If respiratory effort is inadequate provide ventilatory assistance with a BVM and 100% Oxygen.
3. Initiate advanced airway management if the airway cannot be managed properly utilizing BLS airway maintenance.
   - ALS providers should utilize advanced airway management with **ET intubation** and attach **$ETCO_2$** device, maintaining a level of 35-45 mmHg.
4. Establish an **IV** of Normal Saline KVO or Saline Lock. ***EMT may initiate IV access if module completed***.
5. If a narcotic (opiate) overdose is suspected, administer **Naloxone (Narcan)**:

Adult	***Pediatric***
BLS: 2 mg IN only. **ALS: 2 mg IV/IN or IM**. If no response from the initial dosage within 5 minutes, administer an additional dose **2 mg IV/IN or IM**.	**ALS only: 0.1 mg/kg IV/IN or IM**, up to a maximum single dose of **2 mg**.

ADVANCED LIFE SUPPORT PROVIDERS

1. Provide **continuous EKG and $ETCO_2$ monitoring**.
2. If the patient (≥15 years of age) presents with respiratory distress and is in extremis with a GCS of <9, consider the following sedation option and attempt **Orotracheal** or **Nasotracheal Intubation (Not indicated for patients with a suspected head injury)**.
   - **Midazolam (Versed) 2-5 mg IV/IN**, up to a maximum of 10 mg.

MEDICAL CONTROL OPTIONS

1. Contact Medical Control for further orders when necessary.

This Page Intentionally Blank

This protocol applies to patients who are experiencing abdominal pain. There are many causes of abdominal pain and vomiting, some of which are life threatening. See Abdominal Pain Differential sheet. Obtain thorough history to identify the cause:

- GI or urinary tract (kidney stone)
- GI bleeding
- Referred Cardiac pain
- Aortic aneurysm or rupture
- Possible Pregnancy / Ectopic
- Recent trauma / surgery
- Pain associated with passing blood, syncope, and diaphoresis

ALL PROVIDER LEVELS

1. Initiate General Patient Care.
2. Administer supplemental **Oxygen** maintaining a SpO_2 >96%, as needed.
3. Place the patient in a position of comfort.
4. Establish an **IV** of Normal Saline KVO or Saline Lock. ***EMT may initiate IV access if module completed***.
5. If the patient presents with signs and symptoms of hypoperfusion administer **Normal Saline Boluses**:

Adult	***Pediatric***
250 mL as needed to maintain or restore perfusion. Maximum total of 2000 mL.	**20 mL/kg** as needed to maintain or restore perfusion. Maximum of 3 boluses.

ADVANCED LIFE SUPPORT PROVIDERS

1. For nausea / vomiting consider **Ondansetron (Zofran):**

Adult	***Pediatric***
4 mg IV, over 30 seconds.	**Contact Medical Control**.

MEDICAL CONTROL OPTIONS

1. Contact Medical Control for pain management as needed.
2. Medical Direction required for **Ondansetron (Zofran)** administration in pregnant patients.

This protocol applies to patients that present with altered mental status, syncope or unconsciousness that is non-traumatic.

ALL PROVIDER LEVELS

1. Initiate General Patient Care and rule out trauma as a suspected etiology. If stroke is suspected, proceed to Brain Attack / CVA Protocol.
2. Administer supplemental **Oxygen** maintaining a SpO_2 >96%. If respiratory effort is inadequate provide ventilatory assistance with a BVM and 100% Oxygen.
3. Place the patient in a position of comfort if possible.
4. If the patient is ≥8 years of age with a blood glucose level of <70 mg/dl and displays signs / symptoms of hypoglycemia, administer **Oral Glucose 24-50 gm PO** *or* one single dose tube if the patient is conscious enough to swallow.
5. Initiate advanced airway management if the airway cannot be managed properly utilizing BLS airway maintenance.
   - ALS providers should utilize advanced airway management with **ET intubation** and attach **$ETCO_2$** device, maintaining a level of 35-45 mmHg.
6. Establish an **IV** of Normal Saline KVO or Saline Lock. ***EMT may initiate IV access if module completed***. Ensure that a blood glucose reading is obtained.
7. If the patient presents with signs and symptoms of hypoperfusion administer **Normal Saline Boluses**:

Adult	***Pediatric***
250 mL as needed to maintain or restore perfusion. Maximum total of 2000 mL.	**20 mL/kg** as needed to maintain or restore perfusion. Maximum of 3 boluses.

8. If a narcotic (opiate) overdose is suspected, administer **Naloxone (Narcan)**:

Adult	***Pediatric***
BLS: 2 mg IN only. **ALS: 2 mg IV/IN or IM**. If no response from the initial dosage within 5 minutes, administer an additional dose **2 mg IV/IN or IM**.	**ALS only: 0.1 mg/kg IV/IN or IM**, up to a maximum single dose of **2 mg**.

9. After successful treatment of a diabetic emergency (hypoglycemia), the patient may refuse further treatment or transport if all of the following criteria are met:
   - Patient is at least 18 years of age with a GCS 15.
   - After a repeated physical assessment, the patient's blood sugar is within an acceptable range (>70 mg/dl).
   - Have no other signs and symptoms of illness (i.e. chest pain).
   - Patient must be observed to eat without vomiting by a responsible adult.
   - Patient must not be driving a vehicle or operating machinery.

ADVANCED LIFE SUPPORT PROVIDERS

1. Provide **continuous EKG monitoring**. Treat life threatening dysrhythmias as indicated.
2. If the event is suspected cardiac related, obtain **12 lead EKG's** pre-treatment and post-treatment if possible.
3. Identify and treat the following contributing factors (6 H and 5 T's).

Causes	Treatment
Hypovolemia	**Normal Saline Boluses**.
Hypoxia	Ventilate with 100% Oxygen.
Hyperkalemia (dialysis patient)	**Calcium Chloride** and **Sodium Bicarbonate**. After administration of either medication ensure that the IV line is completely flushed.
Hypoglycemia	**Dextrose**.
Hypothermia	Remove clothing with gradual re-warming. Handle patient gently.
Hydrogen Ion (acidosis)	**Normal Saline Boluses**. **Sodium Bicarbonate**.
Tension Pneumothorax	Needle Thoracostomy.
Cardiac Tamponade	**Normal Saline Boluses** and rapid transport. In-hospital pericardiocentesis.
Thrombosis	In-hospital fibrinolysis.
Trauma	Provide treatment per trauma protocols.
Toxins	**Sodium Bicarbonate** for tricyclic. **Calcium Chloride** for calcium channel blockers. **Glucagon** for beta blockers.

4. If the patients blood glucose level is low and not conscious enough to swallow, administer **Dextrose**:

Adult (>12 yrs) <70 mg/dl	***Pediatric*** (1 mo.-12 yrs)<60 mg/dl	***Neonate*** (<1 mo.)<45 mg/dl
50% 25 gm IV.	**25% 2 mL/kg IV**.	**10% 5 mL/kg IV**.

Dextrose Dilution Procedures

$D_{25}W$ - Waste 25 mL $D_{50}W$. Use pre-filled syringe (with remaining 25 mL) to withdraw 25 mL of NS from IV bag. Gently agitate syringe to mix solution.

$D_{10}W$ - Waste 40 mL $D_{50}W$. Use pre-filled syringe (with remaining 10 mL) to withdraw 40 mL of NS from IV bag. Gently agitate syringe to mix solution.

- **Use caution when administering Dextrose to patients that are suffering from hypoglycemia with signs / symptoms of CVA or head injury, because of the potential to increase cerebral edema. Contact medical control for direction**.

5. For patients with suspected malnutrition or chronic alcoholism, consider administration of **Thiamine**:

Adult	***Pediatric***
100 mg IV or IM.	**Not indicated under these guidelines**.

6. If IV access is unobtainable, administer **Glucagon**:

Adult	***Pediatric*** (≥25 kg)	***Pediatric*** (<25 kg)
1 mg IN/IM.	**1 mg IN/IM**.	**0.5 mg IM**.

7. If the patient's blood sugar is ≥300 mg/dl in the non-diabetic, or >400 mg/dl in the adult diabetic patient with symptoms, administer a **Normal Saline bolus of 500 mL**, followed by a **drip of 100 mL/hr**.

MEDICAL CONTROL OPTIONS

1. Contact Medical Control for further orders as necessary.

The protocol applies to patients suffering from anaphylaxis as a result of an allergic reaction to a known or unknown allergen. It is imperative that when looking for signs and symptoms be cognizant that 10-20% of all anaphylaxis cases will not present with hives or other skin manifestations. Signs and symptoms of anaphylaxis / allergic reaction may include oral manifestations such as; itching of the lips, tongue and palate; edema of the lips and tongue or a metallic taste in the mouth. Skin related manifestations may include flushing, itching, hives, swelling or rash.

ALL PROVIDER LEVELS

1. Initiate General Patient Care and determine a suspected cause of the reaction.
2. Administer supplemental **Oxygen** maintaining a SpO_2 >96%. If respiratory effort is inadequate provide ventilatory assistance with a BVM and 100% Oxygen.
3. Place the patient in a position of comfort. If signs of hypoperfusion exist, place the patient in the shock position if possible.
4. If patient presents with a severe anaphylactic reaction with associated hypoperfusion and/or respiratory distress, proceed to the following treatment regiment:
   - BLS providers, administer **Epinephrine Auto-injector**:

Adult	***Pediatric***
0.3 mg IM.	**0.15 mg IM** (Epi-Pen Jr) ≤3 yrs

   - ALS providers can administer **Epinephrine**. May be repeated once in 5 minutes if there is no improvement:

Adult	***Pediatric***
Epinephrine 1:1,000 0.3 - 0.5 mg IM or **Epinephrine 1:10,000 0.5 mg IV/IO/ET**.	**Epinephrine 1:1,000 0.01 mg/kg IM** up to a maximum single dose of **0.3 mg** or **Epinephrine 1:10,000 0.01 mg/kg IV/IO/ET**.

5. Initiate advanced airway management if the airway cannot be managed properly utilizing BLS airway maintenance.
   - ALS providers should utilize advanced airway management with **ET intubation** and attach **$ETCO_2$** device, maintaining a level of 35-45 mmHg. If ET intubation cannot be accomplished due to a completely obstructed airway, perform an emergent **Needle Cricothyroidotomy**.

6. Establish an **IV** of Normal Saline KVO. ***EMT may initiate IV access if module completed***.
7. If the patient presents with signs and symptoms of hypoperfusion administer **Normal Saline Boluses**:

Adult	***Pediatric***
250 mL as needed to maintain or restore perfusion. Maximum total of 2000 mL.	**20 mL/kg** as needed to maintain or restore perfusion. Maximum of 3 boluses.

8. If the patient presents with respiratory distress with suspected bronchospasm / wheezing, administer a combination of **Albuterol** and **Ipratropium Bromide (Atrovent)** via nebulizer one time only for pre-hospital care.

Adult	***Pediatric***
Albuterol 2.5 mg and Atrovent 500 mcg.	**Albuterol 2.5 mg and Atrovent 500 mcg**. Patient's 1-2 yrs administer **Atrovent 250 mcg**.

- BLS providers can administer one additional **Albuterol 2.5 mg** via nebulizer if bronchospasm is still present.
- ALS providers may repeat **Albuterol 2.5 mg via nebulizer** to a total of 3 doses or 7.5 mg, if bronchospasm is still present.

ADVANCED LIFE SUPPORT PROVIDERS

1. Provide **continuous EKG monitoring**.
2. Administer **Diphenhydramine (Benadryl)** to patients suffering from mild to severe allergic / anaphylactic reactions:

Adult	***Pediatric***
25-50 mg IV/IM.	**1 mg/kg IV/IM**, up to a maximum single dose of **50 mg**.

3. For patients who present with signs and symptoms of a Dystonic (Extrapyramidal) reaction, administer **Diphenhydramine (Benadryl)** to relieve the patient's discomfort:

Adult	***Pediatric***
50 mg IV/IM.	**1 mg/kg IV/IM**, up to a maximum single dose of **50 mg**.

4. Administer **Methylprednisolone (Solu-Medrol)** if the patient exhibits with skin manifestations and/or bronchospasm:

Adult	***Pediatric***
125 mg IV/IM.	**1 mg/kg IV/IM**, up to a maximum single dose of **40 mg**.

MEDICAL CONTROL OPTIONS

1. **Dopamine infusion 5-20 mcg/kg/min** for persistent hypoperfusion.
2. **Epinephrine infusion** for persistent symptoms or hypoperfusion.

Adult	***Pediatric***
2-10 mcg/min.	**0.1-1 mcg/kg/min**.

3. Contact Medical Control for additional doses of Epinephrine, Albuterol or for further orders when necessary.

This protocol applies to adult patients exhibiting signs and symptoms of a cerebral vascular accident or bleed. It is very difficult in some patients to determine the time of onset of the new symptoms, but try to establish the time interval of the new deficit. Treatment for strokes is time dependent, and will be carried out at a verified stroke center. In many cases, it will be up to the hospital providers to determine more precisely when the patient had first onset of new symptoms. Fire and EMS providers should provide and document any information they have.

ALL PROVIDER LEVELS

1. Initiate General Patient Care to include the Capital Area Pre-hospital Stroke Screen (CAPSS).

Capital Area Pre-hospital Stroke Screen (CAPSS)

Obtain history from the patient, family members, or other persons who are present on the scene.

- Date and time at baseline or symptom-free and awake.
- Age ≥18.
- Symptom duration ≤24 hours.
- Blood glucose is between 70 and 400 mg/dl.
- Patient has one or more of the following abnormalities.
  - Facial weakness or droop on left or right side.
  - Arm weakness (drifts or falls) on left or right side.
  - Leg weakness on left or right side.
- Patient has unilateral weakness.
- Reassess patient every 5 minutes.

2. Administer supplemental **Oxygen** maintaining a SpO_2 >96%.
3. Place the patient in a position of comfort.
4. Transport to a verified stroke center. The current hospitals in the District of Columbia identified as designated stroke centers are George Washington Hospital (H08), Georgetown Hospital (H07), and Washington Hospital Center (H13).
5. Pre-notify the medical facility and be sure to include vital signs and suspected time of onset of symptoms to allow activation of the stroke team.

6. Establish an **IV** of Normal Saline KVO or Saline Lock. ***EMT may initiate IV access if module completed***. Ensure that a blood glucose reading is obtained.
7. Do not attempt to administer glucose preparations to patients unless their blood glucose is <70 mg/dl. If the blood glucose level is <70 mg/dl, administer **Oral Glucose (BLS), Dextrose or Glucagon (ALS)** per protocol.

ADVANCED LIFE SUPPORT PROVIDERS

1. Provide **continuous EKG monitoring**.
2. Do not attempt to lower the blood pressure in the hypertensive patient or increase the heart rate of the patient in bradycardia (Cushing's Triad).
3. For nausea / vomiting consider **Ondansetron (Zofran) 4 mg IV**.

MEDICAL CONTROL OPTIONS

1. Contact Medical Control for further orders when necessary.

This protocol applies to adult patients experiencing an isolated hypertension emergency without signs and symptoms of CVA (Stroke). Patients exhibiting signs / symptoms of an acute hypertensive emergency generally present with headache or blurred vision. If the patient's blood pressure is **≥220 systolic and/or ≥120 diastolic** consider therapy.

ALL PROVIDER LEVELS

1. Initiate General Patient Care.
2. If signs / symptoms of CVA are present, refer to the Brain Attack / CVA protocol.
3. Administer supplemental **Oxygen** maintaining a SpO_2 >96%.
4. Place the patient in a position of comfort.
5. Establish an **IV** of Normal Saline KVO or Saline Lock. ***EMT may initiate IV access if module completed***.

ADVANCED LIFE SUPPORT PROVIDERS

1. Provide **continuous EKG monitoring**.

MEDICAL CONTROL OPTIONS

1. Consider **Nitroglycerin 0.4 mg SL** once every 5 minutes up to 1.2 mg.
2. Consider **Nitroglycerin Paste 0.5"** for persistent symptoms after 2 doses (0.8 mg) of Nitroglycerin have been previously administered.

This protocol applies to patients exhibiting signs and symptoms of hypoperfusion that is non-traumatic in nature.

ALL PROVIDER LEVELS

1. Initiate General Patient Care.
2. Administer supplemental **Oxygen** maintaining a SpO_2 >96%. If respiratory effort is inadequate provide ventilatory assistance with a BVM and 100% Oxygen.
3. Place the patient in the shock position unless respiratory distress is present; then the preferred method shall be the position of comfort.
4. Initiate advanced airway management if the airway cannot be managed properly utilizing BLS airway maintenance.
   - ALS providers should utilize advanced airway management with **ET intubation** and attach **$ETCO_2$** device, maintaining a level of 35-45 mmHg.
5. Establish an **IV** of Normal Saline KVO. ***EMT may initiate IV access if module completed***.
6. If the patient presents with signs and symptoms of hypoperfusion administer **Normal Saline Boluses**:

Adult	***Pediatric***
250 mL as needed to maintain or restore perfusion. Maximum total of 2000 mL.	**20 mL/kg** as needed to maintain or restore perfusion. Maximum of 3 boluses.

ADVANCED LIFE SUPPORT PROVIDERS

1. Provide **continuous EKG and $ETCO_2$ monitoring**.
2. Obtain a **12 lead EKG** if time and patient condition permits. If an acute coronary syndrome is confirmed, revert to the Acute Coronary Syndrome (ACS) protocol.

MEDICAL CONTROL OPTIONS

1. **Dopamine infusion 5-20 mcg/kg/min** for persistent hypoperfusion after sufficient volume replacement.

2. **Epinephrine infusion** for persistent hypoperfusion.

Adult	***Pediatric***
2-10 mcg/min.	**0.1-1 mcg/kg/min**.

This protocol applies to patients experiencing an acute onset of severe pain. **Patients with head injuries, diminished level of consciousness, respiratory depression, abdominal pain, multi-system trauma and hypotension are excluded from this protocol**. Providers must use sound judgment when determining if a patient is indeed a candidate for pain management. Patients that will likely require pain management will often include those experiencing a sickle cell crisis, kidney stones, burns and isolated musculoskeletal injuries. All patients treated under this protocol must be transported to the hospital.

ALL PROVIDER LEVELS

1. Initiate General Patient Care to include an accurate pain rating.

Wong/Baker FACES Pain Rating Scale

Infant Pain Rating Scale

0	Restful, sleep
1 - 2	Quiet, awake, calm face
3 - 4	Restless, occasional grimace or whimper.
5 - 6	Irritable with intermittent crying and occasional grimace (easily consolable).
7 - 8	Frequent crying, constant grimace, tense muscles (difficult to console).
9 - 10	Constant high-pitched cry, thrashing of limbs, constant grimace (unable to console).

2. Administer oxygen as needed. For sickle cell patients administer 100% via NRB.
3. Place the patient in a position of comfort.
4. Establish an **IV** of Normal Saline KVO or Saline Lock. ***EMT may initiate IV access if module completed***.
5. Sickle cell patients experiencing severe pain, administer a **Normal Saline Bolus**:

Adult	***Pediatric***
500 mL.	**20 mL/kg**.

ADVANCED LIFE SUPPORT PROVIDERS

1. Provide **$ETCO_2$ monitoring** if the patient begins to exhibit any change in level of consciousness.
2. For pain management consider **Morphine Sulfate**:

Adult	***Pediatric***
2 mg IV. Repeat as needed until pain is relieved or a maximum of **10 mg** is reached.	**0.1 mg/kg IV**. Repeat as needed until pain is relieved or a maximum of **5 mg** is reached. **Contact Medical Control** for patients <5yrs.

- **If the patient exhibits signs / symptoms of hypoperfusion omit Morphine Sulfate**.

3. For nausea / vomiting consider **Ondansetron (Zofran)**:

Adult	***Pediatric***
4 mg IV, over 30 seconds.	**Contact Medical Control**.

MEDICAL CONTROL OPTIONS

1. Contact Medical Control for further orders when necessary.
2. Medical Direction required for **Ondansetron (Zofran)** administration in pregnant patients.

This protocol applies to patients with unusually prolonged altered mental status after seizure activity, and patients experiencing multiple or continuous seizure activity.

ALL PROVIDER LEVELS

1. Initiate General Patient Care and protect the patient from injury.
2. Consider manual stabilization and spinal immobilization if the possibility of suspected head or c-spine injury exists.
3. Administer supplemental **Oxygen** maintaining a SpO_2 >96%. If respiratory effort is inadequate provide ventilatory assistance with a BVM and 100% Oxygen.
4. If the patient is ≥8 years of age with a blood glucose level of <70 mg/dl and displays signs / symptoms of hypoglycemia, administer **Oral Glucose 24-50 gm PO** *or* one single dose tube if the patient is conscious enough to swallow.
5. Initiate advanced airway management if the airway cannot be managed properly utilizing BLS airway maintenance.
   - ALS providers should utilize advanced airway management with **ET intubation** and attach **$ETCO_2$** device, maintaining a level of 35-45 mmHg.
6. Establish an **IV** of Normal Saline KVO or Saline Lock. ***EMT may initiate IV access if module completed***. Ensure that a blood glucose reading is obtained.

ADVANCED LIFE SUPPORT PROVIDERS

1. Provide **continuous EKG and $ETCO_2$ monitoring**.
2. If the patients blood glucose level is low and not conscious enough to swallow, administer **Dextrose**:

Adult (>12 yrs) <70 mg/dl	***Pediatric*** (1 mo.-12 yrs)<60 mg/dl	***Neonate*** (<1 mo.)<45 mg/dl
50% 25 gm IV.	**25% 2 mL/kg IV**.	**10% 5 mL/kg IV**.

Dextrose Dilution Procedures

$D_{25}W$ - Waste 25 mL $D_{50}W$. Use pre-filled syringe (with remaining 25 mL) to withdraw 25 mL of NS from IV bag. Gently agitate syringe to mix solution.

$D_{10}W$ - Waste 40 mL $D_{50}W$. Use pre-filled syringe (with remaining 10 mL) to withdraw 40 mL of NS from IV bag. Gently agitate syringe to mix solution.

- **Use caution when administering Dextrose to patients that are suffering from hypoglycemia with signs / symptoms of CVA or head injury, because of the potential to increase cerebral edema. Contact medical control for direction**.

3. For patients with suspected malnutrition or chronic alcoholism, consider **Thiamine**:

Adult	***Pediatric***
100 mg IV or IM.	**Not indicated under these guidelines**.

4. If IV access is unobtainable, administer **Glucagon**:

Adult	***Pediatric*** (≥25 kg)	***Pediatric*** (<25 kg)
1 mg IN/IM.	**1 mg IN/IM**.	**0.5 mg IM**.

5. If the patient is experiencing active seizure activity, administer **Midazolam (Versed)**:

Adult	***Pediatric***
2-5 mg IV/IN, up to a maximum dose of **5 mg**.	**0.1 mg/kg IV/IN**, up to a maximum single dose of **5 mg**.

6. If eclampsia is suspected, administer **Magnesium Sulfate 4 gm infusion**. Mix 4 gm in 100 mL of Normal Saline. Utilize a 10 gtts set and run at 50 gtts/min over 20 minutes.
7. Consider administration of **Sodium Bicarbonate IV** for tricyclic antidepressant overdose, **Calcium Chloride IV** for calcium channel blocker overdose or **Glucagon IV** for beta blocker overdose.

MEDICAL CONTROL OPTIONS

1. Contact Medical Control for further orders when necessary.

This protocol applies to patients suffering from a suspected heat related emergency. Hyperthermic reactions generally relate to heat cramps, heat exhaustion or in severe cases, heat stroke.

ALL PROVIDER LEVELS

1. Initiate General Patient Care.
2. If heat exhaustion or cramps are suspected, move the patient to a cool environment and obtain a temperature.
3. Place the patient in a position of comfort. If signs of hypoperfusion exist, place the patient in the shock position if possible.
4. Administer supplemental **Oxygen** maintaining a SpO_2 >96%. If respiratory effort is inadequate provide ventilatory assistance with a BVM and 100% Oxygen.
5. If heat stroke is suspected, initiate immediate aggressive cooling techniques such as removing as much clothing as possible, cold packs at the groin, under the axilla and around the neck; covering the patient with a cool wet sheet and set windows and ventilation system in the EMS unit to provide mechanical cooling.
6. Establish an **IV** of Normal Saline KVO. ***EMT may initiate IV access if module completed***.
7. If the patient presents with signs and symptoms of hypoperfusion, administer **Normal Saline Boluses**:

Adult	***Pediatric***
250 mL as needed to maintain or restore perfusion. Maximum total of 2000 mL.	**20 mL/kg** as needed to maintain or restore perfusion. Maximum of 3 boluses.

ADVANCED LIFE SUPPORT PROVIDERS

1. Provide **continuous EKG monitoring**. Treat life threatening dysrhythmias as indicated.
2. If the patient is experiencing active seizure activity, administer **Midazolam (Versed)**:

Adult	***Pediatric***
2-5 mg IV/IN, up to a maximum dose of **5 mg**.	**0.1 mg/kg IV/IN**, up to a maximum single dose of **5 mg**.

MEDICAL CONTROL OPTIONS

1. Contact Medical Control for further orders when necessary.

This protocol applies to patients suffering from cold-related emergencies such as mild frostbite to severe hypothermia. Hypothermia is defined as a core temperature below 95°F. Moderate to severe hypothermia often presents with altered mental status and occasionally a decreased pulse, respiratory rate and blood pressure. Patients in cardiac arrest with suspected severe hypothermia shall not be considered dead until re-warming has been completed at a medical facility.

ALL PROVIDER LEVELS

1. Initiate General Patient Care and handle the patient gently.
2. Remove any wet clothing and cover the patient in blankets to prevent heat loss.
3. Administer supplemental **Oxygen** maintaining a SpO_2 >96%. If respiratory effort is inadequate provide ventilatory assistance with a BVM and 100% Oxygen.
4. If the patient is in cardiac arrest, attach **AED** and analyze the rhythm. If the AED advises "shock advised" ensure that all providers are clear of the patient and depress the shock button. If no response from the first defibrillation, defer from further attempts until the patient's core temperature is increased.
   - ALS providers should utilize their manual cardiac monitor / defibrillator and **defibrillate** if the patient is in a "shockable" rhythm. Immediately continue CPR post defibrillation.

Adult	***Pediatric***
360 J.	**2 J/kg (manual) or AED**.

5. If the patient is ≥8 years of age with a blood glucose level of <70 mg/dl and displays signs / symptoms of hypoglycemia, administer **Oral Glucose 24-50 gm PO** *or* one single dose tube if the patient is conscious enough to swallow.
6. Establish an **IV** of Normal Saline KVO and infuse warm IV fluids if possible. ***EMT may initiate IV access if module completed***.
7. If the patient presents with signs and symptoms of hypoperfusion, administer **Normal Saline Boluses**:

Adult	***Pediatric***
250 mL as needed to maintain or restore perfusion. Maximum total of 2000 mL.	**20 mL/kg** as needed to maintain or restore perfusion. Maximum of 3 boluses.

ADVANCED LIFE SUPPORT PROVIDERS

1. Provide **continuous EKG monitoring**.
2. If the patient is suffering from severe hypothermia (at the hospital, this patient will likely be found to have a temperature of <86°F or 30°C) and in cardiac arrest, withhold medication delivery until the patient is re-warmed in the medical facility.
3. If the patients blood glucose level is low and not conscious enough to swallow, administer **Dextrose**:

Adult (>12 yrs) <70 mg/dl	***Pediatric*** (1 mo.-12 yrs)<60 mg/dl	***Neonate*** (<1 mo.)<45 mg/dl
50% 25 gm IV.	**25% 2 mL/kg IV**.	**10% 5 mL/kg IV**.

Dextrose Dilution Procedures

$D_{25}W$ - Waste 25 mL $D_{50}W$. Use pre-filled syringe (with remaining 25 mL) to withdraw 25 mL of NS from IV bag. Gently agitate syringe to mix solution.

$D_{10}W$ - Waste 40 mL $D_{50}W$. Use pre-filled syringe (with remaining 10 mL) to withdraw 40 mL of NS from IV bag. Gently agitate syringe to mix solution.

- **Use caution when administering Dextrose to patients that are suffering from hypoglycemia with signs / symptoms of CVA or head injury, because of the potential to increase cerebral edema. Contact medical control for direction**.

MEDICAL CONTROL OPTIONS

1. Contact Medical Control for further orders when necessary.

This protocol applies to patients suffering from an accidental or intentional submersion in any liquid. Pre-hospital management of these patients shall be directed toward correcting the hypoxia associated with drowning. All patients suffering from a drowning or near drowning episode should be transported to a medical facility. In the event of cold water drowning, the patient shall not be considered deceased until re-warming has been completed at a medical facility.

ALL PROVIDER LEVELS

1. Initiate General Patient Care.
2. Consider manual stabilization and spinal immobilization if the possibility of suspected head or c-spine injury exists.
3. Administer supplemental **Oxygen** at or near 100%. If respiratory effort is inadequate provide ventilatory assistance with a BVM and 100% Oxygen.
4. If hypothermia is suspected, revert to hypothermia protocol.
5. If the patient is in cardiac arrest, follow the appropriate cardiac arrest guidelines.
6. Initiate advanced airway management if the airway cannot be managed properly utilizing BLS airway maintenance.
   - ALS providers should utilize advanced airway management with **ET intubation** and attach **$ETCO_2$** device, maintaining a level of 35-45 mmHg.
7. Establish an **IV** of Normal Saline KVO. ***EMT may initiate IV access if module completed***.
8. If the patient presents with signs and symptoms of hypoperfusion, administer **Normal Saline Boluses**:

Adult	***Pediatric***
250 mL as needed to maintain or restore perfusion. Maximum total of 2000 mL.	**20 mL/kg** as needed to maintain or restore perfusion. Maximum of 3 boluses.

ADVANCED LIFE SUPPORT PROVIDERS

1. If the patient is conscious and in severe respiratory distress with adequate respiratory effort, apply **Continuous Positive Airway Pressure Device (CPAP)** and titrate to a pressure of:

Adult	***Pediatric***
10 cmH_2O.	**Medical Direction required**.

2. Provide **continuous EKG monitoring**.
3. Administer **Sodium Bicarbonate 1 mEq/kg IV** if the patient is suspected to be severely acidotic.

MEDICAL CONTROL OPTIONS

1. Contact Medical Control for further orders when necessary.

This protocol applies to patients that have been exposed to a poison, overdosed on a medication or exhibits signs and symptoms related to the affects of drugs of abuse.

ALL PROVIDER LEVELS

1. Initiate General Patient Care and attempt to identify any medications or products taken or exposed to. Save samples if possible.
2. Administer supplemental **Oxygen** maintaining a SpO_2 >96%. If respiratory effort is inadequate provide ventilatory assistance with a BVM and 100% Oxygen.
3. Contact Poison Control on channel H-11 or call 1-800-222-1222 for assistance in managing specific overdoses. Any medication orders from Poison Control must first be cleared by Medical Control.
4. Initiate advanced airway management if the airway cannot be managed properly utilizing BLS airway maintenance.
   - ALS providers should utilize advanced airway management with **ET intubation** and attach **$ETCO_2$** device, maintaining a level of 35-45 mmHg.
5. Establish an **IV** of Normal Saline KVO or Saline Lock. ***EMT may initiate IV access if module completed***. Ensure that a blood glucose reading is obtained.
6. If the patient presents with signs and symptoms of hypoperfusion administer **Normal Saline Boluses**:

Adult	***Pediatric***
250 mL as needed to maintain or restore perfusion. Maximum total of 2000 mL.	**20 mL/kg** as needed to maintain or restore perfusion. Maximum of 3 boluses.

7. If a narcotic (opiate) overdose is suspected, administer **Naloxone**:

Adult	***Pediatric***
BLS: 2 mg IN only. **ALS: 2 mg IV/IN or IM**. If no response from the initial dosage within 5 minutes, administer an additional dose of **2 mg IV/IN or IM**.	**ALS Only: 0.1 mg/kg IV/IN or IM**, up to a maximum single dose of **2 mg**.

ADVANCED LIFE SUPPORT PROVIDERS

1. Provide **continuous EKG monitoring**.
2. If organophosphate poisoning is suspected, administer **Atropine**:

Adult	*Pediatric*
2-4 mg IV/IM every 5 -10 minutes until symptoms are relieved.	**0.02-0.05 mg/kg IV/IM**, up to a maximum single dose of **2 mg**. May repeat once in 5-10 minutes if symptoms persist.

3. If the patient is experiencing active seizure activity, administer **Midazolam (Versed)**:

Adult	*Pediatric*
2-5 mg IV/IN, up to a maximum dose of **5 mg**.	**0.1 mg/kg IV/IN**, up to a maximum single dose of **5 mg**.

4. Consider specific toxicology antidotes when the patient displays critical signs and symptoms:
   - **Sodium Bicarbonate IV** for tricyclic antidepressant overdose.

Adult	*Pediatric*
1 mEq/kg IV.	**1 mEq/kg IV**.

   - **Calcium Chloride IV** for calcium channel blocker overdose.

Adult	*Pediatric*
10 mg/kg, slow IV.	**10 mg/kg, slow IV**.

   - **Glucagon IV** for beta blocker overdose.

Adult	*Pediatric*
1 mg IV every 5 minutes, up to maximum of **3 mg**.	**1 mg IV** every 5 minutes, up to a maximum of **3 mg**.

MEDICAL CONTROL OPTIONS

1. Administration of **Activated Charcoal (without sorbitol)**.

Adult	*Pediatric*
25-50 gm PO.	**0.5-1 gm/kg**.

This protocol applies to patients experiencing venomous or non-venomous, bites or stings from animals, snakes or spiders.

ALL PROVIDER LEVELS

1. Initiate General Patient Care.
2. Attempt to identify the insect, reptile or animal that caused the injury, if safe to do so. **DO NOT** transport a living snake/animal/spider to the hospital. Determine if the patient has access to anti-venom that can be transported to the hospital with them.
3. If an anaphylactic reaction occurs as a result of a bite or sting, refer to the allergic reaction / anaphylaxis protocol.
4. Administer supplemental **Oxygen** maintaining a SpO_2 >96%. If respiratory effort is inadequate provide ventilatory assistance with a BVM and 100% Oxygen.
5. Have the patient remain calm and immobilize the effected extremity.
6. Remove any rings, bracelets, jewelry and constricting clothing from the affected extremity.
7. Do not apply tourniquets, cold packs, or make incisions around the affected area.
8. Contact Poison Control on channel H-11 or call 1-800-222-1222 for assistance in managing specific envenomations. Any medication orders from Poison Control must first be cleared by Medical Control.
9. Provide rapid transport to the appropriate medical facility if the patient is symptomatic. Notification of the receiving facility is required.
10. Initiate advanced airway management if the airway cannot be managed properly utilizing BLS airway maintenance.
    - ALS providers should utilize advanced airway management with **ET intubation** and attach **$ETCO_2$** device, maintaining a level of 35-45 mmHg.
11. Establish an **IV** of Normal Saline KVO. ***EMT may initiate IV access if module completed***.
12. If the patient presents with signs and symptoms of hypoperfusion, administer **Normal Saline Boluses**:

Adult	***Pediatric***
250 mL as needed to maintain or restore perfusion. Maximum total of 2000 mL.	**20 mL/kg** as needed to maintain or restore perfusion. Maximum of 3 boluses.

ADVANCED LIFE SUPPORT PROVIDERS

1. Provide **continuous EKG monitoring**.
2. Administer **Midazolam (Versed)** for patients experiencing severe muscle spasms:

Adult	***Pediatric***
2-5 mg IV/IN, up to a maximum dose of **5 mg**.	**Contact Medical Control**.

MEDICAL CONTROL OPTIONS

1. Contact Medical Control for further orders when necessary.

Carbon monoxide is an odorless, tasteless, colorless gas produced from incomplete combustion. It is present in the environment in various concentrations mainly due to automotive exhaust. Most poisonings occur in the home, from intentional exposure or from faulty fuel-fed heating appliances. Additionally victims and rescue personnel who are found or working at a fireground have a high probability of carbon monoxide poisoning. Carbon monoxide easily binds to the hemoglobin molecule. It has an affinity for hemoglobin that is 200 times that of oxygen. Once bound to the receptor sites on the hemoglobin, it can no longer transport oxygen.

I. General Indicators of Carbon Monoxide Exposure:

- Victims who have been rescued from or had a prolonged exposure to smoke at a fireground.
- Victims who have been exposed to carbon monoxide due to a faulty heating system, automobile exhaust or other sources of incomplete combustion.

II. Clinical Indicators of Carbon Monoxide Exposure:

1. After a patient has been exposed to carbon monoxide, his/her symptoms may range from minimal to life threatening and may include:
   - Headaches, irritability, vomiting.
   - Errors in judgment.
   - Chest pain.
   - Confusion.
   - Loss of coordination.
   - Loss of consciousness.
   - Seizures.
   - Cyanosis.

III. Treatment and Transport Decision

1. The following percentages refer to the saturation percentage of CO (SpCO) in the hemoglobin.
   - 0-3% No treatment required
   - <6% For smokers or during fireground rehab - No treatment required
   - 4-12% without signs/symptoms AND no history of exposure – Observe
   - 4-12% with signs/symptoms OR history of exposure - Treat with 100% oxygen and transport to hospital
   - 12%-25% - Treat and transport all regardless of symptoms
2. For any history of CO exposure regardless of measured CO level on the meter, transport to a hyperbaric facility (GW Hospital, H08 for adult and CHNMC, H02 for pediatric patients) for CO exposure if there is:
   - History of unconsciousness.
   - Objective neurologic deficit or altered mental status.

- Chest pain or ischemic EKG changes.
- Pregnant patient with CO level of >15% regardless of symptoms.
- Pediatric patient with CO level of >15% regardless of symptoms.
- Any patient with CO level of >25% regardless of symptoms.

ALL PROVIDER LEVELS

1. Remove the patient from the contaminated environment if safe to do so.
2. Initiate General Patient Care. Pulse oximetry monitors may give false readings in patients exposed to cyanide and/or carbon monoxide.
3. Administer supplemental **Oxygen** at 100%. If respiratory effort is inadequate, provide ventilatory assistance with a BVM and 100% Oxygen.
4. Initiate advanced airway management if the airway cannot be managed properly utilizing BLS airway maintenance.
   - ALS providers should utilize advanced airway management with **ET intubation** and attach **$ETCO_2$** device, maintaining a level of 35-45 mmHg.
5. Establish an **IV** of Normal Saline KVO or Saline Lock. ***EMT may initiate IV access if module completed***.

ADVANCED LIFE SUPPORT PROVIDERS

1. Provide **continuous EKG, CO and $ETCO_2$ monitoring**.
2. If the patient is exhibiting signs and symptoms of a high cyanide exposure, administer **Hydroxocobalamin**:

Adult	***Pediatric***
Initial dose is **5 gm IV** over 15 minutes. Each 2.5 gm vial of Hydroxocobalamin for injection is to be reconstituted with 100 mL of NS and administered at 10-15 mL/minute.	**70 mg/kg IV**, up to a maximum of 5 gm. Each 2.5 gm vial of Hydroxocobalamin for injection is to be reconstituted with 100 mL of NS and administered at 10-15 mL/minute.

MEDICAL CONTROL OPTIONS

1. Contact Medical Control for further orders when necessary.

Cyanide is a cellular toxin; it halts respiration at the cellular level. Cyanide may also be found in university laboratory facilities. This may be a common method of suicide attempt in those who have access to the substance, such as laboratory workers and chemists. Cyanide also has an important role in causing death and incapacitation in fires. The speed of onset is related to the severity of exposure (inhalation or ingestion) and may have dramatic, immediate effects causing early hypertension with subsequent hypotension, sudden cardiovascular collapse or seizure/coma.

I. Non-specific and early signs of cyanide exposure:

1. The following are early signs and symptoms of cyanide exposure: anxiety, vertigo, weakness, headache, tachypnea, nausea, dyspnea, vomiting, and tachycardia.

II. Suspected High Cyanide Exposure:

1. The following are signs and symptoms of high cyanide exposure:
   - Markedly altered level of consciousness.
   - Seizures.
   - Respiratory depression or respiratory arrest.
   - Hypotension.
   - Cardiac dysrhythmia (other than sinus tachycardia).

III. Suspected Low Cyanide Concentrations:

1. If patient has a reported oral cyanide ingestion and does not manifest signs and symptoms meeting administration criteria (high exposure), medical consultation is required for administration of hydroxocobalamin (consider simultaneous consultation with poison control and medical consultation).

ALL PROVIDER LEVELS

1. Remove the patient from the contaminated environment if safe to do so.
2. Initiate General Patient Care. Pulse oximetry monitors may give false readings in patients exposed to cyanide and/or carbon monoxide.
3. Administer humidified **Oxygen** at 100% if available. If respiratory effort is inadequate, provide ventilatory assistance with a BVM and 100% Oxygen.

4. Initiate advanced airway management if the airway cannot be managed properly utilizing BLS airway maintenance.
   - ALS providers should utilize advanced airway management with **ET intubation** and attach **$ETCO_2$** device, maintaining a level of 35-45 mmHg.
5. Establish an **IV** of Normal Saline KVO or Saline Lock. ***EMT may initiate IV access if module completed***.
6. If the patient presents with signs and symptoms of hypoperfusion, administer **Normal Saline Boluses**:

Adult	***Pediatric***
250 mL as needed to maintain or restore perfusion. Maximum total of 2000 mL.	**20 mL/kg** as needed to maintain or restore perfusion. Maximum of 3 boluses.

ADVANCED LIFE SUPPORT PROVIDERS

1. Provide **continuous EKG, and $ETCO_2$ monitoring**.
2. If the patient is exhibiting signs and symptoms of a high cyanide exposure, administer **Hydroxocobalamin (Cyanokit)**:

Adult	***Pediatric***
Initial dose is **5 gm IV** over 15 minutes. Each 2.5 gm vial of Hydroxocobalamin for injection is to be reconstituted with 100 mL of NS and administered at 10-15 mL/minute.	**70 mg/kg IV**, up to a maximum of 5 gm. Each 2.5 gm vial of Hydroxocobalamin for injection is to be reconstituted with 100 mL of NS and administered at 10-15 mL/minute.

MEDICAL CONTROL OPTIONS

1. **Dopamine infusion 5-20 mcg/kg/min** for persistent hypoperfusion.

This protocol applies to female patients that are in labor, with delivery of a newborn being imminent. The most important decision to make with a patient in labor is whether to attempt delivery in the field or transport the patient to the hospital. Factors that effect that decision include; number of previous deliveries, frequent contractions that are less than 2 minutes apart and lasting 30-45 seconds, crowning or bulging, or mother has the urge to push or move her bowels (Do not allow the patient to utilize the toilet).

ALL PROVIDER LEVELS

1. Initiate General Patient Care.
2. Administer supplemental **Oxygen** maintaining a SpO_2 >96%.
3. Place the patient supine with knees widely separated. Elevated the patients buttocks if needed.
4. Carefully assist expulsion of the newborn from the birth canal in its natural progression. Do not push or pull the newborn.
5. As the head emerges, encourage the mother not to push so that the delivery process can continue slowly and with minimal trauma to the perineal area.
6. Once the head emerges, suction the newborns mouth then nose to clear secretions.
   - If the cord is wrapped around the newborns neck, attempt to unwrap it from the neck. If unable to remove the cord, attach the 2 umbilical clamps and cut the cord between the clamps.
7. Gently guide the head downward until the upper shoulder delivers.
8. Gently guide the head upwards until the lower shoulder delivers.
9. Once delivery is accomplished, clamp the cord at 6” and 8” from the navel and cut between the clamps.
10. Dry and wrap the newborn in a blanket to preserve body temperature.
11. Record the delivery time and gender of the newborn.
12. Proceed immediately to **Newborn Resuscitation Protocol** if resuscitation is necessary.
13. Record **APGAR score** at 1 minute and at 5 minutes.
14. Ensure that the placenta is transported to the hospital with the mother and newborn if delivered prior to arrival at the hospital.

Generalized edema is usually the presenting sign and can be often noted in the patients face, hands, sacral area, lower extremities, and abdominal wall. Patient may also complain of a frontal lobe headache, blurred vision or any other visual disturbances, nausea, vomiting, irritability, difficulty breathing and hypertension.

ALL PROVIDER LEVELS

1. Initiate General Patient Care.
2. Administer supplemental **Oxygen** maintaining a SpO_2 >96%.
3. Place the patient in the left lateral recumbent position if possible.
4. During transport, dim the lights in the transport unit because bright lighting and loud noises can produce seizures in the pre-eclamptic patient.
5. Provide immediate transport to the closest appropriate facility.
6. Establish an **IV** of Normal Saline KVO or Saline Lock. ***EMT may initiate IV access if module completed***.

ADVANCED LIFE SUPPORT PROVIDERS

1. If the patient is experiencing active seizure activity, administer **Midazolam 2-5 mg IV/IN or IM**, up to a maximum dose of **5 mg**.
2. If eclampsia is suspected, administer **Magnesium Sulfate 4 gm IV infusion**. Mix 4 gm in 100 mL of Normal Saline. Utilize a 10 gtts set and run at 50 gtts/min.
3. If equipment is available, obtain and document fetal heart tones.

MEDICAL CONTROL OPTIONS

1. Contact Medical Control for further orders when necessary.

A prolapsed cord occurs when the umbilical cord presents itself outside of the uterus while the fetus is still inside. It can happen when the water breaks – with the gush of water the cord comes along. Usually, thereafter the fetus will engage and squash the cord, cutting off oxygen supplies and leading to brain damage of the fetus.

ALL PROVIDER LEVELS

1. Initiate General Patient Care.
2. Administer supplemental **Oxygen** maintaining a SpO_2 >96%.
3. Place the patient in the knee-chest position.
4. Do not attempt to push the cord back into the vagina. Wrap the cord in a saline soaked dressing.
5. Palpate the cord for a pulse. If no pulse is obtained, push the newborn's head or presenting part back into mother only far enough to regain a pulse in the umbilical cord.
6. Provide immediate transport to the closest appropriate facility while maintaining pressure on the newborn.
7. Establish an **IV** of Normal Saline KVO or Saline Lock. ***EMT may initiate IV access if module completed***.

When faced with a newborns limb as the presenting part, do not attempt delivery and transport the patient immediately to the closest appropriate facility.

ALL PROVIDER LEVELS

1. Initiate General Patient Care.
2. Administer supplemental **Oxygen** maintaining a SpO_2 >96%.
3. Place the patient supine with hips elevated.
4. Do not attempt to deliver the newborn in the pre-hospital setting.
5. Keep the patient calm and encourage her not to push during contractions.
6. Provide immediate transport to the closest appropriate facility.

When faced with a newborn patient buttock as the presenting part, let the delivery occur naturally and make certain that an open airway is accomplished until delivery is completed.

ALL PROVIDER LEVELS

1. Initiate General Patient Care.
2. Administer supplemental **Oxygen** maintaining a SpO_2 >96%.
3. Place the patient supine with knees widely separated. Elevated the patients buttocks if needed.
4. Allow the delivery to proceed normally while supporting the newborn with the palm or your hand and arm.
5. If the head is not delivered within 3 minutes, place a gloved hand in the vagina, with your palm toward the newborn's face utilizing a "V" technique with your fingers. Push the vaginal wall away from the newborns face to create a space until delivery of the head.
6. Check the cord to ensure that it is not wrapped around the newborns neck.
7. Provide immediate transport to the closest appropriate facility if there is a delay in delivery of the head.

Uterine inversion is a condition when the uterus protrudes through the vagina with the placenta still attached. This condition can produce severe hemorrhage and hypoperfusion.

ALL PROVIDER LEVELS

1. Initiate General Patient Care.
2. Administer supplemental **Oxygen** maintaining a SpO_2 >96%.
3. Place the patient supine.
4. If the placenta is still attached, do not remove it.
5. Cover any protruding tissue lightly with moist sterile dressings.
6. Establish an **IV** of Normal Saline KVO. ***EMT may initiate IV access if module completed***.
7. Administer **Normal Saline Boluses at 250 mL** as needed to maintain or restore perfusion. Maximum total of 2000 mL.

This protocol applies to female patients with unusually heavy vaginal bleeding as a result of pregnancy (abrupto placenta, placenta previa and uterine rupture), miscarriage or post-partum hemorrhage.

ALL PROVIDER LEVELS

1. Initiate General Patient Care.
2. Administer supplemental **Oxygen** maintaining a SpO_2 >96%.
3. Place the patient in the left lateral recumbent position if the patient is in the third trimester of pregnancy. If the patient is not in the third trimester and is exhibiting signs / symptoms of hypoperfusion, place the patient in the shock position.
4. In the event of active post-partum hemorrhage from the vagina, apply a firm uterine massage starting from the pubis toward the umbilicus clockwise.
5. In the event that the patient has experienced a miscarriage and the fetus is ≤20 weeks in gestation:
   - Ensure that the fetus is pulseless and apneic. If so, do not attempt resuscitative measures.
   - If there is any question as to the approximate gestation of the fetus, provide resuscitative measures.
   - If the fetus presents with spontaneous respirations and/or pulses, provide newborn resuscitative measures and transport to the closest appropriate hospital. If there is a question as to whether the fetus is viable or not, contact Medical Control for direction.
6. In the event that the patient has experienced a miscarriage and the fetus is >20 weeks in gestation:
   - Provide newborn resuscitative measures and transport to the closest appropriate hospital.
7. Establish an **IV** of Normal Saline KVO. ***EMT may initiate IV access if module completed***.
8. If the patient presents with signs and symptoms of hypoperfusion, administer **Normal Saline Boluses at 250 mL** as needed to maintain or restore perfusion. Maximum total of 2000 mL.

This protocol applies to newborn patients who do not respond to initial stimulation and resuscitative efforts. Prompt initiation of resuscitative steps is critical to the successful outcome of a neonatal resuscitation.

ALL PROVIDER LEVELS

1. Position the newborn on his/her back, with the neck in a neutral position.
2. Ensure a patent airway by gentle suctioning of the mouth then the nose utilizing a bulb syringe. If Meconium stained fluid is present, suction the patient's hypopharynx.
   - ALS providers should utilize a **Meconium Aspirator** attached to an endotracheal tube. With the assistance of a laryngoscope and blade, insert the endotracheal tube into the trachea and suction while removing the tube. **Do not perform in a newborn with a vigorous cry**.
3. Dry the infant, place on a dry blanket, cover the head and keep the infant warm.
4. Provide tactile stimulation, if the newborn is not responding to drying.
5. If the infant is ventilating adequately, administer free flow (blow-by) 100% oxygen at a minimum of 6 liters per minute close to the face. If ventilations are inadequate or if the chest fails to rise, reposition the head and neck, suction, and initiate bag-valve-mask ventilations with high flow oxygen at 40-60 breaths per minute.
6. If heart rate 60-80 and rapidly rising:
   - Continue manual ventilation and supplemental oxygen
7. If heart rate less than 60, or 60-80 and not rapidly rising:
   - Initiate CPR with bag-valve-mask ventilations with high flow oxygen.
8. Determine the 1-minute **APGAR score**. Repeat at the 5 minute interval.

Test	0 Points	1 Point	2 Points
Activity (Muscle Tone)	Absent	Arms & legs extended	Active movement with flexed arms & legs
Pulse (Heart Rate)	Absent	Below 100 bpm	Above 100 bpm
Grimace (Response Stimulation or Reflex Irritability)	No Response	Facial grimace	Sneeze, cough, pulls away
Appearance (Skin Color)	Blue-gray, pale all over	Pink body and blue extremities	Normal over entire body – Completely pink
Respiration (Breathing)	Absent	Slow, irregular	Good, crying

ADVANCED LIFE SUPPORT PROVIDERS

1. Establish an **IV/IO** of **Normal Saline** and administer 10 mL/kg if ventilation and heart rate are not improving after 3 minutes.
2. Provide **continuous EKG monitoring** and treat life threatening dysrhythmias as indicated.
3. Perform **ET Intubation** if the patient does not respond to assisted ventilations and/or CPR after 3 minutes.
4. Administer **Epinephrine 1:10,000 0.01 mg/kg IV/IO**, if the heart rate remains <80 beats per minute after assisted ventilations and/or CPR for 3 minutes.
5. For suspected narcotic (opiate) overdose, administer **Narcan 0.1 mg/kg IV/IO/ET**.

MEDICAL CONTROL OPTIONS

1. Medical Control may request that providers obtain a blood sugar. If the result is low, and transport time is still lengthy, Medical Control may request that Dextrose 10% be administered to the newborn.

This Page Intentionally Blank

This protocol applies to patients with near or complete amputations.

ALL PROVIDER LEVELS

1. Initiate General Patient Care.
2. Control bleeding with:
   - Direct pressure. Utilize a tourniquet as the last resort.
3. If c-spine injury is suspected, provide spinal immobilization.
4. Administer supplemental **Oxygen** maintaining a SpO_2 >96%.
5. Provide extremity splinting as required.
6. Care or the amputated part if recovered shall include:
   - Removing gross contaminations with saline.
   - Wrap the part in moist sterile dressings and place the part in a plastic bag or container.
   - If possible, place that bag or container into a separate bag or container with ice packs to keep the part cool. **Do not allow the part to freeze**.
7. Transport to the closest appropriate facility with trauma capabilities if the patient has abnormal vital signs, multi-system trauma or amputations of the toe or finger tip at the distal end.
8. Consider transportation to a specialty referral center for stable patients that present with the following:
   - Complete or incomplete amputation, de-gloving, crushing or de-vascularization injuries.
   - Specific injuries might include, complete or incomplete hand amputation, partial or complete proximal finger or thumb amputation at the joint that meets the hand, de-gloving, crushing or de-vascularization injuries of hand, clean cut amputation at the ankle.
   - **Ensure that the specialty referral center is notified and willing to accept the patient prior to transport**.
9. Establish an **IV** of Normal Saline KVO or Saline Lock. ***EMT may initiate IV access if module completed***.

10. If the patient presents with signs and symptoms of hypoperfusion, administer **Normal Saline Boluses**:

Adult	***Pediatric***
250 mL as needed to maintain or restore perfusion. Maximum total of 2000 mL.	**20 mL/kg** as needed to maintain or restore perfusion. Maximum of 3 boluses.

ADVANCED LIFE SUPPORT PROVIDERS

1. For pain management, administer **Morphine Sulfate**:

Adult	***Pediatric***
2 mg IV. Repeat as needed until pain is relieved or a maximum of **10 mg** is reached.	**0.1 mg/kg IV**. Repeat as needed until pain is relieved or a maximum of **5 mg** is reached. **Contact Medical Control** for patients <5yrs.

- **If the patient exhibits signs / symptoms of hypoperfusion omit Morphine Sulfate**.

MEDICAL CONTROL OPTIONS

1. Contact Medical Control for further orders when necessary.

This protocol applies to patients sustaining burns as a result of thermal or chemical components. Indications for referral to a burn center applies to patients with 2nd degree burns >10%, 3rd degree burns >1% in any patient, electrical injury (greater than 200 volts), suspected inhalation injury, or significant burns to the hands, face feet or perineum. In the event that there is associated trauma in the burned patient, transport to the closest trauma center for immediate care if unstable.

ALL PROVIDER LEVELS

1. Remove the patient from the source of injury. Decontaminate if the injury occurred as a result of a hazardous material or chemical if safe to do so.
2. Initiate General Patient Care.
3. Administer supplemental **Oxygen** maintaining a SpO_2 >96%. If respiratory effort is inadequate provide ventilatory assistance with a BVM and 100% Oxygen. If smoke inhalation is suspected, provide humidified Oxygen.
4. Remove items that may constrict swelling tissue.
5. Determine the degree and body surface area percentage burned.
6. If the burns are **≤10% body surface area**, cover with sterile dressings soaked in a saline solution.
7. If the burns are **>10% body surface area**, cover with sterile dry dressings or burn sheet. Ensure that the patient is kept covered and warm to prevent the loss of body heat.
8. Initiate advanced airway management if the airway cannot be managed properly utilizing BLS airway maintenance.
   - ALS providers should utilize advanced airway management with **ET intubation** and attach **$ETCO_2$** device, maintaining a level of 35-45 mmHg. If ET intubation cannot be accomplished due to a completely obstructed airway, perform an emergent **Needle Cricothyroidotomy**.
9. Establish an **IV** of Normal Saline KVO. ***EMT may initiate IV access if module completed***.
10. If the patient presents with signs and symptoms of hypoperfusion, administer **Normal Saline Boluses**:

Adult	***Pediatric***
250 mL as needed to maintain or restore perfusion. Maximum total of 2000 mL.	**20 mL/kg** as needed to maintain or restore perfusion. Maximum of 3 boluses.

ADVANCED LIFE SUPPORT PROVIDERS

1. Consider **continuous EKG monitoring**.
2. For pain management, administer **Morphine Sulfate**:

Adult	***Pediatric***
2 mg IV. Repeat as needed until pain is relieved or a maximum of **10 mg** is reached.	**0.1 mg/kg IV**. Repeat as needed until pain is relieved or a maximum of **5 mg** is reached. **Contact Medical Control** for patients <5yrs.

- **If the patient exhibits signs / symptoms of hypoperfusion omit Morphine Sulfate**.

MEDICAL CONTROL OPTIONS

1. Contact Medical Control for further orders when necessary.

This protocol applies to patients sustaining injury as a result of high voltage electricity (>200 volts) or lightning strikes. In addition to burns, these patients have a high probability of cardiac rhythm disturbances and penetrating trauma as a result of the electrical injury.

ALL PROVIDER LEVELS

1. Remove the patient from the source of injury, if safe to do so.
2. Initiate General Patient Care.
3. Consider spinal immobilization if the mechanism of injury exists.
4. Administer supplemental **Oxygen** maintaining a SpO_2 >96%. If respiratory effort is inadequate provide ventilatory assistance with a BVM and 100% Oxygen.
5. If the patient is in cardiac arrest, attach **AED** and analyze the rhythm. If the AED advises "shock advised" ensure that all providers are clear of the patient and depress the shock button. Reassess rhythm after 2 minutes or 5 cycles of CPR (30:2).
   - ALS providers should utilize their manual cardiac monitor / defibrillator and **defibrillate** if the patient is in a "shockable" rhythm. Immediately continue CPR post defibrillation.

Adult	***Pediatric***
360 J.	**2 J and 4 J/kg**.

   - BLS providers are to continue with "shock" and CPR therapy for the remainder of the arrest, until the rhythm is no longer "shockable" or until patient care is taken over by ALS providers.
6. Initiate advanced airway management if the airway cannot be managed properly utilizing BLS airway maintenance.
   - ALS providers should utilize advanced airway management with **ET intubation** and attach **$ETCO_2$** device, maintaining a level of 35 – 45 mmHg.
7. Establish an **IV** of Normal Saline KVO. ***EMT may initiate IV access if module completed***.

8. If the patient presents with signs and symptoms of hypoperfusion, administer **Normal Saline Boluses**:

Adult	***Pediatric***
250 mL as needed to maintain or restore perfusion. Maximum total of 2000 mL.	**20 mL/kg** as needed to maintain or restore perfusion. Maximum of 3 boluses.

ADVANCED LIFE SUPPORT PROVIDERS

1. Provide **continuous EKG and $ETCO_2$ monitoring**.

MEDICAL CONTROL OPTIONS

1. Contact Medical Control for further orders when necessary.

Compartment Syndrome (CS) is a limb- and life-threatening condition seen when perfusion pressure falls below tissue pressure in a closed anatomical space. This can lead to tissue necrosis, permanent impairment, and eventually renal failure and death. All providers should maintain a high index of suspicion when dealing with complaints of severe extremity pain. Initial symptoms of pain and burning may progress to weakness and paralysis. ***All treatment should be initiated prior to extrication***.

Consider activation of the "Go Team" for a patient involved in an unusual extrication, prolonged crush injury, or possible field amputation. This team will bring the necessary equipment needed for unusual field care.

Common mechanisms of injury leading to Compartment Syndrome are:

- Long bone fractures
- High energy trauma
- Penetrating injuries / GSW's / stab wounds
- Venous injury
- Crush injuries

ALL PROVIDER LEVELS

1. Initiate General Patient Care.
2. Administer supplemental **Oxygen** maintaining a SpO_2 >96%. If respiratory effort is inadequate provide ventilatory assistance with a BVM and 100% Oxygen.
3. Initiate advanced airway management if the airway cannot be managed properly utilizing BLS airway maintenance.
   - ALS providers should utilize advanced airway management with **ET intubation** and attach **$ETCO_2$** device, maintaining a level of 35-45 mmHg.
4. Establish at least one large bore **IV** of Normal Saline KVO. ***EMT may initiate IV access if module completed***.
5. If the patient presents with signs and symptoms of hypoperfusion, administer **Normal Saline Boluses**:

Adult	***Pediatric***
250 mL as needed to maintain or restore perfusion. Maximum total of 2000 mL.	**20 mL/kg** as needed to maintain or restore perfusion. Maximum of 3 boluses.

6. **Once extricated, do not delay transport to the closest available trauma facility.**

ADVANCED LIFE SUPPORT PROVIDERS

1. Provide **continuous EKG monitoring** and treat life threatening dysrhythmias as indicated.
2. For pain management, administer **Morphine Sulfate**:

Adult	***Pediatric***
2 mg IV until pain is relieved or a maximum of **10 mg** is reached.	**0.1 mg/kg IV**. Repeat as needed until pain is relieved or a maximum of **5 mg** is reached. **Contact Medical Control** for patients <5yrs.

- **If the patient exhibits signs / symptoms of hypoperfusion omit Morphine Sulfate**.

3. Consider **Albuterol 2.5 mg via nebulizer** to a total of 3 doses or 7.5 mg for suspected hyperkalemia.
4. Consider **Sodium Bicarbonate 1 mEq/kg IV**.
   - May be repeated at 0.5 mEq/kg after 10 minutes.

MEDICAL CONTROL OPTIONS

1. Contact Medical Control for further orders when necessary.

This protocol applies to patients with eye injuries as a result of trauma or burns (including pepper spray).

ALL PROVIDER LEVELS

1. All providers shall utilize proper PPE at all times.
2. If the injury is related to a chemical exposure:
   - Remove patient from exposure source if safe to do so.
   - Remove contact lenses if possible and transport them with the patient.
   - Irrigate the eye(s) immediately with Normal Saline for a minimum of 20 minutes utilizing IV tubing or a nasal cannula.
   - For significant eye pain, administer **2 drops of Tetracaine HCL** in the affected eye(s).
   - Determine the chemical involved. If MSDS is available transport with patient.
3. If the eye injury is related to trauma:
   - Do not irrigate or use Tetracaine HCL if penetrating trauma.
   - Cover the injured eye. Do not use a pressure or absorbent dressing on any eye that may have ruptured, or have penetrating trauma.
   - Cover both eyes to limit movement.
   - Transport the patient with head elevated at least 30°.

This protocol applies to patients injured as a result of trauma with a GCS of ≤15, penetrating injuries to the head, neck, chest, and abdomen, extremities proximal to the elbow or knee. Patients with 2 or more proximal long bone fractures flail chest, combination or trauma with burns, pelvic fractures, amputation or crush injuries proximal to the wrist or ankle and limb paralysis. Automobile crashes >40 mph with major deformity to the vehicle >20 inches, intrusion into passenger compartment >12 inches, vehicle rollover and ejection from a vehicle. When in doubt, transport the patient to the closest open trauma center for evaluation and treatment. **Transport to Children's National Medical Center (CNMC)**. **for patients <15 years of age**.

ALL PROVIDER LEVELS

1. Initiate General Patient Care.
2. Ensure that spinal immobilization is performed if the mechanism of injury warrants. This would also include penetrating injuries to the head, chest or abdomen with or without neurological deficit.
3. Administer supplemental **Oxygen** maintaining a SpO_2 >96%. If respiratory effort is inadequate provide ventilatory assistance with a BVM and 100% Oxygen.
4. Treat all life threatening injuries as soon as possible such as decompression of a tension pneumothorax (**ALS**), sealing of a sucking chest wound, stabilization of a flail chest, and stabilization of a protruding object from a head, neck, eye, chest or abdomen. Consider "load and go" option.
5. Initiate advanced airway management if the airway cannot be managed properly utilizing BLS airway maintenance.
   - ALS providers should utilize advanced airway management with **ET intubation** and attach **$ETCO_2$** device, maintaining a level of 35-45 mmHg.
6. Establish **1 or 2 IV's** of Normal Saline. ***EMT may initiate IV access if module completed***. **Do not delay transport performing IV access. Perform IV access enroute to the trauma center**.
7. If the patient presents with signs and symptoms of hypoperfusion, administer **Normal Saline Boluses**:

Adult	***Pediatric***
250 mL as needed to maintain or restore perfusion. Maximum total of 2000 mL.	**20 mL/kg** as needed to maintain or restore perfusion. Maximum of 3 boluses.

ADVANCED LIFE SUPPORT PROVIDERS

1. If a tension pneumothorax is suspected, perform a **needle decompression** of the pleural space at the 2nd intercostal space, mid-clavicular on the affected side, utilizing an appropriate size gauge angiocath or commercial device.
2. Provide **continuous EKG monitoring** if time or conditions permit.

MEDICAL CONTROL OPTIONS

1. Contact Medical Control for further orders when necessary.

This protocol applies to patients in cardiac arrest as a result of penetrating or blunt trauma. Rapid assessment, airway management, critical interventional skills (needle decompression, etc.) and immediate transport to a trauma center is essential to improve the patient's outcome. **Transport to Children's National Medical Center (CNMC) for patients <15 years of age**.

ALL PROVIDER LEVELS

1. Initiate General Patient Care.
2. Initiate immediate **CPR** with an oral airway, **BVM and 100% oxygen** (≥15 lpm) in conjunction with spinal immobilization. This will be 5 cycles of CPR:

Adult	*Pediatric*
30:2	**15:2**

   - When performing compressions, providers are to "push hard and fast" allowing the chest to fully recoil.
3. If the arrest is believed to be medical in nature, attach **AED** and analyze the rhythm. If "no shock" is advised immediately continue CPR.
   - ALS providers should utilize their manual cardiac monitor / defibrillator for all patients.
4. **Transport immediately to the closest open trauma center**.
5. Initiate advanced airway management if the airway cannot be managed properly utilizing BLS airway maintenance.
   - ALS providers should utilize advanced airway management with **ET intubation** and attach **ETCO$_2$** device, maintaining a level of 35-45 mmHg.
6. Establish **1 or 2 IV/IO's** of Normal Saline. ***EMT may initiate IV access if module completed***. **Do not delay transport performing IV access. Perform IV access enroute to the trauma center**.
   - ALS providers can initiate **IO access**.
7. Administer **Normal Saline Boluses** to treat hypovolemia:

Adult	*Pediatric*
250 mL as needed to maintain or restore perfusion. Maximum total of 2000 mL.	**20 mL/kg** as needed to maintain or restore perfusion. Maximum of 3 boluses.

ADVANCED LIFE SUPPORT PROVIDERS

1. If a tension pneumothorax is suspected, perform a **needle decompression** of the pleural space at the 2nd intercostal space, mid-clavicular on the affected side, utilizing an appropriate size gauge angiocath or commercial device.
2. Consider **bilateral needle decompressions** for patients in cardiac arrest with penetrating or blunt trauma to the chest.
3. Interpret EKG and treat dysrhythmias according to the appropriate protocol.

MEDICAL CONTROL OPTIONS

1. Consider ***Termination of Resuscitation***.
2. Contact Medical Control for further orders when necessary.

This protocol applies to pregnant patients that are 20 weeks or greater in gestation. In the event of cardiac arrest secondary to trauma, these patients do not apply to the presumed dead on arrival (PDOA) protocol, except in instances where there is apparent dependent lividity and rigor mortis. These patients must be resuscitated and transported to the nearest trauma facility in an effort to save the unborn child.

ALL PROVIDER LEVELS

1. Initiate General Patient Care.
2. Ensure that spinal immobilization is performed if the mechanism of injury warrants. This would also include penetrating injuries to the head, chest or abdomen with or without neurological deficit.
3. Administer supplemental **Oxygen** maintaining a SpO_2 >96%. If respiratory effort is inadequate provide ventilatory assistance with a BVM and 100% Oxygen.
4. Treat all life threatening injuries as soon as possible such as decompression of a tension pneumothorax (**ALS**), sealing of a sucking chest wound, stabilization of a flail chest, and stabilization of a protruding object from a head, neck, eye, chest or abdomen. Consider "load and go" option.
5. Patients should be transported on their left side, either left lateral recumbent or tilted left on a long spine board to displace the uterus off the vena cava thus enhancing venous return (Supine Hypotensive Syndrome or Vena Cava Syndrome). **In cases of cardiac arrest or when airway maintenance requires the patient to be supine, tilting shall be omitted**.
6. Initiate advanced airway management if the airway cannot be managed properly utilizing BLS airway maintenance.
   - ALS providers should utilize advanced airway management with **ET intubation** and attach **$ETCO_2$** device, maintaining a level of 35-45 mmHg.
7. Establish **1 or 2 IV/IO's** of Normal Saline. ***EMT may initiate IV access if module completed***. **Do not delay transport performing IV access. Perform IV access enroute to the trauma center**.
8. If the patient presents with signs and symptoms of hypoperfusion, administer **Normal Saline Boluses at 500 mL** intervals as required to maintain or restore perfusion. Maximum total of 2000 mL. Reassess before and after every administration.

ADVANCED LIFE SUPPORT PROVIDERS

1. If a tension pneumothorax is suspected, perform a **needle decompression** of the pleural space at the 2nd intercostal space, mid-clavicular on the affected side, utilizing a 14 gauge angiocath or commercial device.
2. Consider **bilateral needle decompressions** for patients in cardiac arrest with penetrating or blunt trauma to the chest.

MEDICAL CONTROL OPTIONS

1. Contact Medical Control for further orders when necessary.

This protocol applies to patients with a suspected brain injury due to blunt or penetrating trauma. **Transport to Children's National Medical Center (CNMC)**. **for patients <15 years of age**.

ALL PROVIDER LEVELS

1. Initiate General Patient Care.
2. Ensure that spinal immobilization is performed. If isolated TBI is suspected, attempt to keep the head of the backboard elevated to reduce intracranial swelling.
3. Administer 100% **Oxygen** maintaining a SpO_2 >96%. If respiratory effort is inadequate provide ventilatory assistance at 12 breaths per minute with a BVM and 100% Oxygen.
4. If the head injured patient has a Glasgow Coma Score of ≤8 and one or more of the following signs of brain herniation is present, hyperventilate the patient at a rate of:

Adult	***Pediatric***
20 breaths per min.	**25 breaths per min**.

   - Seizure activity.
   - Pupils that are fixed or asymmetric (unequal).
   - Abnormal flexion or extension (posturing).
   - Hypertension and bradycardia (Cushing's Syndrome).
   - Intermittent apnea (periodic breathing).
5. **Transport immediately to the closest open trauma center**.
6. Initiate advanced airway management if the airway cannot be managed properly utilizing BLS airway maintenance.
   - ALS providers should utilize advanced airway management with **ET intubation** and attach **$ETCO_2$** device, maintaining a level of 35 – 45 mmHg. **Do not perform Nasotracheal Intubation in pediatric patients or patients with maxial-facial trauma or evidence of a basilar skull injury**.
7. Establish **IV** of Normal Saline. ***EMT may initiate IV access if module completed***. **Do not delay transport performing IV access. Perform IV access enroute to the trauma center**.

8. Administer **Normal Saline Boluses**:

Adult	***Pediatric***
250 mL as needed to maintain or restore perfusion. Maximum total of 2000 mL.	**20 mL/kg** as needed to maintain or restore perfusion. Maximum of 3 boluses.

ADVANCED LIFE SUPPORT PROVIDERS

1. Provide **continuous EKG and $ETCO_2$ monitoring**.
2. If the patient is experiencing active seizure activity, administer **Midazolam (Versed)**:

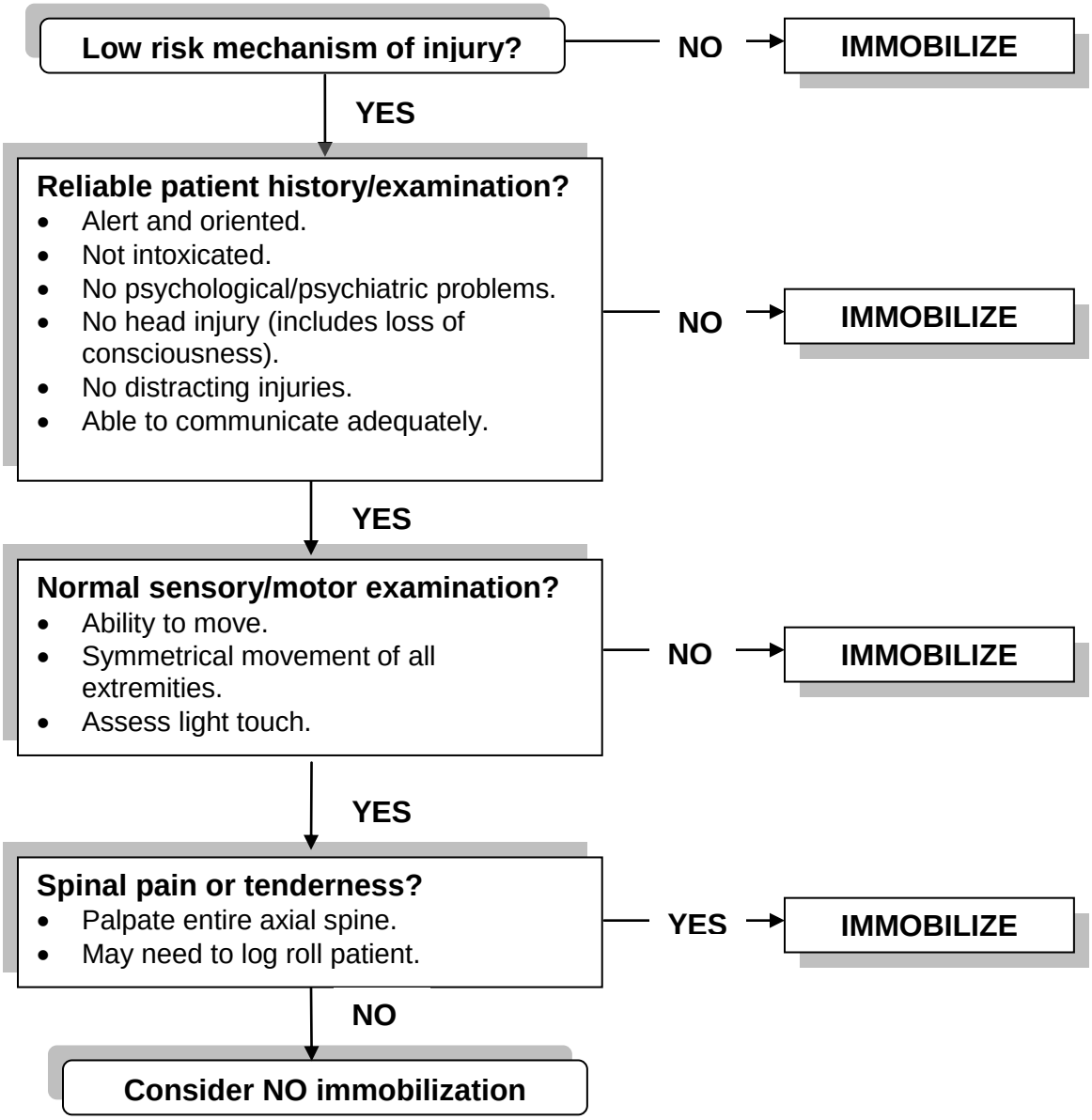
Adult	***Pediatric***
2-5 mg IV/IN, up to a maximum dose of **5 mg**.	**0.1 mg/kg IV/IN**, up to a maximum single dose of **5 mg**.

MEDICAL CONTROL OPTIONS

1. Contact Medical Control for further orders when necessary.

EMS providers may withhold spinal immobilization if the following algorithm is applied and the end-point is "Consider no immobilization." Algorithm may be applied to patients 5 years of age or older.

High mechanism of injury suggestive of spinal injury includes, but is not limited to:	
• Violent impact to the head, neck, torso, or pelvis. • Shallow-water diving incident. • Moderate to high speed motor vehicle incident. • Fall from 2 times height of the patient. • Pedestrian struck by a vehicle.	• Axial load. • Explosion. • Penetrating trauma in or near the spine. • Ejection from a vehicle. • Sports injury to the head or neck.



TRAUMA DECISION TREE ALGORITHM

Assess vital signs and LOC.

GCS <14 or Systolic BP <90 (Adult), <60 (Peds) or Respiratory Rate <10 or ≥29; <20 in Infant (under 1 year).

Pediatric Patients: Abnormal Appearance and /or Abnormal Work of Breathing and/or Abnormal Circulation.

YES → **Transport to appropriate trauma center and pre-notify.**

NO → Assess anatomy of injury.

- Flail Chest.
- Combination trauma with burns.
- Two or more proximal long-bone fractures.
- Child Abuse-Known or suspected with significant injury.
- All penetrating injuries to head, neck, torso, or extremities proximal to elbow/knee.
- Amputation proximal to wrist/ankle.
- Suspected pelvic fractures.
- Limb paralysis.
- Crush injury, degloved, or mangled.
- Neuro/vascular deficit of extremities.
- Depressed or open skull fractures.

YES → **Transport to appropriate trauma center and pre-notify.**

NO → Evaluate for evidence of mechanism of injury &/or high energy impact.

- Ejection from/off vehicle.
- Vehicle rollover with unrestrained patient.
- Death in same passenger compartment.
- Auto vs. bicyclist/pedestrian thrown, run over, or with significant (≥20mph) impact.
- Fall >3 times patient's height or ≥15 feet.
- Exposure to blast or explosion.
- Motorcycle crash ≥20 mph.

YES → **Transport to appropriate trauma center and pre-notify.**

NO → Evaluate for co-morbid & other mechanism factors.

- Age <5 or ≥55 years.
- Pregnancy ≥20 weeks.
- Bleeding disorders.
- Anticoagulants or Antiplatlets. (i.e. Coumadin or Plavix, except ASA).
- LOC reported.
- EMS Provider Judgment.
- End-Stage Renal Disease requiring dialysis.
- Extrication time ≥20 minutes.
- Intrusion into occupied passenger space ≥12 inch frontal.
- Intrusion into occupied passenger space ≥8 inch side.
- Severe cardiac and/or respiratory disease.

YES → **Consider transport to appropriate trauma center or a specific resource hospital (i.e. burns).**

NO → **Re-evaluation with medical direction and transport to the appropriate facility.**

WHEN IN DOUBT, TRANSPORT PATIENT TO APPROPRIATE TRAUMA CENTER

This Page Intentionally Blank

This protocol applies to patients exhibiting behavior that presents a danger to self and others. Careful assessment is required to determine the cause of the mental disturbance. In all cases, substance induced disorders (alcohol intoxication or drugs), organic causes (cerebral lesions), endocrine emergencies (hypoglycemia or hyperglycemia), hypoxia or trauma must be ruled out to determine if the condition is truly psychological. Excited Delirium is a condition in which a person is in a psychotic state or extremely agitated. The person's inability to process rational thought precludes normal de-escalation procedures alone. High body temperatures and instant tranquility (this is when a previously combative patient becomes quiet and docile) in these patients are key findings in predicting a high risk of sudden death in excited delirium. Ensure that the Metropolitan Police Department (MPD) is summoned to all responses involving potentially combative patients. **Violent psychiatric patients ≥15 years should not be transported to Children's National Medical Center (CNMC)**.

ALL PROVIDER LEVELS

1. Initiate General Patient Care.
2. Attempt to de-escalate verbally aggressive behavior with a calm and reassuring approach and manner. Utilize family members or friends known to the patient if is safe to do so.
3. Do not leave the patient alone unless there is a risk or harm to pre-hospital personnel or others.
4. Administer supplemental **Oxygen** maintaining a SpO_2 >96% if indicated.
5. Place the patient in a position of comfort unless combative.
6. If patient restraint is necessary to prevent harm to the patient and others, provide soft four-point restraints or handcuffs (law enforcement) and transport the patient in a supine position. **Do not transport the patient in a prone position or restrict the patient in taking full tidal volume breaths**. Circulation and motor sensory function shall be checked every 5 minutes while in physical restraints.
7. Ensure that a blood glucose reading is obtained.
8. Consider use of Comprehensive Psychiatric Emergency Program (CPEP) transport by Metropolitan Police Department (MPD) if there is an isolated behavioral problem, and no medical problems or injuries that need to be evaluated at the hospital.

ADVANCED LIFE SUPPORT PROVIDERS

1. If the patient continues to present a danger to self or others on scene due to combativeness, consider chemical sedation:
   - **Midazolam (Versed)**:

Adult	***Pediatric***
5 mg IN/IM.	**Contact Medical Control**.

OR

   - **Haloperidol (Haldol)**:

Adult	***Pediatric***
5 mg IM. Patients over the age of 65 years **2.5 mg**.	**5 mg IM** (>12 yrs) and **2 mg IM** (6-12 yrs). **Medical Direction Required**.

2. Provide **continuous EKG monitoring**.

MEDICAL CONTROL OPTIONS

1. Contact Medical Control for further orders when necessary.

This protocol addresses when field resuscitation may be discontinued. If the patient does not meet PDOA criteria, every effort should be made to resuscitate the patient. Studies have shown that rapid transport for in-hospital resuscitation after unsuccessful pre-hospital advanced cardiac life support (ACLS) rarely, if ever, results in survival to hospital discharge. These guidelines have been established to determine when terminating resuscitation in the field is appropriate. ***Medical Control contact must be made and agreed upon before resuscitation is actually terminated***.

All of the following must be met to consider "***Termination of Resuscitation***":

1. Pulseless and apneic prior to EMS arrival.
2. 18 years of age or older.
3. Patient is not visibly pregnant.
4. Adequate CPR is being performed.
5. Patient is not hypothermic due to an environmental extreme.
6. At least two rounds ACLS medications and subsequent procedures have been performed without return of spontaneous circulation (palpable pulses).
7. >20 minute resuscitation (by EMS) following appropriate pulseless protocol. Time starts when ALS provider care is initiated.
8. Successful placement of endotracheal tube or supraglottic airway (Combitube or King Airway device), confirmed by approved methods (including capnography).
9. Patent IV / IO line.
10. Patient could not have been in a perfusing rhythm at any time.
11. Patient displays none of following rhythms at any time; ventricular fibrillation, ventricular tachycardia or pulseless electrical activity (PEA) ≥20/min.
12. Patient displays no signs of neurological function.
13. If cardiac arrest is witnessed by EMS personnel, full resuscitative efforts and transport will be initiated.
14. If the patient is in law enforcement custody, full resuscitative efforts and transport will be initiated.
15. **Continue resuscitation efforts and transport the patient, if provider safety becomes an issue.**
16. **Continue resuscitation efforts and transport the patient if cardiac arrest occurs in a crowded public place, excluding nursing homes or extended care facilities.**
17. **Trauma patients should be rapidly assessed for signs of life. Resuscitation efforts may be withheld if the patient has a down time greater than 20 minutes for penetrating trauma or greater than 10 minutes for blunt trauma and must not display any of the following rhythms at anytime; ventricular fibrillation, ventricular tachycardia or pulseless electrical activity (PEA) ≥20/min.**

Once death has been determined:

1. Immediately notify law enforcement and remain on the scene until they arrive.
2. Do not remove any property or medical devices from the body for any reason (e.g. endotracheal tube/supraglottic airway, IV/IO, jewelry, etc).
3. Document time of death, and badge number of the reporting law enforcement officer.

Dealing with family and loved ones:

1. Briefly describe the circumstances leading to the death. Avoid euphemisms such as “passed on” or “no longer with us.” Instead use the terms “death”, “dying” or “dead.”
2. Allow time for questions/discussion and for the shock to be absorbed. Make eye contact and consider sharing your feelings. Use phrases such as “you have our sincere sympathy.”
3. Allow the family to see the patient. Explain that medical equipment is still attached to the patient prior to the viewing.

This protocol addresses when field resuscitation should not be initiated. Sound judgment and assessment skill must be utilized when a patient is presumed dead on arrival (PDOA). If a patient is determined to be PDOA, the Metropolitan Police Department (MPD) shall be requested to the scene to investigate and assume responsibility for the deceased person. Complete all necessary documentation and obtain the MPD Officer name and badge number on scene.

ALL PROVIDER LEVELS

1. Criteria for determining a patient presumed dead on arrival (PDOA) shall include those that are pulseless and apneic with one or more of the following:
   - Rigor Mortis.
   - Dependant Lividity.
   - Decomposition.
   - Traumatic injuries incompatible with life such as organ destruction of the brain or thoracic contents, decapitation.
   - Incineration.
   - Submersion ≥24 hours.
   - Valid out-of-hospital DNR order is present.
   - A valid licensed physician, on scene orders that resuscitation not be attempted.
2. When the patient meets any of the above criteria, EMS personnel are not required to continue resuscitation efforts initiated by others. This includes bystander or health care facility CPR.
3. If the patient is pregnant >20 weeks in gestation or hypothermic, resuscitation efforts shall be provided and transport initiated to the closest appropriate facility unless criteria is met in line 1.
4. If there is any question whether or not to resuscitate patient, resuscitation efforts should be initiated and the patient transported to the closest appropriate facility.

Any provider who is unwilling or unable to comply with a comfort care order for religious or moral reasons shall immediately notify their EMS employer in writing. Providers shall not be found to have committed an unprofessional act or to have violated any provision of the **Emergency Medical Services Non-Resuscitation Procedures Law of 2001 (D.C. Law 13-224)** because the provider resuscitates a patient.

I. Comfort Care Order

1. The Comfort Care Form is a distinctive form, sequentially numbered and printed on security paper.
2. The Comfort Care bracelet or necklace shall be made of metal.
   a. A plastic temporary bracelet and necklace may be used until the metal bracelet or necklace is received.
3. The Comfort Care Order shall include:
   a. A statement describing the specific medical or terminal condition of the patient, and the circumstances under which the patient shall not be resuscitated.
   b. The name of the patient and an ID number.
   c. The patient's signature (if not incapacitated).
   d. Signed and dated by the attending physician of the patient.
   e. Attending physician's license number and phone number.
   f. Name, signature and social security number of any authorized decision maker or surrogate.
   g. An engraving of the Comfort Care Order Number.

II. Revocation of the Comfort Care Order

1. The Comfort Care Order may be revoked at any time by the patient or authorized decision maker/surrogate by:
   a. Removing, cutting, destroying, defacing or discarding the Comfort Care bracelet or necklace.
   b. Directing another person to remove, cut, destroy, deface, or discard the Comfort Care bracelet or necklace in the presence of the patient or authorized decision maker/surrogate.
   c. Communicating directly to EMS providers the patient's or authorized decision maker/surrogate's intent to revoke the Comfort Care Order.

III. Decision to Withhold Resuscitation

1. Inspect the Comfort Care Order bracelet or necklace to see if it is intact or has been defaced. If the Order is intact, cease and withhold all resuscitation efforts.
2. If resuscitation has been initiated, order all efforts to cease after validating the CCO.
3. If resuscitation is withheld, document the DNR on the PCR.
4. Ensure the current emergency is related to the underlying terminal condition. If it is not, disregard the DNR-CCO and provide resuscitative efforts.
    a. Ex: Patient has a DNR-CCO for cancer, but is choking on food. In this case the DNR-CCO does not apply.

IV. Decision to Resuscitate

1. Resuscitate the patient if:
    a. The DNR-CCO is intact and not defaced, but the patient or authorized decision maker/surrogate orally requests that the patient be resuscitated.
    b. The DNR-CCO is not intact or has been defaced.
    c. If there is any doubt as to whether or not the DNR-CCO is intact or has been defaced.
    d. If the patient has attempted suicide, or is the victim of a homicide.
2. Notify the EMS Supervisor after the incident of any problems encountered.

V. Comfort Care Measures

1. The following interventions may be provided to a patient who is wearing a DNR-CCO that is intact and has not been defaced to provide comfort of care or alleviate pain:
    a. Clear the Airway
        i. Exclude artificial ventilation or airway adjuncts
    b. Suction as needed
    c. Provide oxygen
    d. Administer pain medication
    e. Control bleeding

f. Make comfort adjustments

VI. Reciprocity

1. All providers shall recognize a Comfort Care bracelet, necklace, or similar identifier issued by Maryland and Virginia as if issued in accordance with the **Emergency Medical Services Non-Resuscitation Procedures Law of 2001 (D.C. Law 13-224)** and shall act on the identifier in accordance with this act.

VII. Liability

1. No licensed health care professional, EMS personnel, health care facility, government entity, or government employee shall be subject to criminal or civil liability, or be found to have committed an unprofessional act because the person, in good faith, resuscitates, withholds or withdraws resuscitation, or participates in resuscitating or withholding or withdrawing resuscitation in accordance with the **Emergency Medical Services Non-Resuscitation Procedures Law of 2001 (D.C. Law 13-224).**
2. Any person who falsifies or forges a Comfort Care Order, willfully conceals or withholds personal knowledge of the revocation of a Comfort Care Order contrary to the wishes of a person who has executed a Comfort Care Order, or places a Comfort Care bracelet or necklace on a person for whom a Comfort Care Order has not been executed in accordance with the **Emergency Medical Services Non-Resuscitation Procedures Law of 2001 (D.C. Law 13-224),** and who, because of the forgery, concealment, withholding, or placement, directly causes resuscitation to be withheld or withdrawn from a person and the death of the person to be hastened shall be subject to prosecution for unlawful homicide pursuant to **DC Code § 22-2201**.

Children with special health care needs refers to children who have or are suspected of having a serious or chronic condition of: physical, developmental, behavioral, or emotional health that requires health-related services of a type or amount beyond that generally required by children. Technology-assisted children refer to those children who depend on medical devices to support bodily function. In all cases utilize the caregiver to assist or perform necessary troubleshooting measures because they are often trained in performing those functions.

Emergencies in Children with Ventilators

ALL PROVIDER LEVELS

1. Children on mechanical ventilation may exhibit sudden or gradual deterioration, cardiac arrest, increased oxygen demand, increased respiratory rate, retractions, and change in mental status.
2. Examine the child quickly for possible causes of distress which may be easily correctable (e.g. detached oxygen source) the caretakers will often have done this but double check.
3. Medications the child is presently taking may be the cause of deterioration.
4. Try to establish the child's baseline; the child may never look age appropriate.
5. If on a ventilator, remove the child from the ventilator and manually ventilate the child with a secure oxygen source; if the child improves there may be a problem with the ventilator or oxygen source.
6. Suction the child as accumulation of debris is a common cause of obstruction; if the tracheostomy tube has a cannula, remove it; if it is the cause of obstruction, there should be immediate improvement.
7. If still no improvement provide immediate transport to the closest appropriate facility.
8. Initiate appropriate resuscitation as needed.

ADVANCED LIFE SUPPORT PROVIDERS

1. If there is no improvement the tube should be removed; attempt bag-valve mask ventilation; if another tube is available insert into the stoma and resume ventilation (a standard endotracheal tube may be used or the used tracheostomy tube after being cleaned).

2. If there is no improvement, immediately transport to the nearest appropriate medical facility and initiate appropriate resuscitation as needed.

Emergencies in Children with In-Dwelling Catheters

ALL PROVIDER LEVELS

1. Children may have central lines in several locations and some complications are due to location; some central lines are located under the skin and can be felt but not seen.
2. The most common emergencies with central lines include blockage of the line, complete or partial accidental removal, or complete or partial laceration of the line.
3. Always evaluate a child for cardiovascular stability, as some complications may be life threatening.
4. Children may be experiencing complications from their underlying medical condition; ask caretakers about the child's condition.
5. If the line is blocked, do not attempt to force the catheter open. Transport to a facility capable of managing central lines.
6. For complete removal, do not attempt to reinsert; transport to the nearest emergency department.
7. Infections are a common complication; don't try to push a line back in, even if it is only slightly out.
8. For complete removal, maintain pressure on site until bleeding has stopped; transport child and catheter to nearest emergency department (part of the catheter may have broken off).
9. Always bring the line with you to the hospital.
10. For partial or complete laceration of the line, clamp proximally to laceration and transport child and catheter to the closest appropriate facility.
11. For children with sudden deterioration begin resuscitation and transport to the closest appropriate facility (child may have pneumothorax or internal bleeding).

Emergencies in Children with Gastrostomy Tubes

ALL PROVIDER LEVELS

1. Children with gastrostomy tubes may have complications of obstruction or dislodgment; obstruction is usually not an emergency but the child may require transport; dislodgment is not life threatening but the tube should be replaced as soon as possible. Both conditions are easily recognized.
2. The child should be examined for any other possible problems.
3. Children who have problems with their tubes may have problems with regurgitation or aspiration.
4. Be aware of and address any other possible problems from their underlying medical condition.
5. Transport the child and the tube to the nearest facility capable of replacing the tube; this is not an emergency transport.
   - Do not attempt to replace the tube; it is not as easy as it seems and there may be other complications.

All Fire/EMS personnel are required to report cases of suspected child / elder abuse or neglect to the Police agency responsible for the area in which the call occurred or the DC Child and family Services Agency (24 hour hotline at 202-671-7233). Do not initiate the report in front of the patient, parent, or caregiver. **DO NOT CONFRONT OR BECOME HOSTILE TO THE PARENT OR CAREGIVER**.

ALL PROVIDER LEVELS

Physical Assessment Suggestive of Abuse:

1. Fractures in children under 2 years of age.
2. Repeated fractures not explained well.
3. Injuries in various stages of healing.
4. Frequent injuries.
5. Bruises or burns in patterns (eg. iron or cigarette burns, cord marks, bite or pinch marks, and bruised to head, neck, back or buttocks).
6. Widespread injuries over the body.
7. Obvious physical neglect (malnutrition, lack of cleanliness).
8. Inappropriate dress (eg. very little clothes in winter).

History Suggestive of Abuse:

1. The history does not match with the nature or severity of injury.
2. The parents' and/or caregivers' account is vague or changes.
3. The "accident" is beyond the capabilities of the patient (eg. a 12 month old that burns self by turning on the hot water in the bath tub).
4. There is a delay in seeking help.
5. The parent and/or caregiver may be inappropriately unconcerned about the patient's injury.

Characteristics of the Abused:

1. If less that 5 years old, is likely to be passive.
2. If over 5 years of age, is likely to be aggressive.
3. Does not look to the abuser for support, comfort, or reassurance.
4. May cry without any expectation of receiving help.
5. May be quiet and withdrawn.
6. May be fearful of the abuser.

Characteristics of the Abuser:

1. Crosses all religious, ethnic, occupational, educational, and socioeconomic boundaries.
2. May resent or reject the child.
3. May have feelings of worthlessness about self or about the child.
4. May have unrealistic expectations of what the child is capable of doing.
5. May be very critical of the child.
6. Oftentimes the abuser is repeating what was learned as a child (the abuser was more than likely abused as a child).
7. May be overly defensive rather than concerned.

Presentation:

The patient may present with patterned burns or injuries suggesting intentional infliction, such as, injuries in varying stages of healing, injuries scattered over multiple areas of the body, fractures or injuries inconsistent with stated cause of injury. The patient, parent, or caregiver may respond inappropriately to the situation. Malnutrition or extreme lack of cleanliness of the patient or environment may indicate neglect. Signs of increased intracranial pressure (bulging fontanel and altered mental status in an infant may suggest Shaken Baby Syndrome) may also be seen.

Patient Management:

1. Treat and stabilize injuries according to the appropriate Patient Care Protocol(s).
2. If sexual abuse is suspected, document the reasons for concern.
3. Document the following information on the Patient Care Report (PCR):
   - All verbatim statements made by the patient, the parent or caregiver(s) shall be placed in quotation marks, including statements about how the injury may have occurred.
   - Any abnormal behavior of the patient, parent(s), or caregiver(s) must be documented.
   - Document the condition of the environment and other residents that are present.
   - Document the time MPD was notified and the name of the officer completing the report.
   - Document the name of the hospital personnel that received the patient and any statements made.
   - Document the level / type of interaction between the patient and the caregiver(s).

Type and Use of Personal Protective Equipment

- Gloves - For any patient contact, and when cleaning/disinfecting contaminated equipment. Puncture resistant gloves will be worn in situations where sharp or rough edges are likely to be encountered, i.e., auto extrication.
- Face Mask & Eye Protection - Facial protection will be used in any situation where splash contact with the face is possible. This protection may be afforded by using both a face mask and eye protection, or by using a full-face shield. When treating a patient with a suspected or known airborne transmissible disease, particulate facemasks should be used. For respiratory illnesses (TB, SARS) it is beneficial to mask the patient.
- Coverall/fluid resistant gowns - Designed to protect clothing from splashes, gowns may interfere with, or present a hazard to, the member in some circumstances. The decision to use gowns to protect clothing will be left to the member. Structural fire fighting gear also protects clothing from splashes and is preferable in fire, rescue, or vehicle extrication activities.
- Shoe/Head Coverings - Fluid barrier protection will be used if suspected contamination is possible.

General Precautions against disease

- If it's wet, it's infectious - use gloves
- If it could splash onto your face, use eye shields and mask or full face shield.
- If it's airborne, mask yourself or patient.
- If it can splash on your clothes, use a gown or structural fire fighting gear.
- If it could splash on your head or feet, use appropriate barrier protection.

Post Exposure Management

- Provide first aid.
- Secure area to prevent further contamination. (Stop bleeding with direct pressure).
- Remove contaminated clothing and flush.
- Wash the contaminated area well with soap and water, or waterless hand cleanser, and apply and antiseptic.
- If the eyes, nose, or mouth are involved, flush them well with large amounts of water.
- Notification and relief of duty. The worker's supervisor should be immediately notified if a worker experiences an exposure involving potentially infectious source material. The supervisor should determine if the worker needs to be relieved of duty.
- Report the Exposure. The worker or immediate supervisor should promptly complete an Exposure Report, appropriate for the agency, and submit it to the designated Infection Control Officer.
- Seek Medical Attention, Counseling, Consent and Testing per protocol.

Purpose:

To provide structure to the triage and treatment of persons involved in a multiple or mass casualty incident or a multiple patient scene. This guideline works in conjunction with EMS Operations Bulletin 1, *Mass Casualty Incidents*, which defines the other processes at an MCI outside patient treatment and triage. Consider contacting the DC Hospital Emergency Notification Center early in the incident for MCI's at (877) 323-4262.

Responsibility:

All personnel are responsible for the information set forth in the following procedures. During an MCI primary care givers will be overwhelmed and all additional personnel will be expected to assist in the triage and treatment of patients.

Definitions:

A multiple or mass casualty incident is an emergency scene that creates a number of patients sufficient to significantly overwhelm available resources.

Multiple Casualty Incident: <9 patients (does not need to be declared)

Mass Casualty Incident: 9 or more patients (needs to be declared)

Triage: The process of sorting and categorizing patients based on the severity of their symptoms. Patients will be categorized into the four following groups. Each group has a color designation to assist in the rapid sorting of triaged patients.

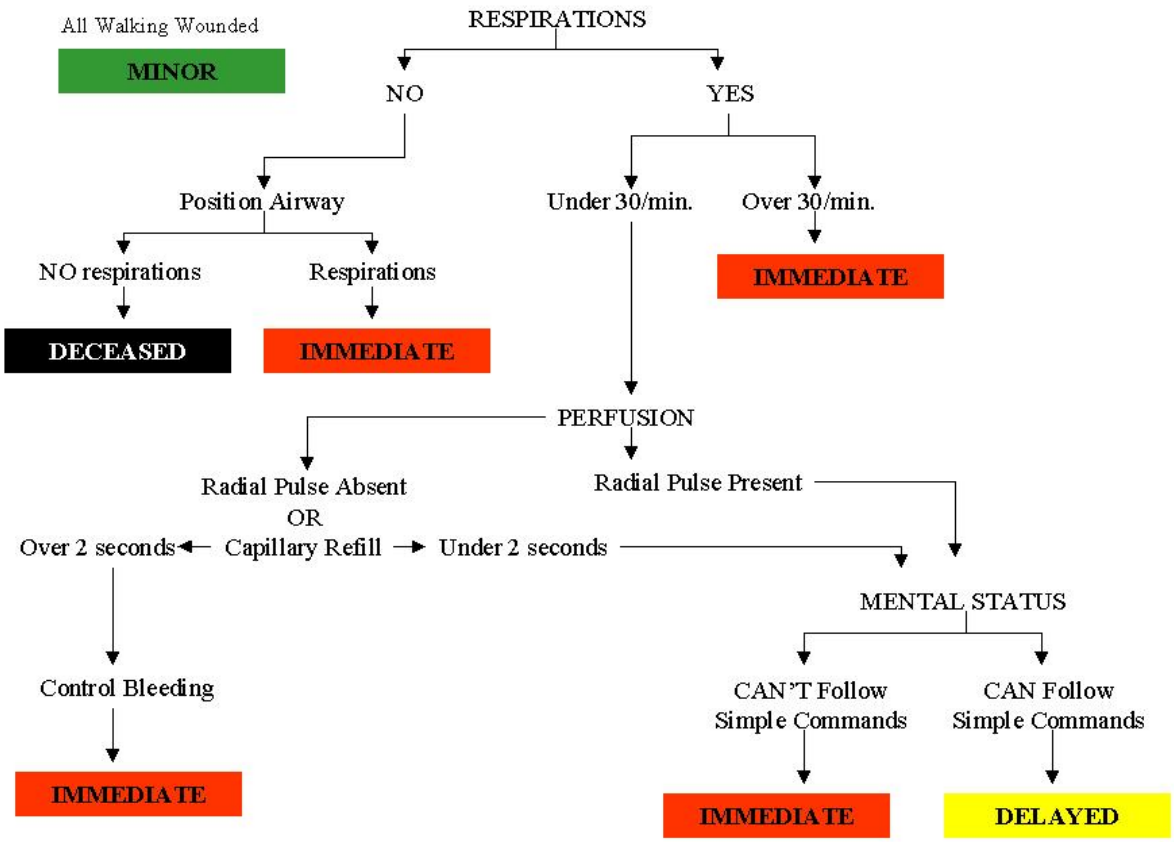
- **Red** (Immediate) – Critically injured patients who must be transported as soon as resources allow.
- **Yellow** (Delayed) – Severely injured patients who must be evaluated and treated but may not need immediate treatment.
- **Green** (Minor) – Those patients who need minor treatment or prophylactic evaluation.
- **Black** (Deceased) – Patients who are or will be deceased before appropriate treatment would be available.

Procedure:

Patients will be triaged according to START and JumpSTART triage criteria during every MCI. During primary triage, providers should spend no more than 30 seconds with each patient. Only after all patients have been triaged and staged per Command, may patients be treated on the scene. ALS providers should consider providing care at the BLS level in order to give care to as many patients as possible.

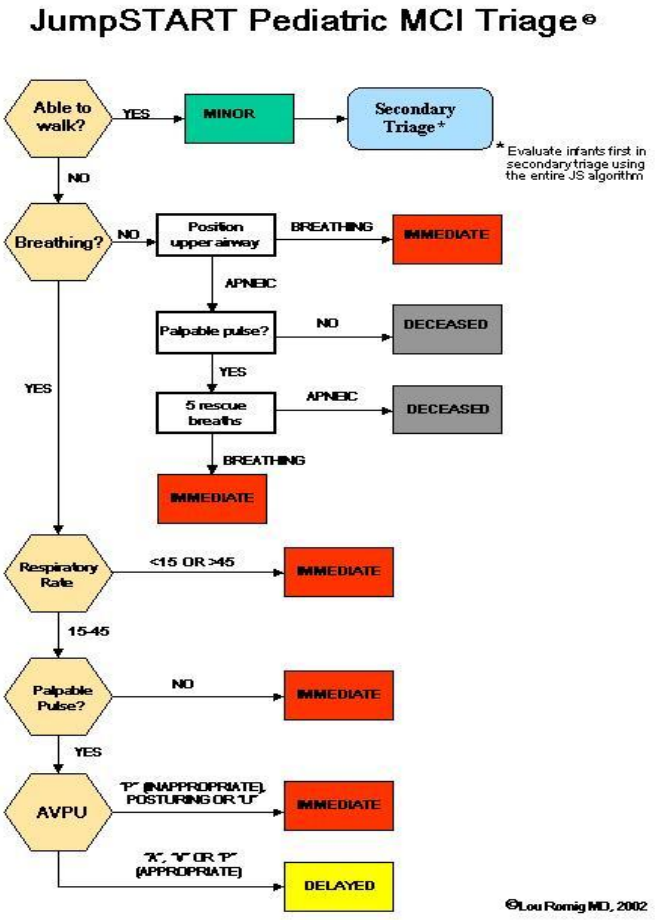
START Triage should be used for all adult patients

1. Walking wounded should be encouraged to congregate in a designated location under their own power and triaged in the **GREEN** (minor) category.
2. Patients with no respiratory effort should be triaged in the **BLACK** (deceased) category following an attempt to open the airway.
3. Patients with difficulty in respirations, perfusion or mental status as specified below should be triaged in the **RED** (immediate) category.
   - Respirations >30/min
   - Perfusion – No radial pulse or capillary refill times >2 seconds
   - Mental Status – Unable to follow simple commands
4. All patients who cannot walk, have respiratory effort, and do not meet criteria for the **RED** category should be triaged to the **YELLOW** (delayed) category.



JumpSTART Triage should be used for all pediatric patients (≤14 years old)

1. Walking wounded should be encouraged to congregate in a designated location under their own power and triaged in the **GREEN** (minor) category.
2. Patients with no respiratory effort or peripheral pulse should be triaged in the **BLACK** (deceased) category.
3. Patients with difficulty in respirations, perfusion or mental status as specified below should be triaged in the **RED** (immediate) category.
   - Respirations >45/min or <15/min
   - Perfusion – No peripheral pulse or capillary refill times >2 seconds
   - Mental Status – unresponsive or responsive to painful stimulus
4. Patients with a peripheral pulse but without respiratory effort should receive 5 ventilations then categorized as **RED** (immediate) if respiratory effort resumes or **BLACK** (deceased) if apnea continues.
5. All patients who cannot walk, have respiratory effort, and do not meet criteria for the **RED** category should be triaged to the **YELLOW** (delayed) category.



Background:
Emergency operations can place extreme demands upon personnel. These demands include physical and mental stress as well as environmental dangers such as heat, humidity, cold or wind chill. Members who are not provided adequate rest and hydration during emergency operations and training exercises are at increased risk for illness or injury, and may jeopardize the safety and integrity of the operation. Rehabilitation is an essential element for any incident to prevent more serious conditions such as heat stroke from occurring.

Guidelines:
This protocol applies to all emergency operations and training exercises where strenuous physical activity or exposure to heat or cold exists. Members will be sent to the rehab area after:

- 1 SCBA bottle and/or 45 minutes of strenuous activity
- SCBA failure
- Signs and symptoms of fatigue
    - Weakness
    - Dizziness
    - Syncope
    - Chest pain
    - Shortness of breath
    - Altered mental status
    - Nausea/Vomiting
    - Muscle Cramps
- Any chief complaint
- Discretion of the Incident Commander

Evaluation:
After the initial evaluation, members will be reassessed after 20 minute rest periods. If vital signs have not returned to normal after two 20 minute rest periods, the member should be transported to the closest appropriate facility. Have the member remove all protective gear and assess the following.

- GCS and mental status
- Pupil response
- Skin condition
- Temperature
- Lung sounds
- Vital signs
    - Blood pressure
    - Heart rate
    - Respiratory rate
    - Pulse Oximeter
    - Carbon Monoxide Oximeter
    - Blood glucose level

Vital Signs:
Members may not be returned to incident operations unless vital signs return to normal ranges.

- GCS = 15, Alert and Oriented to person/place/time/event.
- Temperature <100.6 F
- Heart Rate <120
- SpO2 >95%
- SpCO <5%
- BP >100 or <160 (systolic)
- No medical complaints or signs/symptoms.

Treatment:

1. 20 minute rest period
2. Cooling
   a. Remove from environment.
   b. Air conditioning or shaded area.
   c. Rinse with cool water.
3. Oral rehydration 1-2 quarts
   a. Water
   b. Electrolyte solution (Gatorade/Powerade)
   c. 50/50 mixture of water with electrolyte solution
   d. NO alcohol, caffeine or carbonated beverages
4. Oxygen as needed.
5. Additional 20 minute rest period.
6. Follow appropriate protocols as needed for additional medical complaints.
7. If vital signs have not returned to normal ranges, establish an **IV** and transport to the closest appropriate facility. ***EMT may initiate IV access if module completed***.
8. If the patient presents with signs and symptoms of hypoperfusion, administer **Normal Saline Boluses at 250 mL** intervals as required to maintain or restore perfusion. Maximum total of 2000 mL. Reassess before and after every administration.

Organophosphate, Pesticide and Nerve Agent Poisoning

Organophosphate and Carbamate Poisoning

Organophosphates and carbamates are widely used commercially and by consumers as insecticides for pets, homes, and businesses. These chemicals are among the most toxic currently used in pesticides. Both classes of compounds have similar pharmacological actions, in that they both inhibit the effects of acetylcholinesterase, which is an enzyme that degrades acetylcholine at nerve terminals. When acetylcholinesterase is inhibited, acetylcholine accumulates at the synapses, resulting in the characteristic S/S of organophosphate and carbamate poisoning.

Examples of Organophosphates and Carbamates:

- Malathion / Parathion / TEPP / OMPA / Dipterex / Chlorthion / Di-Syston / Co-ral / Phosdrin/ Methylparathion / Systex / EPN / Diazinon / Guthion / Trithion.

The antidote kits are to be used in incidents of exposure to a nerve agent or organophosphate material. Auto-injectors contain Atropine Sulfate and Pralidoxime Chloride. Specific criteria will trigger this medical protocol.

- The decision to utilize the antidote should be done with Medical Direction unless in a Mass Casualty incident.
- Use of the antidote kit is to be based on signs and symptoms of the patient. Suspicion or the simple presence of a nerve agent is not sufficient reason to administer these medications.
- Use of antidotes will not protect responders from anticipated exposures.

Symptoms of a Nerve Agent Poisoning

When a nerve agent is present, it interferes with the normal instructions of chemical transmitters that direct the muscle or gland to return to an unstimulated, relaxed state. The action of toxic nerve agents is to overstimulate the nerve endings and central nervous system. Overstimulation of the nervous system causes muscles and certain glands to overreact and cause predictable symptoms. The symptoms of the poisoned patient have been characterized by an acronym:

S - salivation (excessive drooling)
L - lacrimation (tearing)
U - urination (lose control of urine)
D - defecation / diarrhea
G - GI upset (cramps)
E - emesis (vomiting)
M - muscle (twitching, spasm, "bag of worms")
+
RESPIRATION - difficulty breathing / distress (short of breath, wheezing)
+

AGITATION + CNS SIGNS - confusion, agitation, seizures, coma.

Treating the Nerve Agent Poisoned Patient
The emergent treatment for a nerve agent exposure consists of a two part antidote:

1. Atropine, packaged in 2 mg injectors.
2. 2-PAM Chloride, packaged in 600 mg injectors.

Initial Treatment

Signs/Symptoms	Atropine Dose Monitor Interval	2-Pam Dose
Severe respiratory distress, agitation, SLUDGEM	3 Auto-Injectors (6 mg) Monitor every 5 minutes	3 Auto-Injectors (1.8 grams)
Respiratory distress, SLUDGEM	2 Auto-Injectors (4 mg) Monitor every 10 minutes	1 Auto-Injector (600 mg)
Asymptomatic	Monitor for signs/symptoms every 15 minutes	None

Ongoing Treatment

Signs/Symptoms	Atropine Dose Monitor Interval	2-Pam Dose	Atropine Repeat Dosing Frequency
Severe respiratory distress, agitation, SLUDGEM	1 Auto-Injector (2 mg) Monitor every 5 minutes	Up to maximum of 3 Auto-Injectors (1.8 grams)	Atropine 3-5 minutes as needed
Mild respiratory distress, SLUDGEM, no CNS or agitation	1 Auto-Injector (2 mg) Monitor every 5-15 minutes	Up to a maximum of 1 Auto-Injector (600 mg)	Atropine 5-10 minutes as needed
Asymptomatic	None Monitor every 15 minutes	None	Atropine 5-15 minutes as needed

Anthrax Poisoning
Anthrax is an acute infectious disease caused by the spore-forming bacterium Bacillus Anthracis. The serious forms of human anthrax are inhalation, cutaneous, and intestinal. Direct person-to-person spread of anthrax is extremely unlikely, if it occurs at all. There is no need to immunize or treat contacts of persons ill with anthrax.

- No treatment for household contacts
- No treatment for friends
- No treatment for coworkers, unless they also were exposed to the same source of infection

Provide supportive patient care and decontamination as needed.

Ricin Poisoning
Ricin is a very potent protein toxin made from mash left over after processing castor beans for oil. Ricin is considered a threat as a biological weapon primarily because it is widely available; it is a category B agent/disease with a high fatality. It is water-soluble, odorless, tasteless and not inactivated by heat. Ricin inhibits protein synthesis. It is very toxic to cells. The toxin may be inhaled, ingested, or in some instances directly introduced into the body as by injection. It is not transmissible person to person. Ricin should be particularly suspected when severe pulmonary distress occurs in previously healthy individuals. Signs, symptoms and pathology manifestations of ricin toxicity vary with dose and route of exposure. Symptoms may mimic pneumonia or food poisoning depending on the route of transmission:

- Fever
- Cough/congestion
- Wheezing/shortness of breath
- Nausea/vomiting/diarrhea
- Hypotension (severe cases)
- Pulmonary Edema/Failure (severe cases)

Provide supportive patient care and decontamination as needed.

Acute Radiation Syndrome
During victim prioritization, first responders can use available radiation detection equipment to determine the presence of significant amounts of contamination on an individual. The monitoring equipment may also be used to qualitatively compare the amount of contamination on one victim to the contamination on other victims. This may aid in prioritizing victims for decontamination.
At the post-decontamination monitoring point, first responders may use detection equipment to grossly assess the progress made in decontaminating victims. If operationally feasible, individuals who remain significantly contaminated following decontamination procedures should be subjected to additional decontamination. This will typically involve the victim returning to the contaminant removal/shower station for additional washing. Decontamination efforts should be reevaluated or suspended if contamination levels are not being significantly reduced.

The Environmental Protection Agency (EPA) recommends that no more than two additional decontamination attempts be performed for individuals with significant contamination remaining following the first decontamination attempt. An inability to reduce the measured radiation levels to near-background levels may suggest that the remaining contamination is internal.

Although lukewarm soapy water solution is considered ideal for most radiological decontamination scenarios, its use may not be practical or even recommended in certain cases. Unless soapy water is readily available or easy to make, it may not be practical to use it as a decontaminant. The incident commander should consider using alternative decontaminants or techniques in light of operational constraints.

Following decontamination, if practical, check each victim for remaining Contamination, using appropriate meter. If considerable contamination remains on a victim, the victim should return to the shower station for additional washing; however, decontamination efforts for that individual should be reevaluated or suspended if contamination levels are not being significantly reduced. Multiple decontamination attempts are not generally recommended, since they are usually neither practical nor warranted. After decontamination, victims can be released to the clean area for drying with clean towels, redressing with clean replacement clothing or blankets, and medical evaluation. If possible, privacy and modesty should be preserved throughout the decontamination process – from undressing to redressing.

Provide supportive patient care as needed.

Pandemic Influenza

There is a continuous stream of information regarding the approaches to an outbreak of severe viral respiratory diseases, especially Pandemic Influenza. This disease outbreak would require significant operational changes in Fire and EMS operations, in conjunction with Public Health programs. There would be a variety of programs that would allow Fire and EMS providers to receive appropriate vaccination, prophylaxis, or treatment as the threat of the disease evolves. Discussion of this topic is beyond the scope of this handbook, and would be accomplished at the time of the event in conjunction with the District's public health leaders, the Department's leadership and medical direction, and local infectious disease experts.

ALS - BLS

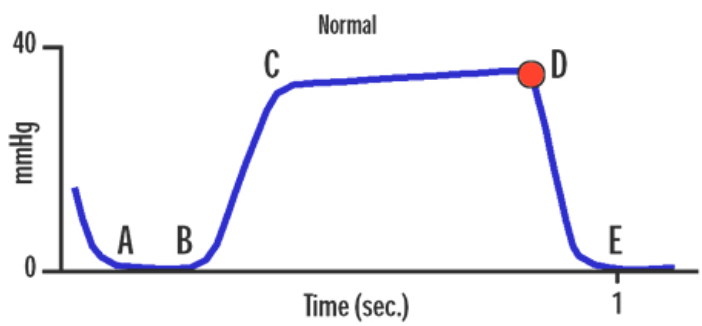
Clinical Indications:

- Capnography should be used when available with all endotracheal and nasotracheal airways, those with respiratory distress or seizures.
- Capnography should be considered for use on patients treated with CPAP, Epinephrine, Morphine and Midazolam.

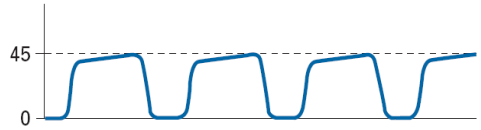
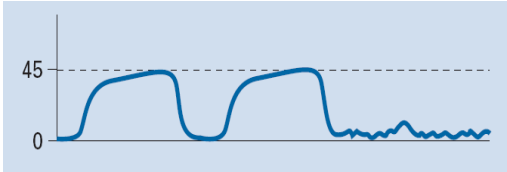
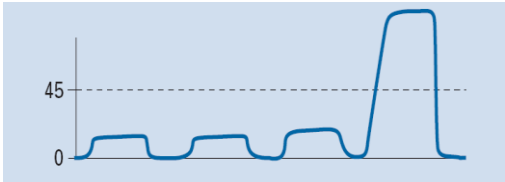
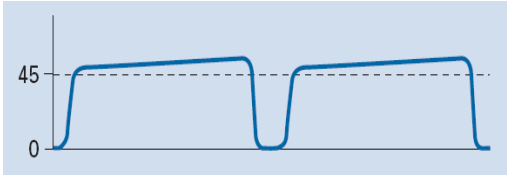
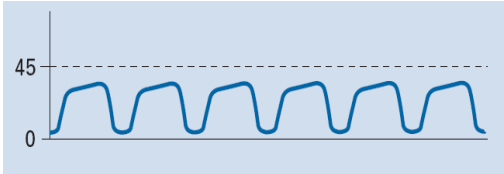
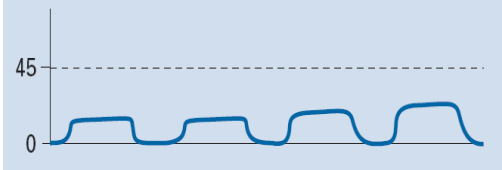
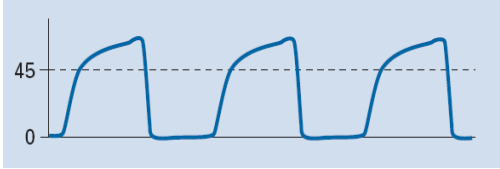
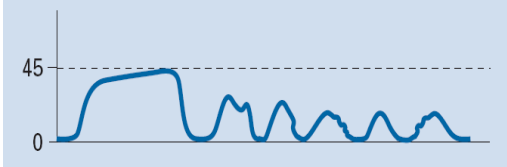
Procedure:

1. Attach capnography sensor to a patient or endotracheal tube.
2. Note CO_2 level and waveform changes. These should be documented on each respiratory failure, cardiac arrest, or respiratory distress patient.
3. The capnometer should remain in place with the airway and be monitored throughout the pre-hospital care and transport.
4. Any loss of CO_2 detection or waveform indicates an airway problem and should be documented.
5. The capnogram should be monitored as procedures are performed to verify or correct the airway problem.
6. In a perfusing patient, end-tidal CO_2 levels of 35-45 mmHg are considered normal.
7. The numerical value can aid in assessing hypoventilation (increased $EtCO_2$), or hyperventilation (decreased $EtCO_2$) in perfusing patients.
8. Hyperventilation shall be avoided in patients in cardiac arrest or those with head injuries without signs / symptoms of herniation.
9. Document the procedure and results on the patient care report (PCR).

Normal Capnogram:



Waveform Labels	
A	End of inhalation
B	Beginning of exhalation
B–D	Exhalation of alveolar gas
D	End exhalation and point of maximal or highest CO_2 concentration (end-tidal CO_2)
D–E	Inhalation

END-TIDAL CO_2 WAVEFORM / CHANGES		
	Normal $EtCO_2$	• Normal perfusion
	Loss of previous waveform with $EtCO_2$ near zero	• Endotracheal tube disconnected, dislodged, kinked or obstructed • Loss of circulatory function
	Sudden increase in $EtCO_2$	• Return of spontaneous circulation
	Slow rate with increased $EtCO_2$	• Hypoventilation • If elevated above normal levels, need for increased ventilation • Partial airway obstruction
	Rapid rate with decreased $EtCO_2$	• Effects of hyperventilation
	CPR Assessment	• Cardiac arrest • Attempt to maintain minimum of 10 mmHg
	“Sharkfin” waveform	• Asthma • COPD
	Decreasing EtCO2 with loss of plateau.	• ET tube cuff leak or deflated cuff • ET tube in the hypopharynx • Partial obstruction

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Medical Director or designee.

ALS - BLS

Utilization of Carbon Monoxide Oximeter:

- This is a noninvasive instrument used for the detection of capillary carbon monoxyhemoglobin in a patient with a pulse.

Clinical Indications:

- Carbon Monoxide Oximeter should be used on patients with smoke inhalation or inhalation of other hydrocarbon exhaust. Consider use for firefighters during incident rehabilitation.

Procedure:

- Apply finger probe to patient's finger (preferably the non-dominant ring finger, or another finger with a large clean nail.
- A reading of >12% indicates mild carbon monoxide inhalation.
- A reading of >25% indicates severe carbon monoxide inhalation.

Special Considerations:

- Pediatrics: Not intended for use on patients weighing less then 30 kg.
- Pregnancy: Fetal SpCO may be 10-15% higher than the maternal reading.
- Smokers: Heavy smokers may have a baseline SpCO level up to 10%.
- A misapplied or dislodged sensor will cause inaccurate readings.
- Never use tape to secure the sensor.
- Do not place the sensor on the thumb.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Medical Director or designee.

ALS

Clinical Indications:

- The CPAP device should be applied to patients when inadequate ventilation is suspected due to pulmonary edema (CHF), COPD, pneumonia or near drowning.
- Patient is ≥15 years of age.

Contraindications:

- Asthma.
- Respiratory Arrest / Apnea.
- Patient has a tracheotomy.
- Active vomiting or upper GI bleeding.
- Patient has a suspected pneumothorax or chest trauma.

Procedure:

1. Ensure adequate oxygen supply to ventilation device.
2. Explain the procedure to the patient.
3. Consider placement of a nasopharyngeal airway.
4. Place the delivery mask over the mouth and nose. Oxygen should be flowing at this point.
5. Secure the mask with provided straps starting with the lower straps until minimal air leak occurs.
6. Titrate device up to 10 cm H_2O in patient's ≥15 years of age (Consider lower settings for COPD patients at 5 cm H_2O).
7. Continuously evaluate the patient's response to therapy. Assess breath sounds, oxygen saturation, and general appearance of the patient.
8. Encourage the patient to allow forced ventilation to occur. Observe closely for signs of complication. The patient must be breathing for optimal use of the CPAP device.
9. Administer appropriate medications as required (nebulized albuterol for COPD or nitroglycerin for CHF).
10. If the patient begins to deteriorate due to respiratory failure, remove the CPAP device, provide BVM ventilations and assess the need for advanced airway management.
11. Document time and response on patient care report (PCR).

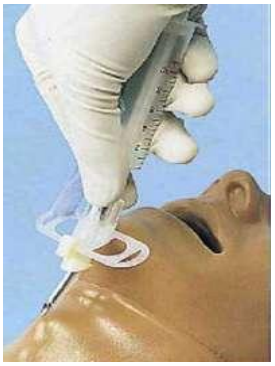
Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Medical Director or designee.

ALS

Clinical Indications:

- Adult (4.0 mm) QuickTrach: Any patient >100 pounds (45kg).
- Pediatric (2.0mm) QuickTrach: Any patient <100 pounds (45 kg) and >2 years (24 months) in age.
- Acute upper airway obstruction, which cannot be relieved using basic airway maneuvers, finger sweep, or endotracheal visualization and Magill forceps removal.
- Respiratory arrest with facial or neck injury, or abnormal anatomy, which make endotracheal intubation impossible.
- Inability to ventilate patient with a bag valve mask.



Procedure:

1. Expose the neck.
2. Identify the cricoid membrane/ligament located between the cricoid cartilage and the thyroid cartilage.
3. Prep the skin.
4. Puncture the cricothyroid membrane at a 90-degree angle with the catheter/syringe assembly.
5. Aspirate for air upon introducing the catheter/syringe.
6. Upon aspiration of air, redirect the catheter/syringe in a 45-degree angle (toward feet), and advance until the stopper meets the skin.
7. Remove the stopper.
8. Advance the catheter (not the needle) until the flange rests on the skin.
9. Remove the needle-syringe assembly.
10. Apply the strap.
11. Attach the connecting tube to the 15 mm adaptor.
12. Attach a bag valve mask (BVM) to the other end of the connecting tube.
13. Ventilate the patient using the BVM.
14. Auscultate for bilaterally equal breath sounds.
15. Document the procedure and results on the patient care report (PCR).

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Medical Director or designee.

ALS

Clinical Indications:

- Apnea.
- Inability to maintain a patent airway by other means.
- Need to prevent aspiration.
- Impending compromise of airway.
- Closed head injury (GCS<9) requiring assisted ventilation.
- Inability to maintain adequate oxygenation by other means.
- Patient ≥15 years of age.

Procedure:

1. Determine the need for drug assisted intubation.
2. Pre-Oxygenate with 100% supplemental oxygen.
   - NRB – For patients with adequate respiratory rate/effort.
   - BVM – For patients requiring ventilatory support.
3. Monitor EKG, pulse oximetry, and vital signs.
4. Obtain IV access.
5. Pre-Medication.
   - Administer sedative: **Midazolam (Versed) 2-5 mg slow IVP**. May repeat dose in increments of 2-5 mg to a maximum total of 10 mg to achieve adequate sedation.
   - For patients with head injuries, administer **Lidocaine 100 mg IV** at least 90 seconds prior to intubation attempt.
6. Perform Sellick maneuver as the patient becomes more sedated.
7. Perform orotracheal intubation.
8. Confirm tube placement with $ETCO_2$ detector, lung sounds and symmetric chest rise.
9. Secure the endotracheal tube.
10. Administer additional sedatives as needed (**Medical Control required**).
11. Document the procedure and results on the patient care report (PCR).

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Medical Director or designee.

ALS - BLS

Clinical Indications:

- Following unsuccessful endotracheal intubation:
  - Endotracheal intubation provides a definitive airway. Every attempt should be made to secure an airway with an endotracheal tube. Following two (2) unsuccessful attempts to place an endotracheal tube, or if it appears additional endotracheal intubation attempts would be unsuccessful, use of the King Airway should be considered.
- The King Airway may be considered the initial airway of choice in the cardiac arrest patient.

Contraindications:

- Patients who are conscious or who have an intact gag reflex.
- Patients under three (3) feet in height.
- Patients with known esophageal disease (varices, alcoholism, cirrhosis etc.) or ingestion of caustic substances.

Size Chart:

Product	Patient Height	Size	Color	Cuff Volume
LT-D	35 to 45 inches	2	Green	25-35 mL
LT-D	41-51 inches	2.5	Orange	30-40 mL
LT-D	4 to 5 feet	3	Yellow	45-60 mL
LT-D	5 to 6 feet	4	Red	60-80 mL
LT-D	Over 6 feet	5	Purple	70-90 mL

Procedure:

1. Body Substance Isolation (BSI).
2. Attach pulse oximeter and/or $EtCO_2$ to monitor oxygen saturation and/or CO_2 readings.
3. Choose the correct KING LT-D size, based on patient height.
4. Test cuff inflation system by injecting the maximum volume of air into the cuffs. Remove all air from both cuffs prior to insertion.
5. Apply a water-based lubricant to the beveled distal tip and posterior aspect of the tube, taking care to avoid introduction of lubricant in or near the ventilatory openings.
6. Pre-oxygenate patient with 100% oxygen for at least 1 minute.
7. Position the head. The ideal head position for insertion of the KING LT-D is the "sniffing position". However, the angle and shortness of the tube also allows it to be inserted with the head in a neutral position.
8. Hold the KING LT-D at the connector with dominant hand. With non-dominant hand, hold mouth open and apply chin lift.

9. With the KING LT-D rotated laterally 45-90º such that the blue orientation line is touching the corner of the mouth, introduce tip into mouth and advance behind base of tongue. Never force the tube into position.
10. As tube tip passes under tongue, rotate tube back to midline (blue orientation line faces chin).
11. Without exerting excessive force, advance KING LT-D until proximal opening of gastric access lumen is aligned with teeth or gums.
12. With a syringe inflate the KING LT-D; inflate cuffs with the minimum volume necessary to seal the airway at the peak ventilatory pressure employed (just seal volume).
13. Attach the BVM to the 15 mm connector of the KING LT-D. While gently bagging the patient to assess ventilation, simultaneously withdraw the airway until ventilation is easy and free flowing (large tidal volume with minimal airway pressure).
14. Depth markings are provided at the proximal end of the KING LT-D which refers to the distance from the distal ventilatory openings. When properly placed with the distal tip and cuff in the upper esophagus and the ventilatory openings aligned with the opening to the larynx, the depth markings give an indication of the distance, in cm, from the vocal cords to the upper teeth.
15. Attach ITD (unless contraindicated by the patient with spontaneous pulses) directly to the King Airway.
16. Attach $EtCO_2$ monitoring device to adaptor and follow guidelines for its use.
17. Confirm proper position by auscultation, chest movement and verification of $EtCO_2$ by capnography. **Note: Do not let go of the King Airway until secured.**
18. Secure the KING LT-D to patient using tape or an approved commercial device.
19. Document the procedure and results on the patient care report (PCR).

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Medical Director or designee.

ALS

Clinical Indications:

- Non-vigorous Neonatal patients with thick meconium stained amniotic fluid.

NOTE: **If the newborn is vigorous, suction with a bulb syringe, do not intubate. If thick meconium stained amniotic fluid is present, do not stimulate the infant to breathe. Use appropriate aspiration adapter**.

Procedure:

1. Intubate immediately with appropriate size endotracheal tube.
2. Connect endotracheal tube to meconium aspiration adapter and to suction.
3. Withdraw endotracheal tube while suctioning.
4. If the endotracheal tube is filled with meconium, re-intubate with a new endotracheal tube and suction again until clear.
5. Resume Neonatal Resuscitation protocol.
6. If intubating and suctioning takes longer than 90 seconds or heart rate <80, initiate BVM with oxygen therapy.
7. Document the procedure and results on the patient care report (PCR).

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Medical Director or designee.

ALS

Clinical Indications:

- CNS trauma.
- Rigidity or hypoxia from seizures (e.g. "clenched teeth").
- Poisonings.
- Metabolic disturbance.
- Patients with severe respiratory distress.

Contraindications:

- Non-breathing or near apneic patient.
- Known or likely fracture/instability of mid-face secondary to trauma.
- Suspected basilar skull fracture.
- Children <15 years of age.
- Relative contraindications:
  - Blood clotting abnormalities.
  - Nasal Polyps.
  - Upper neck hematomas or infections.

Procedure:

1. Prepare, position and oxygenate the patient with 100% Oxygen.
2. Choose proper ET tube about 1 mm less than for oral intubation.
3. For patients with suspected intracranial pressure, administer **Lidocaine 1 mg/kg IV/IO**.
4. Lubricate ET tube generously with water-soluble lubricant such as Lidocaine Jelly.
5. Pass the tube in the largest nostril with the beveled edge against the nasal septum and perpendicular to the facial plate.
6. Use forward and lateral back and forth rotational motion to advance the tube. **Never force the tube**.
7. Continue to advance the tube noting air movement through it; use the BAAM whistle to assist you.
8. Apply firm, gentle cricoid pressure and advance the tube quickly past the vocal cords during inspiration.
9. Inflate the cuff with 5-10 mL of air and secure the tube to the patient's face.
10. Auscultate for bilaterally equal breath sounds and absence of sounds over the epigastrium. If you are unsure of placement, remove tube and ventilate patient with bag valve mask.
11. Check placement by $EtCO_2$ monitor and record readings at the scene, enroute to the hospital, and at the hospital.
12. Reassess airway and breath sounds after transfer to the stretcher and during transport. These tubes are easily dislodged and require close monitoring and frequent reassessment.
13. Document the procedure and results on the patient care report (PCR).

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Medical Director or designee.

ALS

Clinical Indications:

- Patients with hypotension, clinical signs of shock, and at least one or more of the following signs:
  - Jugular vein distention.
  - Tracheal deviation away from the side of the injury (often a late sign and difficult to see).
  - Absent or decreased breath sounds on the affected side.
  - Hyper-resonance to percussion on the affected side.
  - Increased resistance when ventilating a patient.
- Patients in traumatic arrest with chest trauma for whom resuscitation is indicated. These patients may require bilateral chest decompression even in the absence of the signs above.

Procedure:

1. Don personal protective equipment (gloves, eye protection, etc.).
2. Administer high flow oxygen.
3. Identify and prep the site:
   - Locate the second intercostals space in the mid-clavicular line on the same side as the pneumothorax.
   - Prepare the site with alcohol or betadine solution. **NOTE: If unable to place anteriorly, lateral placement may be used at the fourth ICS midaxillary line**.
4. Insert the catheter into the skin over the third rib and direct it just over the top of the rib (superior border) into the pleura space.
5. Advance the catheter through the parietal pleura until a “pop” is felt and air or blood exits under pressure through the catheter, then advance catheter only to chest wall.
6. Remove the needle, leaving the plastic catheter in place.
7. Secure the catheter hub to the chest wall with dressings and tape.
8. Consider placing a finger cut from an exam glove over the catheter hub. Cut a small hole in the end of the finger to make a flutter valve. Secure the glove finger with tape or a rubber band. **NOTE: do not waste time preparing the flutter valve; if necessary control the air flow through the catheter hub with your gloved thumb**.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Medical Director or designee.

ALS

Clinical Indications:

- Cardiac arrest.
- Respiratory arrest.
- Hypoxic or obtunded patients.
- Patients with possible increasing ICP.

Contraindications:

- Presence of gag reflex.
- Clinched teeth.

Procedure:

1. Prepare, position and oxygenate the patient with 100% Oxygen.
2. Select proper endotracheal tube (and stylette, if used), have suction ready.
   - Pediatric - Refer to Broselow™ tape.
3. Using laryngoscope, visualize vocal cords. (Use Sellick maneuver to assist you).
4. Limit each intubation attempt to 30 seconds with BVM between attempts.
5. Visualize tube passing through vocal cords.
6. Inflate the cuff with 5-10 mL of air and secure the tube to the patient's face.
7. Auscultate for bilaterally equal breath sounds and absence of sounds over the epigastrium. If you are unsure of placement, remove tube and ventilate patient with bag valve mask.
8. Consider using an alternate airway device if endotracheal intubation efforts are unsuccessful.
9. Apply $EtCO_2$ monitor and record readings on scene, enroute to the hospital, and at the hospital.
10. Document endotracheal tube size, time, results, and placement location by the centimeter marks either at the patient's teeth or lips on the patient care report (PCR). Document all devices used to confirm initial tube placement.
11. Consider placing an orogastric tube to clear stomach contents after the airway is secured with an ET tube.
12. Document the procedure and results on the patient care report (PCR).

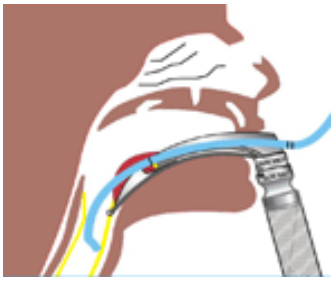
Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Medical Director or designee.

ALS

Clinical Indications:

- Difficult intubation with a restricted view of the glottic opening. This may occur due to:
  - Short, thick (bull) neck.
  - Pregnancy.
  - Laryngeal edema (anaphylaxis, burns).
  - Normal anatomical variation.
  - Supra-glottic neoplasms (tumors above the glottic opening).
  - Inability to position patient appropriately (e.g. entrapment, confined space).



Contraindications:

- Pediatric patients under the age of 14.

Procedure:

- Hyperventilate the patient with 100% oxygen for at least one minute prior to each intubation attempt. Note, however, that this step should be omitted when ventilation (demonstrated by rise and fall of the chest) proves impossible.
- Prepare the ET tube and other intubation equipment (minimum 6.0 mm ET tube).
- Curve the bougie and ensure the distal tip is formed into a “J” shape;
- Perform a laryngoscopy, obtaining the best possible view of the glottic opening.
- Advance the bougie, continually observing its distal tip, with the concavity facing anteriorly;
- Visualize the tip of the bougie passing the vocal cords.
- Once the tip of the bougie has passed the epiglottis, continue to advance it in the mid-line so that it passes behind the epiglottis but in an anterior direction.
- As the tip of the bougie enters the glottic opening you will either feel ‘clicks’ as it passes over the tracheal rings or the tip will arrest against the wall of the airways (‘hold-up’). This suggests correct insertion, although cannot be relied upon to indicate correct positioning with 100% accuracy. **HOWEVER, *FAILURE* TO ELICIT CLICKS OR HOLD-UP IS INDICATIVE OF ESOPHAGEAL PLACEMENT**. If hold-up is felt, the bougie should then be withdrawn approximately 5 cm to avoid the ET tube impacting against the carina.

- Hold the bougie firmly in place and **MAINTAIN LARYNGOSCOPY**.
  - Instruct your colleague to pass the endotracheal tube over the proximal end of the bougie.
  - As the proximal tip of the bougie is re-exposed, the assistant should carefully grasp it, assuming control of the bougie and passing control of the ET tube to the intubator.
  - The ET tube should then be carefully advanced ('rail-roaded') along the bougie and hence through the glottic opening, taking care to avoid movement of the bougie.
  - **SUCCESSFUL INTUBATION MAY BE CONSIDERABLY ENHANCED BY ROTATING THE ET TUBE 90º, SO THAT THE BEVEL FACES POSTERIORLY**. In so doing the bougie may also rotate along the same plane but should not be allowed to move up or down the trachea.
- Once the ET tube is fully in place hold it securely as your colleague withdraws the bougie.
- Withdraw the laryngoscope.
- Inflate the cuff. Then verify correct positioning of the ET tube using auscultation of the lung fields and epigastrium and observing for chest wall movement.
- Secure the ET tube. The tip of the ET tube can move up to 6.0 cm once placed and this is certainly sufficient to dislodge it from the trachea.
- Document the procedure and results on the patient care report (PCR).

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Medical Director or designee.

ALS - BLS

Backround:

Pulse Oximeters are noninvasive instruments used for the detection of arterial oxyhemoglobin. Each hemoglobin (Hgb) molecule can carry up to 4 oxygen molecules. A Hgb molecule carrying 4 oxygen molecules is "fully saturated." A Hgb molecule carrying less than 4 oxygen molecules is "unsaturated." Pulse oximetry measures the concentration of bound Hgb. It does not measure oxygen concentration.

Clinical Indications:

- Include SpO2 as a vital sign.
- All patients who require oxygen.
- All patients requiring EKG monitoring.
- All patients with respiratory, cardiovascular or neurological complaints.
- All patients with abnormal vital signs.
- All patients who receive respiratory depressants (Morphine, Diazepam, Midazolam).
- Critical trauma patients.

Procedure:

1. Apply probe to index finger or thumb.
2. A normal SpO2 on room air is 96-100%.
3. Moderate hypoxemia is characterized by values <90%.
4. Severe hypoxemia is characterized by values <80%.
5. Document the results on the patient care report (PCR).

Special Considerations:

The following circumstances may result in low/absent SpO2 readings:

- Motion at the sensor site.
- Hypoperfusion
- Cold temperature.
- Edema.
- Anemia.
- Carbon monoxide poisoning.
- Methemoglobinemia.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Medical Director or designee.

ALS - BLS

Background:
Tracheostomy patients with an In-Dwelling Tube or Stoma.

- Most patients with a permanent tracheostomy (with tube or stoma) can adequately breathe through the opening.
- Some of these patients have complete surgical reconstruction of the airway and breathe only through the tube or stoma, while other patients may have the opening to the mouth and can breathe through the tracheostomy tube, stoma, nose, or mouth.
- If air escaping is felt or heard at the nose or mouth when ventilating a partial neck breather, the nose and mouth must be sealed (pinching the nose closed and closing the mouth using a jaw lift) prior to ventilating the patient.
- Tracheostomy patients requiring ventilatory assistance require specialized techniques be employed in order to be properly ventilated.
  - EMS personnel must identify the tracheostomy site and tube (if present).
  - Check the tracheostomy tube or stoma for any blockage.
  - Look, listen, and feel for breathing at the tube or stoma site.
  - Assess for breathing and adequacy of respirations.

Clinical Indications:

- Respiratory arrest.
- Cardiac arrest.
- Hypoventilation.
- Severe respiratory distress due to an obstructed tracheostomy tube.

Procedures:
If a tracheostomy tube has the standard 15 mm adapter and the patient can be ventilated through the tube:

1. Attach a BVM to the adapter.
2. Ventilate with a bag-valve mask and 100% oxygen.
3. Assess for adequacy of ventilations and check for leaks.
4. If the tube is cuffed, inflate the cuff until there is no air leak.

If the patient cannot be ventilated through the tube:

1. Visually inspect the tube and tracheostomy for any obstructing material and remove if possible.
2. Attempt to ventilate with 2 breaths.
3. If successful, continue to ventilate as required.

If there is no obvious obstructing material and the patient cannot be ventilated:

1. Suction the airway and attempt to ventilate with 2 breaths.
2. If successful, continue to ventilate as required.

If the patient still cannot be ventilated:
BLS Providers should:
1. Remove the tube carefully.
2. Suction the stoma.
3. Place a pediatric sized mask over the stoma site.
4. Ventilate with a bag-valve mask and 100% oxygen.
5. Load and go should be initiated as soon as possible.
6. On scene times should be kept to a minimum.
7. Treat other life-threatening conditions en route.
8. Transport the patient to the nearest appropriate health care facility.
9. Notify the receiving health care facility of the patient's status as soon as possible.
10. Monitor and treat the patient en route.

ALS Providers should:
1. Remove the tube carefully.
2. Place a pediatric mask over the stoma site.
3. Ventilate with a bag-valve mask and 100% oxygen.
4. Choose the appropriate sized endotracheal tube.
5. Insert the tube into the stoma until the cuff is just inside the stoma (cuffed tubes only).
6. Inflate the cuff and check for air leaks.
7. Ventilate the patient checking for chest rise and fall.
8. Auscultate lung sounds for equal bilateral breath sounds and no sounds over the epigastrium.

If a tracheostomy tube is not present (i.e. a stoma):
1. Place a pediatric mask over the stoma site.
2. Ventilate with an appropriately sized bag-valve mask and 100% oxygen.
3. Suctioning can be done through the tracheostomy tube or stoma.
4. Care must be taken to insert the suction catheter no more than 5 cm (2 inches) beyond the lower edge of the opening.

Certification Requirements:
- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Medical Director or designee.

ALS - BLS

Clinical Indications:

- Patients in cardiac arrest (pulseless, apneic).
- Age 1 to 8 years, use reduced energy Pediatric Pads.

Contraindications:

- Traumatic cardiac arrest.
- Patients with a fully obstructed airway.
- Hazardous environments.

Procedure:

1. If multiple rescuers available, one rescuer should provide uninterrupted chest compressions while the AED is being prepared for use.
2. Apply defibrillator pads per manufacturer recommendations. Use alternate placement when implanted devices (pacemakers, AICDs) occupy preferred pad positions.
3. Remove any medication patches on the chest and wipe off any residue.
4. Activate AED for analysis of rhythm.
5. Stop CPR and clear the patient for rhythm analysis. Keep interruption in CPR as brief as possible.
6. Defibrillate if appropriate by depressing the “shock” button. Assertively state “CLEAR” and visualize that no one, including yourself, is in contact with the patient prior to defibrillation. The sequence of defibrillation charges is preprogrammed for monophasic defibrillators. Biphasic defibrillators will determine the correct joules accordingly.
7. Begin CPR (chest compressions and ventilations) immediately after the delivery of the defibrillation.
8. After 2 minutes of CPR, analyze rhythm and defibrillate if indicated. Repeat this step every 2 minutes.
9. If “no shock advised” appears, perform CPR for 2 minutes and then re-analyze.
10. Transport and continue treatment as indicated.
11. Keep interruption of CPR compressions as brief as possible. Adequate CPR is a key to successful resuscitation. If a spontaneous pulse returns: See return of spontaneous circulation protocol (ROSC).
12. Document the procedure and results on the patient care report (PCR).

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Medical Director of designee.

ALS

Clinical Indications:

- Cardiac arrest with ventricular fibrillation or pulseless ventricular tachycardia.

Procedure:

1. Ensure chest compressions are adequate and interrupted only when necessary.
2. Clinically confirm the diagnosis of cardiac arrest and identify the need for defibrillation.
3. Apply hands free pads to the patient's chest in the proper position (Anterior - Lateral or Anterior-Posterior position).
4. Set the appropriate energy level.
5. Charge the defibrillator to the selected energy level. Continue chest compressions while the defibrillator is charging.
6. Hold compressions, assertively state, "CLEAR" and visualize that no one, including yourself, is in contact with the patient.
7. Deliver the desired energy by depressing the shock button for hands free operation.
8. Immediately resume chest compressions and ventilations for 2 minutes. After 2 minutes of CPR, analyze rhythm and check for pulse only if appropriate for rhythm.
9. Repeat the procedure every two minutes as indicated by patient response and EKG rhythm.
10. Keep interruption of CPR compressions as brief as possible. Adequate CPR is a key to successful resuscitation.
11. Document the procedure and results on the patient care report (PCR).

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Medical Director or designee.

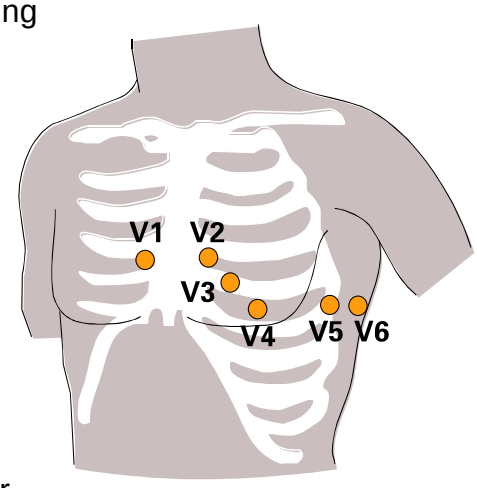
ALS

Clinical Indications:

- Suspected cardiac event.
- Suspected tricyclic overdose.
- Electrical injuries.
- Syncope.
- CHF.

Procedure:

1. Assess patient and monitor cardiac status.
2. If patient is unstable, definitive treatment is the priority. If patient is stable or stabilized after treatment, perform a 12 Lead EKG.
3. Prepare EKG monitor and connect patient cable with electrodes.
4. Expose chest and prep as necessary. Modesty of the patient should be respected.
5. Apply chest leads and extremity leads using the following landmarks:
   - RA -Right arm.
   - LA -Left arm.
   - RL -Right leg.
   - LL -Left leg.
   - V1 -4th intercostal space at right sternal border.
   - V2 -4th intercostal space at left sternal border.
   - V3 -Directly between V2 and V4.
   - V4 -5th intercostal space at left mid-clavicular line.
   - V5 -Level with V4 at left anterior axillary line.
   - V6 -Level with V5 at left mid-axillary line.



6. When performing a right sided EKG in patients with a suspected inferior wall MI with possible right ventricular involvement (RVI):
   - V4R - 5th intercostal space at right mid-clavicular line.
7. Instruct patient to remain still.
8. Press the appropriate button to acquire the 12 Lead EKG.
9. Interpret the EKG and if STEMI is suspected, transmit the EKG to an interventional cardiology facility if possible.
10. Document the procedure, time, and interpretation on the patient care report (PCR).

Wall affected	Leads	Artery(s) involved	Reciprocal changes
Anterior	$V_2 – V_4$	Left coronary artery, Left anterior descending (LAD)	II, III, AVF
Anterolateral	I, AVL, $V_3 – V_6$	Left anterior descending (LAD) and diagonal branches, circumflex and marginal branches	II, III, AVF
Anteroseptal	$V_1 – V_4$	Left anterior descending (LAD)	
Inferior	II, III, AVF	Right coronary artery (RCA)	I, AVL
Lateral	I, AVL, V_5, V_6	Circumflex branch or left coronary artery	II, III, AVF
Posterior	V_8, V_9	Right coronary artery (RCA) or circumflex artery	$V_1 – V_4$ ST segment depression (R > S in V_1 and V_2).
Right ventricular	V_4R	Right coronary artery (RCA)	-----

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Medical Director or designee.

ALS

Clinical Indications:

- Unstable patient with a tachydysrhythmia (rapid atrial fibrillation, supraventricular tachycardia or ventricular tachycardia).
- Patient is not pulseless (the pulseless patient requires unsynchronized cardioversion, i.e. defibrillation).

Procedure:

1. Ensure the patient is attached properly to a monitor/defibrillator capable of synchronized cardioversion.
2. Have all equipment prepared for unsynchronized cardioversion/defibrillation if the patient fails synchronized cardioversion and the condition worsens.
3. Consider the use of pain or sedating medications.
4. Set energy selection to the appropriate setting.
5. Set monitor/defibrillator to synchronized cardioversion mode.
6. Make certain all personnel are clear of patient.
7. Press and hold the shock button to cardiovert. Stay clear of the patient until you are certain the energy has been delivered. **NOTE: It may take the monitor/defibrillator several cardiac cycles to "synchronize", so there may a delay between activating the cardioversion and the actual delivery of energy**.
8. Note patient response and perform immediate unsynchronized cardioversion/defibrillation if the patient's rhythm has deteriorated into pulseless ventricular tachycardia/ventricular fibrillation, following the procedure for Defibrillation-Manual.
9. If the patient's condition is unchanged, repeat steps 4 to 8 above, using escalating energy settings.
10. Document the procedure, response, and time on the patient care report (PCR).

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Medical Director or designee.

ALS

Clinical Indications:

- Monitored heart rate less than 60 per minute with signs and symptoms of inadequate cerebral or cardiac perfusion such as:
  - o Chest pain.
  - o Hypotension.
  - o Pulmonary edema.
  - o AMS, disorientation, confusion, etc.
  - o Ventricular ectopy.
- Witnessed Asystole, pacing must be done early to be effective.

Procedure:

1. Attach standard four-lead monitor.
2. Apply defibrillation/pacing pads:
   - Anterior / Posterior: Anterior electrode on left precordium below the left nipple. Avoid placing on the nipple. Posterior electrode below left scapula, lateral to spine at heart level.
   - Anterior / Lateral: Lateral (apex) electrode lateral to left nipple with the center of the electrode on the midaxillary line. Anterior electrode below the right clavicle lateral to sternum.
3. Press pacer button and observe for sensor markers on each QRS complex.
4. Press rate or slowly rotate selector knob and adjust rate to 80 BPM for the adult patient and 100 BPM for the pediatric patient.
5. Press current or slowly rotate selector knob until capture is obtained.
6. Slowly increase output until capture of electrical rhythm on the monitor.
7. If unable to capture while at maximum current output, stop pacing immediately.
8. If capture observed on monitor, check for corresponding pulses and assess vital signs, skin color and capillary refill for improved perfusion.
9. Consider the use of sedation or analgesia if patient is uncomfortable.
10. Document the dysrhythmia and the response to external pacing with EKG strips on the patient care report (PCR).

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Medical Director or designee.

ALS - BLS

Clinical Indications:

- Patients with suspected hypoglycemia (diabetic emergencies, change in mental status, bizarre behavior, etc.).

Procedure:

1. Gather and prepare equipment.
2. Blood samples for performing glucose analysis should be obtained simultaneously with intravenous access when possible.
3. Place correct amount of blood on reagent strip or site on glucometer per the manufacturer's instructions.
4. Time the analysis as instructed by the manufacturer.
5. Document the glucometer reading and treat the patient as indicated by the analysis and protocol.
6. Repeat glucose analysis as indicated for reassessment after treatment and as per protocol.
7. If after dextrose administration the glucose level is substantially low per a reading in a cool digit, utilize a more centrally located alternate site for testing.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Medical Director or designee.

ALS

Clinical Indications:

- Access of an existing venous catheter for medication or fluid administration.

Procedure:

1. Clean the port of the catheter with an alcohol wipe.
2. Remove the cap to the port and attach the empty 10 mL syringe to the catheter port.
3. Unlock the clamp on the access line, if applicable, and aspirate blood from the port. Blood should aspirate freely. If it does not, replace the cap and ***DO NOT*** use the access port.
4. Lock the clamp, if applicable, and remove the syringe with the aspirated blood. Dispose of the syringe in a biohazard container.
5. Connect a syringe containing 10 mL of normal saline to the port, unlock the clamp, and flush the device. The line should flush easily. Re-clamp the line.
6. Remove the syringe and connect the primed IV to the port. Unclamp the line and adjust flow rate as needed.
7. Begin administration of medications or IV fluids slowly and observe for any signs of infiltration. If difficulties are encountered, stop the infusion and reassess.
8. Record procedure, any complications, and fluids / medications administered on the patient care report (PCR).

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Medical Director or designee.

ALS

Clinical Indications:

- External jugular vein cannulation is indicated in a critically ill patient >8 years of age who requires intravenous access for fluid or medication administration and in whom an extremity vein is not obtainable.
- External jugular cannulation can be attempted initially in life threatening events where no obvious peripheral site is noted.

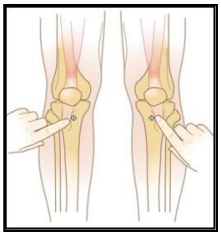
Procedure:

1. Place the patient in a supine head down position. This helps distend the vein and prevents air embolism.
2. Turn the patient's head toward the opposite side if no risk of cervical injury exists.
3. Prep the site with alcohol.
4. Apply pressure to the vein lightly with one finger above the clavicle to allow the vein to engorge.
5. Align the catheter with the vein and aim toward the same side shoulder.
6. Puncture the vein midway between the angle of the jaw and the clavicle and consulate the vein in the usual method.
7. Attach the IV tubing or saline lock and secure the catheter with taping and/or dressing.
8. Document the procedure, time, and result (success) on the patient care report (PCR).

Certification Requirements:

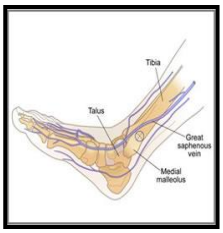
- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Medical Director or designee.

ALS



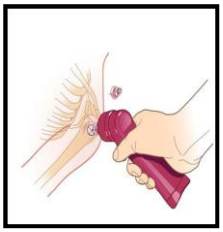
Clinical Indications:

- Patients where peripheral IV access is unobtainable with any of the following:
  - Cardiac arrest.
  - Single or Multi-system trauma with severe hypovolemia.
  - Any unconscious or seriously ill patient requiring immediate medication therapy or fluid replenishment.



Contraindications:

- Fracture proximal to proposed intraosseous site.
- History of Osteogenesis Imperfecta.
- Current or prior infection at proposed intraosseous site.
- Previous intraosseous insertion or joint replacement at the selected site.



Procedure:

1. Locate landmarks.
   - Adult ≥40 kg (AD or LD Needle)
     - Proximal Tibia - The insertion point is two finger widths below the patella, 1-2 cm medial of the tibial tuberosity.
     - Distal Tibia - Identify the major structures of the lower leg, the distal tibia (anterior or most forward lower leg bone) and the medial malleolus (medial ankle bone or protrusion). The insertion point is two finger widths proximal to the medial malleolus and midline on the tibia.
     - Proximal Humeral - Palpate and identify the mid-shaft humerus and continue palpating toward the proximal aspect or humeral head. As you near the shoulder you will note a protrusion. This is the base of the greater tubercle insertion site.

   - Pediatric 3-39 kg (PD Needle)
     - Proximal Tibia - 1 cm distal to tibial tuberosity and then medial along the flat aspect. Gently guide the driver, do not push. If **NO** tuberosity is present, the insertion is located two finger widths below the patella and then medial along the flat aspect of the tibia. Carefully feel for the "give" indicating penetration into the medullary space.
     - Distal Tibia - Identify the major structures of the lower leg, the distal tibia (anterior or most forward lower leg bone) and the medial malleolus (medial ankle bone or protrusion). The insertion point is one finger width proximal to the medial malleolus for pts less than 12 kg. As the patient reaches the 39 kg mark, the insertions point is two finger widths from the medial malleolus.

- Proximal Humeral - Palpate and identify the mid-shaft humerus and continue palpating toward the proximal aspect or humeral head. As you near the shoulder you will note a protrusion. This is the base of the greater tubercle insertion site. The greater tubercle may be difficult to palpate on patients weighing less than 25 kgs.

2. Prepare the skin with alcohol.
3. Load the needle onto the driver.
4. Firmly stabilize the leg near (not under) the insertion site
5. Firmly press the needle against the site and operate the driver. Use firm, gentle pressure.
6. As the needle reaches the bone, stop and be sure that the 5 mm marking on the needle is visible; if it is, continue to operate the driver.
7. When a sudden decrease in resistance is felt and the flange of the needle rests against the skin, remove the driver and the stylette from the catheter.
8. Confirm placement by aspiration of bone marrow.
9. Flush the EZ-IO™ needle rapidly. 5 mL EZ-IO™ PD and 10 mL EZ-IO™ AD (Consider IO administration of 2-4 mL 2% Lidocaine for conscious patients prior to flush).
10. Attach primed extension set.
11. If no infiltration is seen, attach the IV line and infuse fluids and/or medications as normal.
12. IV bag may need to be under pressure for infusion.
13. Secure the needle.
14. Document the procedure, time, and results on the patient care report (PCR).

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Medical Director or designee.

ALS

Clinical Indications:

- Life threatening illness or injury in a child <8 years of age or <40 kg in weight.

Procedure:

1. Expose the lower leg.
2. Identify the tibial tuberosity (bony prominence below the knee cap) on the proximal tibia. The insertion location will be 1-2 cm (2 finger widths) below this and medially.
3. Prep the site with alcohol.
4. Hold the intraosseous needle perpendicular to the skin, twist the needle with a rotating grinding motion applying controlled downward force until a "pop" or "give" is felt indicating loss of resistance. Do not advance the needle any further.
5. Remove the stylette and attach a 10 mL syringe filled with 5 mL of Normal Saline.
6. Attempt to extract marrow into the syringe; then inject the saline while observing for infiltration.
7. Stabilize and secure the needle.
8. Document the procedure, time, and result (success) on the patient care report (PCR).

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Medical Director or designee.

ALS - BLS

Background:
The Broselow™ Pediatric Emergency Tape is designed to be used as a quick reference to drug dosing and equipment sizing on pediatric patients. The Broselow™ tape is calibrated in different colors according to different lengths. The color that corresponds to the patient's length is used. If the Broselow™ bag is also used, the color on the tape can be matched with the color on the pouch that contains the appropriately sized equipment and drugs.

Procedure:
1. Place the patient in a supine position.
2. Remove tape from package and unfold.
3. Place tape next to patient, ensuring that the multicolored side is facing up.
4. Place red end of tape even with the top of the patient's head.
5. Place the edge on one hand on the red end of the tape.
6. Starting from the head, run the edge of your free hand down the tape.
7. Stop hand even with the heel of the patient's foot (if patient is larger than tape, stop here and use appropriate adult technique).
8. Verbalize the color block (on edge of tape) and weight range where your free hand has stopped. If patient falls on the line, go to the next higher section.
9. Use color block (on edge of tape) to identify the weight range of the patient.
10. Use weight range to determine appropriate sized of equipment and approximate dosages for medications.

Certification Requirements:
- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Medical Director or designee.

ALS - BLS

Background:
The purpose of spinal immobilization is to effectively splint the entire body to minimize movement of the spine for patients with suspected spinal chord injuries.

Indications for Immobilization:
- Altered mental status.
- Serious multi-system trauma.
- Neck pain secondary to significant MOI (i.e., spider-webbed windshield, dash deformity, rollover, passenger space intrusion greater than 12 inches, etc).
- Any mechanism that produced a violent impact to the head, neck, chest, torso or pelvis (i.e., assault, entrapment in structural collapse, etc).
- Incidents producing sudden acceleration, deceleration or lateral bending forces to the head, neck or torso (i.e., high speed MVC, pedestrian struck, involvement in explosion).
- Ejection or fall from any motorized or human powered transportation device (i.e., scooters, skateboards, motor vehicles, motorcycles or recreational vehicles).
- Major injury that may distract patient's awareness to neck/back pain (i.e., pelvic fracture, femur fracture, extensive burns, extensive soft tissue injury, acute abdomen, significant chest injury, degloving or crush injury, etc).
- Pain upon palpation to any part of cervical spine.
- Neck pain to patient's range of motion.
- Inability to communicate (speech or hearing impaired, foreign language, small children).
- Any fall that is 3 times the patient's height.
- Victim of shallow water diving incident.
- **When in doubt – Immobilize!!**
- See *Selective Spinal Immobilization* protocol.

Certification Requirements:
- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Medical Director or designee.

ALS - BLS

Background:
The helmet removal procedure is a guideline designed in two parts. Part I is for those patients wearing a motorcycle, bicycle, or other non-football type head protective device. Part II is designed for those patients wearing a football helmet.

Non-Football Helmets
1. Perform a Primary Survey if possible. Also, if the situation permits, ascertain if the victim has the ability to move their extremities. If unable to perform a primary survey, go to step 2.
2. The in-charge rescuer should designate a trained rescuer (Rescuer II) to manually control the cervical spine. The in-charge rescuer should kneel beside the patient and remove the chin strap device. A third rescuer should prepare padding for use to keep the spine in a neutral position.
3. The in-charge rescuer should then take control of the cervical spine from a side position to the patient. Rescuer II should then relinquish control of the cervical spine to the in-charge rescuer.
4. Rescuer II should remove the helmet by spreading the sides of the helmet and removing the helmet using caution not to manipulate the cervical spine. The in-charge rescuer should be prepared to hold the head, as when the helmet is removed there will be an increase in weight.
5. A pad may need to be inserted under the patient's head to maintain position of the c-spine. Cervical spine control should then be maintained by rescuer II.
6. The in-charge rescuer should then resume the primary survey, further assessment and interventions.

Football Helmets
1. Perform a Primary Survey. Also, if the situation permits, ascertain if the victim has the ability to move all extremities.
2. If the football helmet fits and the airway is maintainable with the helmet in place, do not remove the helmet. Immobilize manually and complete the primary survey. If transportation is necessary, the cervical spine should be immobilized with the helmet and shoulder pads in place. A CID, towels, or blanket rolls may be used to immobilize the head on a back board. The face mask may be removed.
3. If the football helmet does not fit correctly or the airway is not maintainable with the helmet in place, then the helmet needs to be removed.
4. The in-charge rescuer should designate an trained rescuer (rescuer II) to manually control the cervical spine. The in-charge rescuer should kneel beside the patient and remove the chin strap, ear pads, and remove the face mask retainers. (If not already done) A third rescuer should prepare padding for use to keep the spine in a neutral position.
5. The in-charge rescuer should then take control of the cervical spine from a side position to the patent. Rescuer II should then relinquish control of the cervical spine to the in-charge rescuer.

6. Rescuer II should remove the helmet by spreading the sides of the helmet and removing it from the head without moving the cervical spine. The in-charge rescuer should be prepared to hold the head, as when the helmet is removed there will be an increase in weight. Padding may need to be inserted under the patient's head to maintain neutral position. Cervical spine control should then be maintained by rescuer II.
7. If shoulder pads need to be removed, the helmet should be removed prior to the shoulder pads. When removing shoulder pads remove the straps and lift on side of the pads prior to log-rolling. Then after rolling the patient on their side, finish removing the shoulder pads. A CID pad or a 1" pad may be sufficient to maintain neutral alignment of the cervical spine.
8. Immobilize on a long backboard using a cervical collar, straps, and a cervical immobilization device. Continue the assessment.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Medical Director or designee.

ALS - BLS

Combative Patient Restraint - Adult & Pediatric:
There are many reasons why a patient may be combative – mental illness, drug/alcohol ingestion, post-ictal state, hypoxia, traumatic head injuries or from an unknown etiology. The priority when caring for medical patients who present with combative behavior is to identify and treat the underlying cause.
Note: Prior to restraining a patient, the EMS provider must assess the patient's mental status and determine whether the patient presents a potential or definite life threat to themselves or others.

Patient Management:
If patient has an altered mental status:
- Ensure adequate assistance is available to restrain the patient.
- All personnel should be instructed as to how the patient will be restrained. This will ensure the safety of the patient as well as emergency personnel.
- Restrain the patient.
- Document.
- Assess the patient continuously to prevent complications until turned over to ED personnel.

Restraint procedure:
1. Soft medical restraints only are secured to each extremity.
2. Place patient supine on a long backboard (LBB).
3. Both lower extremities are secured to the LBB.
4. Left arm is secured to the LBB beside the patient's body.
5. Right arm is flexed above the patient's head and secured to the LBB by the wrist.
6. Patient's body is secured to the LBB using straps.
7. Perform a complete assessment on the patient and reassess every 5 minutes.
8. Notify the receiving facility of transport.
9. Consider the use of chemical restraint (See Behavioral / Psychological Emergencies Protocol).
10. The use of medication mandates continuous observation by the paramedic, to prevent respiratory arrest, insufficiency, or aspiration.

Suicidal patient who is alert and oriented as normal and refusing transport:
1. Attempt to convince the patient to allow transport, use family and/or friends to assist. However, family/friends may agitate the patient and need to be distanced.
2. Request the assistance of the Metropolitan Police Department (MPD).
3. All personnel should be instructed as to how the patient will be restrained. This will ensure the safety of the patient as well as emergency personnel.
4. Restrain the patient.

5. Perform a complete assessment on the patient and reassess every 5 minutes.
6. Notify the receiving facility of transport and ask for security personnel to be available upon arrival, if needed.

Documenting a Restraint Procedure:

1. Reason(s) why restraint was necessary.
2. Any assessment findings obtained through observation (injuries, behavior, mental status, etc.) prior to restraining.
3. Describe the position in which the patient was restrained.
4. Time the patient was restrained.
5. Assessment findings after the patient was restrained and during transport.
6. Once the patient is restrained, one EMS provider must remain with the patient at all times.

Note: Do not place or allow any restraint to impair circulation or respirations. The dignity of the patient must be considered during and after the restraining process.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Medical Director or designee.

ALS

Clinical Indications:

- Cardiac arrest when an endotracheal tube has been placed and venous or IO access is unobtainable.

Medications that can be administered by endotracheal route:

- Narcan
- Atropine
- Epinephrine
- Lidocaine
- Midazolam

Procedure:

1. Ensure that the correct medication, patient, dosage, time is identified.
2. Hyperventilate the patient with 4-5 breaths and remove BVM.
3. If the BVM has a supplied medication port, administer medication through the medication port and ventilate the patient.
4. If the BVM does not have a supplied medication port:
   - Hyperventilate the patient.
   - Disconnect the BVM.
   - Administer medication via the endotracheal tube.
   - Re-attach the BVM and ventilate the patient to allow the medication to reach the bronchial tree so it can be absorbed into the bloodstream.
5. Medications administered via endotracheal route, should be administered at twice the IV dose and should be diluted with sterile normal saline to a volume of at least 10 mL for adults and 1-5 mL for pediatric patients.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Medical Director or designee.

ALS - BLS

Clinical Indications:

- Patient without IV access requiring urgent medication administration (e.g., active seizure, respiratory arrest secondary to opiate overdose, hypoglycemia).

Medications that can be administered by intranasal route:

- Narcan
- Glucagon
- Midazolam (Versed)

Procedure:

1. Determine appropriate medication dose per applicable protocol.
2. Draw medication into syringe and carefully dispose of sharps if the medication is drawn from a vial. If medication is needle-less, attach mucosal atomizer device directly to syringe.
3. Gently insert the atomizer into the nare and stop once resistance is met.
4. Rapidly administer the medication.
5. If the medication is ≥1 mL, administer half of the medication in one nare and the other half in the other nare.
6. Document the procedure and results on the patient care report (PCR).

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Medical Director or designee.

ALS - BLS

Clinical Indications:

- Patient's condition warrants medication to improve or stabilize condition.

Precautions:

- Observe universal precautions and ensure body substance isolation (BSI).
- Be certain that the route you choose to use is appropriate for the drug; see specific protocols or medication formulary.
- Be certain the drug you want to administer is the one you use.
- Check expiration dates, dosages and routes before administration.
- Use sterile technique for drawing up medications and filling syringes.
- Rapid administration of drugs can cause untoward effects, avoid them by administering the drugs according to protocol.
- Always check for extravasation, especially when administering dextrose and dopamine.

Procedures:

IV Administration (ALS)

1. Use appropriate needle or needle less syringe for solution.
2. Cleanse injection port with alcohol.
3. Insert needle or needle less device into injection port.
4. Pinch IV tubing between port and IV bag; inject medication slow or rapid as required.
5. Release tubing and follow medication with a 10-20 mL fluid bolus.
6. Record medication given, concentration of dose, amount given and time.

IO Administration (ALS)

1. Establish intraosseous line per protocol.
2. Prepare medication.
3. Cleanse injection port with alcohol, inject medication.
4. Record medication given, concentration of dose, amount given and time.

IM Administration (ALS)

1. Use ¾ inch to 1 inch, 21-25 gauge needle.
2. Select site, usually deltoid or gluteal muscles.
3. Cleanse site with alcohol.
4. Eject air from syringe.
5. Insert needle at 90 degree angle.
6. Aspirate, if no blood return, inject medication.
7. Apply pressure to site, cover with sterile dressing.
8. Record medication given, concentration of dose, amount given and time.

SQ Administration (ALS)

1. Use ¾ inch to 1 inch, 21-25 gauge needle.
2. Select site, usually lateral mid 1/3 arm.
3. Cleanse site with alcohol.
4. Eject air from syringe.
5. Insert needle at 45 degree angle, bevel up.
6. Aspirate, if no blood return, inject medication.
7. Cover with sterile dressing.
8. Record medication given, concentration of dose, amount given and time.

Nebulized Administration (ALS – BLS)

1. Medication is measured and introduced into nebulizer.
2. Attach oxygen tubing to the nebulizer and adjust flow rate to 6-10 lpm.
3. Patient is instructed to breathe deeply and to hold a deep inspiration every 4-5 breaths.
4. Patient is monitored throughout procedure per protocol.
5. Treatment is continued until all medication is administer or is discontinued due to complication in patient condition.
6. Record medication given, concentration of dose, amount given and time.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Medical Director or designee.

This Page Intentionally Blank

This medication formulary was developed specifically to assist the EMT or Paramedic in carrying out his / her daily function as it relates to medication therapy and the standard by which all providers are trained and tested. EMS personnel must be familiar with all medications and other agents in their routine work. The following medications have been approved by the Medical Director and the District of Columbia Department of Health (DOH):

Activated Charcoal ..... ALS - BLS
Adenosine (Adenocard) ..... ALS
Albuterol Sulfate (Proventil) ..... ALS - BLS
Amyl Nitrate (**WMD**) ..... ALS
Aspirin (Acetylsalicylic Acid) ..... ALS - BLS
Atropine Sulfate ..... ALS
Calcium Chloride 10% ..... ALS
Dextrose 50%, 25%, 10% ..... ALS
Diphenhydramine HCL (Benadryl) ..... ALS
Dopamine (Intropin) ..... ALS
Epinephrine HCL 1:1.000 / 1:10,000 (Adrenalin) ..... ALS - BLS
Furosemide (Lasix) ..... ALS
Glucagon HCL ..... ALS
Glucose (Oral) ..... ALS - BLS
Haloperidol (Haldol) ..... ALS
Hydroxocobalamin (Cyanokit) ..... ALS
Ipratropium Bromide (Atrovent) ..... ALS - BLS
Lidocaine HCL (Xylocaine) ..... ALS
Magnesium Sulfate ..... ALS
Methylprednisolone Sodium Succinate (Solu-Medrol) ..... ALS
Midazolam HCL (Versed) (**Controlled Substance**) ..... ALS
Morphine Sulfate (**Controlled Substance**) ..... ALS
Naloxone HCL (Narcan) ..... ALS - BLS
Nitroglycerin (Nitrostat) ..... ALS - BLS
Ondansetron (Zofran) ..... ALS
Oxygen ..... ALS - BLS
Pralidoxime Chloride / 2-pam CL (**WMD**) ..... ALS - BLS
Sodium Bicarbonate ..... ALS
Sodium Nitrate **(WMD**) ..... ALS
Sodium Chloride 0.9% ..... ALS - BLS
Sodium Thisosulfate **(WMD**) ..... ALS
Tetracaine Hydrochloride ..... ALS - BLS
Thiamine HCL (Vitamin B_1) ..... ALS

ALS - BLS

Class:
- Absorbent.

Actions:
- Absorbs poisons in the stomach, prevents absorption by the body and enhances their elimination from the body.

Indications:
- Utilized for patients who have ingested poisons or overdosed medications by mouth.

Contraindications:
- Altered Mental Status.
- Patients that have ingested acids of alkalis.
- Patient unable to swallow.

Precautions:
- Do not give the patient milk, ice cream or sherbet, as they decrease the effectiveness of the charcoal.

Adverse Reactions:
- Blackening of the stools.
- Vomiting.

Adult Dosage / Route:
- Administer 1-2 g/kg (25-50 grams).

Pediatric Dosage / Route:
- Administer 1-2 g/kg (12.5-25 grams).

ALS

Class:
- Antiarrhythmic.

Actions:
- Adenosine is a naturally occurring substance present in all cells that slows conduction through the AV node of the heart. Because of its rapid onset of action and short half-life, the administration of Adenosine is sometimes referred to as "chemical cardioversion".

Indications:
- Paroxysmal Supraventricular Tachycardia (PSVT) refractory to common vagal maneuvers.

Contraindications:
- 2nd and 3rd degree heart blocks.
- Sick sinus syndrome.
- Hypersensitivity.
- History of WPW or in the presence of “Delta waves”.

Precautions:
- May cause transient dysrhythmias.
- Effects antagonized by theophylline.
- May cause bronchospasm in asthma patients.

Adverse Reactions:
- Dyspnea.
- Nausea.
- Headache.
- Dizziness.

Adult Dosage / Route:
- 6 mg rapid IV followed by a rapid 10-20 mL flush.
- If no response after initial dose in 2 minutes, administer 12 mg rapid IV push followed by a rapid 10-20 mL flush.
- May repeat 12 mg IV once more if no response from 2nd dose.

Pediatric Dosage / Route:
- 0.1 mg/kg rapid IV, up to a maximum single dose of 6 mg.
- Repeat if needed at 0.2 mg/kg rapid IV, up to a maximum of 12 mg.

ALS - BLS

Class:
- Sympathetic agonist.

Actions:
- A synthetic sympathomimetic that causes bronchodilitation with very little cardiac effects. Beta 2 adrenergic.

Indications:
- Bronchial asthma.
- Bronchospasm associated with chronic bronchitis, emphysema, allergic reaction, toxic inhalation, pulmonary edema and congestive heart failure.

Contraindications:
- Hypersensitivity.
- Uncontrolled cardiac dysrhythmias.

Precautions:
- Caution should be exercised in patients with a cardiac history.

Adverse Reactions:
- Palpitations.
- Anxiety.
- Dizziness.
- Headache.
- Nervousness.
- Arrhythmias.
- Nausea / vomiting.

Adult Dosage / Route:
- 2.5 mg in 3 mL saline administered by nebulizer.
- BLS Providers may administer 5 mg without order.
- ALS Providers may administer 7.5 mg without order.

Pediatric Dosage / Route:
- 2.5 mg in 3 mL saline administered by nebulizer.
- BLS Providers may administer 5 mg without order.
- ALS Providers may administer 7.5 mg without order.

ALS

Class:
- Antidote for cyanide poisoning.

Actions:
- Forms methemoglobin which combines with cyanide forming a nontoxic compound (cyanmethemoglobin) which is excreted when sodium thiosulfate is administered.

Indications:
- Used initially in the management of cyanide toxicity.

Contraindications:
- None when used for cyanide poisoning.

Precautions:
- Stop administration once sodium nitrate infusion is started.
- Do not administer to patients improving on their own.
- Oxygenation is critical in these patients.

Adverse Reactions:
- Headache.
- Hypotension.
- Tachycardia.
- Nausea/Vomiting.

Adult Dosage / Route:
- Vapor inhaled every 10-20 minutes until sodium nitrate IV solution is available. Crush capsule inside oxygen mask and patient inhales vapor.

Pediatric Dosage / Route:
- Same as adult dose.

ALS - BLS

Class:
- Analgesic, anti-inflammatory, antipyretic, anti-platelet aggregator.

Actions:
- Blocks pain impulses in the CNS, dilates peripheral vessels, reduces platelet adhesion, and reduces coronary artery vasoconstriction.

Indications:
- Chest pain or discomfort suggestive of MI or cardiac ischemia.

Contraindications:
- Hypersensitivity.

Precautions:
- Any significant bleeding.

Adverse Reactions:
- Gastritis, nausea and vomiting.

Adult Dosage / Route:
- 324 mg / 4-81 mg baby aspirin PO if not taken during the previous 24 hours.

Pediatric Dosage / Route:
- Not indicated.

ALS

Class:
- Anticholinergic / Parasympatholytic agent.

Actions:
- Blocks acetylcholine receptors in organophosphate poisonings.
- Reverses suspected vagal tone in bradycardia, asystole, and PEA.

Indications:
- Symptomatic bradycardia.
- Asystole.
- Pulseless Electrical Activity with rate less than 60.
- Organophosphate poisoning.
- WMD Nerve Agent poisoning.

Contraindications:
- Use with caution in high degree blocks (2nd degree Type II and 3rd degree).

Precautions:
- If given too slowly, can cause transient bradycardias.
- Use caution when administering to patients with glaucoma.

Adverse Reactions:
- Palpitations.
- Tachycardia.
- Dilated pupils.
- Dry mouth.
- Blurred vision.

Adult Dosage / Route:
Bradycardia
- 0.5 mg IV. Repeat once in 5 minutes if the patient remains symptomatic.

Asystole / Agonal, Pulseless Electrical Activity
- 1 mg IV/IO or 2 mg ET. Repeat every 3-5 minutes, up to a maximum of 3 mg IV/IO or 6 mg ET.

Organophosphate Poisoning / WMD
- 2-4 mg IV/IM as an initial dose, repeat as needed every 5-10 minutes.

Pediatric Dosage / Route:

Bradycardia

- 0.02 mg/kg IV/IO, minimum dose of 0.1 mg and a maximum of 0.5 mg in a child and 1 mg in an adolescent.

Asystole / Agonal, Pulseless Electrical Activity

- Not indicated.

Organophosphate Poisoning / WMD

- 0.02-0.05 mg/kg IV/IM as an initial dose (maximum single dose of 2 mg), repeat as needed.

ALS

Class:
- Electrolyte, calcium supplement.

Actions:
- Increases myocardial contractile force and ventricular automaticity.
- Balances hyperkalemia.
- Aids in the re-entry of calcium into muscle when given for calcium channel blocker or magnesium sulfate toxicity.

Indications:
- Known or suspected hyperkalemic cardiac arrest (renal patient).
- Magnesium sulfate toxicity.
- Calcium channel blocker toxicity (toxicity may be caused by overdose of calcium channel blocker medications such as Nifedipine, Verapamil, etc.

Contraindications:
- Digitalis toxicity (Calcium chloride worsens arrhythmias secondary to digitalis toxicity).

Precautions:
- **Sodium bicarbonate precipitates with Calcium chloride. Therefore, flush the IV line with 10 mL of IV fluid between administrations of these two medications**.

Adverse Reactions:
- Tissue necrosis if the IV infiltrates.
- Bradycardia, hypotension or asystole can occur with rapid injection.

Adult Dosage / Route:
- 10 mg/kg IV. Slow administration for patients with a palpable pulse.

Pediatric Dosage / Route:
- 10 mg/kg IV. Slow administration for patients with a palpable pulse.

ALS

Class:
- Carbohydrate.

Actions:
- Increases blood glucose levels.

Indications:
- Hypoglycemia.

Contraindications:
- Suspected intracranial hemorrhage.
- Known or suspected CVA in the absence of hypoglycemia.

Precautions:
- Blood glucose measurement is preferred prior to the administration of glucose.

Adverse Reactions:
- Dextrose can cause local venous irritation and tissue necrosis if infiltration occurs.

Adult Dosage / Route:
- >12 years, administer 25 gm slow IV. May repeat once if BGA remains <70 mg/dl.

Pediatric Dosage / Route:
- 1 month to 12 years, dilute 1:1 and administer 2 mL/kg of D25.
- Newborn to 1 month, dilute 1:4 and administer 5 mL/kg of D10.

ALS

Class:
- Potent antihistamine.

Actions:
- Block histamine receptor sites in allergic reactions.
- Reverses side effects of dystonic reactions caused by phenothiazines.

Indications:
- Anaphylaxis.
- Allergic reactions.
- Dystonic reactions.

Contraindication:
- Hypersensitivity.

Precautions:
- Use with caution in patients that are pregnant, history of asthma, or experiencing severe intoxication.

Adverse Reactions:
- Hypotension.
- Headache.
- Palpitations.
- Tachycardia.
- Sedation.
- Drowsiness.

Adult Dosage / Route:
- 25-50 mg, slow IV/IM.

Pediatric Dosage / Route:
- 1 mg/kg, slow IV/IM up to a maximum dose 50 mg.

ALS

Class:
- Sympathomimetic.

Actions:
- At low doses (2-5 mcg/kg/min), increases perfusion to kidneys and abdominal organs.
- At moderate doses (5-10 mcg/kg/min), increases force and rate of ventricular contractions (Beta 1 effects).
- At high doses (10-20 mcg/kg/min), peripheral vasoconstrictor (Alpha 1 effects).

Indications:
- Hypovolemic shock with sufficient fluid resuscitation.
- Cardiogenic shock.
- Septic shock.
- Anaphylactic shock.

Contraindications:
- Should not be used in the management of hypovolemia until sufficient volume replacement is achieved.
- Pre-existing tachydysrhythmias.

Precautions:
- Do not mix with Sodium Bicarbonate.
- Continue to monitor EKG, blood pressure and heart rate.

Adverse Reactions:
- Nervousness.
- Headache.
- Dysrhythmias.
- Hypertension.
- Nausea / vomiting.

Adult Dosage / Route:
- 5-20 mcg/kg/min via infusion.

Pediatric Dosage / Route:
- 5-20 mcg/kg/min via infusion.

ALS - BLS

Class:
- Sympathomimetic.

Actions:
- A potent alpha and beta stimulant that increases heart rate, cardiac contractile force, myocardial electrical activity, systemic vascular resistance, blood pressure and automaticity. Increases myocardial oxygen demand.

Indications:
- Cardiac arrest.
- Severe anaphylaxis.
- Bronchial asthma.

Contraindications:
- Hypertension.
- Pre-existing tachydysrhythmias with a pulse.

Precautions:
- Use with caution in patients with a history of coronary artery disease because Epinephrine may precipitate acute MI.
- Use with caution in pregnant patients.
- Do not mix with Sodium Bicarbonate.

Adverse Reactions:
- Palpitations.
- Anxiety.
- Tremors.
- Headache.
- Dizziness.
- Nausea / vomiting.

Adult Dosage / Route:
Cardiac Arrest
- 1:10,000 1 mg IV/IO every 3-5 minutes for the duration on the arrest.
- 1:1,000 2 mg in 5 mL saline ET every 3-5 minutes.

Severe Anaphylaxis
- 1:1,000 0.3-0.5 mg IM, repeat as necessary (ALS).
- Epi-Pen 0.3 mg IM (BLS)
- 1:10,000 0.5 mg IV/IO/ET, repeat as necessary.

Asthma
- 1:1,000 0.3 mg SQ.

Pediatric Dosage / Route:

Cardiac Arrest

- 1:10,000 0.01 mg/kg IV/IO every 3-5 minutes for the duration of the arrest.
- 1:1,000 0.1 mg/kg in 5 cc saline every 3-5 minutes.

Bradycardia

- 1:1,000 0.01 mg/kg IV/IO.
- 1:1,000 0.1 mg//kg ET.

Severe Anaphylaxis

- 1:1,000 0.01 mg/kg IM, up to a maximum of 0.3 mg, repeat as necessary (ALS).
- Epi-Pen Jr .15 mg IM for patient's ≤3 years of age (BLS).
- 1:10,000 0.01 IV/IO/ET, Repeat as necessary.

Asthma / Croup

- 1:1,000 0.01 mg/kg SQ, up to a maximum of 0.3 mg.
- 1:1,000 0.5 ml via nebulizer, mix with 2.5 mL saline.

ALS

Class:
- Loop diuretic.

Actions:
- A potent diuretic that inhibits sodium re-absorption by the kidneys.
- Vasodilatation of the pulmonary veins.

Indications:
- Acute pulmonary edema.
- Congestive heart failure.
- Hypertension.

Contraindications:
- Hypersensitivity.
- Known allergy to sulfonamides.
- Dehydrated patients.
- Pregnancy.
- Hypotension.

Precautions:
- Severe dehydration and electrolyte depletion may occur from excess doses of Furosemide.

Adverse Reactions:
- Dehydration.
- Decreased circulatory blood volume.
- Decreased cardiac output.
- Loss of electrolytes.

Adult Dosage / Route:
- 40 mg IV over 2 minutes if the patients systolic BP is ≥140 mmHg. If the patient is currently prescribed Furosemide or any other diuretic, administer Furosemide 80 mg IV.

Pediatric Dosage / Route:
- 0.5-1 mg/kg slow IV. **Medical Direction Required**.

ALS

Class:
- Pancreatic hormone.
- Anti-hypoglycemic.

Actions:
- Converts stored glycogen to glucose, increasing blood glucose levels.
- Improves cardiac contractility and increases heart rate.

Indications:
- Hypoglycemia when IV access is unobtainable (should not be a first line treatment for hypoglycemia when IV access is available).
- Beta blocker and calcium channel blocker overdose with bradycardia.

Contraindications:
- Hypersensitivity to proteins.

Precautions:
- Administer cautiously to patients with kidney and liver dysfunctions.
- Effective only if sufficient stores of glycogen in the liver.

Adverse Reactions:
- Nausea and vomiting.
- Tachycardia.

Adult Dosage / Route:
Hypoglycemia
- 1 mg IN/IM.

Calcium Channel / Beta Blocker Overdose
- 1 mg IV every 5 minutes, up to a maximum of 3 mg.

Pediatric Dosage / Route:
Hypoglycemia
- 1 mg IN/IM.

Calcium Channel / Beta Blocker Overdose
- 1 mg IV every 5 minutes, up to a maximum of 3 mg.

Neonatal Dosage / Route:
Hypoglycemia
- 0.5 mg IN/IM.

ALS - BLS

Class:
- Carbohydrate.

Actions:
- Increases blood glucose level.

Indications:
- Altered mental status secondary to hypoglycemia.

Contraindications:
- Patients unable to protect their own airway.
- Patients unable to swallow.

Precautions:
- Assure that the patient has a gag reflex.

Adverse Reactions:
- Aspiration.
- Nausea and vomiting.

Adult Dosage / Route:
- 25-50 gm PO *or* one single dose tube. May repeat once.

Pediatric Dosage / Route:
- 0.5 gm/kg PO if the child is <8 years of age (ALS).

ALS

Class:
- Tranquilizer.
- Anti-psychotic.

Actions:
- Strong anti-emetic effect and impairs central thermoregulation. Produces weak central anticholinergic effects and transient orthostatic hypotension due to blockade of dopamine activity.

Indications:
- Management of manifestations of psychotic disorders and for treatment of agitated states in acute and chronic psychoses.

Contraindications:
- Patients with known hypersensitivity
- Coma
- Parkinson's Disease
- Alcoholism
- CNS depression
- Cocaine overdose

Precautions:
- Severe cardiovascular disorders (may cause transient hypotension or precipitate angina pectoris).
- Receiving anticonvulsant medication (may lower convulsive threshold).

Adverse Reactions:
- Extra-pyramidal Syndrome (EPS)
- Headache
- Lethargy
- Headache
- Tachycardia
- Hypotension

Adult Dosage / Route:
- 5 mg IM. Patients over the age of 65 years, 2.5 mg IM.

Pediatric Dosage / Route:
- 5 mg IM (>12 yrs) and 2 mg IM (6-12 yrs). **Medical Direction Required**.

ALS

Class:
- Antidote.
- Precursor of vitamin B12.

Actions:
- Binds with cyanide ions to form cyanocobalamin, which is excreted in the urine.

Indications:
- Treatment of cyanide poisoning with significant signs and symptoms of circulatory compromise.

Contraindications:
- Patients with known anaphylactic reactions to hydroxocobalamin or cyanocobalamin.

Precautions:
- Administer slowly over 15 minutes.
- Transient hypertension.

Adverse Reactions:
- Hypertension.
- Headache.
- Red-colored urine.
- Headache.
- Nausea.

Adult Dosage / Route:
- Initial dose is 5 g administered over 15 minutes slow IV. (Each 2.5 g vial of hydroxocobalamin for injection is to be reconstituted with 100 mL of Normal Saline and administered at 10-15 mL/minute.) An additional 5 g dose may be administered with medical control order.

Pediatric Dosage / Route:
- 70 mg/kg (reconstitute concentration is 25 mg/ml). Each 2.5 g vial of hydroxocobalamin for injection is to be reconstituted with 100 mL of Normal Saline and administered at 10-15 mL/minute. Maximum single dose 5 grams.

ALS - BLS

Class:
- Anticholinergic.
- Bronchodilator.

Actions:
- Bronchodilitation.
- Dries respiratory tract secretions.
- Most effective in combination with a beta-adrenergic bronchodilator.

Indications:
- Bronchospasm related to asthma, chronic bronchitis, and emphysema.

Contraindications:
- Sensitivity to soybeans or peanuts.
- Sensitivity to Atropine.
- Tachydysrhythmias.

Precautions:
- Administer cautiously to patients with narrow-angle glaucoma.

Adverse Reactions:
- Tachycardia.
- Palpitations.
- Dizziness.
- Headache.
- Dry mouth.

Adult Dosage / Route:
- 0.5 mg (500 mcg) mixed with 2.5 mg Albuterol via nebulizer.

Pediatric Dosage / Route:
- <1 year 0.25 mg (250 mcg) mixed with 2.5 mg Albuterol via nebulizer.
- >1 year 0.5 mg (500 mcg) mixed with 2.5 mg Albuterol via nebulizer.

ALS

Class:
- Antiarrhythmic.
- Local anesthetic.

Actions:
- Suppresses ventricular ectopy.
- Blocks conduction of pain impulses.

Indications:
- Ventricular fibrillation.
- Ventricular tachycardia.
- Multifocal or frequent PVC's (>6 per minute).

Contraindications:
- Ventricular escape rhythms with bradycardia.
- 2° type II and 3° heart blocks.
- Bradycardia.

Precautions:
- Use caution in patients over the age 65.
- History of liver disease or dysfunction.

Adverse Reactions:
- Muscle twitching.
- Slurred speech.
- Coma.
- Hypotension.
- Altered mental status.

Adult Dosage / Route:
Ventricular Fibrillation / Pulseless Ventricular Tachycardia, Ventricular Tachycardia with a pulse.
- 1 mg/kg IV/IO may be repeated every 5 minutes up to a maximum of 3 mg/kg. 2 mg/kg ET, up to a maximum of 6 mg/kg. IO for cardiac arrest.

Pediatric Dosage / Route:
Ventricular Fibrillation / Pulseless Ventricular Tachycardia, Ventricular Tachycardia with a pulse.
- 1 mg/kg IV may be repeated every 5 minutes up to a maximum of 3 mg/kg. IO for cardiac arrest.

ALS

Class:
- Electrolyte.
- Anticonvulsant.

Actions:
- Reverses magnesium deficiency.
- Calcium channel blocker.
- Increases intracellular potassium.
- Relaxes smooth muscle.

Indications:
- Torsades de pointes.
- Seizures due to eclampsia.
- Bronchospasm in asthma or COPD that does not respond to other therapy.

Contraindications:
- Hypotension.
- Heart block.
- Chronic kidney disease/dialysis.

Precautions:
- Continuously monitor blood pressure, respiratory effort, level of consciousness, and muscle strength before and after medication administration.

Adverse Reactions:
- Hypotension.
- Respiratory depression.
- Circulatory collapse.
- Muscle weakness/paralysis.
- Bradycardia.
- CNS depression.

Adult Dosage / Route:
Torsades de pointes (Pulseless)
- 2 gm slow IV/IO. Mix 2 gm in 10 mL of Normal Saline and administer over 2 minutes.

Torsades de pointes (With a pulse)
- 2 gm slow infusion. Mix 2 gm in 100 mL of Normal Saline. Utilize a 10 gtts set and run at 50 gtts/min.

Eclampsia

- 4 gm slow infusion. Mix 4 gm in 100 mL of Normal Saline. Utilize a 10 gtts set and run at 50 gtts/min.

Asthma

- 2 gm slow infusion. Mix 2 gm in 100 mL of Normal Saline. Utilize a 10 gtts set and run at 50 gtts/min.

Pediatric Dosage / Route:
Torsades de pointes (Pulseless)

- 25-50 mg/kg slow IV/IO. Mix required dosage in 10 mL Normal Saline and administer over 2 minutes. Maximum dose of 2 gm.

Torsades de pointes (With a pulse)

- 25-50 mg/kg IV over 20 minutes, up to a maximum single dose of 2 gm.

Asthma

- 25-50 mg/kg IV over 20 minutes, up to a maximum single dose of 2 gm.

ALS

Class:
- Anti-inflammatory.
- Steroid.

Actions:
- A synthetic steroid that is effective as an anti-inflammatory. Also controls severe or incapacitating allergic reactions.

Indications:
- Asthma.
- Severe anaphylaxis.
- Exacerbation of COPD.

Contraindications:
- Known hypersensitivity.

Precautions:
- Cardiac arrhythmias or circulatory collapse can occur with large rapidly administer dosages.

Adverse Reactions:
- Cardiac arrhythmias.
- Hypertension.
- Vertigo.
- Headache.

Adult Dosage / Route:
- 125 mg IV/IM.

Pediatric Dosage / Route:
- 1 mg/kg IV/IM, up to a maximum single dose of 40 mg.

ALS

Class:
- Benzodiazepine.

Actions:
- A short acting central nervous system depressant that causes amnesia, sedation and muscle relaxation.

Indications:
- Active seizures / status epilepticus.
- Sedation prior to cardioversion or transcutaneous pacing in conscious patients.
- Chest pain or tachycardia due to overdose on ingestion of cocaine, amphetamine, ecstasy, LSD, PCP or ketamine.
- Chemical sedation for combative patients with mental disturbances or overdose.

Contraindications:
- Known hypersensitivity.
- Hypotension.

Precautions:
- Monitor respirations.
- Avoid mixing with other medications, flush IV line after administration.
- Titrate in small doses.

Adverse Reactions:
- Respiratory depression.
- Apnea.
- Hypotension.
- Amnesia.
- Nausea.

Adult Dosage / Route:
- 2-5 mg IV/IN, up to a maximum dose of 5 mg. For combative patients the dosage is 5 mg IN/IM.

Pediatric Dosage / Route:
- 0.1 mg/kg IV/IN, up to a maximum single dose of 5 mg.

ALS

Class:
- Narcotic.
- Analgesic.

Actions:
- Potent analgesic.
- Decreases peripheral vascular resistance – vasodilatation.
- Decreases cardiac workload and oxygen demand on the heart.

Indications:
- Chest pain not relived by nitroglycerin.
- Pain management.

Contraindications:
- Known hypersensitivity.
- Head injury.
- Hypotension.
- Respiratory depression.

Precautions:
- Monitor respiratory status and blood pressure. Have Naloxone readily available.

Adverse Reactions:
- Hypotension.
- Respiratory depression.
- Syncope.
- Bronchospasm.

Adult Dosage / Route:
Pain Management
- 2 mg IV until pain is relieved or a maximum of 10 mg is reached.

CHF
- 2 mg IV, up to a maximum of 10 mg as long as the patients systolic BP is ≥140 mmHg.

Cardiac Chest Pain
- 2 mg IV, up to a maximum of 6 mg.

Pediatric Dosage / Route:
Pain Management
- 0.1 mg/kg IV until pain is relieved or a maximum of 5 mg is reached.

CHF
- 0.1 mg/kg IV, up to a maximum of 5 mg.

ALS - BLS

Class:
- Narcotic Antagonist.

Actions:
- Reverses narcotic effects.

Indications:
- Suspected narcotic / opiate overdose.
- Coma of unknown origin.

Contraindications:
- Known hypersensitivity.

Precautions:
- Half-life is shorter than most narcotics and may allow the patient to re-develop a decreased level of consciousness and/or respiratory depression.
- May induce opiate withdrawal in patients that have a physical dependency to narcotics / opiates.

Adverse Reactions:
- Nausea / vomiting.
- Headache.
- Tachycardia.
- Acute withdrawal syndrome (violent behavior).

Adult Dosage / Route:
- 2 mg IV/IM/IN. May repeat once if no response.

Pediatric Dosage / Route:
- 0.1 mg/kg IV/IM/IN, up to a maximum single dose of 2 mg.

ALS - BLS

Class:
- Nitrate.
- Vasodilator.

Actions:
- Coronary and systemic vasodilator that decrease peripheral vascular resistance and preload.
- Decreases cardiac workload and oxygen demand on the heart.

Indications:
- Chest pain of cardiac origin.
- Pulmonary edema associated with congestive heart failure.
- Hypertension.

Contraindications:
- Hypotension.
- Suspected intracranial pressure.
- Taken Viagra or similar medications (Sildenafil, Cialis, Tadalafil, Levitra, Vardenafil) in the previous 24 hours.

Precautions:
- Use extreme caution when right ventricular involvement (RVI) is suspected. Consult Medical Control prior to administration.
- Ensure that an IV is established prior to nitroglycerin in patients with a suspected inferior wall MI.

Adverse Reactions:
- Hypotension.
- Headache.
- Reflex tachycardia.
- Nausea / vomiting.

Adult Dosage / Route:
Cardiac chest pain
- 0.4 mg SL every 5 minutes, up to a maximum of 3 doses. Nitro paste 0.5”.
- BLS providers may assist the patient with his/her own prescribed Nitroglycerin.

Congestive heart failure
- 0.4 mg SL every 5 minutes, up to a maximum of 4 doses. Nitro paste 1”.

Pediatric Dosage / Route:
- Not indicated.

ALS

Class:
- Anti-emetic.

Actions:
- Potent anti-emetic.

Indications:
- Persistent vomiting due to gastrointestinal problems.

Contraindications:
- History of allergic reaction.
- Pregnancy – ***Medical Control option only***

Precautions:
- Avoid intra-arterial or subcutaneous administration.

Adverse Reactions:
- Allergic reaction.

Adult Dosage / Route:
- 4 mg IV.

Pediatric Dosage / Route:
- Rarely used. 2-4 mg IV. **Medical Direction Required**.

ALS - BLS

Class:
- Gas.

Actions:
- Odorless, colorless, tasteless gas that is essential for life.

Indications:
- Cardiopulmonary arrest.
- Trauma.
- Dyspnea.
- Suspected hypoxemia.
- Cardiac related chest pain.

Contraindications:
- None.

Precautions:
- Utilize the prescribed dose of a COPD patient unless the patient is in severe respiratory distress then 100% is required.

Adverse Reactions:
- May induce respiratory drive in some COPD patients.

Adult Dosage / Route:
- ≥15 lpm for BVM, 12-15 lpm via NRB mask or 2-6 lpm via nasal cannula.

Pediatric Dosage / Route:
- ≥15 lpm for BVM, 12-15 lpm via NRB mask or blow-by, 2-6 lpm via nasal cannula.

ALS - BLS

Class:
- Cholinesterase reactivator.

Actions:
- Reactivates cholinesterase which has been deactivated by chemical nerve agents and organophosphate poisons.
- Relieves paralysis of the respiratory muscles following chemical nerve agent or organophosphate exposure.

Indications:
- Second drug given for the treatment of poisoning due to organophosphate pesticides and chemical nerve agents (First drug of choice is Atropine).
- Primary indication for Pralidoxime administration is muscle weakness or respiratory depression in these patients.

Contraindications:
- Known hypersensitivity.

Precautions:
- Not indicated for poisonings with carbonate pesticides.
- Effects during pregnancy are unknown.
- Safety and efficacy in children is unknown.
- Do not administer more than 3 auto-injectors due to its hypertensive effects.

Adverse Reactions:
- Tachycardia, laryngospasm, muscle rigidity if IV and infused too quickly.
- Mild to moderate pain at injection site.
- Blurred or double vision, dizziness, loss of coordination, headache drowsiness, hypertension, tachycardia.

Adult Dosage / Route:
- 600 mg IM, up to 1800 mg or 3 auto-injectors.

Pediatric Dosage / Route:
- Not indicated.

ALS

Class:
- Electrolyte.
- Alkalizing agent.

Actions:
- Drives serum potassium back into the cell.
- Enhances urinary excretion of tricyclic antidepressants.
- Neutralizes acidosis.

Indications:
- Prolonged cardiac arrest (>10 minutes).
- Hyperkalemia.
- Metabolic acidosis.
- Tricyclic antidepressant (TCA) overdose or ingestion.

Contraindications:
- Pre-existing alkalosis.

Precautions:
- Inactivates simultaneously administered catecholamine's (epinephrine or dopamine).
- Flush IV line between medication administrations.

Adverse Reactions:
- Alkalosis.
- Hypokalemia.
- Seizures.
- Tissue sloughing at injection site.

Adult Dosage / Route:
- 1 mEq/kg IV/IO.

Pediatric Dosage / Route:
- 1 mEq/kg IV/IO.

SODIUM CHLORIDE 0.9%

ALS - BLS

Class:
- Isotonic Crystalloid Solution.

Actions:
- Fluid and sodium replacement.

Indications:
- Anytime IV access and/or medication administration is obtained.

Contraindications:
- High doses in the presence of congestive heart failure can cause circulatory overload.

Precautions:
- Electrolyte depletion can occur following large amounts of normal saline.

Adverse Reactions:
- Thirst.

Adult Dosage / Route:
- IV/IO or saline lock.

Pediatric Dosage / Route:
- IV/IO or saline lock.

ALS

Class:
- Antidote for cyanide poisoning.

Actions:
- Production of methemoglobinemia that combines with cyanide ion which is excreted in the urine.

Indications:
- Cyanide toxicity.
- Hydrogen sulfide toxicity.

Contraindications:
- Hypotension – consider skipping this step and proceeding to Sodium Thiosulfate.
- Pregnancy.

Precautions:
- **Use extreme caution – methemglobin can be fatal in children**.

Adverse Reactions:
- Syncope.
- Hypotension.
- Excessive methemoglobinemia is likely to occur with decreased arterial oxygen saturation.

Adult Dosage / Route:
- 300 mg IV over 4-5 minutes.
- May repeat 150 mg IV after 30 minutes.

Pediatric Dosage / Route:
- 0.2 mL/kg IV over 4-5 minutes.
- May repeat with half dose after 30 minutes.

SODIUM THIOSULFATE

ALS

Class:
- Antidote for cyanide poisoning.

Actions:
- Converts cyanide to less toxic thiocyanate which is excreted in the urine.

Indications:
- Acute cyanide toxicity.

Contraindications:
- None in acute cyanide toxicity.

Precautions:
- Not useful in Hydrogen Sulfide toxicity.
- Should be used after administration of nitrates.

Adverse Reactions:
- No significant side effects in the setting of acute cyanide toxicity following the administration of nitrates.

Adult Dosage / Route:
- 12.5 grams (50 mL of 25% solution) slow IV push over 10 minutes.

Pediatric Dosage / Route:
- Contact Medical Control.

ALS - BLS

Class:
- Local anesthetic for the eye.

Actions:
- Blocks the initiation and conduction of nerve impulses.

Indications:
- Topically applied local anesthetic for eye examination.

Contraindications:
- Hypersensitivity to ester anesthetics.
- Not to be applied in large amounts or to infants less than 1 year of age.
- Do not use in the presence of penetrating trauma.

Precautions:
- Advise patient that the drops may burn for a few seconds.

Adverse Reactions:
- Stinging in affected eye.

Adult Dosage / Route:
- 1-2 drops per eye.

Pediatric Dosage / Route:
- 1-2 drops per eye.

ALS - BLS

Class:
- Vitamin.

Actions:
- Required for carbohydrate metabolism.
- Deficiency leads to anemia, polyneuritis, Wernicke's encephalopathy, and cardiomyopathy.
- Administration may reverse symptoms of deficiency, but effects are dependent upon duration of illness and severity of disease.

Indications:
- Coma of unknown origin.
- Thiamine deficiency syndromes.
- Alcoholism and severe delirium tremors.
- Malnourishment.

Contraindications:
- Hypersensitivity.

Precautions:
- None.

Adverse Reactions:
- Hypotension (rare).

Adult Dosage / Route:
- 100 mg IV/IM.

Pediatric Dosage / Route:
- Not indicated.

There are many causes of abdominal pain of which some can be life threatening. When evaluating a patient experiencing abdominal pain attempt to determine the cause of the complaint utilizing the following differential.

Upper GI Bleed	Lower GI Bleed	Gynecological
Hx of peptic ulcer disease; Can cause massive hemorrhage. Esophageal varices (Hx of cirrhosis, hepatitis). Peptic Ulcer Disease Aspirin, NSAID's Alcohol Ingestion of caustic substances.	May be occult or bright red; A common cause of orthostatic Hypotension and undetected anemia. Diverticulitis Hemorrhoids Cancer Inflammatory Bowel Disease Chronic Diarrhea, overuse of laxatives.	Think ectopic!! Pain plus vaginal bleeding and sometimes syncope. Ectopic Pregnancy Pelvic Inflammatory Disease/STD's. Ovarian Cyst (No Bleeding) Kidney / Urinary Tract Infection (Blood in Urine). Endometriosis (Severe pain before and during menstrual cycles).
Colicky Pain	**Peritoneal Pain**	**Vomiting**
Spasmotic – usually results from smooth muscle contracting against obstruction of hollow organ. Bowel Obstruction Renal Obstruction “Kidney Stones”. Gallbladder Obstruction Ulcerative Colitis Crohn's Disease	Rigid board-like abdomen, resulting from infection or long standing rupture. Ruptured Appendix Ruptured Ovarian Cyst Pelvic Inflammatory Disease (PID). Perforated Ulcer Peritonitis Advanced	Non-specific symptom, caused by a wide variety of underlying problems some of which are serious. Infection of GI Tract Ulcers Toxic Ingestions Bowel Obstruction Stones of the Gallbladder or Kidney.
Back Pain		
Every pain presenting with new onset back pain (>60 yrs.) should have an abdominal exam R/O AAA. Abdominal Aortic Aneurysm Cholelithasis Pancreatitis Perforated Ulcer		

There are many presentations that represent an acute coronary syndrome, especially in females, the elderly, in patients with diabetes, and those with underlying histories of heart disease. Consider acute coronary syndromes in patients with pain or discomfort from the jaw to the lower abdomen.

	Myocardial Infarction	Angina Pectoris	Dissecting Aneurysm	Pericarditis	Peptic Ulcer
Location	Substernal may vary	Substernal	Substernal	Substernal more left sided	Epigastric Substernal
Onset	Usually sudden	Exertional	Acute	Subacute	Acute or Subacute
Provocation	Usually none. See comments.	Exercise excitement stress, cold, meals	None	Worsened: lying down breathing, swallowing, coughing, twisting	Alcohol, lack of foods, acid foods
Quality	Crushing Heaviness, dull Pressure Band-like Constricting Squeezing	Discomfort Choking Pressure Squeezing, Strangling, Constricting	Deep tearing Shearing “Knife-like”	Sharp	Burning
Radiation	Across, mid-thorax anterior, arms shoulder, neck jaw, teeth, fingers	Same as MI	Back lumbar region	Usually none occasionally shoulder, neck, flank	Occasionally back
Alleviation	None	Rest, NTG	None	Tripod position shallow respirations	Antacids, food
Duration	Usually under 30 minutes. Can be longer.	5-15 min.	Hours	Hours	Hours
Comments	SOB, N&V, pallor, diaphoresis impending doom	May be nocturnal	Sudden onset may subside spontaneously or be associated with paralysis	May be associated with URI, flu pronestyl hydralazine lupus; MAY BE FEBRILE	ASA, NSAID’s eg. Motrin Advil, may trigger.

	Pancreatitis	Esophageal Rupture	Pulmonary Embolism	Esophageal Spasm	Costo- Chondritis
Location	Epigastric	Retrosternal	Multiple	Substernal, Epigastric	Anterior / Lateral
Onset	Acute / Sub-acute	Acute	Sudden or Gradual	Sub-acute	Sudden or Gradual
Provocation	Alcohol, trauma, gall bladder disease	Swallowing	Respirations, cough	Spontaneous, cold liquids, recumbency	Movement, palpation, cough, respiration
Quality	Severe or dull	Severe	Sharp or dull	Dull, pressure, colicky	Sharp superficial
Radiation	Back	Lateral	None	Jaw, either arm	None
Alleviation	Time	None	None	Antacids, occasionally NTG	Time, heat, analgesia
Duration	Hours	Hours	Variable	5-60 minutes	Variable
Comments	May be viral Eg. Mumps	Alcoholics with forceful vomiting; associated with pleural effusion, shock and hydro-pneumothorax	Sudden onset may subside spontaneously or be associated with paralysis	May be associated with URI, flu pronestyl hydralazine lupus; MAY BE FEBRILE	ASA, NSAID's eg. Motrin Advil, may trigger.

Eye Opening

Spontaneously **4**
To Voice **3**
To Pain **2**
No Response **1**

Motor Response

To Verbal Command - Obeys **6**
To Painful Stimulus - Localizes Pain **5**
Flexion - Withdraw **4**
Flexion - Abnormal **3**
Extension **2**
No Response **1**

Verbal Response

Less than 2 years old	2-5 years old	Greater than 5 years old	Score
Smiles/Coos/Cries	Appropriate Words	Oriented and Converses	**5**
Cries	Inappropriate Words	Disoriented and Converses	**4**
Inappropriate/Cries/Screams	Cries/Screams	Inappropriate Words	**3**
Grunts	Grunts	Incomprehensible Sounds	**2**
No Response	No Response	No Response	**1**

Glasgow Coma Score Total (3-15)

This reference applies to 400 mg of Dopamine in 250 mL solution (concentration of 1600 mcg/mL), run via 60 drop tubing at the following rates.

For patients <40 kg, refer to the Broselow™ tape for drip/min calculation.

Weight (kg)	5 mcg gtts/min	10 mcg gtts/min	15 mcg gtts/min	20 mcg gtts/min
40	8	16	24	30
50	10	20	30	40
60	12	24	34	45
70	14	26	40	54
80	15	30	45	60
90	18	34	52	68
100	20	40	56	75
110	22	42	62	84
120	24	45	68	90
130	24	50	74	98
140	26	53	80	105
150	28	56	85	112
160	30	60	90	120
170	32	64	96	128
180	34	68	102	135
190	36	72	106	142
200	38	75	112	150

Quick Calculation

Take patient's weight in pounds, drop the last number and then subtract 2. This will give you the starting drip rate at 5 mcg/kg/min. For every change in micrograms, add or subtract 3 drops.
Example: Patient weighs 175 lb.
175 drop 5 = 17, 17 - 2 = 15
5 mcg/kg/min = 15 gtts/min, 6 mcg/kg/min = 15 + 3 = 18 gtts/min
(Note that this quick calculation is a very close approximate dose)

This reference applies to mixing 1 gram of Lidocaine in a 250 mL solution (concentration of 4 mg/mL), run via 60 drop tubing at the following rates.

For patients <40 kg, refer to the Broselow™ tape for drip/min calculation.

1 mg/min	2 mg/min	3 mg/min	4 mg/min
15 gtts/min	30 gtts/min	45 gtts/min	60 gtts/min

This reference applies to mixing 1 milligram of Epinephrine 1:1,000 in a 250 mL solution (concentration of 4 mcg/mL), run via 60 drop tubing at the following rates.

For patients <40 kg, refer to the Broselow™ tape for drip/min calculation.

1 mcg/min	2 mcg/min	3 mcg/min	4 mcg/min	5 mcg/min
15 gtts/min	30 gtts/min	45 gtts/min	60 gtts/min	75 gtts/min
6 mcg/min	**7 mcg/min**	**8 mcg/min**	**9 mcg/min**	**10 mcg/min**
90 gtts/min	105 gtts/min	120 gtts/min	135 gtts/min	150 gtts/min

	Respirations	Pulse	Systolic BP*
Adult	12 - 20	60 -100	90 - 140
Adolescent	12 - 24	60 -100	>90
Children (1 to 10 years)	22 - 34	80 -140	>75
Infants (1 to 12 months)	24 - 40	90 -150	>70
Neonate (0 to 28 days)	30 - 60	100 -160	>60

* For children 1 to 10 years of age, you can determine the lower limit of an acceptable blood pressure using the following formula:

Minimal systolic blood pressure = 70 + (2 × age in years)

Determine the **APGAR** score at the first minute postpartum. Repeat at the 5 minute interval.

Test	0 Points	1 Point	2 Points
Activity (Muscle Tone)	Absent	Arms & legs extended	Active movement with flexed arms & legs
Pulse (Heart Rate)	Absent	Below 100 bpm	Above 100 bpm
Grimace (Response Stimulation or Reflex Irritability)	No Response	Facial grimace	Sneeze, cough, pulls away
Appearance (Skin Color)	Blue-gray, pale all over	Pink body and blue extremities	Normal over entire body – Completely pink
Respiration (Breathing)	Absent	Slow, irregular	Good, crying

Score of 7-10 is usually associated with coughing and crying within seconds of delivery. Newborns with this score typically do not require and further resuscitation.

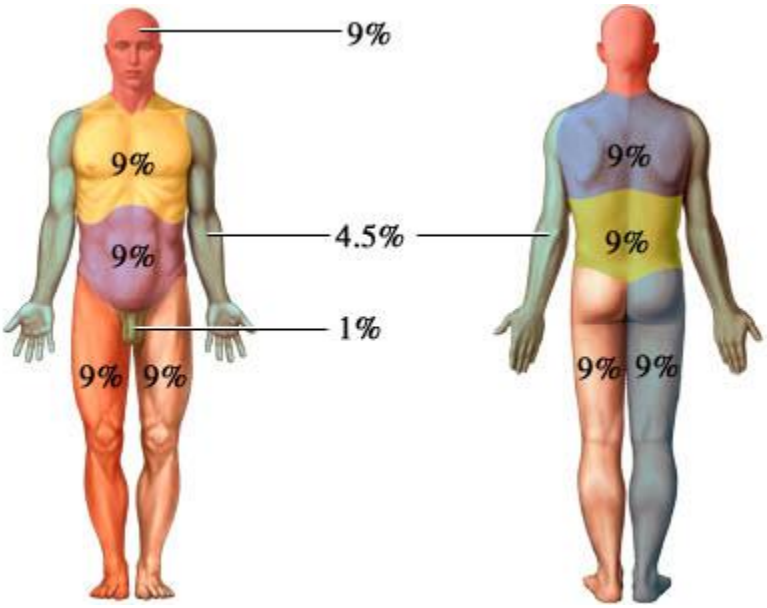
Score of 4-6 the newborn is moderately depressed. Will typically appear pale or cyanotic and have respiratory complications and flaccid muscle tone. These newborns will require some type of resuscitative efforts.

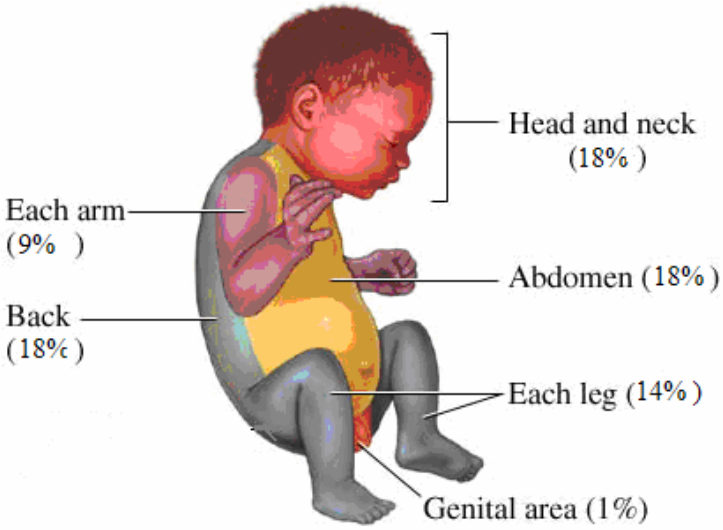
The following chart shows the average ET, suction and orogastric tube size that is compatible to the age of the patient.

Age	ET Size	Suction Catheter	Orogastric Tube
Pre-term	2.5 - 3.0 uncuffed	5	8
Term	3.0 - 3.5 uncuffed	6 - 8	8
6 Months	3.5 uncuffed	8	10
12 - 18 Months	4.0 uncuffed	8	10
3 Years	4.5 uncuffed	8	12
5 Years	5.0 uncuffed	10	12
6 Years	5.5 uncuffed	10	14
8 Years	6.0 uncuffed	10	14
12 Years	6.5 cuffed	10	16
16 Years	7.0 - 8.0 cuffed	12	16
Adult Female	7.5 - 8.0 cuffed	12	18
Adult Male	8.0 - 8.5 cuffed	14	18

1. This chart is meant as a guide only.
2. The size and weight of the child must be taken into consideration for sizing.
3. A quick formula to use when determining endotracheal tube size in pediatric patients is Size = (Age in Years) / 4 + 4.
4. The use of a Broselow™ tape or similar device is encouraged for pediatric patients.

Rule of Nines





Detailed calculation reference for pediatrics > 1 year of age:
For every year over one, add 0.5% to each leg and subtract 1% for the head

Age	Head	Each leg		Age	Head	Each leg
2	17%	14.5%		6	13%	16.5%
3	16%	15%		7	12%	17%
4	15%	15.5%		8	11%	17.5%
5	14%	16%		9	10%	18%

Airborne	Transmission	Prevention	Post-Exposure	Follow-up
Tuberculosis (TB)	Droplets; Coughing, sneezing, intubation, suctioning	Initial 2-step test, annual PPD. Wear HEPA masks.	Source = PPD Employee = PPD, unless PPD tested within prior 12 weeks or previously PPD reactive	PPD at week 12 post-exposure. If new positive; chest x-ray and Rx with isoniazid for 6 months.
Meningitis (Bacterial / Viral)	Droplets; Coughing, sneezing, intubation, suctioning	HEPA Mask	Antibiotic; Cipro, Rocephin, Rifampin	Seek medical care is symptoms of meningitis develop; fever, stiff neck, severe headache.
Influenza (FLU)	Close contact droplets; coughing, sneezing, intubation, suctioning. Also direct contact with vesicle fluid.	Flu shot (Vaccination)	Treatments; analgesics, Rimantadine, Tamiflu, Relenza.	As determined by medical professional.
Varicella Zoster (Chicken Pox)	Close contact droplets; coughing, sneezing, intubation, suctioning. Also direct contact with vesicle fluid.	Vaccine = 1 shot (Varivax). HEPA mask.	Treatment; Varicella Zoster Immune Globulin (VZIG) within 96 hrs of exposure.	As determined by medical professional.
Blood-Borne	**Transmission**	**Prevention**	**Post-Exposure**	**Follow-up**
HIV	Blood to blood, to non intact skin and mucous membranes.	No Vaccine	See post-exposure control protocol.	Periodic screening; 6, 12, 26 weeks after exposure.
Syphilis	Blood and/or open sores / lesions	No Vaccine	Source = RPR Employee = RPR Penicillin.	Repeat test at 3 and 6 months. If positive refer to medical professional.
Hepatitis-B (HBV)	Blood to blood, to non intact skin and mucous membranes.	Vaccine = 3 shot series. Titer and re-immunize if necessary.	Source = Acute Hep. Panel Employee = Acute Hep. Panel. If source positive, employee not immune; administer immune globulin and consider HAV vaccine series.	Periodic screening; 6, 12, 26 weeks after exposure.
Hepatitis-C (HCV)	Blood to blood, to non intact skin and mucous membranes.	No Vaccine	Source = Acute Hep. Panel Employee = Acute Hep. Panel. If source positive, consider employee qualitative HCV RNA & ALT testing 6 weeks after exposure.	Periodic screening; 6, 12, 26 weeks after exposure. If employee becomes HCV RNA positive, treat with Interferon / Ribavirin for 6 months.

Other	Transmission	Prevention	Post-Exposure	Follow-up
Hepatitis-A (HAV)	Fecal / oral	Vaccine = 2 shot series	Source = Acute Hep. Panel Employee = Acute Hep. Panel. If source positive, employee not immune; administer immune globulin and consider HAV vaccine series.	Periodic screening; 12 weeks after exposure or if symptoms occur.
Tetanus	Soiled object causing open wound.	Vaccine good for 10 years.	If no vaccine, administer at this time. If over 7 years from last vaccination and sustained open wound, booster dose.	Seek medical care if symptoms of tetanus develop; lockjaw, rigid muscles.
Lyme Disease	Tick-borne; tick attached 24 hours.	Avoid tick infested areas. Vaccine = 3 shot series for prone areas.	Antibiotics; Amoxicillin, Doxycycline.	As determine by medical professional.
Scabies	Direct contact; mite infested areas, bedding / clothing, nursing homes.	Avoid infested areas.	Lindane and Kwell applied to the entire body for 24 hours.	Close supervision of treatment including bathing.
Rabies	Virus-laden salvia of infected animal; animal bites.	Avoid animal bites.	Wash infected areas. Administer rabies anti-serum injection and first dose of rabies vaccine. Contact animal control, monitor for presence of infection.	If animal is positive, continue to treat employee with vaccine.

1st degree, primary	1°	calcium chloride	CaCl
2nd degree, secondary	2°	carcinoma, cancer	Ca
3rd degree	3°	cardiopulmonary resuscitation	CPR
about, approximately	≈	centigrade	C°
after	$\overline{p}$	cerebrospinal fluid	CSF
before	$\overline{a}$	cerebrovascular accident	CVA
abdomen	abd.	change	Δ
abortion	Ab	chest pain	CP
acetaminophen/Tylenol	APAP	chief complaint	CC
acute coronary syndrome	ACS	chronic obstructive pulmonary disease	COPD
acute myocardial infarction	AMI	circulation, motor, sensation	CMS
advanced cardiac life support	ACLS	clear to auscultation	CTA
against medical advice	AMA	complains of	c/o
airway, breathing, circulation	ABC	congestive heart failure	CHF
alcohol (ethanol)	ETOH	coronary artery bypass graft	CABG
alert and oriented	A&O	coronary artery disease	CAD
ambulate, ambulatory	Amb	cubic centimeter	cc
antecubital	AC	dead on arrival at hospital	DOA
anterior	ant.	dead on scene	DOS
arrived on scene to find	AOSTF	decreased, depressed	↓
aspirin	ASA	delirium tremens	DT's
atherosclerotic heart disease	ASHD	dextrose 25%	D25
atrial fibrillation	AFib	dextrose 5% in water	D5W
atrial flutter	Aflutter	dextrose 50%	D50
automatic internal cardiac defibrillator	AICD	diagnosis	Dx
automated external defibrillator	AED	diastolic blood pressure	DBP
awake, alert, oriented	AAO	discontinue	D/C
bag-valve-mask	BVM	drop	gtt.
beats per minute	BPM	drops	gtts.
bilateral breath sounds	BBS	ear, nose, and throat	ENT
blood glucose analysis	BGA	electrocardiogram	ECG, EKG
blood pressure	BP	emergency department	ED
blood sugar, breath sounds	BS	Epinephrine	Epi
bowel movement	BM	equals	=

erectile dysfunction medications	EDF	last menstrual period	LMP
estimated date of confinement	EDC	left, liter	L.
endotracheal tube	ETT	left	Ⓛ
every	q or Q	left lower quadrant of abdomen	LLQ
external jugular	EJ	left upper quadrant of abdomen	LUQ
Fahrenheit	F°	less than	<
female	f. or ♀	less than or equal to	≤
format for capnography measurements	EtCO2=XX	level of consciousness	LOC
gastrointestinal	GI	loss of consciousness	LOC
gauge	ga.	liters per minute	LPM
Glasgow Coma Scale	GCS	male	m. or ♂
gram or grams	g or gm	medical intensive care unit (hospital)	MICU
Gravida	G	milliequivalent	mEq.
greater than	>	microgram	mcg
greater than or equal to	≥	milligram	mg
ground level fall	GLF	milligrams per deciliter	mg/dL
gunshot wound	GSW	milliliter	mL or ml
headache	HA	millimeters of Mercury	mm Hg
head, eyes, ears, nose, throat	HEENT	minute	Min
heart rate	HR	mobile intensive care unit	MICU
history	Hx	motor vehicle collision	MVC
increased, elevated	↑	moves all extremities	MAE
inferior	inf.	moves all extremities well	MAEW
insulin dependent diabetes mellitus	IDDM	multiple sclerosis	MS
intensive care unit	ICU	myocardial infarction	MI
intramuscular	IM	nasal cannula	NC
intranasal	IN	nasogastric tube	NG tube
intraosseous	IO	nausea/vomiting/diarrhea	N/V/D
intravenous	IV	nebulized	Neb
jugular venous distention	JVD	negative	⊖
keep vein open	KVO	Nitroglycerin	NTG
kilogram	kg	no complaint	N/C
laceration	LAC	none	Ø
lactated Ringer's	LR	non-insulin dependent diabetes mellitus	NIDDM

no known drug allergies	NKDA
Non-rebreather	NRB
normal saline	NS
normal sinus rhythm	NSR
overdose	OD
oxygen	O_2 or O2
para	P
patient	pt.
patient care report	PCR
per	/
person, place, time, event	PPTE
physical exam	P.E.
positive	+
posterior	post.
privately owned vehicle	POV
pulseless electrical activity	PEA
pulse, motor, sensation	PMS
pulse oximetry	SpO2
pupils equal and reactive to light	PERL
range of motion	ROM
Revised Trauma Score	RTS
right	R or R.
right bundle branch block	RBBB
right lower quadrant	RLQ
right upper quadrant	RUQ
Ringer's lactate	RL
shortness of breath	S.O.B.
signs/symptoms	S/S
sodium bicarbonate	NaHCO3
sodium chloride	NaCl
ST elevation myocardial infarction	STEMI
signs/symptoms, allergies, medications, past history, last oral, events leading to	SAMPLE
sublingual	SL
supraventricular tachycardia	SVT
systolic blood pressure	SBP
times 2, or times 3, or times …	x2
to keep open	TKO
transcutaneous pacing	TCP
treatment	Rx or Tx
ventricular fibrillation	VF
ventricular tachycardia	VT
vital signs	V.S.
wheelchair	w/c
weight	wt.
with	$\overline{c}$ or w/
without	$\overline{s}$ or w/out
year(s) old	y.o.