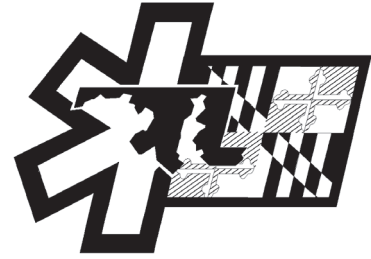


| PROTOCOL TITLE | | PAGE # | LINE # | ORIGINAL TEXT | NEW TEXT |
|--|--|--------|-------------------------------|--|---|
| Health care facility codes | | 7 | n/a | n/a | 444 Holy Cross Germantown Hospital |
| Health care facility codes | | 7 | n/a | n/a | 582 Laurel Highlands Specialized Acute Care, PA |
| General Patient Care | | 9 | n/a | Queenstown Emergency Center (UMSRH) | Shore Emergency Center at Queenstown (UMSRH) (Base Station) |
| General Patient Care | | 26 | 3. a) i. i. and ii | i. If patient's age is > 12 yo, provide 1 breath every 5 seconds. ii. If patient's age is <12 yo, provide 1 breath every 3 seconds | i. For all ages except neonates, 1 breath every 5 seconds (8-12 breaths/min) ii. For a neonate, 1 breath every 3 seconds (higher rates may be required) |
| General Patient Care | | 28 | 5. b) (2) | 2. If patient presents... thru (g) Child less than 8 years of age | 2. Patients who... thru (h) Conditions predisposing to spine injury |
| General Patient Care | | 28 | ALERT | IF PATIENT IS UNABLE TO COMMUNICATE OR APPROPRIATELY RESPOND TO THE ABOVE QUESTIONS, PERFORM A COMPLETE SPINAL IMMOBILIZATION. | IF PATIENT IS UNABLE TO COMMUNICATE OR APPROPRIATELY RESPOND TO THE ABOVE QUESTIONS, APPLY SPINAL PROTECTION PROTOCOL. |
| Altered mental Status: Seizures | | 37 | 3. d) | Additional language | If patient has no IV or IO in place, administer Midazolam 5 mg IN or IM. |
| Altered Mental Status: Seizures | | 38 | f) | New addition | If patient is pregnant, actively seizing, consider magnesium sulfate 4 gm IV/IO over 10 minutes. |
| Altered mental Status: Seizures | | 38 | g) | New addition | If seizures persist, consult for second dose of magnesium sulfate. |
| Altered mental Status: Seizures | | 38 | ALERT | New addition | IF PATIENT IS PREGNANT, USE MIDAZOLAM FOLLOWED BY MAGNESIUM SULFATE. MEDICAL CONSULTATION REQUIRED FOR PREGNANT PATIENTS WHO MAY REQUIRE LARGER DOSES OF MIDAZOLAM TO CONTROL SEIZURES. |
| Altered Mental Status: Seizures | | 38 | ALERT | New addition | IF FOLLOWING ADMINISTRATION OF MAGNESIUM SULFATE, PATIENT EXHIBITS SIGNS OF TOXICITY CONSIDER ADMINISTRATION OF CALCIUM CHLORIDE. CONSIDER CALCIUM CHLORIDE 500 MG IV/P FOR RESPIRATORY DEPRESSION, DECREASED REFLEXES, FLACCID PARALYSIS, AND APNEA FOLLOWING MAGNESIUM SULFATE ADMINISTRATION. MEDICAL CONSULTATION REQUIRED. |
| Altered Mental Status: Seizures | | 38-1 | l) | Additional language | If patient has no IV or IO in place, Administer midazolam 0.1 mg/kg IN or IM. Maximum total dose 5 mg. |
| Altered Mental Status: Seizures | | 38-1 | ALERT | New addition | FOR A CHILD ACTIVELY SEIZING, ADMINISTER MIDAZOLAM IN/IM AND RESERVE IO FOR LIFE-THREATENING ILLNESS. |
| Altered mental Status: Seizures | | 38-1 | o) | If patient is in status, consider IO administration of midazolam | If patient's seizures are refractory to treatment, consider IO administration of midazolam. |
| Cardiac Emergencies: Cardiac Guidelines | | 44 | 1. c) | After single shock, immediately restart CPR (do not perform pulse or ECG rhythm check)... | After single shock, immediately restart CPR (do not perform pulse or EKG rhythm check)... |
| Universal Algorithm for Adult Emergency Cardiac Care for ALS | | 46 | n/a | Oxygen 90 - 100% VENTILATE | Oxygen as needed Ventilate as needed |
| Universal Algorithm for Pediatric (less than 12 years of age) Emergency Cardiac Care for ALS | | 48 | n/a | 100% Oxygen BVM ventilations at 12-20 breaths/min, if appropriate | Oxygen as needed Ventilate as needed |
| Adult Tachycardia Algorithm | | 51-3 | (c) | Consider calcium chloride 250 mg... | Consider calcium chloride 500 mg... |
| Ventricular Fibrillation Pulseless Ventricular Tachycardia | | 56 | Persistent or recurrent VF/VT | New addition | b. If Torsades dePointes is present, give magnesium sulfate 1-2 grams IV/IO over 2 minutes before lidocaine, with medical consult. [See Magnesium Sulfate] |
| Termination of Resuscitation | | 56-2A | n/a | New addition | Termination of Resuscitation Algorithm |
| Cardiac Emergencies: ST Elevation Myocardial Infarction (STEMI) | | 57 | ALERT | ACUTE CORONARY SYNDROME (ACS) IS DEFINED AS PATIENTS PRESENTING WITH ANGINA OR ANGINAL EQUIVALENTS SUCH AS CHEST, EPIGASTRIC, ARM, OR JAW PAIN OR DISCOMFORT AND MAY BE ASSOCIATED WITH DIAPHORESIS, NAUSEA, SHORTNESS OF BREATH, OR DIFFICULTY BREATHING. | ACUTE CORONARY SYNDROME (ACS) IS DEFINED AS PATIENTS PRESENTING WITH ANGINA OR ANGINAL EQUIVALENTS SUCH AS SHORTNESS OF BREATH, CHEST, EPIGASTRIC, ARM, OR JAW PAIN OR DISCOMFORT; DIAPHORESIS; and/or NAUSEA. (Sentence revised for clarity.) |
| Cardiac Emergencies: ST Elevation Myocardial Infarction (STEMI) | | 65 | ALERT | ACUTE CORONARY SYNDROME (ACS) IS DEFINED AS PATIENTS PRESENTING WITH ANGINA OR ANGINAL EQUIVALENTS SUCH AS CHEST, EPIGASTRIC, ARM, OR JAW PAIN OR DISCOMFORT AND MAY BE ASSOCIATED WITH DIAPHORESIS, NAUSEA, SHORTNESS OF BREATH, OR DIFFICULTY BREATHING. | ACUTE CORONARY SYNDROME (ACS) IS DEFINED AS PATIENTS PRESENTING WITH ANGINA OR ANGINAL EQUIVALENTS SUCH AS SHORTNESS OF BREATH, CHEST, EPIGASTRIC, ARM, OR JAW PAIN OR DISCOMFORT; DIAPHORESIS; and/or NAUSEA. (Sentence revised for clarity.) |
| Cardiac Emergencies: ST Elevation Myocardial Infarction (STEMI) | | 65 | ALERT | New addition | IF PATIENT MEETS ABOVE STEMI CRITERIA... |
| Cardiac Emergencies: ST Elevation Myocardial Infarction (STEMI) | | 66 | Chart | New addition | Consider the following presentations as indicative of increased cardiovascular risk... |
| Nausea and Vomiting | | 85-1 | 3. a) | Place patient either in position of comfort or in left lateral position if not prevented by spinal immobilization or packaging. | Place patient either in position of comfort or in left lateral position if not prevented by spinal protection or packaging. |
| Overdose/Poisoning: Injection | | 99 | 3. c) | ...or EMS service's Epinephrine auto-injector or patient's prescribed fast acting bronchodilator. | ...or EMS Service's Epinephrine (1:1,000) 0.3 mg in 0.3 mL IM or patient's prescribed fast-acting bronchodilator. |
| Overdose/Poisoning: Injection | | 100 | 3. n) | ...or EMS service's Epinephrine auto-injector or patient's prescribed fast acting bronchodilator. | ...or EMS Service's Epinephrine (1:1,000) 0.15 mg in 0.15 mL IM or patient's prescribed fast-acting bronchodilator. |
| Respiratory Distress: Allergic Reaction/Anaphylaxis | | 103 | 3. a) | ...or EMS service's Epinephrine auto-injector or patient's prescribed fast acting bronchodilator. | ...or EMS Service's Epinephrine (1:1,000) 0.3 mg in 0.3 mL IM or patient's prescribed fast-acting bronchodilator. |

| Summary of 2015 Protocol Changes | | | | |
|---|------------------|---------------------------------------|---|---|
| PROTOCOL TITLE | PAGE # | LINE # | ORIGINAL TEXT | NEW TEXT |
| Respiratory Distress: Allergic Reaction/Anaphylaxis | 103 | 3. c) | Consider additional doses of patient's prescribed fast-acting bronchodilator or Epinephrine auto-injector. | Consider additional doses of Epinephrine (1:1,000) 0.3 mg in 0.3 mL IM or prescribed fast-acting bronchodilator. |
| Respiratory Distress: Allergic Reaction/Anaphylaxis | 104 | 3. g) | ...or EMS service's Epinephrine auto-injector or patient's prescribed fast acting bronchodilator. | ...or EMS Services Epinephrine (1:1,000) 0.15 mg in .15 mL IM or patient's prescribed fast-acting bronchodilator. |
| Respiratory Distress: Allergic Reaction/Anaphylaxis | 104 | 3. l) | Consider additional doses of patient's prescribed fast-acting bronchodilator or Epinephrine auto-injector. | Consider additional doses of Epinephrine (1:1,000) 0.15 mg in 0.15 mL IM or fast-acting bronchodilator. |
| Respiratory Distress: Asthma/COPD | 106 | 3. b) | Use of the EMS services Epinephrine auto-injector requires medical consultation | Use of the EMS service's Epinephrine (1:1,000) 0.3 mg in 0.3 mL IM requires medical consultation. |
| Respiratory Distress: Asthma/COPD | 106 | 3. d) | Consider additional doses of patient's prescribed fast-acting bronchodilator or Epinephrine auto-injector. | Consider additional doses of patient's prescribed fast-acting bronchodilator or Epinephrine (1:1,000) 0.3 mg in 0.3 mL IM. |
| Respiratory Distress: Asthma/COPD | 107 | 3. m) | New addition | For moderate to severe exacerbations, consider the administration of magnesium sulfate 1-2 grams in 50-100 mL Lactated Ringers IV/IO over 10-20 minutes. |
| Respiratory Distress: Asthma/COPD | 107 | 3. o) | ...or EMS service's Epinephrine auto-injector or patient's prescribed fast acting bronchodilator. | ...or EMS Services Epinephrine (1:1,000) 0.15mg in 0.15 mL IM or patient's prescribed fast-acting bronchodilator. |
| Respiratory Distress: Asthma/COPD | 107 | 3. q) | Consider additional doses of patient's prescribed fast-acting bronchodilator or Epinephrine auto-injector. (formally (p)) | Consider additional doses of patient's prescribed fast-acting bronchodilator or Epinephrine (1:1,000) 0.15 mg in 0.15 mL IM. |
| Respiratory Distress: Asthma/COPD | 107 | 3. v) | New addition | Consider Magnesium Sulfate 50mg/kg IV/IO to a max of 2 grams given over 10-20 minutes. |
| Trauma Protocol: Eye Trauma | 120 | 3. b) | Stabilize and immobilize the patient's head and spine | Consider head stabilization and spinal protection protocol. |
| Trauma Protocol: Eye Trauma | 120 | 3. c) | ...immobilize the patient's head and spine and elevate the head of the backboard to decrease intraocular pressure | ...: consider head stabilization and spinal protection and elevate the head to decrease intraocular pressure. |
| Trauma Protocol: Eye Trauma | 121 | 3. h) | Stabilize and immobilize the patient's head and spine | Consider head stabilization and spinal protection protocol. |
| Trauma Protocol: Eye Trauma | 121 | 3. l) | ...: immobilize the patient's head and spine and elevate the head of the backboard to decrease intraocular pressure | ...: consider head stabilization and spinal protection and elevate the head to decrease intraocular pressure. |
| Trauma Protocol: Multiple/Severe Trauma | 124 | 3. a) | Maintain spine stabilization for blunt trauma patients... | Apply spinal protection protocol for blunt trauma patients. |
| Trauma Protocol: Multiple/Severe Trauma | 124 | 3. b) | ...If mechanism includes both blunt and penetrating trauma, perform spinal immobilization. | If mechanism includes both blunt and penetrating trauma, apply spinal protection protocol. |
| Trauma Protocol: Multiple/Severe Trauma | 125 | 3. g) | Maintain spine stabilization for blunt trauma patients... | Apply spinal protection protocol for blunt trauma patients. |
| Trauma Protocol: Multiple/Severe Trauma | 125 | 3. h) | ...if mechanism includes both blunt and penetrating trauma, perform spinal immobilization. | If mechanism includes both blunt and penetrating trauma, apply spinal protection protocol. |
| Trauma Protocol: Spinal Cord Injury | 128-129-3 | ALL | Replaced protocol | Replaced with Spinal Protection Protocol |
| Trauma Protocol: Trauma Arrest | 130 | 3. c) | Protect cervical spine for blunt trauma patients only. | Perform spinal immobilization for blunt trauma patients only. |
| Trauma Protocol: Trauma Arrest | 131 | 3. k) | Protect cervical spine for blunt trauma patients only. | Perform spinal immobilization for blunt trauma patients only. |
| Glossary | 138 | n/a | New addition | Distracting Injury: Any injury (e.g. fracture, chest, or abdominal trauma) associated with significant discomfort that could potentially distract from a patient's ability to accurately discern or define spinal column pain or tenderness |
| Glossary | 143 | n/a | New addition | Spinal Immobilization: The act of placing a patient on a backboard with cervical collar for the purpose of trying to prevent excessive movement of the spinal column |
| Glossary | 143 | n/a | New addition | Spinal Protection: The act of protecting the spinal cord from further injury |
| Procedures | 144 | Airway Management | New addition | Video Laryngoscopy for Orotacheal Intubation GRT-(I) PP and PM PP |
| Procedures | 145 | iStat | New addition | iStat PM REA |
| Procedures | 146 | Antimicrobial | New addition | Antimicrobial (pre-established interfacility only) PM OSP |
| Medications | 146 | Epinephrine (1:1,000) Vial or Syringe | New addition | 1:1,000 vial or syringe EMT OSP, CRT-(I) SO, PM SO |
| Medications | 146 | Epinephrine 1:10,000 | 1:10,000/1:1,000 | 1:10,000 CRT-(I) SO and PM SO |
| Medications | 146 | Magnesium Sulfate | New medication | GRT-(I) SO/IMC and PM SO/IMC |
| Medications | 146 | Morphine Sulfate | GRT-(I) MC | GRT-(I) SO/IMC |
| Procedures | 181-2 to 181-4 | All | New Protocol | Ventilatory Management |
| Procedures: Electrical Therapy Cardioversion | 184 | c) (2) (b) and (c) | (b) Subsequent 1 J/kg; repeat at 2 J/kg, then 4 J/KG (c) If refractory after 4 shocks, increase dosage to 6 J/kg, 8 J/kg, then 10 J/kg | (b) Subsequent 1 J/kg; repeat at 2 J/kg (c) removed |
| Procedures: Intravenous Maintenance Therapy for EMT | 196 | 2. e) | Total Parenteral Nutrition (TPN) | Peripheral Parenteral Nutrition (PPN) |
| Procedures: Intravenous Maintenance Therapy for EMT | 196 | ALERT | IF IV FLUIDS OR TPN ARE... | IF IV FLUIDS OR PPN ARE... |
| Procedures: Patient initiated refusal of EMS | 198-9 and 198-11 | 3a, 3b, and 4 | 4a and 4b | Lines renumbered 3a,3b, and 4 in both adult and pediatric section |

| Summary of 2015 Protocol Changes | | | | |
|---|-------------------|-------------------|--|--|
| PROTOCOL TITLE | PAGE # | LINE # | ORIGINAL TEXT | NEW TEXT |
| Procedures: Neuroprotective induced hypothermia (therapeutic) after cardiac arrest - Scene & interfacility transfer | 204-1 | d) (2) (a) | Rapid IV infusion of ice cold LR... | Removed |
| Procedures: Neuroprotective induced hypothermia (therapeutic) after cardiac arrest - Scene & interfacility transfer | 204-1 | d) (2) (b) | If not able to administer ice cold IV fluids, apply ice/cold packs bilaterally to patient's neck, axilla, and femoral groins | Actively cool by applying ice/cold packs bilaterally to patient's neck, axilla, and femoral groins. [Outline level 'b' removed] |
| Procedures: Neuroprotective induced hypothermia (therapeutic) after cardiac arrest - Scene & interfacility transfer | 204-2 | d) (4) | If IV fluid administration completed before... | Removed |
| Procedures: 12 Lead Electrocardiogram | 204-3 | c) (3) | Set patient age and a patient identifier (minimum of patient's initials). | Removed |
| Procedures: 12 Lead Electrocardiogram | 204-3 | c) (3) | Acquire 12-lead (15-lead, if trained) | Acquire 12-lead and document the patient's last name, first initial, age, and gender. These identifiers should be on the transmission copy (if able to transmit) and shall be on the delivered printed copy. |
| Procedures: PVE/LSI | 204-8 to 204-13 | All | New protocol | Potentially Volatile Environments with Life-Sustaining Interventions |
| BLS Pharmacology | 206-1 | n/a | New addition | Epinephrine (1:1,000) |
| BLS Pharmacology | 207-1 | Title | NALOXONE (NARCAN) | NALOXONE (NARCAN) Public Safety |
| ALS Pharmacology: Calcium Chloride | 220 | c) (5) | New addition | Respiratory depression, decreased reflexes, flaccid paralysis, and apnea following magnesium sulfate administration |
| ALS Pharmacology: Calcium Chloride | 220 | g) (1) | Administer 250 mg slow IVP... | Administer 500 mg slow IVP... |
| ALS Pharmacology: Diltiazem | 225 | j) (2) | Consider calcium chloride 250 mg... | Consider calcium chloride 500 mg... |
| ALS Pharmacology: Midazolam | 238-1 to 238-2 | All | New medication | Magnesium Sulfate |
| ALS Pharmacology: Midazolam | 239-1 | (1) and (2) | New route of administration | Added intranasal as route of administration for seizures |
| ALS Pharmacology: Oxygen | 245 | c) (1) | New addition | If evidence of hypoxia. [All previous indications renumbered] |
| Pilot Program: Rapid Sequence Intubation Protocol Package | 253 | 1. b) (2) | Age less than 12 | Patients who have not yet reached their 15th birthday |
| Pilot Program: Rapid Sequence Intubation Protocol Package | 260 | Title | (For children less than 12 years of age) | (For children who have not yet reached their 15th birthday) |
| Pilot Program: Adult Surgical Cricothyroidotomy | 268-19 and 268-20 | New protocol | New protocol | Adult Surgical Cricothyroidotomy |
| Pilot Program: Jurisdictional Optional Protocols: Cyanide Poisoning | 268-21 to 268-23 | New program ALERT | New Pilot Program | Mobile Integrated Community Health Pilot Program ...INCLUDING APPLYING SPINAL PROTECTION, IF INDICATED. |
| Jurisdictional Optional Supplemental Program | 274-11 and 274-12 | All | New protocol | Antimicrobial Infusion for Interfacility Transport |
| Jurisdictional Optional Supplemental program: Specialty Care Paramedic | 279-282 | Chart | S= Solo T= Team | SP=Specialty Paramedic RN=With nurse or physician |
| Jurisdictional Optional Supplemental program: Specialty Care Paramedic | 281 | A. 12. (a) | Antibiotics | Removed |
| Jurisdictional Optional Supplemental program: Specialty Care Paramedic | 281 | A. 13. (i) | Total Parenteral Nutrition (TPN) | Removed |
| Jurisdictional Optional Protocol: Ventilated Patient | 301 | 6. a) (2) | dislodgement of tracheotomy tube | dislodgement of tracheotomy tube |
| Jurisdictional Optional Chronic and Scene ventilated patients | 302 | 2. a) (1) | Have an established tracheotomy and ventilator settings that have no changes reflecting improvement in the patient and... | Have an established tracheotomy and ventilator settings that have no changes within 24 hours or changes reflecting improvement in the patient and... |
| Jurisdictional Optional Protocol: Ventilated Patient | 303 | 3. b) (4) | A replacement tracheotomy tube... | A replacement tracheotomy tube... |
| Research | 327-329 | All | New Research Protocol | EMS Linkage to Addiction Treatment |
| Research | 331-334 | All | New Research Protocol | Prehospital Point of Care Testing for Shock Pilot Program (Maryland State Police Aviation Command IStat Research) |

THIS PAGE IS INTENTIONALLY BLANK



The Maryland
Medical Protocols
for Emergency Medical Services Providers

Effective July 1, 2015

**Maryland Institute for
Emergency Medical Services Systems**



The complete “Maryland Medical Protocols for
Emergency Medical Services Providers” is also
available on the Internet. Check out the MIEMSS
website **www.MIEMSS.org**.

Copyright 2015. This document may not be amended or altered;
however, it may be individually reproduced and distributed for free to
Maryland EMS Providers without permission.

This text was produced from materials from the Div. of State Documents, Office of the Secretary of State,
State of Maryland. Only text obtained directly from the DSD is enforceable under Maryland law.
For copies of the official text, call the DSD at 1-800-633-9657.

To All Health Care Providers in the State of Maryland:

Re: 2015 revisions, updates, and additions to *The Maryland Medical Protocols for EMS Providers*

EMS providers will be able to download the replacement pages from the MIEMSS website at www.miemss.org and will be receiving a single copy of the 2015 pocket protocols.

The EMS Board has approved these protocols for implementation on July 1, 2015. Prior to July 1, all EMS providers must complete the protocol update “Meet the Protocols” (visit the Online Training Center) that will highlight the new material.

Some major protocol additions, deletions, and changes have been made this year. A spreadsheet of those changes is included in this year’s packet of updates. The spreadsheet is for reference only and the information located in the full protocol book is the official medical reference for EMS providers. It is the responsibility of each EMS provider to be familiar with all of the Maryland Medical Protocols for EMS Providers.

Protocol Changes:

- Many hospitals have changed their names to reflect their EMS Board designations.
- A requirement for patient demographic information has been placed in the 12-lead procedure section.
- BLS providers whose jurisdiction participates in the optional supplemental program may administer IM epinephrine manually with a prefilled syringe or a syringe and single dose ampule or vial.
- Midazolam: Intranasal (IN) has been added as an acceptable route of administration.
- The ability to capture waveform capnography is now required for all ALS transport units.
- Magnesium sulfate has been added to the ALS formulary in multiple sections of the protocol including asthma, pregnant seizure patients, Torsades de Pointes, and patients with refractory VF/VT after administration of lidocaine.
- Neuroprotective hypothermia: Iced IV fluid has been removed as a method of cooling. Neuroprotective Hypothermia will still be implemented with the use of ice/cold packs as the ONLY acceptable method of cooling.
- Surgical Cricothyroidotomy is now available as a procedure for approved Paramedics whose jurisdiction has been MIEMSS-approved and participates in the new Pilot Program.
- Spinal Protection: This new protocol replaces the Spinal Cord Injury protocol. Providers will now assess patients to determine the level of spinal protection treatment (only a properly-sized cervical collar) or spinal immobilization treatment (a properly-sized cervical collar and long backboard), that is warranted based on EMS provider assessment and signs and symptoms, not simply mechanism of injury.
- Research protocols: A new section has been added to the Maryland Medical Protocols. Two jurisdiction-specific programs have been placed in this section.

- Calcium Chloride: The dose of calcium chloride has been increased to 500 mg for the reversal of diltiazem or magnesium sulfate side effects or toxicity.
- RSI age definition: Adult patients are now defined as patients who are 15 years of age or older.
- Potentially Volatile Environments - Life Sustaining Interventions: The Governor's Active Assault Task Force developed this new protocol in consultation with Maryland State Police, FBI and federal law enforcement partners, tactical operators, TEMS medics, EMS operational leadership, and MIEMSS to address incidents where implementation of standard Maryland Medical Protocol for EMS Providers is not practical due to provider/victim safety concerns and in an effort to maximize patient survival.

Richard L. Alcorta, MD, FACEP
State EMS Medical Director, MIEMSS

Kevin G. Seaman, MD, FACEP
Executive Director, MIEMSS

TABLE OF CONTENTS

| | |
|--|------|
| I. GENERAL INFORMATION | |
| A. General Provisions | 1 |
| B. Important Numbers | 3 |
| C. Health Care Facility Codes | 5 |
| D. Maryland Trauma and Specialty Referral Centers | 11 |
| E. Protocol Key | 15 |
| F. Protocol Usage Flow Diagram | 16 |
| G. Protocol Variation Procedure | 17 |
| H. Inability to Carry Out Physician Order | 19 |
| I. Physician Orders for Extraordinary Care | 21 |
| J. Quality Review Procedure for Pilot Programs | 23 |
| II. GENERAL PATIENT CARE | 25 |
| III. TREATMENT PROTOCOLS | |
| <i>Abuse/Neglect</i> | |
| A. Abuse/Neglect | 35 |
| <i>Altered Mental Status</i> | |
| B. Seizures | 37 |
| C. Unresponsive Person | 39 |
| <i>Apparent Life-Threatening Event (ALTE)</i> | |
| D. Apparent Life-Threatening Event (ALTE) | 41 |
| <i>Behavioral Emergencies</i> | |
| E. Behavioral Emergencies | 42 |
| <i>Cardiac Emergencies</i> | |
| F. Cardiac Guidelines | 44 |
| Universal Algorithm for Adult Emergency Cardiac Care for BLS | 45 |
| Universal Algorithm for Adult Emergency Cardiac Care for ALS | 46 |
| Universal Algorithm for Pediatric Emergency Cardiac Care for BLS | 47 |
| Universal Algorithm for Pediatric Emergency Cardiac Care for ALS | 48 |
| G. Bradycardia | 49 |
| Adult Bradycardia Algorithm | 50 |
| Pediatric Bradycardia Algorithm | 51 |
| G1. Tachycardia | 51-1 |
| Adult Tachycardia Algorithm | 51-3 |
| Pediatric Tachycardia Algorithm | 51-4 |
| H. Cardiac Arrest | 52 |
| Adult Asystole Algorithm | 53 |
| Pediatric Cardiac Arrest Algorithm | 54 |
| Pulseless Electrical Activity (PEA) Algorithm | 55 |
| VF Pulseless VT Algorithm | 56 |
| H1. Termination of Resuscitation | 56-1 |
| H2. Pronouncement of Death in the Field | 56-3 |

TABLE OF CONTENTS

| | |
|--|-------|
| H3. EMS DNR/MOLST | 56-4 |
| H4. EMS/DNR Flowchart | 56-14 |
| I. Chest Pain/Acute Coronary Syndrome | 57 |
| J. Hyperkalemia: Renal Dialysis/Failure or Crush Syndrome | 59 |
| J1. Implantable Cardioverter Defibrillator (ICD) Malfunction | 60-1 |
| K. Intentionally Omitted | |
| L. Premature Ventricular Contractions (PVCs) | 64 |
| M. ST Elevation Myocardial Infarction (STEMI) | 65 |
| N. Sudden Infant Death Syndrome (SIDS) | 67 |
| O. Intentionally Omitted | |
| P. Intentionally Omitted | |
| <i>Environmental Emergencies</i> | |
| Q. Cold Emergencies (Frostbite) | 74 |
| R. Cold Emergencies (Hypothermia) | 76 |
| S. Depressurization | 78 |
| T. Hazardous Materials Exposure | 79 |
| U. Heat-Related Emergencies | 81 |
| V. Near-Drowning | 82 |
| W. Overpressurization | 83 |
| <i>Hyperbaric Emergencies</i> | |
| X. Hyperbaric Therapy | 84 |
| <i>Nausea and Vomiting</i> | |
| X1. Nausea and Vomiting | 85-1 |
| <i>Non-Traumatic Shock</i> | |
| Y. Hypoperfusion | 86 |
| <i>Obstetrical/Gynecological Emergencies</i> | |
| Z. Childbirth Algorithm | 88 |
| AA. Newly Born | 90 |
| Universal Algorithm for Newly Born for BLS | 90 |
| Universal Algorithm for Newly Born for ALS | 90-1 |
| BB. Vaginal Bleeding | 91 |
| <i>Overdose/Poisoning</i> | |
| CC. Absorption | 92 |
| DD. Ingestion | 94 |
| EE. Inhalation | 97 |
| FF. Injection | 99 |
| FF1. Stimulant Toxicity | 100-1 |
| <i>Pain Management</i> | |
| GG. Pain Management | 101 |
| <i>Respiratory Distress</i> | |
| HH. Allergic Reaction/Anaphylaxis | 103 |
| II. Asthma/COPD | 106 |
| JJ. Croup | 108 |
| KK. Pulmonary Edema/Congestive Heart Failure | 110 |
| Universal Algorithm for Pediatric Respiratory Distress for BLS | 114 |
| Universal Algorithm for Pediatric Respiratory Distress for ALS | 115 |

TABLE OF CONTENTS

| | | |
|--------------------------------------|---|-------|
| Stroke | | |
| LL. | Stroke: Neurological Emergencies | 116 |
| Trauma Protocol | | |
| MM. | Burns | 118 |
| NN. | Eye Trauma | 120 |
| OO. | Hand/Upper/Lower Extremity Trauma | 122 |
| PP. | Multiple/Severe Trauma | 124 |
| | Glasgow Coma Scale | 126 |
| QQ. | Sexual Assault | 127 |
| RR. | Spinal Protection | 128 |
| SS. | Trauma Arrest | 130 |
| TT. | Trauma Decision Tree | 132 |
| | | |
| IV. APPENDICES | | |
| A. | Glossary | 137 |
| B. | Procedures, Medical Devices, and Medications for EMS and Commercial Services | 144 |
| C. | Rule of Nines | 148 |
| D. | Normal Vital Signs and APGAR Chart | 149 |
| E. | Intentionally Omitted | |
| F. | Intentionally Omitted | |
| G. | Intentionally Omitted | |
| G1. | Proposed Protocol Submission Request Policy | 163 |
| G2. | Proposed Protocol Submission Template | 164-1 |
| G3. | Protocol Concept/Sponsor Request | 164-2 |
| H. | Procedures | 165 |
| | Accessing Central Venous Catheters and Devices | 165 |
| Airway Management | | |
| | Bag-Valve-Mask Ventilation | 168 |
| | Continuous Positive Airway Pressure (CPAP) | 170-1 |
| | Latex-Free Dual Lumen Tube | 170-3 |
| Airway Management (continued) | | |
| | Gastric Tube | 171 |
| | Nasotracheal Intubation | 172 |
| | Needle Decompression Thoracostomy (NDT) | 174 |
| | Obstructed Airway Foreign Body Removal: Direct Laryngoscopy | 175 |
| | Orotracheal Intubation | 176 |
| | Tracheostomy Change | 179 |
| | Tracheostomy Suctioning | 181 |
| | Ventilatory Difficulty Secondary to Bucking or Combativeness | 181-1 |

TABLE OF CONTENTS

| | |
|---|-------|
| <i>Electrical Therapy</i> | |
| Automated External Defibrillation | 182 |
| Cardioversion | 184 |
| Defibrillation | 186 |
| External Transcutaneous Cardiac Pacing | 187 |
| Go-Team Activation | 189 |
| External Jugular (EJ) | 191 |
| Glucometer Protocol | 192 |
| Intraosseous Infusion (IO) | 194 |
| Intravenous Maintenance Therapy for EMT | 196 |
| Medevac Utilization | 198-1 |
| Patient-Initiated Refusal of EMS | 198-7 |
| Peripheral Intravenous Access for CRT-(I) and Paramedic, and IV Access Option for EMT Approved by the EMS Operational Program | 199 |
| <i>Physical and Chemical Restraints</i> | 202 |
| <i>Neuroprotective Induced Hypothermia</i> | 204-1 |
| <i>12-Lead Electrocardiogram</i> | 204-3 |
| <i>Acupressure</i> | 204-4 |
| <i>Multiple Casualty Incident/Unusual Event</i> | 204-5 |
| <i>Potentially Volatile Environments with Life Sustaining Interventions</i> | 204-8 |
| I. BLS Pharmacology | |
| Acetaminophen | 205 |
| Activated Charcoal (Without Sorbitol) | 205-1 |
| Albuterol | 205-2 |
| Aspirin | 206 |
| Epinephrine (1:1,000) | 206-1 |
| Epinephrine Auto-Injector | 207 |
| Naloxone | 207-1 |
| Nitroglycerin | 208 |
| Oral Glucose | 209 |
| Oxygen | 210 |
| J. ALS Pharmacology | |
| Acetaminophen | 210-1 |
| Activated Charcoal (Without Sorbitol) | 211 |
| Adenosine | 212 |
| Albuterol | 213 |
| Aspirin | 215 |
| Atropine Sulfate | 216 |
| Atrovent | 218 |
| Calcium Chloride | 220 |
| Dexamethasone | 222 |

TABLE OF CONTENTS

| | | |
|-----|---|-------|
| J. | ALS Pharmacology (continued) | |
| | Dextrose 50% | 222-1 |
| | Diazepam | 223 |
| | Diltiazem | 224 |
| | Diphenhydramine Hydrochloride | 226 |
| | Dopamine Hydrochloride | 227 |
| | Epinephrine | 229 |
| | Fentanyl | 232 |
| | Glucagon | 233 |
| | Haloperidol (Haldol) | 234 |
| | Lactated Ringer's | 236 |
| | Lidocaine | 237 |
| | Magnesium Sulfate | 238-1 |
| | Midazolam | 239 |
| | Morphine Sulfate | 240 |
| | Naloxone | 242 |
| | Nitroglycerin | 243 |
| | Nitroglycerin Paste | 244 |
| | Ondansetron | 244-1 |
| | Oxygen | 245 |
| | Sodium Bicarbonate | 247 |
| | Terbutaline Sulfate | 247-2 |
| | <i>Interfacility</i> | |
| K. | Lidocaine Infusion for Interfacility Transport | 249 |
| L. | Morphine Sulfate Infusion for Interfacility Transport | 250 |
| | <i>Pilot Programs</i> | |
| M. | Adult Rapid Sequence Intubation | |
| | RSI Pilot Program | 253 |
| | Ventilatory Difficulty Secondary to Bucking or Combativeness in Intubated Patients | 255 |
| | Protocol for Cricothyroidotomy (Surgical and Needle) | 257 |
| | RSI Quality Assurance Process | 259 |
| N. | Pediatric Rapid Sequence Intubation | |
| | RSI Pilot Program | 260 |
| | Ventilatory Difficulty Secondary to Bucking or Combativeness in Intubated Patients | 262 |
| | Protocol for Cricothyroidotomy | 264 |
| | RSI Quality Assurance Process | 265 |
| N1. | Rapid Sequence Intubation Pharmacology | 265-1 |
| | Etomidate | 265-1 |
| | Ketamine | 265-2 |
| | Midazolam | 266 |
| | Succinylcholine | 267 |
| | Vecuronium | 268 |

TABLE OF CONTENTS

Pilot Programs (continued)

| | |
|--|--------|
| N2. EMT Acquisition of 12-Lead Electrocardiography | 268-7 |
| N3. Pelvic Stabilization Binder Device | 268-10 |
| N4. On-Scene Protocol and Alternative Dispatch Protocol | 268-12 |
| N5. Video Laryngoscopy for Orotracheal Intubation | 268-15 |
| N6. Transport to Shore Emergency Center at Queenstown Freestanding Medical Facility | 268-18 |
| N7. Adult Surgical Cricothyroidotomy | 268-19 |
| N8. Mobile Integrated Community Health Program | 268-21 |

V. JURISDICTIONAL OPTIONAL PROTOCOLS

| | |
|--|--------|
| O. Cyanide Poisoning | 269 |
| P. Glycoprotein IIb/IIIa Antagonist Infusions | 271 |
| Glycoprotein IIb/IIIa Antagonist | 272 |
| P1. Intranasal Naloxone: EMR & Commercial BLS | 272-1 |
| Q. Heparin Infusion for Interfacility Transport | 273 |
| Heparin | 274 |
| Q1. Impedance Threshold Device | 274-1 |
| Q2. Laryngeal Tube Airway Device | 274-3 |
| Q3. Bi-Level Positive Airway Pressure (BiPAP) | 274-5 |
| Q4. BLS Glucometer | 274-6 |
| Q5. High Performance CPR | 274-7 |
| Q6. Antimicrobial Infusion for Interfacility Transport | 274-11 |
| R. MARK I / DuoDote Kits (Atropine and 2-PAM Auto-injectors) | 275 |
| S. Specialty Care Paramedic | 279 |
| T. Tactical EMS | 283 |
| U. Transport of Acute Ventilated Interfacility Patients | 300 |
| V. Transport of Chronic and Scene Ventilated Patients | 302 |
| W. Transport to Freestanding Medical Facility | 305 |
| X. Wilderness Emergency Medical Services Protocols | 306 |
| Y. Maryland Vaccination & Testing Program | 322 |

VI. RESEARCH PROTOCOLS

| | |
|---|-----|
| Z. EMS Linkage to Addiction Treatment | 327 |
| Z1. Prehospital Point of Care Testing for Shock | 331 |

| Code | Health Care Facility Name |
|-------------|--|
| 242 | Hanover Hospital, PA |
| 211 | Harbor Hospital (MedStar) (Base Station, Primary Stroke) |
| 220 | Harford Memorial Hospital (UMUCH) (Base Station, Primary Stroke) |
| 562 | Harryon State Hospital |
| 399 | Health South Chesapeake Rehabilitation Center (formerly Chesapeake Rehabilitation Hospital) |
| 490 | Health South Rehabilitation Hospital of Altoona (former facility code 420) |
| 267 | Highland State Health Facility Psychiatric Unit |
| 444 | Holy Cross Germantown Hospital (New '15) |
| 244 | Holy Cross Hospital (Base Station, Cardiac Interventional, Primary Stroke) |
| 450 | Hospice of Baltimore - Gilchrist Center - Baltimore, MD |
| 268 | HSC Pediatric Center, DC |
| 223 | Howard County General Hospital (JHM) (Base Station, Cardiac Interventional, Primary Stroke) |
| 270 | Howard University Hospital, DC |
| 230 | Inova Alexandria Hospital, VA |
| 340 | Inova Fair Oaks Hospital, VA |
| 305 | Inova Fairfax Hospital, VA |
| 326 | Inova Loudoun Hospital, VA |
| 287 | Inova Mount Vernon Hospital, VA |
| 349 | Isle of Wight Medical Center |
| 273 | Jefferson Memorial Hospital, Arlington, VA |
| 314 | Jefferson Memorial Hospital, Ranson, WV |
| 201 | Johns Hopkins Bayview (Adult Burn, Adult Trauma, Base Station, Cardiac Interventional, Neonatal, Perinatal, Primary Stroke) |
| 766 | Johns Hopkins Bayview Medical Center Transitional Care Unit |
| 761 | Johns Hopkins Comprehensive Geriatric Center |
| 204 | Johns Hopkins Hospital (Adult Trauma, Base Station, Cardiac Interventional, Eye Trauma, Neonatal, Pediatric Base Station, Pediatric Burn, Pediatric Trauma, Perinatal, Primary Stroke) |
| 706 | Johns Hopkins Hospital Inpatient Rehabilitation Center |
| 451 | Joseph Richey Hospice - Joseph Richey House, Baltimore, MD |
| 274 | Kennedy-Krieger Institute (formerly John F. Kennedy Institute for Handicapped Children) |
| 277 | Keswick Multi-Care Center (Formerly Keswick Home for the Incurables of Baltimore City) |
| 262 | Kimbrough Army Hospital |
| 563 | King's Daughters Hospital, WV |
| 259 | Kirk Army Hospital |
| 403 | Lancaster General Hospital, PA |
| 564 | Lancaster Osteopathic Hospital, PA |
| 582 | Laurel Highlands Specialized Acute Care, PA (New '15) |
| 352 | Laurel Regional Hospital (formerly Greater Laurel Beltsville Hospital) |
| 773 | Laurel Regional Hospital–Rehabilitation |
| 565 | Leesburg Hospital, VA |
| 278 | Levindale Hebrew Geriatric Center & Hospital |
| 209 | Liberty Medical Center (formerly Provident Hospital) |
| 205 | Liberty Medical Center Psychiatric Center (formerly Lutheran Hospital) |
| 255 | Lincoln Memorial Hospital |
| 354 | Malcolm Grow U.S. Air Force Medical Center |
| 280 | Mary Washington Hospital, VA |
| 281 | Maryland Penitentiary Hospital |

| Code | Health Care Facility Name |
|-------------|--|
| 300 | Maryland Poison Information Center at UMAB |
| 285 | Masonic Eastern Star Home, DC |
| 566 | McConnellsburg Hospital |
| 332 | McCready Memorial Hospital (Base Station) |
| 339 | McGuire Veteran's Administration Hospital, VA |
| 398 | Mechanicsburg Rehabilitation Hospital |
| 774 | Medlink, DC |
| 327 | MedStar Washington Hospital Center, DC (Adult Trauma, Burn, Cardiac Interventional) |
| 404 | Memorial Hospital, PA |
| 567 | Memorial Osteopathic Hospital, PA |
| 207 | Mercy Medical Center (Base Station, Neonatal, Perinatal, Primary Stroke) |
| 389 | Meritus Medical Center (formerly listed as Washington County Health System #289) (Adult Trauma, Base Station, Cardiac Interventional, Primary Stroke) |
| 799 | Meritus Medical Center, Comprehensive Inpatient Rehabilitation Services (formerly listed as Washington County Health System, Comprehensive Inpatient Rehabilitation Services #789) |
| 499 | Meritus Medical Center, Psychiatric Unit (formerly listed as Washington County Health System, Psychiatric Unit #456) |
| 798 | Meritus Medical Center, Skilled Nursing Facility (formerly listed as Washington County Health System, Skilled Nursing Facility #764) |
| 206 | Midtown (UM) (Base Station, Primary Stroke) (formerly Maryland General Hospital) |
| 271 | Monongalia General Hospital, WV |
| 228 | Montebello Center - Baltimore, MD |
| 264 | Montgomery Medical Center (MedStar) (Base Station, Primary Stroke) |
| 292 | Mount Washington Pediatric Hospital |
| 400 | Myersdale Medical Center, PA |
| 351 | Nanticoke Memorial Hospital, DE (Cardiac Interventional) |
| 295 | National Capital Poison Center, Washington, DC |
| 334 | National Hospital for Orthopedics & Rehabilitation, VA |
| 308 | National Institute of Mental Health |
| 356 | National Institutes of Health Clinical Center |
| 309 | National Rehabilitation (MedStar) at Irving Street, Washington, DC |
| 751 | Nemours/Alfred I. DuPont Hospital for Children (formerly Alfred I. DuPont Institute) |
| 307 | Newark Emergency Center, Newark, DE |
| 568 | Newark Hospital, NJ |
| 762 | Newmedico Rehabilitation |
| 753 | Northampton-Accomac Memorial Hospital |
| 313 | Northeast Georgetown Medical Center (see also Greater Northeast # 261) |
| 315 | Northern Virginia Doctor's Hospital, VA |
| 218 | Northwest Hospital Center (Base Station) |
| 408 | Peninsula Regional Medical Center (Adult Trauma, Base Station, Cardiac Interventional, Primary Stroke) |
| 454 | Peninsula Regional Medical Center, Transitional Care Unit |
| 419 | Penn State Children's Hospital, Hershey, PA |
| 301 | Penn State Milton Hershey Medical Center, PA |
| 318 | Perkins State Hospital |
| 357 | Perry Point Veteran's Administration Hospital |
| 569 | Pittsburgh Institute for Rehabilitation |

| Code | Health Care Facility Name |
|------|--|
| 362 | Pocomoke City Medical Center |
| 361 | Pocomoke Family Health Center |
| 338 | Police & Fire Clinic, Washington, DC |
| 325 | Potomac Hospital, VA |
| 401 | Potomac Valley Hospital, WV |
| 232 | Prince George's Hospital Center (Adult Trauma, Cardiac Interventional, Base Station, Neonatal) |
| 344 | Prince William Hospital, VA |
| 288 | Providence Hospital, DC |
| 378 | Psychiatric Institute of DC |
| 364 | Psychiatric Institute of Montgomery County |
| 634 | R Adams Cowley Shock Trauma Center (UM) (Adult Trauma, Base Station, Hyperbaric, Neurotrauma) |
| 570 | Reading Medical Center |
| 227 | Rehabilitation & Orthopaedic Institute (UM) (formerly Kernan Hospital) |
| 571 | Riverside Hospital, DE |
| 311 | Riverside Hospital, VA |
| 365 | Rosewood Center |
| 461 | Ruby Hospital Morgantown, WV |
| 572 | Sacred Heart Hospital, PA |
| 573 | Saint Agnes Burn Center, PA (formerly listed as a Delaware facility) |
| 212 | Saint Agnes Hospital (Base Station, Cardiac Interventional, Neonatal, Perinatal, Primary Stroke) |
| 366 | Saint Elizabeth's Hospital, Washington, DC |
| 303 | Saint Francis Hospital, WV |
| 460 | Saint Francis Hospital, Wilmington, DE |
| 213 | Saint Joseph Medical Center (UM), MD (Base Station, Cardiac Interventional, Primary Stroke) |
| 405 | Saint Joseph Hospital, PA |
| 367 | Saint Luke Institute |
| 333 | Saint Mary's Hospital (MedStar) (Base Station, Primary Stroke) |
| 455 | Salisbury Genesis Center |
| 384 | Shady Grove Adventist Emergency Center at Germantown |
| 265 | Shady Grove Adventist Hospital (Base Station, Cardiac Interventional, Primary Stroke) |
| 368 | Sheppard & Enoch Pratt Hospital |
| 387 | Shore Emergency Center at Queenstown (UMSRH) (Base Station) (formerly Queenstown Emergency Center) (New '15) |
| 324 | Sibley Memorial Hospital (JHM), Washington, D.C. |
| 750 | Sinai Head Injury Rehabilitation Hospital |
| 210 | Sinai Hospital of Baltimore (Adult Trauma, Base Station, Cardiac Interventional, Neonatal, Perinatal, Primary Stroke) |
| 770 | Sinai Rehabilitation Hospital |
| 772 | Solomon's Nursing Home Center |
| 360 | Southern Chester County Medical Center, PA |
| 343 | Southern Maryland Hospital (MedStar) (Base Station, Cardiac Interventional, Primary Stroke) |
| 369 | Spring Grove State Hospital |
| 406 | Springfield State Hospital |
| 370 | Springwood Psychiatric Institute, VA |
| 521 | State Post Mortem Examiner's (Morgue) |
| 452 | Stella Maris Hospice - Dulaney Valley Road - Timonium, MD |
| 453 | Stella Maris Hospice at Mercy Medical Center - Baltimore, MD |
| 249 | Suburban Hospital (JHM) (Adult Trauma, Base Station, Cardiac Interventional, Primary Stroke) |

| Code | Health Care Facility Name |
|-------------|--|
| 371 | Tawes-Bland Bryant Nursing Center |
| 574 | Taylor Hospital, WV |
| 312 | Taylor Manor Hospital |
| 372 | TB Clinic |
| 373 | Tidewater Memorial Hospital, VA |
| 254 | University Specialty Hospital (formerly Deaton Hospital & Medical Center of Christ Lutheran Church) |
| 374 | U.S. Naval Medical Clinic, Annapolis |
| 576 | U.S. Public Health Hospital, MD |
| 375 | U.S. Soldier's and Airmen's Home, DC |
| 298 | Union Hospital of Cecil County (Base Station) |
| 214 | Union Memorial Hospital (MedStar) (Base Station, Cardiac Interventional, Hand/Upper Extremity, Primary Stroke) |
| 215 | University of Maryland Medical Center (Base Station, Cardiac Interventional, Neonatal, Perinatal, Primary Stroke) |
| 575 | University of Pennsylvania Hospital |
| 551 | University of Pittsburgh Medical Center Bedford Memorial, PA |
| 224 | Upper Chesapeake Medical Center (UMUCH) (Base Station, Cardiac Interventional, Primary Stroke) |
| 407 | Upper Shore Mental Health Center |
| 246 | Veteran's Administration Hospital - Baltimore, MD |
| 577 | Veteran's Administration Hospital - Wilmington, DE |
| 376 | Veteran's Administration Medical Center, DC |
| 275 | Veterans Affairs Medical Center, Martinsburg, VA (formerly Martinsburg V.A. Hospital and Newton T. Baker Hospital) |
| 233 | Virginia Hospital Center, VA |
| 238 | Walter P. Carter Center |
| 377 | Walter Reed Hospital Annex |
| 355 | Walter Reed National Military Medical Center, Bethesda, MD |
| 282 | War Memorial Hospital, Berkeley Springs, WV |
| 552 | War Memorial Hospital, Berkeley Springs, WV |
| 328 | Washington Adventist Hospital (Base Station, Cardiac Interventional) |
| 269 | Waynesboro Hospital, Waynesboro, PA |
| 323 | West Virginia University Hospital, WV |
| 290 | Western Maryland Center, MD |
| 395 | Western Maryland Regional Medical Center (Adult Trauma, Base Station, Cardiac Interventional, Primary Stroke) |
| 776 | Western Maryland Regional Medical Center, Psychiatric Unit |
| 402 | Western Pennsylvania University Hospital, PA |
| 283 | Winchester Medical Center |
| 578 | Woodrow Wilson Rehabilitation Center, VA |
| 579 | Yale - New Haven Hospital |
| 272 | York Hospital, PA |
| 765 | York Rehabilitation Hospital, PA |
| 888 | Other Facility |

II. GENERAL PATIENT CARE (GPC)

A. RESPONSE

Review the dispatch information and select appropriate response.

B. SCENE ARRIVAL AND SIZE-UP

1. Consider Body Substance Isolation (BSI).
2. Consider Personal Protective Equipment (PPE).
3. Evaluate the scene safety.
4. Determine the number of patients.
5. Consider the need for additional resources.

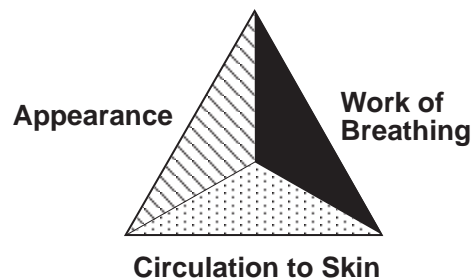
C. PATIENT APPROACH

1. Determine the Mechanism of Injury (MOI)/Nature of Illness (NOI).
2. If appropriate, begin triage and initiate Mass Casualty Incident (MCI) procedures.



D. INITIAL ASSESSMENT

CORRECT LIFE-THREATENING PROBLEMS AS IDENTIFIED.
STABILIZE CERVICAL SPINE WHEN APPROPRIATE.



FOR PEDIATRIC PATIENTS, CONSIDER USING THE PEDIATRIC ASSESSMENT TRIANGLE.

1. Assess mental status
 - a) **A**lert
 - b) Responds to **V**erbal stimuli
 - c) Responds to **P**ainful stimuli
 - d) **U**nresponsive
2. Airway
 - a) Open and establish airway using appropriate adjunct.
 - b) Place patient in appropriate position.
 - c) Suction airway as needed, including tracheostomy tubes.



IF A PATENT AIRWAY CANNOT BE ESTABLISHED, THE PATIENT MUST BE TRANSPORTED TO THE NEAREST APPROPRIATE HOSPITAL-BASED EMERGENCY DEPARTMENT **OR DESIGNATED FREESTANDING MEDICAL FACILITY**. ONCE THE PATIENT PRESENTS TO THE HOSPITAL **OR DESIGNATED FREESTANDING MEDICAL FACILITY** FOR TREATMENT OF AN EMERGENCY CONDITION, TREATMENT AND TRANSFER DECISIONS ARE THE RESPONSIBILITY OF THE HOSPITAL UNDER APPLICABLE LAW. THE PROVIDER SHOULD STAND BY TO BE AVAILABLE FOR AND ASSIST WITH TRANSFER OF THE PATIENT IF THE HOSPITAL DETERMINES SUCH A TRANSFER IS APPROPRIATE.



IN INFANTS AND YOUNG CHILDREN, INSPIRATORY STRIDOR IS AN INDICATION OF UPPER AIRWAY FOREIGN BODY OR PARTIAL AIRWAY OBSTRUCTION. REQUEST ALS RENDEZVOUS. TRANSPORT THE PATIENT RAPIDLY AND CAUTIOUSLY AND HAVE FOREIGN BODY AIRWAY REMOVAL EQUIPMENT READY FOR IMMEDIATE USE IN CASE THE PATIENT'S AIRWAY BECOMES OBSTRUCTED.

3. Breathing

- a) Determine if breathing is adequate. Assess oxygen saturation (SpO_2) with portable pulse oximeter (required on all transport units since 2012).
 - (1) If patient's ventilations are not adequate, provide assistance with 100% oxygen using Bag-Valve-Mask (BVM).
 - (i) For all ages except neonates, 1 breath every 5 seconds (8–12 breaths/min) (manually-activated positive pressure oxygen delivery device is not recommended for this group) (**NEW '15**)
 - (ii) For a neonate, 1 breath every 3 seconds (higher rates may be required) (**NEW '15**)
 - (2) The decision to oxygenate will be based upon the patient's clinical condition.
 - (i) $SpO_2 \geq 94\%$ is considered normoxia in adults and children. Supplemental oxygen is not needed if $SpO_2 \geq 94\%$ unless the patient is in respiratory distress, acutely dyspneic, or suffering from suspected CO poisoning. Patients in severe respiratory distress may benefit from high flow oxygen from a nonrebreather.

Note: Respiratory distress is present if the patient has retractions, nasal flaring, wheezing, stridor, or difficulty speaking.
 - (ii) Unless in respiratory distress, avoid administration of high flow oxygen to patients presenting with the following conditions:
 - (a) STEMI/Angina
 - (b) CVA/stroke
 - (c) Post arrest
 - (iii) CO Exposure: Apply 100% oxygen via NRB mask. Maintain SpO_2 at 100%.



INACCURATE OR MISLEADING SpO_2 READINGS MAY OCCUR IN THE FOLLOWING PATIENTS: HYPOTHERMIC, HYPOPERFUSION (SHOCK), CO POISONING, HEMOGLOBIN ABNORMALITY, ANEMIA, AND VASOCONSTRICTION.

| Percent O ₂ Saturation | Ranges | General Patient Care |
|--|------------------|---|
| 94–100% | Normal | Give Oxygen as necessary |
| 91–93% | Mild Hypoxia | Give Oxygen as necessary |
| 86–90% | Moderate Hypoxia | Give 100% Oxygen Assisting Ventilations if necessary |
| ≤ 85% | Severe Hypoxia | Give 100% Oxygen Assist Ventilations If indicated, Intubate |
| False SpO₂ readings may occur in the following patients: Hypothermic, Hypoperfusion (Shock), Carbon Monoxide Poisoning, Hemoglobin Abnormality, Anemic, and Vasoconstriction. | | |

(3) If available, utilize end-tidal CO₂ waveform monitoring in intubated patients (required on all ALS transport units for advanced airway management by 2015).

(4) Consider carbon monoxide measurement, if available.

b) Hyperventilate the head injured patient only if signs/symptoms of herniation are present, including posturing, loss of pupillary light response, dilation of one or both pupils, vomiting, hypertension, bradycardia, and/or irregular respirations.

(1) If hyperventilating, use the following rates

Adult: 20 breaths per minute

Child: 30 breaths per minute

Infant: 35 breaths per minute

(2) If hyperventilating, use EtCO₂ monitoring if available.



NEVER WITHHOLD OXYGEN FROM A PATIENT IN RESPIRATORY DISTRESS!

| DEVICE | FLOW RATE | CONCENTRATION |
|-------------------------|-----------|---------------|
| Nasal Cannula | 2–6 lpm | 24–44% |
| Venturi Mask | Variable | 24–50% |
| Partial Rebreather Mask | 6–10 lpm | 35–60% |
| Simple Face Mask | 6–10 lpm | 35–60% |
| Pocket Mask | 12–15 lpm | 50–60% |
| Non-Rebreather Mask | 12–15 lpm | 80–100% |
| Bag-Valve-Mask | 12–15 lpm | 90–100% |



4. Circulation

ONCE CONFIRMED PULSELESS, HIGH-QUALITY CONTINUOUS CPR WITH FREQUENT PROVIDER ROTATION IS AN ESSENTIAL COMPONENT IN THE SUCCESSFUL RESUSCITATION OF THE ARRESTED PATIENT. THIS MAY BE ACCOMPLISHED THROUGH MANUAL OR MECHANICAL MEANS AS APPROPRIATE.



PERFORM CPR WHILE PREPARING FOR RHYTHM ANALYSIS AND DEFIBRILLATION.

- a) Assess pulse.
 - (1) Patients from birth up to those who have not reached their 12th birthday:
 - (a) If pulse is absent, use AED/manual defibrillator or begin CPR.
 - (b) If patient is symptomatic with poor perfusion (unresponsive or responds only to painful stimuli) and pulse is less than 60 bpm:
 - (i) Ventilate for 30 seconds.
 - (ii) If after 30 seconds, the pulse is less than 60 bpm, begin CPR.
 - (c) If pulse greater than 60 bpm, continue assessment.
 - (2) Patients 12 year of age or older:
 - (a) If pulse is absent, use AED/manual defibrillator or begin CPR.
 - (b) If pulse is present, continue assessment.
- b) Assess for and manage profuse bleeding.
- c) Assess skin color, temperature, and capillary refill.

5. Disability

- a) Perform Mini-Neurologic Assessment (Pulse/Motor/Sensory).
- b) Spinal protection (**NEW '15**)
 - (1) The provider shall determine the appropriate method for use in spinal protection of the patient. Infant or child car seats may NOT be used as a spinal immobilization device for the pediatric patient.
 - (2) Patients who have a blunt trauma with a high-energy mechanism of injury that has potential to cause spinal cord injury or vertebral instability **and one** or more the following should receive spinal protection. (**NEW '15**)
 - (a) Midline spinal pain, tenderness, or deformity
 - (b) Signs and symptoms of new paraplegia or quadriplegia
 - (c) Focal neurological deficit
 - (d) Altered mental status or disorientation
 - (e) Distracting injury



In addition to the above indicators for adults, the below apply to children that have not yet reached their 15th birthday

- (f) High impact diving incident or high risk MVC - head on collision, rollover, ejected from the vehicle, death in the same crash, or speed > 55 mph
- (g) Substantial torso injury
- (h) Conditions predisposing to spine injury
- (3) If NO to all of the above, transport as appropriate.



IF PATIENT IS UNABLE TO COMMUNICATE OR APPROPRIATELY RESPOND TO THE ABOVE QUESTIONS, APPLY SPINAL PROTECTION PROTOCOL. (**NEW '15**)

6. Exposure

To assess patient's injuries, remove clothing as necessary, considering condition and environment.

B. ALTERED MENTAL STATUS: SEIZURES

1. Initiate General Patient Care.

2. Presentation

Seizures are a neuromuscular response to an underlying cause such as: epilepsy, hypoxia, hypoglycemia, hypoperfusion, head injury, CVA, alcohol or drug abuse. Consider recent history of possible illness, infection, fever, or stiff neck.



DO NOT ATTEMPT TO FORCE ANY DEVICE INTO THE PATIENT'S MOUTH IF THE PATIENT IS STILL SEIZING.

3. Treatment



a) If the patient is still seizing:

(1) DO NOT RESTRAIN.

(2) Protect patient from further injury.

(3) Consider cause of seizure activity.


b) When seizure activity has stopped

(1) Identify and treat injuries.

(2) If patient is a known diabetic, glucose paste (10–15 grams) should be administered between the gum and cheek. Consider single additional dose of glucose paste if not improved after 10 minutes.



c) Use glucometer and treat accordingly.

d)  Consider midazolam (Paramedic may perform without consult for patients with active seizures).

If patient has no IV or IO in place, administer midazolam 5 mg IN or IM.

(NEW '15)

0.1 mg/kg in 2 mg increments slow IV push over one to two minutes per increment with maximum single dose 5 mg.



REDUCE BY 50% FOR PATIENTS 69 YEARS OR OLDER.

If IV unavailable, 5 mg IM may be administered.

Additional doses up to a maximum total dose 10 mg require medical consultation for all providers.

If patient seizures are refractory to treatment, consider IO administration of midazolam.

If midazolam is not available, consider diazepam (Paramedic may perform without consult for patients with active seizures).


2.5 mg increments slow IVP/IM (IM requires all providers to obtain medical consultation).

ALTERED MENTAL STATUS: SEIZURES (Continued)

Maximum total dose 10 mg

If patient is in status, consider IO administration of diazepam.

If suspected severe nerve agent exposure, providers may administer midazolam 5 mg IM or diazepam (CANA) without medical consultation.

- e) Establish IV access with LR.
- f) If patient is pregnant, actively seizing, consider magnesium sulfate 4 gm IV/IO over 10 minutes. **(NEW '15)**
- g)  If seizures persist, consult for second dose of magnesium sulfate. **(NEW '15)**



IF PATIENT IS PREGNANT, USE MIDAZOLAM FOLLOWED BY MAGNESIUM SULFATE. MEDICAL CONSULTATION REQUIRED FOR PREGNANT PATIENTS WHO MAY REQUIRE LARGER DOSES OF MIDAZOLAM TO CONTROL SEIZURES. **(NEW '15)**



IF, FOLLOWING ADMINISTRATION OF MAGNESIUM SULFATE, PATIENT EXHIBITS SIGNS OF TOXICITY, CONSIDER ADMINISTRATION OF CALCIUM CHLORIDE. CONSIDER CALCIUM CHLORIDE 500 MG IVP FOR RESPIRATORY DEPRESSION, DECREASED REFLEXES, FLACCID PARALYSIS, AND APNEA FOLLOWING MAGNESIUM SULFATE ADMINISTRATION. MEDICAL CONSULTATION REQUIRED. **(NEW '15)**




- h) If the patient is still seizing:
 - (1) DO NOT RESTRAIN.
 - (2) Protect from further injury.
 - (3) Consider underlying cause of seizure.
- i) When seizure activity has stopped:
 - (1) Identify and treat any injuries.
 - (2) If patient is a known diabetic, glucose paste (10–15 grams) should be administered between the gum and cheek. Consider single additional dose of glucose paste if not improved after 10 minutes.




- j) Use glucometer and treat accordingly.
- k) The paramedic may assist patients with the administration of their prescribed benzodiazepine.

ALTERED MENTAL STATUS: SEIZURES (Continued)

- l)  Consider midazolam for seizures lasting greater than 10 minutes (Paramedic may perform without consult for patients with active seizures).
If patient has no IV or IO in place:
Administer midazolam 0.1 mg/kg IN or IM. Maximum total dose 5 mg.
(NEW '15)
- If IV or IO is already in place:
Administer midazolam 0.1 mg/kg in 2 mg increments slow IV push over one to two minutes. Maximum total dose 5 mg.
- m) Establish IV/IO access with LR.
- n) Administer fluid bolus, if appropriate
20 mL/kg of LR IV/IO.



FOR A CHILD ACTIVELY SEIZING, ADMINISTER MIDAZOLAM IN/IM AND RESERVE IO FOR LIFE-THREATENING ILLNESS. **(NEW '15)**

- o) Additional doses up to a maximum total dose 5 mg require medical consultation for all providers.
-  If patient's seizures are refractory to treatment, consider IO administration of midazolam. **(NEW '15)**
If midazolam is not available, consider diazepam for seizures lasting greater than 10 minutes (Paramedic may perform without consult for patients with active seizures).
Up to 0.2 mg/kg rectal
Maximum total dose 10 mg
OR
0.1 mg/kg in 2.5 mg increments SLOW IVP/IO/IM (IM requires all providers to obtain medical consultation).
Maximum total dose 5 mg
If suspected severe nerve agent exposure, providers may administer midazolam as above or diazepam (CANA) without medical consultation.

4. Continue General Patient Care.

THIS PAGE IS INTENTIONALLY BLANK

BEHAVIORAL EMERGENCIES (Continued)



- d) Establish IV access with LR, if appropriate.
 - e) Consider Chemical Restraint.
4. Continue General Patient Care.

F. CARDIAC EMERGENCIES: CARDIAC GUIDELINES



1. The following algorithmic and standard formatted sections pertain to cardiac emergencies. Several guidelines apply to all algorithms when assessing and treating cardiac patients. These guidelines are:

- a) When the patient's condition changes, indicating the transition to a new treatment algorithm, the new treatment shall take into account prior therapy (e.g., previously administered medications).
- b) As BLS/ALS guidelines indicate, definitive airway control is preferable; if this can be achieved, along with other initial interventions, then the earlier the better. However, defibrillation is more important initially if the patient can be ventilated without intubation.
- c) Cardiac Arrest:
Immediately start CPR and apply AED or manual defibrillator as soon as possible; shock if indicated.
The goal is to defibrillate as soon after stopping CPR as possible (ideally for manual defibrillator, in less than 5 seconds).
After single shock, immediately restart CPR (do not perform pulse or EKG rhythm check) for 2 minutes, then assess for pulse and rhythm and apply single shock if indicated. Repeat this sequence of single shocks and 2 minutes of CPR.



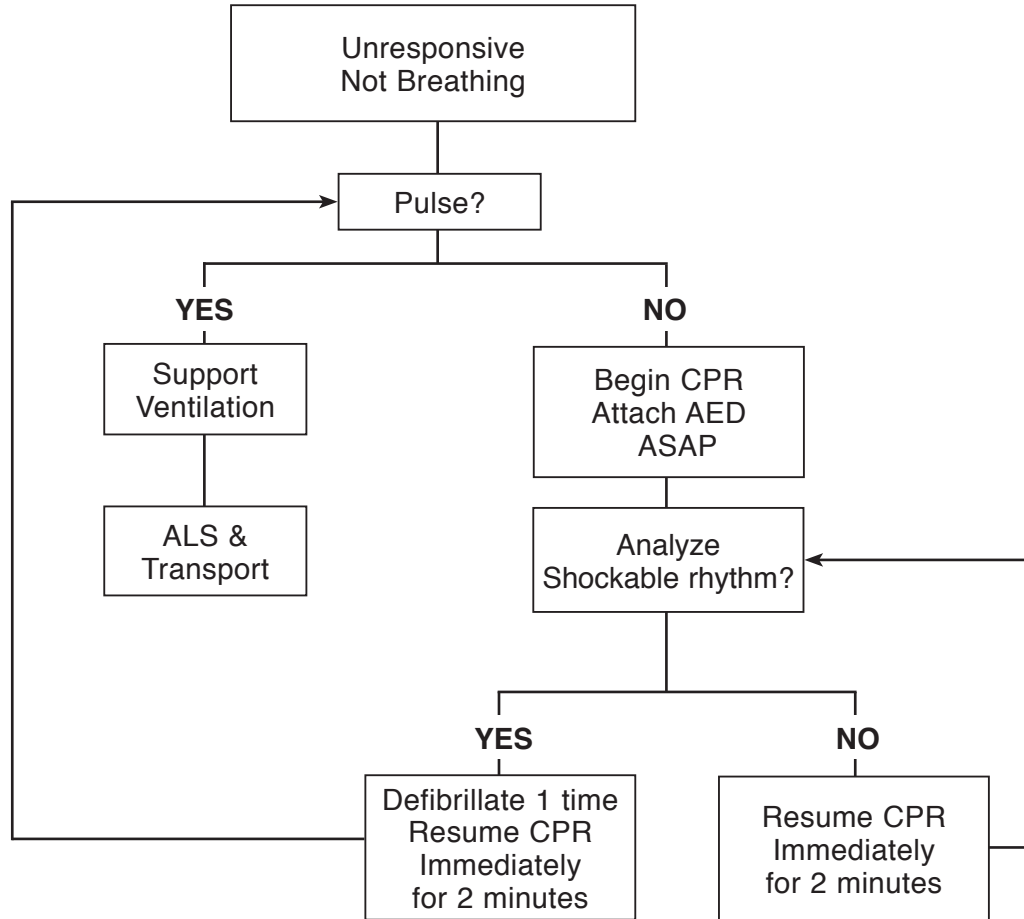
SOME AEDs MAY NOT CURRENTLY DELIVER THE REFERENCED JOULE SETTING NOR ALLOW FOR SINGLE SHOCK DELIVERY. THE AED INDUSTRY WILL BE IMPLEMENTING THESE CHANGES OVER TIME, WHICH WILL BE A MULTI-YEAR PROCESS. WHEN IN DOUBT FOLLOW THE AED PROMPT.

- d) If unable to initiate an IV or perform endotracheal intubation within 5 minutes, continue with appropriate care and transport the patient as soon as possible to the appropriate hospital. Further attempts to initiate IV therapy or endotracheal intubation should be accomplished while en route to the receiving hospital.
- e) Only in a pediatric or neonatal arrest situation, naloxone, atropine, epinephrine, and lidocaine can be administered via the ET route. Medications administered for pediatric patients via the endotracheal tube route shall be 2–2.5 times the IV dose for naloxone, atropine, and lidocaine and ten times the IV dose for epinephrine (1:1,000). All ET medications shall be diluted in 5 mL of Lactated Ringer's for pediatric patients.



2.

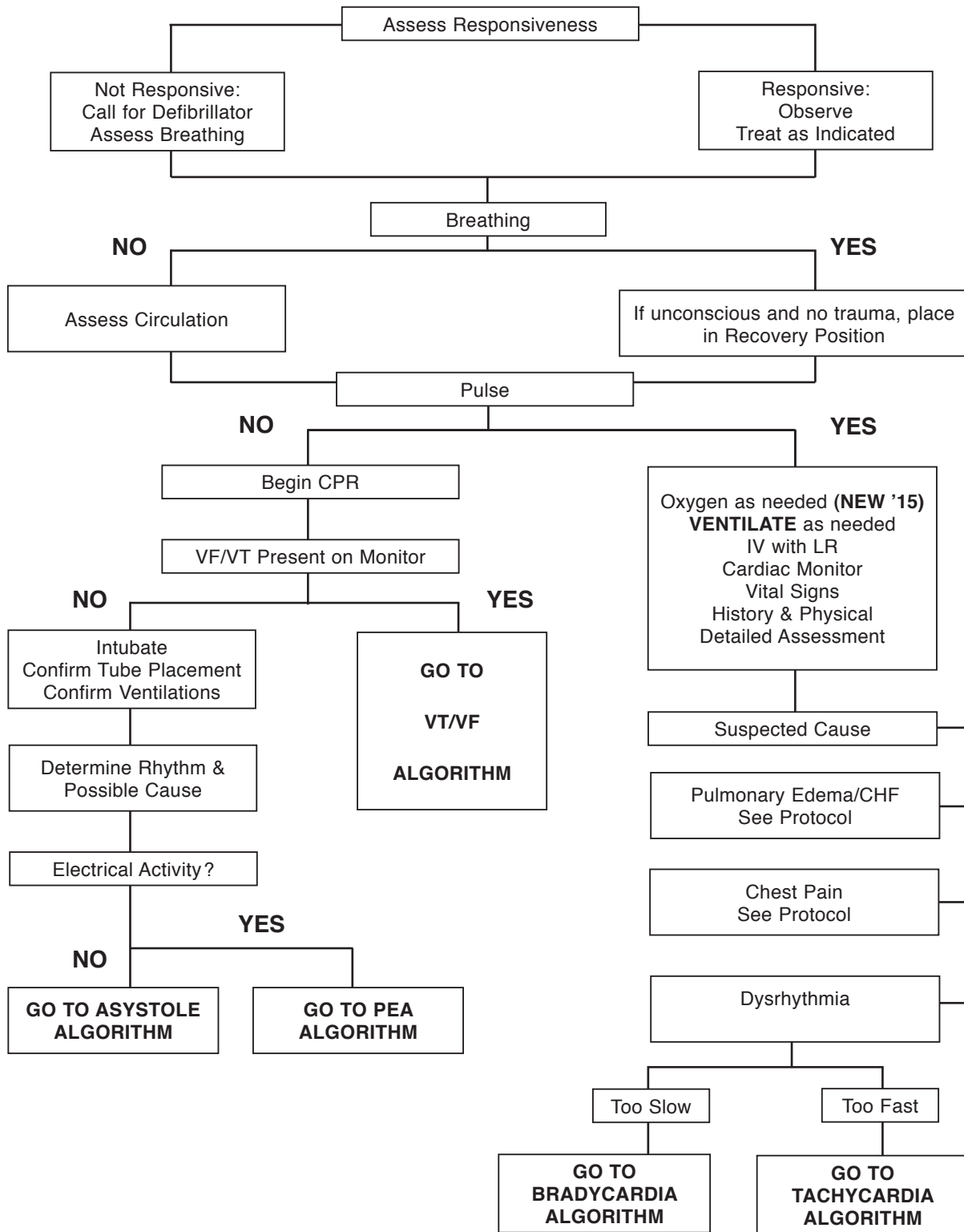
UNIVERSAL ALGORITHM FOR ADULT EMERGENCY CARDIAC CARE FOR BLS





3.

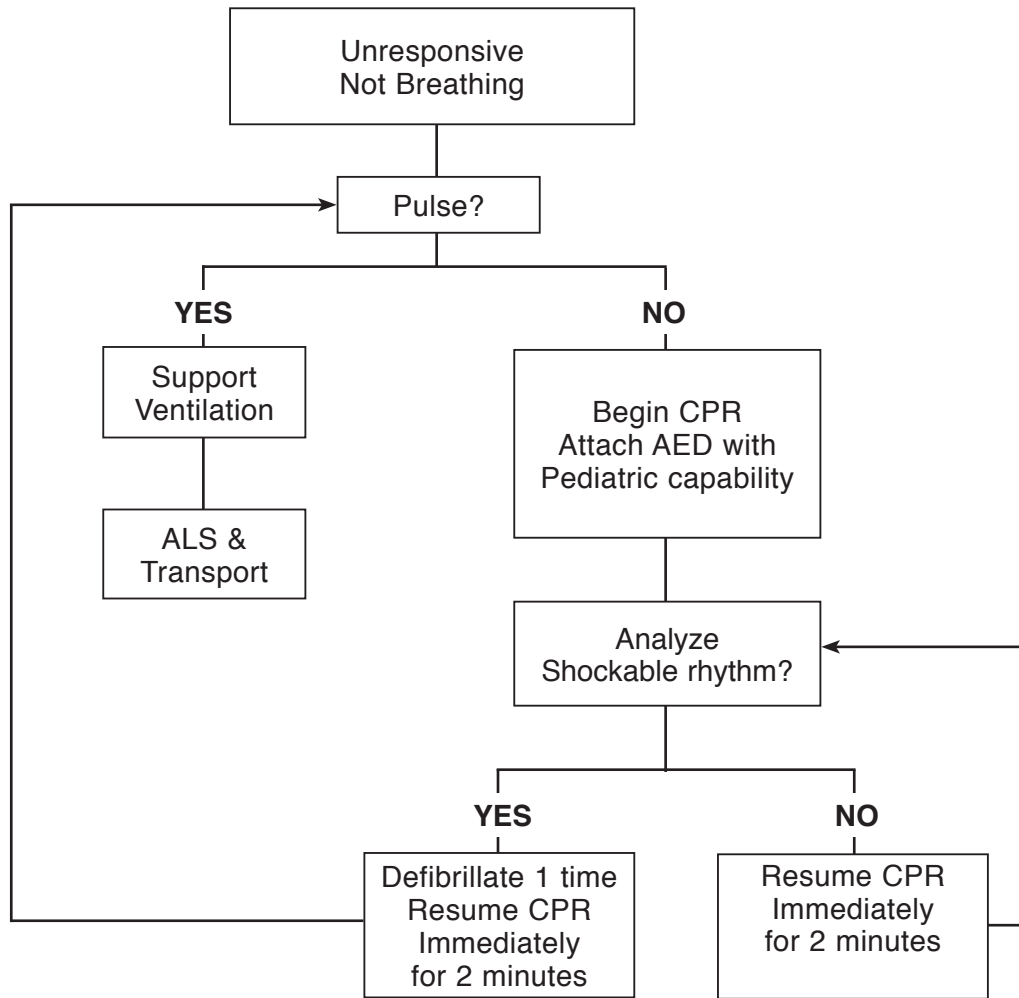
UNIVERSAL ALGORITHM FOR ADULT EMERGENCY CARDIAC CARE FOR ALS





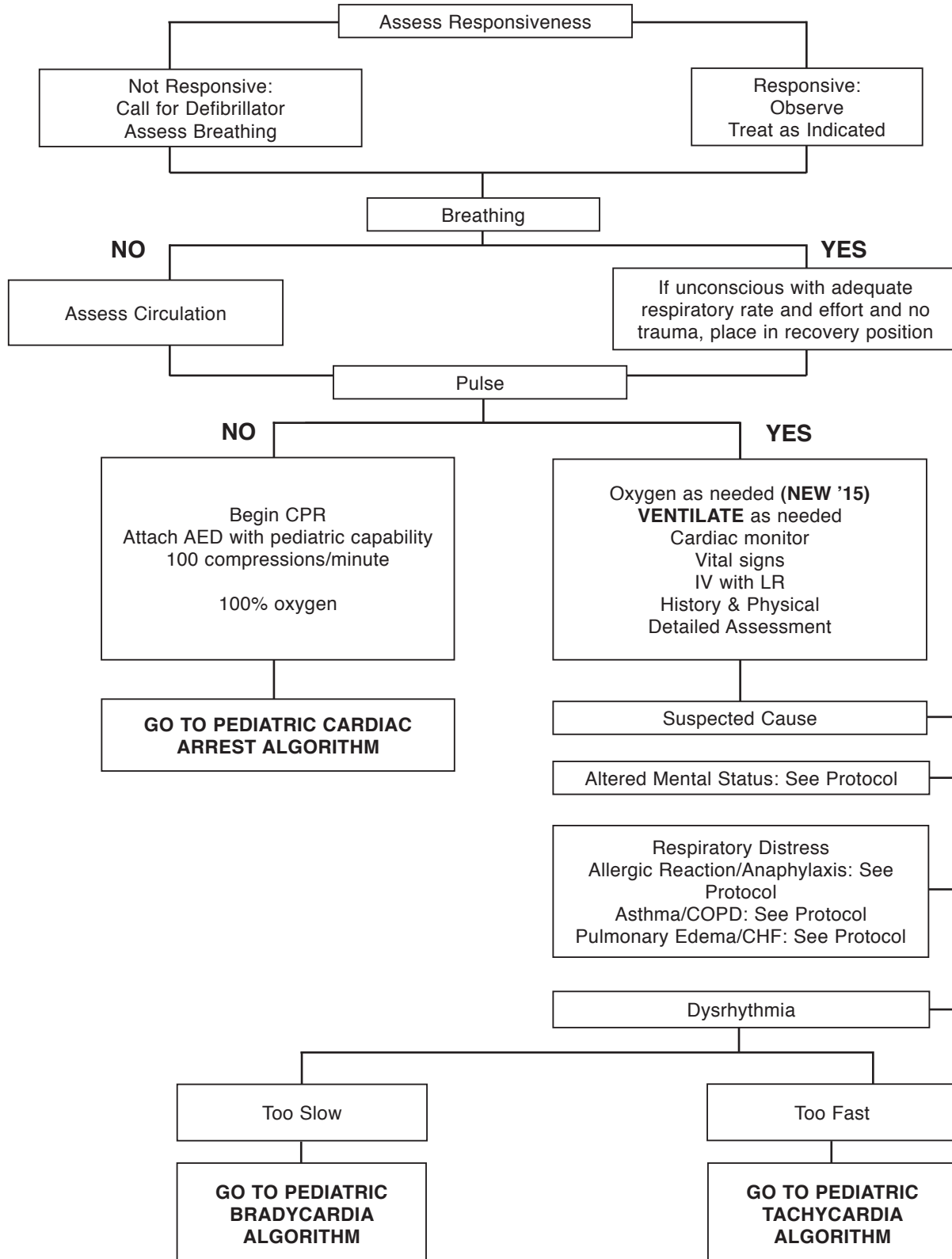
4.

**UNIVERSAL ALGORITHM FOR PEDIATRIC (LESS THAN 12 YEARS OF AGE)
EMERGENCY CARDIAC CARE FOR BLS
(If newborn, refer to Newly Born Protocol)**





5. **UNIVERSAL ALGORITHM FOR PEDIATRIC (LESS THAN 12 YEARS OF AGE)
EMERGENCY CARDIAC CARE FOR ALS**
(If newborn, refer to Newly Born Protocol)

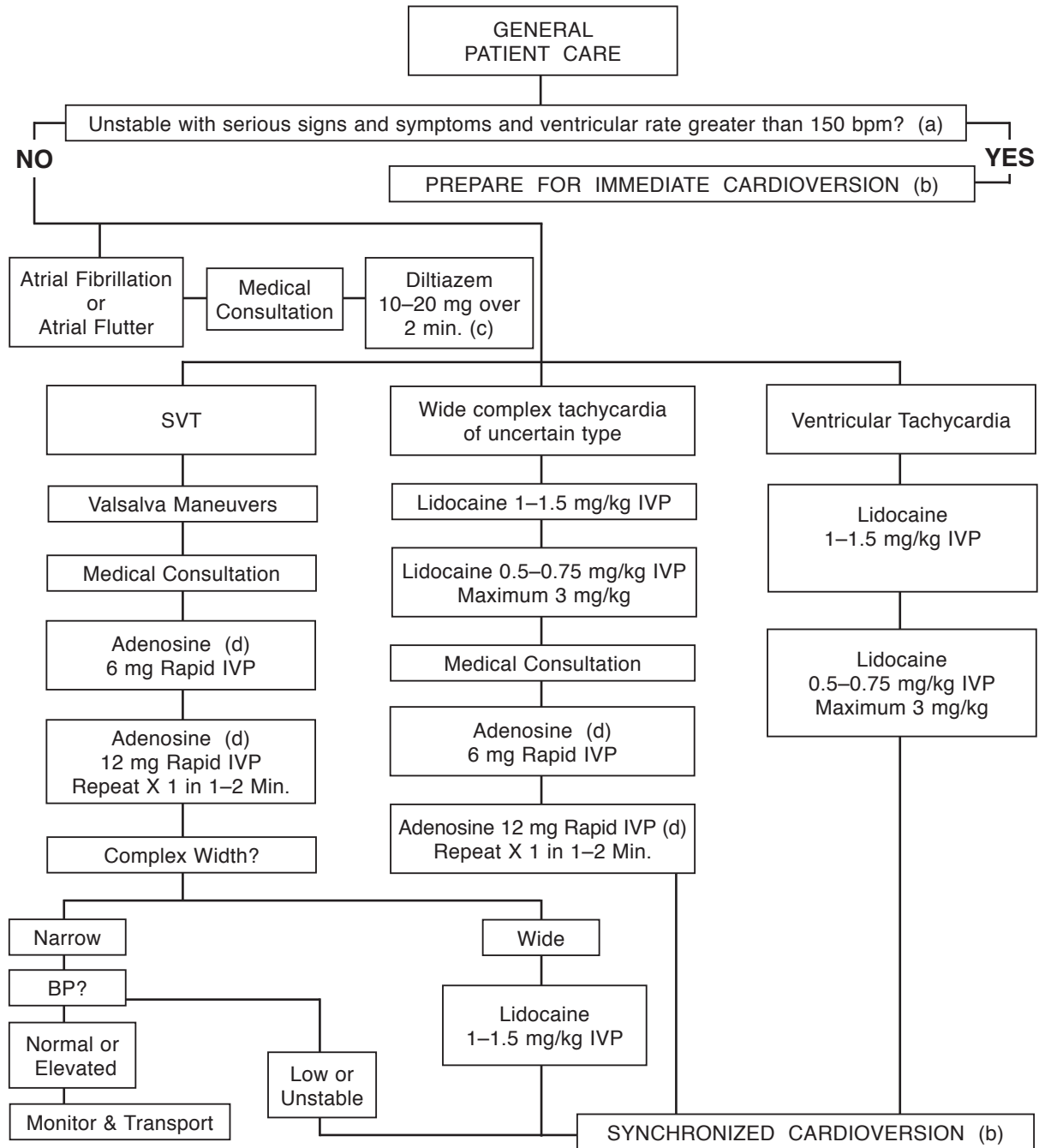


CARDIAC EMERGENCIES: TACHYCARDIA (Continued)

- o) If patient is hemodynamically unstable with a ventricular rate greater than 220 for an infant or 180 for a child, prepare for immediate cardioversion.
 - p) If patient is hemodynamically stable, identify rhythm and proceed to appropriate algorithm.
4. Continue General Patient Care.



5.

ADULT TACHYCARDIA ALGORITHM

(a) - Unstable condition must be related to the tachycardia. Signs and symptoms may include chest pain, shortness of breath, decreased level of consciousness, hypotension, hypoperfusion, pulmonary congestion, CHF, and/or AMI.

(b) - Consider sedation (midazolam with medical consultation). However, overall patient status, including BP, may affect ability to administer sedative.

(c) - Consider calcium chloride 500 mg IVP for hypotension induced by diltiazem. Medical consultation required. If rate does not slow in 15 minutes, administer a second dose of diltiazem (15–25 mg over 2 minutes). Medical consultation required. **(New '15)**

(d) - Be prepared for up to 40 seconds of asystole. (Paramedic may administer without consult.)

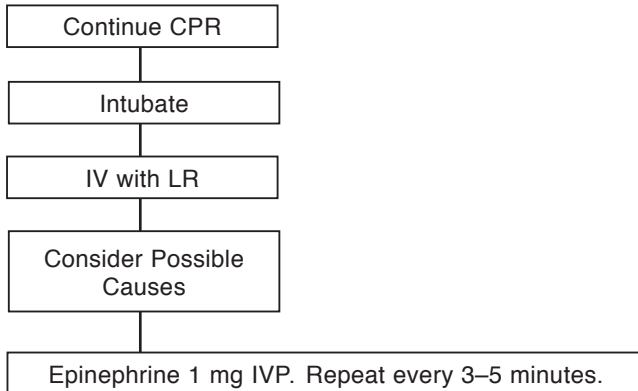


6.

PULSELESS ELECTRICAL ACTIVITY (PEA) ALGORITHM

Includes:

- EMD
- Pseudo EMD
- Brady-asystolic Rhythms
- Idioventricular Rhythms
- Ventricular Escape Rhythms
- Post-defibrillation Idioventricular Rhythms



Consider possible causes of PEA.
(Parenthesis) = Possible Therapies and Treatments

| | |
|----------------------------|---|
| Hypovolemia | (Volume Infusion) (c) |
| Cardiac Tamponade | (Volume Infusion) (c) |
| Tension Pneumothorax | (Needle Decompression Thorocostomy–NDT) |
| Massive Pulmonary Embolism | |
| Massive AMI | |
| Drug Overdose | (a,b) |
| Hypoxia | (Ventilation) |
| Hypothermia | (Warming) |
| Acidosis | (a) |
| Hyperkalemia | (a,b) |

(a) - Sodium bicarbonate 1 mEq/kg, with medical consultation. See sodium bicarbonate.

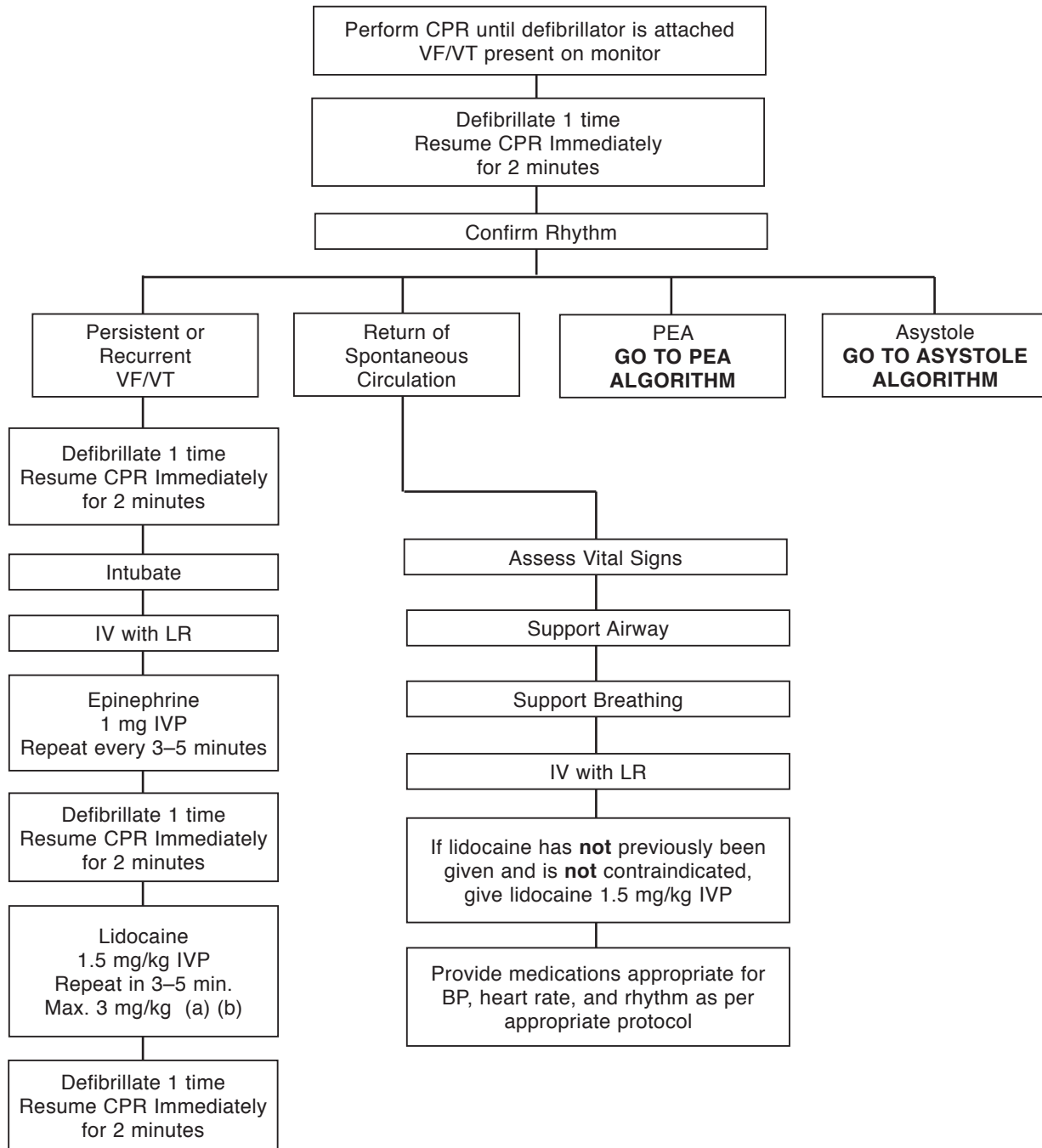
(b) - Calcium chloride, 0.5–1 gram IVP, with medical consultation. See calcium chloride.

(c) - Volume infusion is 20 mL/kg.



7.

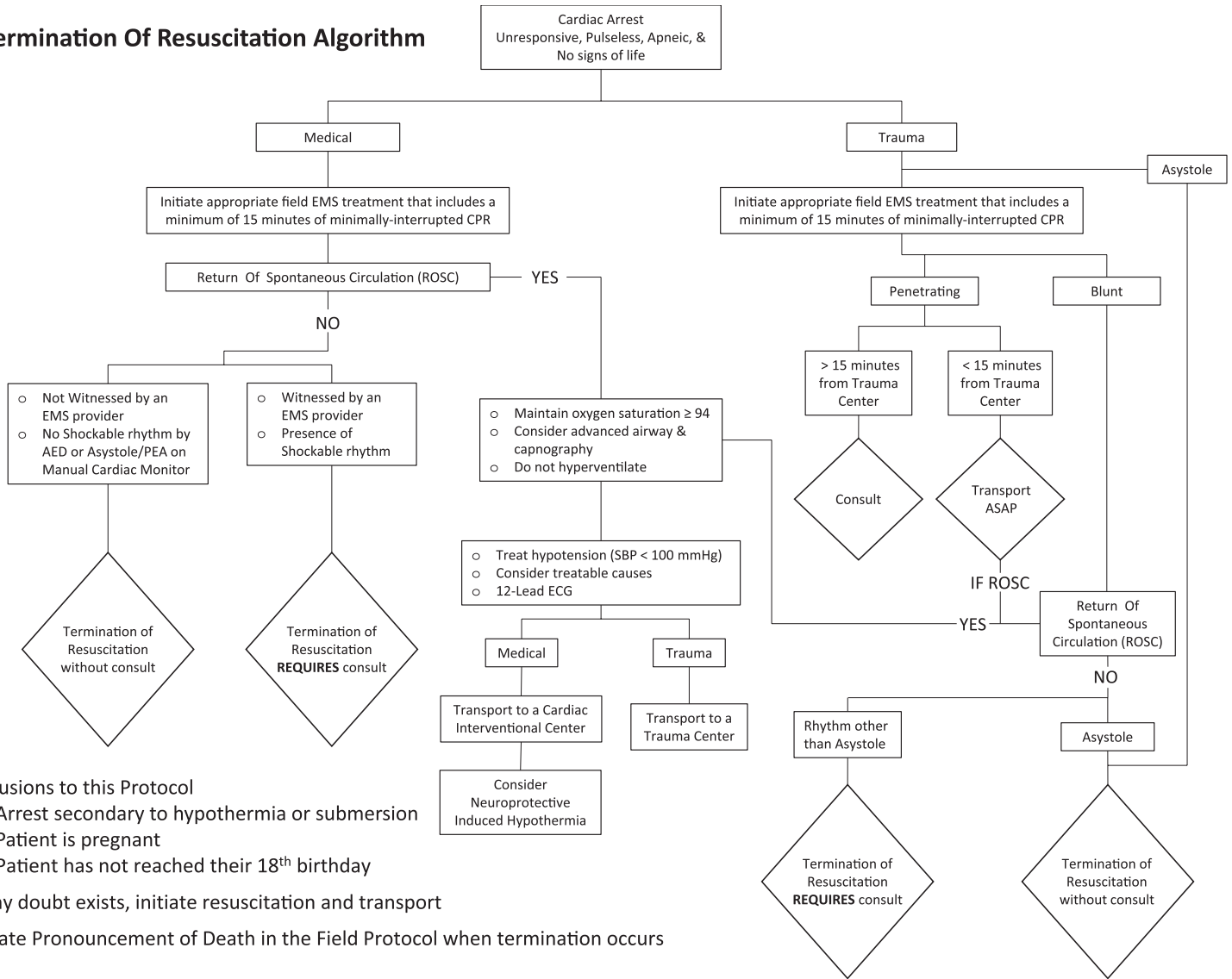
VENTRICULAR FIBRILLATION PULSELESS VENTRICULAR TACHYCARDIA



- (a) - Sodium bicarbonate 1 mEq/kg, if medical consult directed. See sodium bicarbonate.
- (b) - If Torsades dePointes is present, give magnesium sulfate 1–2 grams IV/IO over 2 minutes before lidocaine, with medical consult. **(NEW '15)**

TERMINATION OF RESUSCITATION (NEW '15)

Termination Of Resuscitation Algorithm



Exclusions to this Protocol

- Arrest secondary to hypothermia or submersion
- Patient is pregnant
- Patient has not reached their 18th birthday

If any doubt exists, initiate resuscitation and transport

Initiate Pronouncement of Death in the Field Protocol when termination occurs

THIS PAGE IS INTENTIONALLY BLANK

I. CARDIAC EMERGENCIES: CHEST PAIN/ACUTE CORONARY SYNDROME

1. Initiate General Patient Care.

2. Presentation

Chest discomfort that may radiate to the arm, shoulders, jaw, or back.

Generally described as a crushing pain or toothache. May be accompanied by shortness of breath, sweating, nausea, or vomiting.



ACUTE CORONARY SYNDROME (ACS) IS DEFINED AS PATIENTS PRESENTING WITH ANGINA OR ANGINAL EQUIVALENTS SUCH AS SHORTNESS OF BREATH; CHEST, EPIGASTRIC, ARM, OR JAW PAIN OR DISCOMFORT; DIAPHORESIS; AND/OR NAUSEA. (NEW '15)

3. Treatment



- a) Place patient in position of comfort.
- b) Assist patient with administration of patient's own prescribed nitroglycerin. May be repeated in 3–5 minutes if chest pain persists, blood pressure is greater than 90 mmHg, and pulse is greater than 60 bpm. Maximum three doses total (patient and EMT assisted).
- c) Assess and treat for shock if indicated.
- d) Constantly monitor airway and reassess vital signs every 5 minutes.
- e) Consider aspirin 324 mg or 325 mg chewed, if acute myocardial infarction is suspected.



NITROGLYCERIN IS CONTRAINDICATED FOR ANY PATIENT HAVING TAKEN MEDICATION FOR PULMONARY ARTERY HYPERTENSION (E.G., ADCIRCA™ OR REVATIO™) OR ERECTILE DYSFUNCTION (E.G., VIAGRA™, LEVITRA™, OR CIALIS™) WITHIN THE PAST 48 HOURS. MEDICAL CONSULTATION IS REQUIRED TO OVERRIDE THIS CONTRAINDICATION.


IF THE PATIENT'S BLOOD PRESSURE DROPS MORE THAN 20 mmHg AFTER ADMINISTRATION OF NITROGLYCERIN, OBTAIN MEDICAL CONSULTATION BEFORE FURTHER ADMINISTRATION.

- f)  Additional doses of nitroglycerin require medical consultation.



-
- g) Establish IV access with LR.
 - h) Shall perform a 12-lead EKG for patients with ACS. (If trained, providers may perform a 15-lead EKG.)
 - i) If patient has a prescription or previous history of nitroglycerin use, administer nitroglycerin: 0.4 mg SL. May be repeated if symptoms persist, and BP is greater than 90 mmHg and pulse is greater than 60 bpm, to a maximum dose of 1.2 mg.

CARDIAC EMERGENCIES: CHEST PAIN/ACUTE CORONARY SYNDROME (Continued)

- j) If patient does **not** have a prescription or previous history of nitroglycerin use, an IV must be established prior to administration; then administer nitroglycerin as above.
- k) If IV cannot be established, nitroglycerin may be administered with medical consultation.
- l) Identify rhythm and treat according to appropriate algorithm.
- m)  Administer additional doses of nitroglycerin.
- n) Administer opioid per Pain Management protocol.



CONSULT A PEDIATRIC BASE STATION FOR CHILDREN (WHO HAVE NOT REACHED THEIR 18TH BIRTHDAY) WITH CHEST PAIN WITH ASSOCIATED DYSRHYTHMIAS, CARDIAC DISEASE, OR BLUNT CHEST TRAUMA.

- 4. Continue General Patient Care.

M. CARDIAC EMERGENCIES: ST ELEVATION MYOCARDIAL INFARCTION (STEMI)

1. Initiate General Patient Care.
2. Presentation



ACUTE CORONARY SYNDROME (ACS) IS DEFINED AS PATIENTS PRESENTING WITH ANGINA OR ANGINAL EQUIVALENTS SUCH AS SHORTNESS OF BREATH; CHEST, EPIGASTRIC, ARM, OR JAW PAIN OR DISCOMFORT; DIAPHORESIS; AND/OR NAUSEA. (NEW '15)

Inclusion Criteria:

Patient presents with Acute Coronary Syndrome (ACS) symptoms and has one of the following in a diagnostic quality EKG:

- a) Greater than 1 mm of ST elevation in two or more contiguous limb leads
- b) Greater than 1.5 mm of ST elevation in two or more precordial leads (in women)
- c) Greater than 2 mm of ST elevation in two or more precordial leads (in men)
- d) Anterior, Inferior, or Lateral MI: ST elevation greater than 1 mm in two or more contiguous leads **and**

QRS complex is narrower than 0.12 seconds; (if wider than 0.12, you are unable to diagnose as STEMI)

OR

- e) Posterior MI: ST depression greater than 1 mm in V1 and V2 with an R/S ratio of greater than or equal to one **and**

QRS complex is narrower than 0.12 seconds; (if wider than 0.12, you are unable to diagnose as STEMI)



IF PATIENT MEETS ABOVE STEMI CRITERIA, THIS PATIENT IS A PRIORITY 1 PATIENT AND REQUIRES NOTIFICATION OF THE NEAREST DESIGNATED CARDIAC INTERVENTIONAL CENTER AS SOON AS POSSIBLE TO ALLOW FOR HOSPITAL PREPARATION. DURING THE CONSULTATION WITH THE RECEIVING FACILITY, THE PROVIDER SHALL USE THE VERBIAGE, "STEMI ALERT" AS THE UNIVERSAL METHOD OF NOTIFYING THE FACILITY THAT THE PATIENT MEETS THE STEMI INCLUSION CRITERIA. (NEW '15)

DETECTION OF RIGHT VENTRICULAR AND POSTERIOR WALL INFARCTION IS IMPORTANT, AS APPROXIMATELY 40% OF PATIENTS WITH INFERIOR WALL INFARCTIONS HAVE RIGHT VENTRICULAR AND/OR POSTERIOR WALL INVOLVEMENT, WHICH PREDISPOSES THEM TO MORE COMPLICATIONS AND INCREASED MORTALITY.

CARDIAC EMERGENCIES: ST ELEVATION MYOCARDIAL INFARCTION (STEMI) (Continued)

Consider the following presentations as indicative of increased cardiovascular risk and request guidance from the closest appropriate EMS Base Station or Cardiac Interventional Facility.



- a) **Left bundle branch block (LBBB):** LBBB is rare in the setting of acute myocardial infarction and often indicates underlying cardiovascular disease. LBBB is more likely to signal a myocardial infarction if the one of the following conditions are met:
 - 1) Patient presents in cardiogenic shock
 - 2) EKG shows excessive ST segment elevation > 5 mm
 - 3) EKG shows ST segment deviation (elevation or depression) in the same direction as the QRS complex. This concept is known as inappropriate concordance.
- b) **Wellens' Wave:** Biphasic T waves or deeply inverted T waves in precordial leads. (V2-V3, +/-V4)
- c) **ST segment elevation in Lead aVR:** Multilead ST segment depression with coexisting ST segment elevation in lead aVR.
- d) **Hyperacute T waves:** Peaked, broad based T waves

(NEW '15)

3. Treatment





- a) Follow Chest Pain Protocol for nitrate, aspirin, and pain management.
- b) If patient meets above STEMI criteria, this patient is a priority 1 patient and requires a medical consult.
- c) If a patient meets one of the above condition sets for STEMI inclusion criteria, the patient shall be transported to the closest Cardiac Interventional Center by air or ground as long as the delivery time is not more than 45 minutes greater than transport to the nearest ED.
 - (1) When indicated and based on the EMS provider's report, the Base Station physician at the receiving Cardiac Interventional Center will activate its Cardiac Interventional Team.
 - (2) The receiving ED physician will determine if the patient can bypass the ED and go directly to the cardiac catheterization lab to meet the cardiac interventional team.
 - (3) If the patient cannot be delivered to a Cardiac Interventional Center within the allotted time, complete the Fibrinolytic Therapy Checklist for STEMI.
 - (a) If the patient meets all of the criteria for fibrinolytic therapy, transport to the nearest ED.
 - (b) If the patient does not meet all of the criteria for fibrinolytic therapy, consult with the nearest Cardiac Interventional Center and the nearest ED to determine the most appropriate receiving facility.




HYPERBARIC THERAPY PROTOCOL (Continued)



- c) Establish IV access with LR.
- (1) If hypoperfusion exists, initiate IV LR fluid therapy 20 mL/kg bolus in unburned area, if possible.
Titrates to a systolic pressure of 100 mmHg.
 - (2)  Obtain medical consultation to initiate an IV in an area of burn, if unable to obtain an IV in unburned area.
 - (3)  Consider additional fluid administration.
(Max 2,000 mL without medical consultation)



- d) Establish IV/IO access with LR.
- (1) If age-related vital signs and patient's condition indicates hypoperfusion, administer initial fluid bolus of 20 mL/kg LR IV/IO in unburned area, if possible. If patient's condition does not improve, administer the second bolus of fluid at 20 mL/kg LR IV/IO.
 - (2)  Obtain medical consultation to initiate an IV in an area of burn, if unable to obtain an IV in unburned area.

6. Transportation

- a) Priority 1 Patients (immediate threat to life)
 - (1) Consider air transportation if the patient will **ARRIVE** at the appropriate receiving facility more quickly than could be accomplished by ground transportation.
 - (2) The provider should consider all of the following:
 - (a) Time for helicopter response
 - (b) Patient turnover (loading time)
 - (c) Flight time to appropriate facility
 - (d) Weather conditions
- b) Priority 2 Patients (no immediate threat to life)
Consider air transport if drive time is greater than 30 minutes.

7. Continue General Patient Care.

X1. NAUSEA AND VOMITING

1. Initiate General Patient Care.

2. Presentation

Patients presenting with nausea and/or vomiting due to underlying injury, medical condition, active motion sickness, or medication side effect/complication.



Under certain injury or medical conditions, vomiting or intense nausea can complicate the existing injury or medical condition. Preventative administration of an anti-nausea/anti-emetic should be considered and approved with medical consultation (e.g., penetrating eye injury, high risk for aspiration, side effects of opioid administration).



3. Treatment

- a) Place patient either in position of comfort or in left lateral position if not prevented by spinal protection or packaging. **(NEW '15)**
- b) Perform acupressure on P6 point either digitally or with commercial wrist band.




-
- c) Establish IV access with LR, if appropriate.
 - d) Administer fluid bolus, if appropriate.
20 mL/kg of LR IV
Titrate to a systolic pressure of 100 mmHg.
 - e) Administer ondansetron.
Adult: 4 mg slow IV over 2–5 minutes or 4 mg IM;



May repeat once with medical consultation.
Preventative administration of an anti-nausea/anti-emetic



-
- f) Establish IV access with LR, if appropriate.
 - g) If age-related vital signs and patient's condition indicate hypoperfusion, administer initial fluid bolus of 20 mL/kg LR IV/IO.
 - h)  Administer ondansetron:
For patients who weigh less than 40 kg: 0.1 mg/kg slow IV over 2–5 minutes
For patients who weigh 40 kg or greater: 4 mg slow IV over 2–5 minutes
OR
If no IV: 0.1 mg/kg IM (with max single dose of 4 mg);
May repeat once with medical consultation.
Preventative administration of an anti-nausea/anti-emetic

4. Continue General Patient Care.

FF. OVERDOSE/POISONING: INJECTION

1. Initiate General Patient Care.
2. Presentation
Patient may exhibit any of the following: local pain, puncture wounds, reddening skin, local edema, numbness, tingling, nausea, vomiting, diarrhea, altered mental status, seizures, muscle twitching, hypoperfusion, metallic or rubbery taste.
3. Treatment
 - a) Identify markings (insects, bites, needlestick, etc.).
 - b) Do not apply distal and/or proximal constricting bands for a poisonous snakebite to an extremity. Do remove any jewelry on the affected extremity.
 - c) Assist patient experiencing moderate to severe allergic reaction symptoms or mild symptoms with a history of life-threatening allergic reaction with the patient's prescribed or EMS service's Epinephrine (1:1000) 0.3 mg in 0.3 mL IM or patient's prescribed fast-acting bronchodilator.
(NEW '15)



IF THE SNAKE IS **DEAD**, AND IF IT IS PRACTICAL, DELIVER IT WITH ITS HEAD INTACT.
DEAD SNAKES STILL BITE!

- d) Immobilize extremity.
- e) Apply cool packs for relief of pain only.
- f) **If patient has respiratory depression with decreased LOC, constricted pupils, and provider strongly suspects an opioid/narcotic overdose,**
Administer naloxone.
2 mg intranasal atomizer (Divide administration of the dose equally between the nostrils to a maximum of 1 mL per nostril.)






Consider additional doses of naloxone.



-
- g) Establish IV access with LR; administer 20 mL/kg bolus in uninjured extremity.
Titrates to a systolic pressure of 100 mmHg.
 - h) **If patient has respiratory depression with decreased LOC, constricted pupils, and provider strongly suspects an opioid/narcotic overdose,**
Administer naloxone.
0.4–2 mg SLOW IVP/IO/IM/Intranasal (If delivery device is available - divide administration of the dose equally between the nostrils to a maximum of 1 mL per nostril.)
Titrates to adequate respiratory effort.

OVERDOSE/POISONING: INJECTION (Continued)

- i)  If **organophosphate poisoning**, consider atropine. 2–4 mg IVP or IM every 5–10 minutes.
- j)  Consider antidote to specific agent if available.
- k)  Consider antibiotic specific to agent in mass casualty incident, if available.
- l) Identify markings (insects, bites, needlestick, etc.).



- m) Do not apply distal and/or proximal constricting bands for a poisonous snakebite to an extremity. Do remove any jewelry on the affected extremity.
- n) Assist patient experiencing moderate to severe allergic reaction symptoms or mild symptoms with a history of life-threatening allergic reaction with the patient's prescribed or EMS service's Epinephrine (1:1,000) 0.15 mg in 0.15 mL IM or patient's prescribed fast-acting bronchodilator. (NEW '15)
- o) **If patient has respiratory depression with decreased LOC, constricted pupils, and provider strongly suspects an opioid/narcotic overdose,** Administer naloxone.




28 days to 8 years: Administer naloxone 0.8–1 mg intranasal atomizer (Divide administration of the dose equally between the nostrils to a maximum of 1 mL per nostril.)

8 years to adult: Administer naloxone 2 mg intranasal atomizer (Divide administration of the dose equally between the nostrils to a maximum of 1 mL per nostril.)



Consider additional doses of naloxone.



-
- p) Establish IV access with LR; administer 20 mL/kg bolus in uninjured extremity. Titrate to a systolic pressure of 100 mmHg.
 - q) **If patient has respiratory depression with decreased LOC, constricted pupils, and provider strongly suspects an opioid/narcotic overdose,** Administer naloxone.
0.1 mg/kg slow IVP/IO/IN (Divide administration of the IN dose equally between nostrils to a maximum of 1 mL per nostril.)
Maximum single dose 2 mg
ET dose 0.2–0.25 mg/kg
 - r)  If **organophosphate poisoning**, consider atropine. 0.02 mg/kg IV/IO or IM every 5–10 minutes
 - s)  Consider antidote to specific agent if available.
 - t)  Consider antibiotic specific to agent in mass casualty incident, if available.


4. Continue General Patient Care.

HH. RESPIRATORY DISTRESS: ALLERGIC REACTION/ANAPHYLAXIS

1. Initiate General Patient Care.
2. Presentation
 - a) An allergic reaction is an exaggerated response of the body's immune system to any substance.
 - b) Allergic reactions may range from mild to severe life-threatening anaphylactic reactions.
 - (1) **MILD:** Local swelling and itching at the site
 - (2) **MODERATE:** Hives and mild wheezing
 - (3) **SEVERE:** Diffuse wheezing, pharyngeal swelling, dyspnea, hypoperfusion, abnormal skin color, stridor, and/or loss of peripheral pulses

3. Treatment





- a) Assist patient experiencing moderate to severe symptoms or mild symptoms with a history of life-threatening allergic reaction with the patient's prescribed or EMS service's epinephrine (1:1,000) 0.3 mg in 0.3 mL IM or patient's prescribed fast-acting bronchodilator. **(NEW '15)**
- b) Albuterol inhaler (2 puffs) may be repeated once within 30 minutes.
- c)  Consider additional doses of epinephrine (1:1,000) 0.3 mg in 0.3 mL IM or prescribed fast-acting bronchodilator. **(NEW '15)**



-
- d) Moderate to Severe Distress
 - (1) Administer epinephrine 1:1,000.
0.01 mg/kg IM
Maximum single dose 0.5 mg
May repeat every 5 minutes for total of 3 doses for severe reactions.
Additional doses of epinephrine require medical consultation.
 - (2) Establish IV access with LR; administer 20 mL/kg bolus.
Titrate to a systolic pressure of 100 mmHg.
 - (3) Administer diphenhydramine.
50 mg slow IVP or IM
Additional doses of diphenhydramine require medical consultation.
 - (4) Patients with moderate to severe respiratory distress may require high flow oxygen via non-rebreather mask, CPAP, or BVM while receiving medication via nebulizer.
 - (5) Administer a combination of albuterol/Atrovent via nebulizer.
Albuterol 2.5 mg and Atrovent 500 **mcg**
 - (6) If further treatments are indicated, an additional albuterol-only nebulizer may be given.

RESPIRATORY DISTRESS: ALLERGIC REACTION/ANAPHYLAXIS (Continued)

e)  For anaphylactic shock only (hypotension or severe airway/respiratory distress), consider epinephrine 1:10,000 (concentration is 0.1 mg per mL) with medical consultation.
0.01 mg/kg slow IVP (give 1 mL increments)
Maximum dose 1 mg

f)  Mild Allergic Reaction

- (1) Consider diphenhydramine.
25 mg slow IVP or IM
OR
Consider epinephrine 1:1,000.
0.01 mg/kg IM
Maximum single dose 0.5 mg

- (2) Consider additional fluid administration.
Maximum dose 2,000 mL without medical consultation



g) Assist patient experiencing moderate to severe symptoms or mild symptoms with a history of life-threatening allergic reaction with the patient's prescribed or EMS service's epinephrine (1:1,000) 0.15 mg in 0.15 mL IM or patient's prescribed fast-acting bronchodilator. **(NEW '15)**



h) Albuterol inhaler (2 puffs) may be repeated once within 30 minutes.

i)  Consider additional doses of epinephrine (1:1,000) 0.15 mg in 0.15 mL IM or fast-acting bronchodilator. **(NEW '15)**



-
- j) Moderate to Severe Distress
- (1) Administer epinephrine 1:1,000.
0.01 mg/kg IM
Maximum single dose 0.5 mg
May repeat every 5 minutes for total of 3 doses for severe reactions.
Additional doses of epinephrine require medical consultation.
 - (2) Establish IV/IO access with LR.

RESPIRATORY DISTRESS: ALLERGIC REACTION/ANAPHYLAXIS (Continued)

- (3) If age-related vital signs and patient's condition indicate hypoperfusion, administer initial fluid bolus of 20 mL/kg LR IV/IO.
If patient's condition does not improve, administer the second bolus of fluid at 20 mL/kg LR IV/IO.
- (4) Administer diphenhydramine.
1 mg/kg slow IVP/IO or IM
Maximum single dose 50 mg
Additional doses of diphenhydramine require medical consultation.
- (5) Patients with moderate to severe respiratory distress may require high flow oxygen via non-rebreather mask, CPAP, or BVM while receiving medication via nebulizer.
- (6) Administer a combination of albuterol/Atrovent via nebulizer:
- **For an infant less than 1 year of age**, administer albuterol 1.25 mg via nebulizer; Atrovent is contraindicated.
 - **For a child 1 year of age or greater, but less than 2 years of age**, administer albuterol 1.25 mg and Atrovent 250 mcg.
 - **For a patient 2 years of age or greater**, administer albuterol 2.5 mg and Atrovent 500 mcg.
- (7) If further treatments are indicated, an additional albuterol-only nebulizer may be given.
- k)  For anaphylactic shock only (hypotension or severe airway/respiratory distress), consider epinephrine 1:10,000 (concentration is 0.1 mg per mL) with medical consultation.
0.01 mg/kg slow IVP/IO (give 1 mL increments)
Maximum dose 1 mg
- l)  Mild Allergic Reaction
Consider diphenhydramine.
1 mg/kg slow IVP or IM
Maximum single dose 25 mg
OR
Consider epinephrine 1:1,000.
0.01 mg/kg IM
Maximum single dose 0.5 mg
4. Continue General Patient Care.

II. RESPIRATORY DISTRESS: ASTHMA/COPD

1. Initiate General Patient Care.
2. Presentation



Patient may exhibit any of the following: wheezing and/or crackles, abnormal respiratory rate, rapid heart rate, stridor, grunting, cyanosis, mottled skin, altered mental status, nasal flaring, retractions, accessory muscle use, dyspnea, diminished or absent breath sounds, and/or tripod positioning.



3. Treatment



CONSIDER MEDICAL CONSULTATION FOR PATIENTS GREATER THAN 45 YEARS OF AGE OR PATIENTS WITH A CARDIAC HISTORY.



- a) Assist patient experiencing moderate to severe symptoms or mild symptoms with a history of life-threatening allergic reaction with the patient's prescribed fast-acting bronchodilator or prescribed epinephrine auto-injector.
- b)  Use of the EMS service's epinephrine (1:1,000) 0.3 mg in 0.3 mL IM requires medical consultation. **(NEW '15)**
- c) Albuterol inhaler (2 puffs) may be repeated once within 30 minutes.
- d)  Consider additional doses of patient's prescribed fast-acting bronchodilator or epinephrine (1:1,000) 0.3 mg in 0.3 mL IM. **(NEW '15)**



- e) Establish IV access with LR on all Priority 1 or 2 patients and all patients with a history of cardiac disease.
- f) Patients with moderate to severe respiratory distress may require high flow oxygen via non-rebreather mask, continuous positive airway pressure (CPAP), or BVM while receiving medication via nebulizer.
- g) Administer a combination of albuterol/Atrovent via nebulizer.
Albuterol 2.5 mg and Atrovent 500 **mcg**
- h) If further treatments are indicated, an additional albuterol-only nebulizer may be given.
- i) Consider CPAP if patient continues to deteriorate in spite of above nebulized treatments. Continue inline nebulizations.
- j) Consider the administration of epinephrine 1:1,000.
0.01 mg/kg IM
Maximum single dose 0.5 mg
May repeat every 5 minutes for a total of 3 doses for severe reactions.
OR
- k) Consider the administration of terbutaline.
0.25 mg IM
- l) For moderate to severe exacerbations, consider the administration of dexamethasone 10 mg IV/PO.


RESPIRATORY DISTRESS: ASTHMA/COPD (Continued)



- m)  For moderate to severe exacerbations, consider the administration of magnesium sulfate 1–2 grams in 50–100 mL Lactated Ringer's IV/IO over 10–20 minutes. (NEW '15)
- n)  Consider additional doses of epinephrine, albuterol, or terbutaline.
- o) Assist patient(s) experiencing moderate to severe symptoms or mild symptoms with a history of life-threatening allergic reaction with the patient's prescribed or EMS service's epinephrine (1:1,000) 0.15 mg in 0.15 mL IM or patient's prescribed fast-acting bronchodilator. (NEW '15)



MEDICAL CONSULTATION IS REQUIRED IF THE PATIENT HAS CONGENITAL HEART OR CHRONIC LUNG DISEASE.

- p) Fast-acting bronchodilator (2 puffs) may be repeated once within 30 minutes.
- q)  Consider additional doses of patient's prescribed fast-acting bronchodilator or epinephrine (1:1,000) 0.15 mg in 0.15 mL IM. (NEW '15)




-
- r) Patients with moderate to severe respiratory distress may require high flow oxygen via non-rebreather mask, CPAP, or BVM while receiving medication via nebulizer.
- s) Administer a combination of albuterol/Atrovent via nebulizer:
- **For an infant less than 1 year of age**, administer albuterol 1.25 mg via nebulizer; Atrovent is contraindicated.
 - **For a child 1 year of age or greater, but less than 2 years of age**, administer albuterol 1.25 mg and Atrovent 250 mcg.
 - **For a patient 2 years of age or greater**, administer albuterol 2.5 mg and Atrovent 500 mcg.
- t) If further treatments are indicated, an additional albuterol-only nebulizer may be given.

AND/OR



MEDICAL CONSULTATION IS REQUIRED IF THE PATIENT HAS CONGENITAL HEART OR CHRONIC LUNG DISEASE.

- u) Administer epinephrine 1:1,000.
0.01 mg/kg IM
Maximum single dose 0.5 mg
May repeat every 5 minutes for a total of 3 doses for severe reactions.
- v) Consider magnesium sulfate 50 mg/kg IV/IO to a max of 2 grams given over 10–20 minutes. (NEW '15)
- w) For moderate to severe exacerbations, consider the administration of dexamethasone 0.5 mg/kg PO/IV up to a maximum dose of 10 mg.
- x)  Consider additional doses of albuterol or epinephrine.
- y) Establish IV/IO access with LR in a clean area, if appropriate.
4. Continue General Patient Care.

JJ. RESPIRATORY DISTRESS: CROUP



1. Initiate General Patient Care.

2. Presentation

Forms of Croup:

Mild - Barky cough exhibited without stridor at rest (Priority 2)

Moderate - Barky cough with stridor at rest without agitation, may exhibit mild respiratory distress (Priority 2)

Severe - Stridor at rest, signs of severe respiratory distress that is associated with agitation or decreased level of consciousness (Priority 1)



IF EPIGLOTTITIS IS SUSPECTED, I.E., DROOLING WITH ABOVE SIGNS AND SYMPTOMS, DO NOT INITIATE THIS PROTOCOL WITHOUT APPROPRIATE MEDICAL DIRECTION.



3. Treatment

a) Ensure that the patient has a patent airway and adequate respiratory effort. Assess respiratory status looking specifically for signs and/or symptoms of respiratory distress (nasal flaring, retractions, increased/decreased respirations, skin color, change in level of consciousness).



-
- b) Place patient on cardiac monitor and record vital signs. (This may be done concurrently with medication administration if patient is unstable.)
- c) MILD: For children exhibiting symptoms of a mild croup presentation, administer dexamethasone 0.5 mg/kg PO up to a maximum dose of 10 mg.
- d) MODERATE: For children who exhibit symptoms of a moderate croup presentation, administer dexamethasone 0.5 mg/kg PO up to a maximum dose of 10 mg. If no change in patient's condition, then administer 2.5 mL of epinephrine 1:1,000 via nebulizer.
- e) SEVERE: If respiratory distress is so severe that respiratory arrest is imminent:
- First, administer 0.01 mg/kg of epinephrine 1:1,000 IM (max single dose of 0.5 mg).
 - Then administer dexamethasone 0.5 mg/kg IV up to a maximum dose of 10 mg AND 2.5 mL of epinephrine 1:1,000 via nebulizer. If IV not established, give IM dexamethasone.
- f) Establish communications with the appropriate facility and obtain medical direction if patient is less than 1 year of age, if additional nebulized epinephrine is needed due to level of distress, or if other interventions or directions are needed.



ALL PATIENTS WHO RECEIVE NEBULIZED EPINEPHRINE **MUST** BE TRANSPORTED BY AN ADVANCED LIFE SUPPORT UNIT TO THE APPROPRIATE MEDICAL FACILITY.

4. Continue General Patient Care.

TRAUMA PROTOCOL: BURNS (Continued)

- b) Do what is necessary to stop the burning process. If water is used to extinguish the fire, remove wet clothing and dry the patient to prevent hypothermia.
- c) Administer oxygen in as high a concentration of oxygen as possible (*note: pulse oximetry is not reliable in the presence of carbon monoxide or cyanide exposure*).
- d) Determine percent of body surface area (BSA) and depth.
- e) Treat associated trauma.
- f) For burns greater than 10%, follow hypothermia protocol as well.
- g) Remove all rings, bracelets, and other jewelry.
- h) Cover wounds appropriately (with a clean sheet or Mylar blanket—sterile dressings no longer recommended).
- i) For chemical burns, brush off dry chemical, remove clothing, flush with water.




DO NOT GIVE ANYTHING BY MOUTH.


DO NOT PLACE ICE OR ICE PACKS ON ANY PATIENT WITH BURNS GREATER THAN 5% TOTAL BODY SURFACE AREA.

CONSIDER UTILIZING AEROMEDICAL RESOURCE IF PATIENT IS MORE THAN 30 MINUTES FROM A BURN CENTER/HYPERBARIC MEDICINE SPECIALTY CENTER BY GROUND.



- j) Establish IV access with LR, if appropriate.
 - (1) 10 mL/kg bolus.
 - (2) For shock patients, administer a fluid bolus of 20 mL/kg LR followed by a second 20 mL/kg LR if needed. Titrate to a systolic pressure of 100 mmHg.
- k) Administer opioid per Pain Management protocol.
- l)  Consider additional fluid administration. Maximum dose 2,000 mL without medical consultation.



- m) Establish IV access with LR, if appropriate.
 - (1) 10 mL/kg bolus.
 - (2) If age-related vital signs and patient's condition indicate hypoperfusion, administer initial fluid bolus of 20 mL/kg LR IV/IO. If patient's condition does not improve, administer the second bolus of fluid at 20 mL/kg LR IV/IO.
- n)  Third and subsequent fluid boluses at 20 mL/kg LR IV/IO.
- o) Administer opioid per Pain Management protocol.

4. Continue General Patient Care.

NN. TRAUMA PROTOCOL: EYE TRAUMA

1. Initiate General Patient Care.
2. Presentation
The patient may present with profuse bleeding, avulsions, lacerations, foreign objects, impaled objects, and/or soft tissue damage to the eye(s) and/or surrounding facial areas.
3. Treatment



NEVER APPLY PRESSURE TO THE EYEBALL OR GLOBE!

IF THE PATIENT HAS OTHER ASSOCIATED TRAUMA OR BURNS, TRANSPORT THE PATIENT TO THE APPROPRIATE TRAUMA OR BURN CENTER; OTHERWISE, TRANSPORT THE PATIENT TO THE NEAREST EYE TRAUMA CENTER, IF APPROPRIATE.

DO NOT USE CHEMICAL COLD PACKS ON THE FACE.



- a) **Foreign objects NOT embedded in the eye(s):** Flush with copious amounts of water (preferably sterile), normal saline, or LR from the bridge of the nose outward.
- b) **Injury to orbits (area around the eye):** Consider head stabilization and spinal protection protocol. (NEW '15)
- c) **Lacerations/injuries to the eyeball or globe:** Shield affected eyeball and dress other eye to reduce movement and protect loss of fluids; consider head stabilization and spinal protection and elevate the head to decrease intraocular pressure. (NEW '15)
- d) **Impaled objects:** Stabilize object, shield affected eyeball, and dress other eye to reduce movement.



-
- e) Establish IV access with LR, if appropriate.
 - f) Administer opioid per Pain Management protocol.

TRAUMA PROTOCOL: EYE TRAUMA (Continued)



- g) **Foreign objects NOT embedded in the eye(s):** Flush with copious amounts of water (preferably sterile), normal saline, or LR from the bridge of the nose outward.
- h) **Injury to orbits (area around the eye):** Consider head stabilization and spinal protection protocol. (NEW '15)
- i) **Lacerations/injuries to the eyeball or globe:** Shield affected eyeball and dress other eye to reduce movement and protect loss of fluids; consider head stabilization and spinal protection and elevate the head to decrease intraocular pressure. (NEW '15)
- j) **Impaled objects:** Stabilize object, shield affected eyeball, and dress other eye to reduce movement.



-
- k) Establish IV/IO access with LR, if appropriate.
 - l) Administer opioid per Pain Management protocol.

4. Continue General Patient Care.

OO. TRAUMA PROTOCOL: HAND/UPPER/LOWER EXTREMITY TRAUMA

1. Initiate General Patient Care.
2. Presentation
 - a) Patient may exhibit injuries to skeletal or soft tissue components of the hand or upper extremity at or below the level of the mid-humerus, including complete or incomplete amputations of the elements of the hand or upper extremity, crush or degloving injuries, and other trauma resulting in loss of perfusion or suspected nerve injury (e.g., compartment syndrome).

Upper Extremity

- b) Indications for Referral of adult patients to the Curtis National Hand Center at Union Memorial Hospital **or**

Referral of pediatric patients to the nearest Pediatric Trauma Center (children who have **not** reached their 15th birthday)

Stable patients with an isolated upper extremity injury at or below the mid-humerus



(Hand Center and/or nearest appropriate trauma center)

- (1) Complete or incomplete hand or upper extremity amputation
- (2) Partial or complete finger or thumb amputation
- (3) Degloving, crushing, or devascularization injuries of hand or upper extremity
- (4) High-pressure injection injuries to hand or upper extremity
- (5) Complicated nerve, vessel, or compartment syndrome (excessive swelling and pain of extremity with possible evolving nerve deficit) injury of the forearm and hand

Lower Extremity

- c) Indications for Referral to Pediatric or Adult Trauma Center: Patient may exhibit injuries to skeletal or soft tissue components with complete or incomplete amputation of ankle/foot lower extremity, complicated nerve, vessel, or compartment syndrome (excessive swelling and pain of extremity with possible evolving nerve deficit injury).

LIFE BEFORE LIMB.



TOE INJURIES FROM LAWN MOWER ARE NOT CANDIDATES FOR REIMPLANTATION AND PATIENTS SHOULD GO TO THEIR LOCAL MEDICAL FACILITY.

- d) Contraindications for referral to a Hand Center:
 - (1) Patients with unstable or abnormal vital signs
 - (2) Patients with major and/or multiple system trauma
- e) Contraindication for referral to Pediatric or Adult Trauma Center
Patients with toe amputation (partial or complete)

TRAUMA PROTOCOL: HAND/UPPER/LOWER EXTREMITY TRAUMA (Continued)



3. Treatment

- a) Package amputated extremity in sealed plastic bag (keep dry) and place **on top** of ice to keep cool. **DO NOT FREEZE.**




DO NOT SUBMERGE IN WATER OR FREEZE AMPUTATED PART.

USE TIME, DISTANCE, WEATHER, AND PROXIMITY TO DESIGNATED TRAUMA CENTER TO DETERMINE MODE OF TRANSPORT. IF ESTIMATED TRANSPORT TIME TO DESIGNATED HAND CENTER IS LESS THAN 30 MINUTES, USE GROUND TRANSPORT.




-
- b) Establish IV access with LR, if appropriate.
 - c) Administer fluid bolus, if appropriate.
20 mL/kg of LR IV
Titrate to a systolic pressure of 100 mmHg.
 - d) Administer opioid per Pain Management protocol.



- e)  Consider additional fluid administration.
Maximum dose 2,000 mL without medical consultation



-
- f) Establish IV/IO access with LR, if appropriate.
 - g) If age-related vital signs and patient's condition indicate hypoperfusion, administer initial fluid bolus of 20 mL/kg LR IV/IO. If patient's condition does not improve, administer the second bolus of fluid at 20 mL/kg LR IV/IO.
 - h)  Third and subsequent fluid boluses at 20 mL/kg LR IV/IO.
 - i) Administer opioid per Pain Management protocol.

4. Continue General Patient Care.

PP. TRAUMA PROTOCOL: MULTIPLE/SEVERE TRAUMA

1. Initiate General Patient Care.

2. Presentation

The patient may present with hypovolemic or neurogenic shock, hypotension, hypertension, rapid or slow heart rate, unequal pupils, shallow or absent respirations, decreased distal pulses, decreased motor and sensory function in extremities, internal or external bleeding, fractures, or lacerations.



WHILE TIME, DISTANCE, AND PROXIMITY ARE ALL FACTORS TO BE CONSIDERED IN THE TRIAGE DECISION, THE TRAUMA DECISION TREE SHOULD BE USED TO DETERMINE WHO SHOULD BE TRANSPORTED TO THE NEAREST APPROPRIATE TRAUMA CENTER AND WHEN THE TRANSPORT SHOULD OCCUR.


CHILDREN WHO MEET INCLUSION BASED ON THE TRAUMA DECISION TREE AND WHO HAVE **NOT** REACHED THEIR 15TH BIRTHDAY SHOULD BE TRANSPORTED TO A PEDIATRIC TRAUMA CENTER.

3. Treatment



- a) Apply spinal protection protocol for blunt trauma patients. Patients with isolated penetrating trauma should not have spinal immobilization performed. **(NEW '15)**
- b) Control bleeding and immobilize patient, if blunt mechanism indicates. Spinal immobilization should not be performed on patients with isolated penetrating mechanism. If mechanism includes both blunt and penetrating trauma, apply spinal protection protocol. Backboard may be used for patient transfer maneuvers. **(NEW '15)**
- c) Hyperventilate the head-injured patient as follows:
Adult: 20 breaths per minute
Child: 30 breaths per minute
Infant: 35 breaths per minute
 - (1) Who has signs of herniation such as unequal pupils, posturing, or paralysis **or**
 - (2) Who is manifesting a rapidly decreasing GCS **or**
 - (3) With on-line medical consultation
- d) Consider pelvic stabilization technique if indicated.




- e) Establish IV access with LR; administer 20 mL/kg bolus. Titrate to a systolic pressure of 100 mmHg.
- f)  Consider additional fluid administration. Maximum dose 2,000 mL without medical consultation

TRAUMA PROTOCOL: MULTIPLE/SEVERE TRAUMA (Continued)



- g) Apply spinal protection protocol for blunt trauma patients. Patients with isolated penetrating trauma should not have spinal immobilization performed. **(NEW '15)**
- h) Control bleeding and immobilize patient, if blunt mechanism indicates. Spinal immobilization should not be performed on patients with isolated penetrating mechanism. If mechanism includes both blunt and penetrating trauma, apply spinal protection protocol. Backboard may be used for patient transfer maneuvers. **(NEW '15)**
- i) Hyperventilate the head-injured patient as follows:
 - Adult: 20 breaths per minute
 - Child: 30 breaths per minute
 - Infant: 35 breaths per minute
 - (1) Who has signs of herniation such as unequal pupils, posturing, or paralysis **or**
 - (2) Who is manifesting a rapidly decreasing GCS **or**
 - (3) With on-line medical consultation



-
- j) Establish IV/IO access with LR.
 - k) If age-related vital signs and patient's condition indicate hypoperfusion, administer initial fluid bolus of 20 mL/kg LR IV/IO. If patient's condition does not improve, administer the second bolus of fluid at 20 mL/kg LR.
 - l)  Third and subsequent fluid boluses at 20 mL/kg LR IV/IO.

4. Continue General Patient Care.

GLASGOW COMA SCALE

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 | |
|--------------------------------------|----------------------|---------------------------------|----------|
| 5 SMILES/COOS/CRIS | APPROPRIATE WORDS | ORIENTED AND CONVERSES | 5 |
| 4 CRIES | INAPPROPRIATE WORDS | DISORIENTED AND CONVERSES | 4 |
| 3 INAPPROPRIATE CRIES/SCREAMS | CRIS/SCREAMS | INAPPROPRIATE WORDS | 3 |
| 2 GRUNTS | GRUNTS | INCOMPREHENSIBLE SOUNDS | 2 |
| 1 NO RESPONSE | NO RESPONSE | NO RESPONSE | 1 |

Glasgow Coma Score

| | |
|--------------|---------------|
| Total | (3–15) |
|--------------|---------------|

QQ. TRAUMA PROTOCOL: SEXUAL ASSAULT

1. Initiate General Patient Care.
2. Presentation
Patient may present with no overt evidence of trauma, or may present with bruising, bleeding, or associated physical and/or emotional trauma.



ALL HEALTH CARE PROVIDERS ARE OBLIGATED BY LAW TO REPORT CASES OF SUSPECTED CHILD OR VULNERABLE ADULT ABUSE AND/OR NEGLECT TO EITHER THE LOCAL POLICE OR ADULT/CHILD PROTECTIVE SERVICE AGENCIES. DO NOT INITIATE REPORT IN FRONT OF THE PATIENT, PARENT, OR CAREGIVER.



3. Treatment
 - a) Patient may feel more comfortable talking to someone of the same gender.
 - b) Maintain non-judgmental, but caring attitude.
 - c) Preserve crime scene and clothing articles, if practical.
 - d) Maintain strict confidentiality.
 - e) Do not perform a genital examination.
 - f) Dress wounds (do not attempt to clean).
 - g) Discourage any self-treatment (shower, washing, changing clothes).
 - h) Treat injuries according to presentation.
4. Continue General Patient Care.

RR. TRAUMA PROTOCOL: SPINAL PROTECTION (NEW '15)

1. Initiate General Patient Care.

2. Presentation

Indications for initiating spinal protection:

“**Spinal protection**” refers to the act of protecting the spinal cord from further injury.

“**Spinal immobilization**” is the act of placing a patient on a backboard with cervical collar for the purpose of trying to prevent excessive movement of the spinal column.

a) Patients who have a blunt trauma with a high-energy mechanism of injury that has potential to cause spinal cord injury or vertebral instability **and** one or more the following should receive spinal protection.

(1) Midline spinal pain, tenderness, or deformity

(2) Signs and symptoms of new paraplegia or quadriplegia

(3) Focal neurological deficit

(4) Altered mental status or disorientation

(5) Distracting injury: Any injury (e.g., fracture, chest, or abdominal trauma) associated with significant discomfort that could potentially distract from a patient’s ability to accurately discern or define spinal column pain or tenderness. **(NEW '15)**

Indications for referral to an Adult Specialty Spinal Center.

(1) 15 years of age or older **AND**

(2) Signs and symptoms of new paraplegia or quadriplegia in the presence of trauma **AND**

(3) Patent airway **AND**

(4) Hemodynamically stable

If considering referral to Adult Specialty Spinal Center, consult with both the nearest Trauma Center and the Adult Spinal Specialty Center, when possible.



3. Treatment

a) Initiate general patient care.

b) All patients meeting the spinal protection protocol shall have manual in-line cervical spine stabilization and application of a correctly sized cervical collar.

c) Minimize flexion, extension, and rotation of the spinal column.

d) Patients meeting the spinal protection protocol that are with neurological deficit, or not able to ambulate on their own accord, **shall** be immobilized with cervical collar and a backboard.

TRAUMA PROTOCOL: SPINAL PROTECTION (Continued)

- e) The following patients only need application of a cervical collar and do not need to be placed in full immobilization with a backboard:
 - (1) Patients that are found by EMS providers to be standing or ambulatory,
 - (2) Patients that have a GCS of 15 and are able to safely extricate themselves from the environment (e.g., vehicle seat) without gross movement (flexion, extension, or rotation) of the spinal column, and
 - (3) Patients that do not have evidence of a neurological deficit.
- f) Patients that are placed in a cervical collar without a need for immobilization on a backboard should be assisted in minimal movement to the EMS stretcher and allowed to lie down supine on their own accord.
- g) Patients meeting spinal protection protocol and not requiring immobilization with a backboard should be secured to the EMS stretcher in a supine position with the head elevated at 30 degrees.
- h) Backboards may be used for patient extrication and patient transfer for patients not meeting spinal protection protocol; however, other devices are preferred (e.g., sheet, Reeves sleeve, or scoop stretcher).
- i) If the backboard is used for extrication from the scene to an ambulance, the patient should be removed from the backboard as soon as possible. The stretcher mattress will provide support in place of the backboard.
- j) Interfacility transport patients that have already been removed from a backboard should not be placed back on the backboard prior to transport.
- k) **Helmet Removal**
 - (1) If patient is wearing a helmet, the goals are assessment and management of the airway, breathing, and circulation followed by protection of the spinal column by maintaining neutral alignment of the spinal column.
 - (2) If patient is wearing helmet and no shoulder pads, removal of the helmet is indicated.
 - (3) If patient is wearing helmet with shoulder pads, removal of the helmet is acceptable only with concurrent removal of shoulder pads. Under these conditions, removal of the helmet is indicated for management of the airway or other facial trauma.
- l) **Patients found with backboard applied before EMS arrival**
 - (1) If EMS providers find patient immobilized on a backboard applied prior to arrival, the principles of the spinal protection protocol still apply.

TRAUMA PROTOCOL: SPINAL PROTECTION (Continued)



- m) Establish IV/IO access with LR, if appropriate.
- n) Administer fluid bolus, if appropriate.
20 mL/kg of LR IV
Titrate to a systolic blood pressure of 100 mmHg.
- o) Consider dopamine.
2–20 mcg/kg/min IV/IO
Titrate to a systolic blood pressure of 100 mmHg.



- p) Consider additional fluid administration.
Maximum dose 2,000 mL without medical consultation.

In children that have not reached their 15th birthday:

Indications for initiating spinal protection:

- q) Patients who have a blunt trauma with a high-energy mechanism of injury that has potential to cause spinal cord injury or vertebral instability **and** the presence of or inability to assess one or more of the following should receive spinal protection.
 - (1) Midline spinal pain, tenderness, or deformity
 - (2) Signs and symptoms of new paraplegia or quadriplegia
 - (3) Focal neurological deficit
 - (4) Altered mental status or disorientation
 - (5) Distracting injury
 - (6) Neck pain or torticollis
 - (7) High impact diving incident or high risk MVC (i.e., head on collision, rollover, ejected from the vehicle, death in the same crash, or speed > 55 mph)
 - (8) Substantial torso injury
 - (9) Conditions predisposing to spine injury

Indications for referral to a Pediatric Trauma Center:

- (1) Patient is less than 15 years of age **AND**
- (2) Signs and symptoms of new paraplegia or quadriplegia in the presence of trauma **AND**
- (3) Patent airway **AND**
- (4) Hemodynamically stable



Consult with nearest Trauma Center and, when possible, the nearest Pediatric Trauma Center.

- r) Initiate general patient care.
- s) All patients meeting the spinal protection protocol shall have manual in-line cervical spine stabilization and application of a correctly sized cervical collar.

TRAUMA PROTOCOL: SPINAL PROTECTION (Continued)

- t) Minimize flexion, extension, and rotation of the spinal column.
- u) Patients meeting the spinal protection protocol that are with neurological deficit, not able to ambulate on their own accord, or who are unable to respond during assessment **shall** be immobilized with cervical collar and a backboard.
- v) The following patients only need application of a cervical collar and do not need to be placed in full immobilization with a backboard:
 - (1) Patients that are found by EMS providers to be standing or ambulatory
 - (2) Patients that have a GCS of 15 and are able to safely extricate themselves from the environment (e.g., vehicle seat) without gross movement (flexion, extension, or rotation) of the spinal column, and
 - (3) Patients that do not have evidence of a neurological deficit.
- w) Patients that are placed in a cervical collar without a need for immobilization on a backboard should be assisted in minimal movement to the EMS stretcher and allowed to lie down supine on their own accord.
- x) Patients meeting spinal protection protocol and not requiring immobilization with a backboard should be secured to the EMS stretcher in a supine position with the head elevated at 30 degrees.
- y) Backboards may be used for patient extrication and patient transfer for patients not meeting spinal protection protocol; however, other devices are preferred (e.g., sheet, Reeves sleeve, or scoop stretcher).
- z) If the backboard is used for extrication from the scene to an ambulance, the patient should be removed from the backboard as soon as possible. The stretcher mattress will provide support in place of the backboard.
- aa) Interfacility transport patients that have already been removed from a backboard should not be placed back on the backboard prior to transport.
- bb) Helmet Removal
 - (1) If patient is wearing a helmet, the goals are assessment and management of the airway, breathing, and circulation followed by protection of the spinal column by maintaining neutral alignment of the spinal column.
 - (2) If patient is wearing helmet and no shoulder pads, removal of the helmet is indicated.
 - (3) If patient is wearing helmet with shoulder pads, removal of the helmet is acceptable only with concurrent removal of shoulder pads. Under these conditions, removal of the helmet is indicated for management of the airway or other facial trauma.

TRAUMA PROTOCOL: SPINAL PROTECTION (Continued)

- cc) Patients found with backboard applied before EMS arrival
 - (1) If EMS providers find patient immobilized on a backboard applied prior to arrival, the principles of the spinal protection protocol still apply.



-
- dd) Establish IV/IO access with LR, if appropriate.
 - ee) Administer fluid bolus, if appropriate.
 - 20 mL/kg of LR IV
 - Titrate to a systolic blood pressure of 100 mmHg.
 - ff) Consider dopamine.
 - 2–20 mcg/kg/min IV/IO
 - Titrate to a systolic blood pressure of 100 mmHg.
 - gg) Consider additional fluid administration.
 - Maximum dose 2,000 mL without medical consultation
4. Continue General Patient Care.

THIS PAGE IS INTENTIONALLY BLANK

SS. TRAUMA PROTOCOL: TRAUMA ARREST

1. Initiate General Patient Care.
2. Presentation
Early cardiac arrest secondary to trauma is usually due to severe hypoxia, neurologic injury, or massive hemorrhage. The patient is unresponsive, pulseless, and apneic.



3. Treatment
 - a) Rapid assessment and extrication
 - b) Determine if patient meets the criteria for termination of resuscitation for a patient in traumatic arrest. If patient meets criteria, discontinue resuscitation. If criteria are not met, continue resuscitation.
 - c) Perform spinal immobilization for blunt trauma patients only. Patients with isolated penetrating trauma should not have spinal immobilization performed. If mechanism includes both blunt and penetrating trauma, perform spinal immobilization. **(NEW '15)**
 - d) CPR
 - e) Consider AED if arrest is believed to be medical in nature and the patient meets the criteria.



IF TRAUMATIC ARREST IS SECONDARY TO PENETRATING TRAUMA, PATIENT IS IN A RHYTHM OTHER THAN ASYSTOLE, AND THE TRAUMA CENTER IS WITHIN 15 MINUTES, TRANSPORT THE PATIENT. IF TRANSPORT TIME EXCEEDS 15 MINUTES, CONSULT.



-
- f) Establish IV access with LR, if appropriate.
 - g) Administer fluid bolus, if appropriate.
20 mL/kg of LR IV
Titrate to a systolic pressure of 100 mmHg.
 - h) Identify rhythm and refer to appropriate algorithm.
 - i) If traumatic arrest is suspected due to multi-system blunt trauma, or due to penetrating neck, chest, or abdominal trauma, bilateral needle decompressions should be performed. Once catheters are placed **do not remove.**

TRAUMA PROTOCOL: TRAUMA ARREST (Continued)



- j) Rapid assessment and extrication
- k) Perform spinal immobilization for blunt trauma patients only. Patients with isolated penetrating trauma should not have spinal immobilization performed. If mechanism includes both blunt and penetrating trauma, perform spinal immobilization. (NEW '15)
- l) CPR
- m) Consider AED if arrest is believed to be medical in nature. (See Section IV, AED.)



A PATIENT IN CARDIOPULMONARY ARREST SECONDARY TO TRAUMA SHOULD BE TAKEN TO THE NEAREST APPROPRIATE PEDIATRIC TRAUMA CENTER. CONSIDERATION SHOULD BE GIVEN TO TRANSPORTING THE PATIENT TO THE NEAREST EMERGENCY DEPARTMENT OR ADULT TRAUMA CENTER IF THE PEDIATRIC TRAUMA CENTER IS MORE THAN 10 MINUTES ADDITIONAL TRANSPORT TIME!



-
- n) Establish IV/IO access with LR.
 - o) If age-related vital signs and patient's condition indicate hypoperfusion, administer initial fluid bolus of 20 mL/kg LR IV/IO. If patient's condition does not improve, administer the second bolus of fluid at 20 mL/kg LR IV/IO.
 - p) If traumatic arrest is suspected due to multi-system blunt trauma, or due to penetrating neck, chest, or abdominal trauma, bilateral needle decompressions should be performed. Once catheters are placed **do not remove.**
4. Continue General Patient Care.

TT. TRAUMA DECISION TREE

Measure vital signs and level of consciousness and assess for major injury

Category Alpha

- GCS less than or equal to 13
- Systolic BP less than 90 mmHg (Adult) less than 60 mmHg (Peds)
- Respiratory rate less than 10 or greater than 29 (less than 20 in infant age less than one year) or need for ventilatory support

YES

Transport to trauma center or specialty center per protocol; alert trauma team; consider helicopter transport if quicker and of clinical benefit (refer to GPC Section I).

NO

Assess for other injuries.

Category Bravo

- | | | |
|--|---|--|
| <input type="checkbox"/> 2 or more proximal long-bone fractures | <input type="checkbox"/> Crushed, degloved, mangled, or pulseless extremity | <input type="checkbox"/> Pelvic fracture |
| <input type="checkbox"/> Amputation proximal to wrist or ankle | <input type="checkbox"/> Open or depressed skull fracture | <input type="checkbox"/> Paralysis (spine) |
| <input type="checkbox"/> Chest wall instability or deformity (e.g., flail chest) | <input type="checkbox"/> Penetrating injuries to head, neck, torso, or extremities proximal to elbow and knee | |

YES

Transport to trauma center or specialty center per protocol; alert trauma team; consider helicopter transport if quicker and of clinical benefit (refer to GPC Section I).

NO

Evaluate for evidence of mechanism of injury and high-energy impact.

Category Charlie

- | | |
|--|---|
| <input type="checkbox"/> High Risk Auto Crash <ul style="list-style-type: none"> • Intrusion (including roof) greater than 12 in. occupant site; greater than 18 in. any site • Ejection (partial or complete) from vehicle • Death in same passenger compartment • Vehicle telemetry data consistent with high risk of injury | <ul style="list-style-type: none"> • Rollover without restraint • Auto v. pedestrian/bicyclist thrown, run over, or with significant (greater than 20 mph) impact • Motorcycle crash greater than 20 mph |
| <input type="checkbox"/> Falls <ul style="list-style-type: none"> • Adult: greater than 20 feet (one story is equal to 10 feet) • Pediatric: greater than 10 feet or 3 times the child's height | <input type="checkbox"/> Exposure to blast or explosion |

YES

Transport to Trauma Center; alert trauma team. Patients within a **30-minute drive time** of the closest appropriate trauma/specialty center shall go by ground unless there are extenuating circumstances. Receiving Trauma Center Medical Consultation required when considering whether helicopter transport is of clinical benefit (refer to GPC Section I).

NO

Evaluate for other considerations.

Category Delta

- | | |
|--|--|
| <input type="checkbox"/> Older adults <ul style="list-style-type: none"> • Risk of injury/death increases after age 55 • SBP less than 110 may indicate shock after age 65 • Low-impact mechanisms (e.g., ground-level falls) may result in severe injury | <input type="checkbox"/> Burns <ul style="list-style-type: none"> • Without trauma mechanism, triage to Burn Center • With trauma mechanism, triage to Trauma Center |
| <input type="checkbox"/> Children (Should be triaged to Pediatric Trauma Center) | <input type="checkbox"/> Pregnancy greater than 20 weeks <input type="checkbox"/> EMS provider judgment <input type="checkbox"/> Anticoagulants and bleeding disorders (Patients with head injury are at high risk for rapid deterioration) |

YES

Consider medical direction and transport to trauma center. Patients within a **30-minute drive time** of the closest appropriate trauma/specialty center shall go by ground unless there are extenuating circumstances. Receiving Trauma Center Medical Consultation required when considering whether helicopter transport is of clinical benefit (refer to GPC Section I).

NO

Transport according to protocol.

IV. APPENDICES

A. GLOSSARY

AED: Automated External Defibrillation or Automated External Defibrillator

Alternative Airway Device: An airway adjunct other than an endotracheal tube that may include dual lumen airways (e.g., EasyTube®) or the laryngeal tube airway device (e.g., King LTS-D™)

AMI: Acute Myocardial Infarction

APGAR score: An acronym and method of scoring to determine the condition of a newborn (see APGAR chart on page 149)

Apnea: An absence of spontaneous respirations

Aspiration: The act of taking fluid (e.g., vomitus, mucus, or blood) from the body via a suction device or the act of taking foreign material or vomit into the lungs

Asymptomatic: The lack of any evidence or indication of illness, disease, or physical disturbance of patient's condition

AVPU: A method of determining and recording a patient's mental status or level of consciousness where "A" stands for Alert, "V" stands for responsive to Verbal stimuli, "P" stands for responsive to Painful stimuli, and "U" stands for Unresponsive

Barotrauma: Injury sustained as a result of exposure to excessive environmental pressure changes (e.g., blast injury or underwater pressure injury)

BSI: Body Substance Isolation

BVM: Bag-Valve-Mask

Carte blanche: Full discretionary power

Children with Special Healthcare Needs (CSHN): Children with chronic illness or conditions requiring specialized assessment, treatment, technology, or transport destination

CISM: Critical Incident Stress Management

Commercial ambulance: Ambulance licensed by the State Office of Commercial Ambulance Licensing and Regulation

Continuous CPR: Chest compressions asynchronous with ventilation and infrequent, minimal interruptions (less than 10 seconds each)

COPD: Chronic Obstructive Pulmonary Disease (e.g., asthma, emphysema, bronchitis)

Cricothyroidotomy (needle or surgical): A syringe with a needle attached or a scalpel is used to make a puncture hole or surgical incision through the cricothyroid membrane that overlies the trachea. A needle catheter or ET tube is passed into the trachea and then attached to a jet insufflation device or bag-valve device to ventilate the patient.

Critical: Approaching death or having the nature of a crisis (e.g., time-critical, critical injury)

CRT-(I): Cardiac Rescue Technician-Intermediate

Cyanotic: Bluish color of the skin or mucus membranes caused by lack of oxygen to the tissue

DCAP BTLS: Acronym for signs of injuries to assess during a physical examination of patients: D = Deformity, C = Contusions, A = Abrasions, P = Punctures/penetrations, B = Burns, T = Tenderness, L = Lacerations, S = Swelling

Defibrillation: Administration of electrical current(s) to the heart in an effort to normalize rhythm

Defibrillation set (stacked shocks): Includes a set of three successive shocks either biphasic or monophasic standard 200 J, 300 J, 360 J, or peds 2–4 J/kg

Distracting Injury: Any injury (e.g., fracture, chest, or abdominal trauma) associated with significant discomfort that could potentially distract from a patient's ability to accurately discern or define spinal column pain or tenderness (**NEW '15**)

DNR: Do Not Resuscitate

Dystonic: Any impairment of muscle tone, which may be manifested by prolonged muscle contractions that may cause twisting and repetitive movements or abnormal posture. These movements may be in the form of rhythmic jerks. Symptoms that “appear” to be of a focal seizure-like nature with an awake and alert person and no history of seizures but who probably has a recent history of anticholinergic medication use (e.g., anti-psychotic, anti-vomiting).

EJ: External Jugular vein of the neck; peripheral IV access site

Emergency Information Form: A two-page form, designed by the American Academy of Pediatrics and American College of Emergency Physicians (AAP and ACEP), that provides a brief summary of special health care needs including: diagnosis, usual pattern of disease, emergency action plan, primary and specialty doctors and hospitals. Can be downloaded and data entered at <http://www.aap.org/advocacy/eif.doc>.

Emetic: Referring to a substance that causes vomiting

SOP: Standard Operational Procedure (defined by local jurisdiction or region)

Spinal Immobilization: The act of placing a patient on a backboard with cervical collar for the purpose of trying to prevent excessive movement of the spinal column (**NEW '15**)

Spinal Protection: The act of protecting the spinal cord from further injury (**NEW '15**)

Standing Orders: Orders, rules, regulations, or procedures prepared as guidelines in the preparation and carrying out of medical and surgical procedures

Sublingually: Under the tongue

Symptom: Any subjective evidence of disease or of a patient's condition (such as evidence perceived by the patient)

Symptomatic: The subjective evidence or indication of illness, disease, or physical disturbance of patient's condition

Syncope: A fainting spell. It usually follows a feeling of lightheadedness and may often be prevented by lying down. Syncope may also result from any number of heart, neurologic, or lung disorders.

System Medical Director: Means any of the following: Executive Director of MIEMSS, State EMS Medical Director, Associate State Medical Director for Pediatrics, Regional Medical Directors, Associate Regional Pediatric Medical Directors, EMS Operational Program Medical Directors, and Assistant EMS Operational Program Medical Directors

TOI: Type Of Incident to which EMS providers may be called upon to respond (e.g., ill and/or injured patients, hazardous materials incidents, fires, mass casualty incidents)

Tracheostomy: An incision into the trachea (windpipe) that forms a temporary or permanent opening called a stoma. A tube is inserted through the opening to allow passage of air and removal of secretions.

Vagal: Pertaining to the vagus nerve (the tenth cranial nerve, which is essential for speech, swallowing, and slowing of the heart rate)

VF: Ventricular Fibrillation

Volume-Sensitive Children: Children that need smaller fluid bolus volumes due to special needs including: neonates (birth to 28 days), congenital heart diseases, chronic lung disease, or chronic renal failure

VT: Ventricular Tachycardia

Vulnerable Adult: An adult who lacks the physical or mental capacity to provide for his or her daily needs (Digest of Criminal Law)

**B. PROCEDURES, MEDICAL DEVICES, AND MEDICATIONS FOR
EMS AND COMMERCIAL SERVICES**

| PROCEDURE | EMR | EMT | CRT-(I) | PM |
|--|------------|------------|----------------|-----------|
| ADMINISTRATION OF MEDICATIONS | | | | |
| Buccal, Oral, Sublingual | - | SO | SO | SO |
| SC, IV, Rectal, Nebulizer | - | - | SO | SO |
| Intramuscular | - | OSP | SO | SO |
| Intranasal | OSP | SO | SO | SO |
| Intraosseous | - | - | SO | SO |
| Intradermal PPD (Public Safety Personnel only) | - | - | - | OSP |
| AIRWAY MANAGEMENT | | | | |
| Alternative Airway Device (e.g., EasyTube®) | - | - | SO | SO |
| BiPAP | - | - | - | OSP |
| Carbon Dioxide Detector (ALS required) | - | SO | SO | SO |
| Capnograph (ALS required by 2015) | - | - | SO | SO |
| CPAP | - | - | SO | SO |
| Cricothyroidotomy | - | - | - | PP |
| Direct Laryngoscopy | - | - | SO | SO |
| Gastric Tube (BLS "Burp," ALS insert) | - | - | SO | SO |
| Impedance Threshold Device (ITD) | - | OSP | OSP | OSP |
| Laryngeal Tube Airway (King LTS-D™) | - | - | OSP | OSP |
| Nasotracheal Intubation | - | - | - | SO |
| Oropharyngeal/Nasopharyngeal Airway | SO | SO | SO | SO |
| Orotracheal Intubation | - | - | SO | SO |
| Needle Decompression Thoracostomy (NDT) | - | - | SO/MC | SO/MC |
| Pulse Oximeter | - | SO | SO | SO |
| Suction | SO | SO | SO | SO |
| Ventilator | - | - | - | OSP |
| Video Laryngoscopy (NEW '15) | - | - | PP | PP |
| CHEMICAL RESTRAINT | - | - | SO/MC | SO |
| ELECTROCARDIOGRAM | | | | |
| Standard Limb Leads | - | - | SO | SO |
| 12-Lead | - | PP | SO | SO |
| ELECTRICAL THERAPY | | | | |
| Automated External Defibrillator | SO | SO | SO | SO |
| Cardioversion | - | - | SO | SO |
| Defibrillation | - | - | SO | SO |
| Transcutaneous Cardiac Pacing | - | - | SO | SO |
| GLUCOMETER | - | OSP | SO | SO |
| INTRAVENOUS THERAPY | | | | |
| External Jugular Access & Maintenance | - | - | SO | SO |
| Intraosseous Infusion & Maintenance | - | - | SO | SO |
| Peripheral IV Access/Saline Lock/Blood Drawn | - | OSP | SO | SO |
| Peripheral IV Maintenance | - | SO | SO | SO |
| PRONOUNCEMENT OF DEATH | - | SO | SO | SO |
| SKELETAL STABILIZATION/IMMOBILIZATION | SO | SO | SO | SO |
| BLEEDING MANAGEMENT: TOURNIQUET / HEMOSTATIC DRESSING | SO | SO | SO | SO |
| VALSALVA MANEUVER | - | - | SO | SO |

SO Standing Order

OSP Optional Supplemental Program

MC Medical Consultation Required

PP Pilot Program

REA Research

**B. PROCEDURES, MEDICAL DEVICES, AND MEDICATIONS FOR
EMS AND COMMERCIAL SERVICES (Continued)**

| PROCEDURE | EMR | EMT | CRT-(I) | PM |
|---|------------|------------|----------------|-----------|
| Apnea Monitors | - | SO | SO | SO |
| Arterial Lines and Cardiac Sheaths | - | - | - | - |
| Chemotherapy Administration/Drip | - | - | - | - |
| Chest tubes with Chest Drainage System | - | - | - | - |
| Chest tubes with Heimlich Valve | - | - | SO | SO |
| Colostomy bag | - | SO | SO | SO |
| External Orthopedic Fixators | - | SO | SO | SO |
| Foley catheter | - | SO | SO | SO |
| Foley catheter with irrigation | - | SO | SO | SO |
| Gastrostomy and jejunal feeding tubes (Non-infusing) | - | SO | SO | SO |
| HALO Cervical Immobilization | - | SO | SO | SO |
| IABP InterAortic Balloon Pump | - | - | - | - |
| Ileostomy tube (Non-infusing) | - | SO | SO | SO |
| iStat (NEW '15) | - | - | - | REA |
| PICC —peripherally inserted central catheter or CVA —central venous access line, capped only | - | SO | SO | SO |
| PICC —peripherally inserted central catheter or CVA —central venous access line, subclavian/femoral or internal jugular may be monitored if fluid/medication being administered meets protocol. The ALS provider may access the line in a life-threatening emergency. | - | - | SO | SO |
| Intraventricular/Intracranial Monitor | - | - | - | - |
| Left Ventricular Assist Device (LVAD) Scene (BLS & ALS) | - | SO | SO | SO |
| Left Ventricular Assist Device (LVAD) Interfacility | - | - | - | - |
| Nasogastric and Orogastric tubes (Existing, Non-infusing, or Capped) | - | SO | SO | SO |
| Nephrostomy Tubes | - | SO | SO | SO |
| Peak Expiratory Flow Meter | - | - | SO | SO |
| Pelvic Binder Device | - | PP | PP | PP |
| Portable Outpatient Fixed Medication Pump/PCA Pump | - | SO | SO | SO |
| Peritoneal Dialysis (Non-active, Capped) | - | SO | SO | SO |
| Physical Restraint | - | SO | SO | SO |
| Sengstaken-Blakemore tube | - | - | - | - |
| Suprapubic catheter | - | SO | SO | SO |
| Surgical drains | - | SO | SO | SO |
| Swan-Ganz | - | - | - | - |
| Tracheostomy (Existing) | - | SO | SO | SO |
| Transtracheal O ₂ (Outpatient/Existing) | - | SO | SO | SO |
| Transvenous Pacemaker (Temporary Transvenous) | - | - | - | - |
| Ventilators (Acute, Chronic, Scene) | - | - | - | OSP |
| Ventricular Peritoneal Shunt | - | SO | SO | SO |
| Wound vacuum device | - | SO | SO | SO |

SO Standing Order
OSP Optional Supplemental Program

MC Medical Consultation Required
PP Pilot Program **REA** Research

**B. PROCEDURES, MEDICAL DEVICES, AND MEDICATIONS FOR
EMS AND COMMERCIAL SERVICES (Continued)**

| MEDICATIONS | EMR | EMT | CRT-(I) | PM |
|---|------------|------------|----------------|-----------|
| Acetaminophen | – | SO | SO | SO |
| Activated Charcoal (Without Sorbitol) | – | MC | MC | MC |
| Adenosine | – | – | MC | SO |
| Albuterol/Fast-acting bronchodilator MDI (Patient's Prescribed) | – | SO/MC | SO/MC | SO/MC |
| Albuterol Sulfate Nebulizer | – | – | SO/MC | SO/MC |
| Antimicrobial (Pre-established interfacility only) (NEW '15) | – | – | – | OSP |
| Aspirin | – | SO | SO | SO |
| Atropine Sulfate | – | – | SO/MC | SO/MC |
| Atrovent | – | – | SO | SO |
| Calcium Chloride (10% Solution) | – | – | MC | MC |
| Dexamethasone | – | – | SO | SO |
| Dextrose 50% | – | – | SO | SO |
| Diazepam | – | – | MC | SO/MC |
| Diltiazem | – | – | MC | MC |
| Diphenhydramine Hydrochloride | – | – | SO/MC | SO/MC |
| Dopamine Hydrochloride | – | – | MC | MC |
| Epinephrine Auto-Injector | OSP | SO/MC | SO | SO |
| Epinephrine Nebulizer | – | – | MC | MC |
| Epinephrine (1:1,000) Vial or Syringe (NEW '15) | – | OSP | SO | SO |
| Epinephrine 1:10,000 (NEW '15) | – | – | SO | SO |
| Etomidate (Amidate) | – | – | – | PP |
| Fentanyl | – | – | OSP | OSP |
| Glucagon | – | – | SO/MC | SO/MC |
| Glycoprotein IIb/IIIa | – | – | – | OSP |
| Haldol | – | – | SO | SO |
| Hemophilia Blood Factor (VIII or IX) | – | – | SO | SO |
| Heparin (Interfacility transport only) | – | – | – | OSP |
| Hydroxocobalamin | – | – | OSP | OSP |
| Lidocaine | – | – | SO | SO |
| Magnesium Sulfate (NEW '15) | – | – | SO/MC | SO/MC |
| MARK I/DuoDote (Atropine & 2 PAM) | OSP | OSP | OSP | OSP |
| Midazolam (Versed) | – | – | MC | SO/MC |
| Morphine Sulfate | – | – | SO/MC | SO/MC |
| Morphine Sulfate (Infusion) | – | – | – | MC |
| Naloxone (IN) Public Safety | OSP | SO | SO | SO |
| Naloxone (IV, IM, ET) | – | – | SO | SO |
| Nitroglycerin Paste | – | – | SO | SO |
| Nitroglycerin (tablet /spray) (Patient's Prescribed) | – | SO | SO | SO |
| Nitroglycerin (tablet/spray) | – | – | SO | SO |
| Ondansetron | – | – | SO/MC | SO/MC |

SO Standing Order

OSP Optional Supplemental Program

MC Medical Consultation Required

PP Pilot Program **REA** Research

10B. VENTILATORY MANAGEMENT (NEW '15)

a) PURPOSE

- (1) Manual ventilation using a bag-valve-mask (BVM) or mechanical (machine) ventilation can be an effective method for managing a patient in the prehospital environment when performed correctly. Ventilatory management is important at both the BLS and ALS levels.
- (2) Special considerations such as etiology of respiratory failure and method of achieved airway management, including intubation (e.g., rapid sequence intubation), may require the advanced life support provider to provide additional care.

b) INDICATIONS

- (1) Any condition requiring assisted or artificial ventilation with a bag-valve-mask or mechanical (machine) ventilation
- (2) All patients will require manual ventilation after the placement of an advanced airway. Inadequate respiratory rate may be secondary to underlying respiratory pathology or the result of pharmacologic intervention secondary to medications used in rapid sequence intubation.

c) CONTRAINDICATIONS

None

d) POTENTIAL ADVERSE EFFECTS/COMPLICATIONS

- (1) Gastric distension, vomiting, and/or aspiration
- (2) Hypoxemia
- (3) Secretions and tube/bag obstruction
- (4) Barotrauma
- (5) Patient agitation
- (6) Equipment failure



e) PROCEDURE/PRECAUTIONS:

- (1) Have suction available and ensure a patent airway using a BLS airway adjunct (OPA or NPA).
- (2) Rate of **initial** ventilation by single hand bag-valve technique should generally be the following:
 - a) For all ages except neonates, 1 breath every 5 seconds (8–12 breaths/min)
 - b) For a neonate, 1 breath every 3 seconds (higher rates may be required)
- (3) AVOID hyperventilating unless patient exhibits signs of brainstem herniation (e.g., unequal pupils, posturing). Hyperventilation is associated with increased mortality.

- (4) In the absence of contraindications (e.g., CPR or spinal trauma), consider elevating the head of the bed to 30 degrees.
- (5) Continuous pulse oximetry shall be used. If a sudden drop in SpO₂ is observed, assess airway patency and consider obstruction (e.g., tongue, vomitus, blood), poor seal around BVM, and flow of oxygen being administered (LPM).



- (6) A gastric tube should be considered for gastric decompression whenever distention is caused by BVM ventilation. Gastric distention can reduce effectiveness of ventilations.
- (7) Waveform capnography and patient-specific considerations:
 - a) Continuous end-tidal carbon dioxide (EtCO₂) shall be used whenever an advanced airway has been placed.
 - b) Continuous EtCO₂ monitoring is encouraged for all other manually-ventilated patients.
 - c) The waveform shape and reading can contribute to an understanding of the underlying pathology.
 - d) Waveform capnography is utilized to optimize manual ventilation. Deliver ventilations to achieve a target EtCO₂ level of 35–40 mmHg if patient has a pulse.
 - e) EtCO₂ can be used to assess trends during a cardiac arrest and may contribute to understanding the pathology. A sudden substantial increase in EtCO₂ may indicate ROSC.
 - f) Hypercapnia is seen in patients experiencing respiratory failure as a result of obstructive disease, such as asthma and COPD. Chronic baseline hypercapnia should be considered when ventilating to a target EtCO₂.
 - g) A target EtCO₂ of 30–35 mmHg should be used for the rare patient who exhibits signs of brainstem herniation. Lower EtCO₂ has been associated with increased mortality.
- (8) If advanced airway is placed and patient does not have adequate chest rise, absent or significantly diminished breath sounds, or decreased SpO₂ or abnormal EtCO₂ levels, consider the **DOPES** mnemonic:
 - “**D**”: Is the tube **d**isplaced? Assess for bilateral breath sounds and reassess tube depth and compare to initial depth noted after insertion.
 - “**O**”: Is an **o**bstruction present? Suction the tube with a flexible suction catheter.
 - “**P**”: Are there signs of a tension **p**neumothorax? If present, perform needle decompression thoracotomy.
 - “**E**”: Is there an **e**quipment malfunction? Check oxygen flow in tubing and level in portable cylinder, determine whether SpO₂ and EtCO₂ devices are working correctly, and ensure the cuff is adequately inflated.
 - “**S**”: If history of asthma or COPD is known, consider extending the interval between ventilations to avoid **s**tacked ventilations.

- (9) Consider using a positive end expiratory pressure (PEEP) valve on the BVM, especially if the patient is hypoxemic (start at 5 cm H₂O).
- (10) If combativeness or bucking prevents the delivery of adequate ventilations, management shall be guided by the “Ventilatory Difficulty Secondary to Bucking” protocol.



11. ELECTRICAL THERAPY: AUTOMATED EXTERNAL DEFIBRILLATION (AED)

a) INDICATIONS

Sudden cardiac arrest (patients with no pulse and not breathing).

| | |
|---------------------------------|---|
| Birth - less than 1 of age | Manual defibrillator preferred. (If unavailable, an AED with pediatric capability is preferred over an adult AED.) |
| 1 year of age - 8 years of age | AED with pediatric capability using the pediatric pad is preferred over an adult AED. |
| Child 8 years of age or greater | Adult AED |

b) CONTRAINDICATIONS

Patient exhibiting signs of life



USE OF THE AED IN THE MANUAL MODE IS RESERVED FOR ALS.

c) POTENTIAL ADVERSE EFFECTS/COMPLICATIONS

- (1) Burns to skin
- (2) Deactivation of patient's implanted pacemaker
- (3) Injury to patient, self, and/or bystanders

d) PRECAUTIONS

- (1) Make sure the patient and the environment are dry.
- (2) Avoid placing pads over cardiac pacemakers/defibrillators or nitroglycerin patches.
- (3) DO NOT touch the patient while the AED is analyzing the patient or discharging energy.
- (4) ENSURE that no one is touching the patient when the shock button is pushed.
- (5) Never defibrillate while moving the patient or when in a moving ambulance.

e) PROCEDURE

- (1) Initiate analysis of rhythm.
- (2) If shock is indicated:
 - (a) Ensure all individuals are clear of the patient.
 - (b) Initiate shock to the patient.
 - (c) Immediately perform 5 cycles of CPR between shocks, then initiate analysis of rhythm.
 - (d) If patient remains pulseless, continue this cycle of CPR and shocks until the patient regains a pulse, the AED prompt states "no shock advised," or ALS arrives.

- (3) No more than 3 stacked shocks (9) or 4 single new device shocks via AED without medical consultation.
- (4) If shock is not indicated and the patient remains in cardiac arrest:
 - (a) Perform 5 cycles of CPR.
 - (b) Initiate analysis of rhythm.
 - (c) If shock is indicated, see “If shock is indicated” section above.
 - (d) If shock is not indicated, continue CPR and transport.
- (5) If shock is not indicated and patient regains pulse, treat per Altered Mental Status protocol.

f) SPECIFIC DOCUMENTATION

- (1) Document the number of analyses and shocks delivered, times of assessments and treatments, and the patient’s response to shocks/CPR. Specify the type of AED, location of AED, bystander and provider contact, and the triggering event.
- (2) If using an AED with EKG strip recorder, generate 2 recordings.
- (3) Give one to the ALS provider or hospital and attach the other to your patient care report.
- (4) Record the name of the contact for accessing AED data download summary.
- (5) Consider bringing the AED to the hospital for downloading.



12. ELECTRICAL THERAPY: CARDIOVERSION

a) PURPOSE

Emergency cardioversion involves the delivery of a synchronized electric current to the myocardium of a patient who is exhibiting supra-ventricular or ventricular tachydysrhythmias that results in hemodynamic compromise (i.e., a systolic BP less than 80 mmHg with shock-like signs and symptoms). Emergency cardioversion is appropriate in the field only in those patients where there is hemodynamic compromise or where it is evident that the patient's condition may further deteriorate.

b) INDICATIONS

Symptomatic Rate-Related Tachycardia (age-specific) with serious signs and symptoms related to tachycardia. Signs and symptoms may include chest pain, shortness of breath, decreased level of consciousness, low blood pressure, shock, pulmonary edema, congestive heart failure, and/or acute myocardial infarction.

c) DOSAGE

(1) Adult

- (a) For symptomatic PSVT or atrial flutter:
 - (i) Initial 50 J
 - (ii) Subsequent 100 J, 200 J, 300 J, 360 J
- (b) For symptomatic atrial fibrillation:
 - (i) Initial 200 J
 - (ii) Subsequent 200 J, 300 J, 360 J
- (c) For other symptomatic tachydysrhythmias
 - (i) Initial 100 J
 - (ii) Subsequent 200 J, 300 J, 360 J

(2) Pediatric

Symptomatic tachydysrhythmias

- (a) Initial 0.5 J/kg; if the calculated joules setting is lower than the defibrillation device is able to deliver, use the lowest joules setting possible or obtain medical consultation.
 - (b) Subsequent 1 J/kg; repeat at 2 J/kg
- (3) If the patient exhibits ventricular fibrillation following emergency cardioversion, immediately turn off the synchronizer and defibrillate with appropriate delivered energy (200 to 360 J for adults and 2 to 4 J/kg for pediatric patients) and refer to defibrillation and/or other appropriate protocol.

acromion to locate the tuberosity. Insert at 90 degree angle to lateral surface of the tuberosity.

- (b) Select the appropriate needle:
 - (i) There are three lengths of 15 G mechanical IO needles.
 - (ii) Estimate tissue depth at selected site and select appropriate needle (15 mm, 25 mm, or 45 mm). Always use the 45 mm needle for the proximal humerus site.
 - (iii) Insert so needle is touching bone.
 - (iv) Check the IO needle hub to assure that 5 mm of the needle is visible when the tip of the needle touches the bone. The black line closest to the hub should be visible.



TWO ATTEMPTS WITHIN FIVE MINUTES ARE PERMITTED. MEDICAL CONSULTATION SHOULD BE OBTAINED FOR FURTHER ATTEMPTS.



- (3) Pain due to infusion via IO
 - (a) To prevent or treat pain during an IO infusion for adults, administer 20–40 mg of 2% (only 1–2 mL preservative free/cardiac) lidocaine IO.
 - (b) To prevent or treat pain during an IO infusion for pediatric patients equal to or greater than 40 kg, administer 20–40 mg of 2% (only 1–2 mL preservative free/cardiac) lidocaine IO.
 - (c) Medical consultation is required for pediatric patients under 40 kg.

d) CONTRAINDICATIONS

- (1) Conscious patient with stable vital signs
- (2) Peripheral vascular access readily available
- (3) Suspected or known fractures in the extremity targeted for IO infusion
- (4) Previous attempt in the same bone
- (5) Cellulitis at the intended site of the procedure
- (6) Patient with known bone disorder
- (7) Prior knee or shoulder joint replacement

e) POTENTIAL ADVERSE EFFECTS/COMPLICATIONS

- (1) Extravasation of fluid
- (2) Infection
- (3) Fat emboli
- (4) Compartment syndrome

f) PRECAUTIONS

Humeral site: Stabilize the needle prior to any attempt at removing the driver. The humeral cortex can be considerably less dense and failure to stabilize the needle may cause inadvertent dislodgement. Also, as patients advance in age, bone density continues to decrease and the proximal humeral needle's stability must be routinely assessed.



19. INTRAVENOUS MAINTENANCE THERAPY FOR EMT

a) Provider-controlled IV solutions

(1) The EMT is authorized to be the primary caregiver for patients with established intravenous (IV) therapy **ONLY** when the reason for transport is not related to complications associated with the IV line, and:

(a) The IV Solution **DOES NOT** contain:

- (i) **MEDICATIONS**,
- (ii) **WHOLE BLOOD**, or
- (iii) **BLOOD PRODUCTS** (such as plasma, platelets, or packed red blood cells)

(b) The IV catheter is placed in a **PERIPHERAL LIMB VEIN**, or

(c) The IV catheter is a capped (e.g., heparin-locked) peripheral or central line, and

(d) No other ALS interventions are required.

(2) IV fluids

The EMT is authorized to perform IV maintenance of **NON-MEDICATED** IV solutions that contain only:

(a) Lactated Ringer's solution

(b) 2.5%–10.0% dextrose in water

(c) 0.25%–0.9% saline solution

(d) Potassium chloride (KCL) added to the solution. The amount of KCL in solution shall not exceed 20 milli-equivalents (mEq)/liter

OR

(e) Peripheral Parenteral Nutrition (PPN) (**NEW '15**)



IF IV FLUIDS OR PPN ARE BEING ADMINISTERED VIA INFUSION PUMP AND NOT PATIENT-CONTROLLED, THE PATIENT MUST BE ACCOMPANIED BY A NURSE OR APPROPRIATELY TRAINED ALS PROVIDER. (**NEW '15**)

b) Patient-controlled medications or IV solutions

The EMT is authorized to be the primary caregiver for patients with established intravenous (IV) therapy **ONLY** when the reason for transport is not related to complications associated with the IV line or the medications being infused and the patient has been caring for the line, IV fluids, and/or IV medications at home without the assistance of a health care provider.

- (iv) Living separate and apart from the minor's parent, parents, or guardian, whether with or without consent of the minor's parent, parents, or guardian, and is self-supporting, regardless of the source of the minor's income.
 - (d) A patient that has been evaluated by EMS providers as having 'no' answers to questions 1, 2, 3a, 3b, and 4 on the Patient-Initiated Refusal of EMS Form shall be considered to be medically capable to make decisions regarding his/her care.
 - (e) Patients with 'no' answers to questions 1, 2, 3a, 3b, and 4 on the Patient-Initiated Refusal of EMS Form but one or more 'yes' answers to questions 5–8 (medical conditions) have a higher risk of medical illness. The EMS provider should consider consulting medical direction if the patient does not wish transport. The purpose of the consultation is to obtain a "second opinion" with the goal of helping the patient realize the seriousness of his/her condition and accept transportation.
 - (f) If the EMS provider is unsure whether the patient has adequate ability to make medical decisions, he/she should seek medical consultation.
 - (g) At any time the EMS provider identifies patient conditions that indicate that the patient should be transported to a hospital, and the patient is refusing transport, then the provider should seek medical consultation.
- (2) Any person at the scene of an emergency requesting an EMS response, or for whom an EMS response was requested, and who is evaluated to have any one of the following conditions, shall be considered incapable of making medical decisions regarding care and shall be transported, with law enforcement involvement, to the closest appropriate medical facility for further evaluation:
- (a) Continued altered mental status from any cause including altered vital signs, influence of drugs and/or alcohol, metabolic causes (CNS or hypoglycemia), head trauma, or dementia
 - (b) Attempted suicide, danger to self or others, or verbalizing suicidal intent
 - (c) Acting in an irrational manner, to the extent that a reasonable person would believe that the medical capacity to make decisions is impaired
 - (d) Severe illness or injury to the extent that a reasonable and medically capable person would seek further medical care
 - (e) On an Emergency Petition
- (3) Further care should be provided according to Maryland Medical Protocols, "III E. Behavioral Emergencies" or other protocol sections as appropriate, based on patient's condition.

e) Base Station Hospital Physician Consultation

Patient refusals are one of the highest risk encounters in clinical EMS. Careful assessment, patient counseling, and appropriate base hospital physician consultation can decrease non-transport of high-risk refusals. Patients who meet any of the following criteria require base hospital physician consultation:

- (1) The provider is unsure if the patient is medically capable to refuse transport.
- (2) The provider disagrees with the patient's decision to refuse transport due to unstable vital signs, clinical factors uncovered by the assessment, or the provider's judgment that the patient may have a poor outcome if not transported.
- (3) The patient was involved in any mechanism included in the Trauma Decision Tree of the Maryland Medical Protocols that would recommend transportation to a Trauma Center.
- (4) Minor patients: No parent, guardian, or authorized decision maker is available or the provider disagrees with decision made by the parent, guardian, or authorized decision maker.

For patients with significant past medical history, consider consultation with the specialty center that follows the patient if possible.

Patients who do not meet the criteria above but have one or more positive answers to questions 6 through 10 on the Patient-Initiated Refusal of EMS Form may have a higher risk of illness. In these situations, providers shall consult with the base station hospital physician.

f) Documentation

- (1) Complete Section One of the Patient-Initiated Refusal of EMS Form, documenting the patient's medical decision-making capability and any "At-Risk" criteria.
- (2) Complete Section Two, which documents provider assessment and actions.
- (3) Following patient counseling and base station hospital consultation, when indicated, complete Section Three: Initial Disposition, Interventions, and Final Disposition.
- (4) Have the patient and witness sign the refusal statement as determined by your jurisdiction.
- (5) Document your assessment, the care provided, elements of the refusal, medical decision-making capability, and "At-Risk" criteria on the jurisdiction's documentation (Medical Incident Report, MAIS form, or jurisdictional equivalent.)
- (6) Submit copies of the Patient-Initiated Refusal of EMS Form and the documentation form to the EMS Supervisor.
- (7) If the patient/authorized decision maker refuses to sign the refusal statement:
 - (a) Contact a supervisor.
 - (b) Explain the need for a signature and again attempt to have the patient sign the refusal statement.
 - (c) If not already done, have a witness sign the refusal statement.
 - (d) Transmit the patient's unwillingness to sign the refusal statement on a recorded channel and document all steps taken to convince patient to sign.

Section One:

When encountering a patient who is attempting to refuse EMS treatment or transport, assess their condition and record whether the patient screening reveals any lack of medical decision-making capability (1, 2, 3a, 3b, and 4) or high risk criteria (5–8):

1. Disoriented to:
 - Person? yes no
 - Place? yes no
 - Time? yes no
 - Situation? yes no
2. Altered level of consciousness? yes no
3. Alcohol or drug ingestion by history or exam with:
 - a. Slurred speech? yes no
 - b. Unsteady gait? yes no
4. Patient does not understand the nature of illness and potential for bad outcome? yes no
5. Abnormal vital signs
 - For Adults**
 - Pulse greater than 120 or less than 60? yes no
 - Systolic BP less than 90? yes no
 - Respirations greater than 30 or less than 10? yes no
 - For minor/pediatric patients**
 - Age inappropriate HR or yes no
 - Age inappropriate RR or yes no
 - Age inappropriate BP yes no
6. Serious chief complaint (chest pain, SOB, syncope) yes no
7. Head Injury with history of loss of consciousness? yes no
8. Significant MOI or high suspicion of injury yes no
9. For minor/pediatric patients: ALTE, significant past medical history, or suspected intentional injury yes no
10. Provider impression is that the patient requires hospital evaluation yes no

Section Two:

For providers: Following your evaluation, document information and care below:

1. Did you perform an assessment (including exam) on this patient? yes no
If yes to #1, skip to #3
2. If unable to examine, did you attempt vital signs? yes no
3. Did you attempt to convince the patient or guardian to accept transport? yes no
4. Did you contact medical direction for patient still refusing service? yes no

Patient Refusal of EMS

I, _____, have been offered the following by _____
(EMS Operational Program) but refuse (check all that apply):

- Examination Treatment Transport

Patient Name: _____ Phone: _____

Patient Address: _____

Signature: _____ Witness: _____

- Patient Parent Guardian Authorized Decision Maker (ADM)

If you experience new symptoms or return of symptoms after this encounter, we recommend that you seek medical attention promptly.

Section Three: (CHECK ALL THAT APPLY)

Initial Disposition:

- Patient refused exam Patient refused treatment Patient refused transport
 Patient accepted exam Patient accepted treatment Patient accepted transport
 ADM refused exam ADM refused treatment ADM refused transport

Interventions:

- Attempt to convince patient Attempt to convince family member/ADM
 Contact Medical Direction (Facility: _____)
 Contact Law Enforcement None of the above available

Final Disposition:

- Patient refused exam Patient refused treatment Patient refused transport
 Patient accepted exam Patient accepted treatment Patient accepted transport
 ADM refused exam ADM refused treatment ADM refused transport

Section Four: (MUST COMPLETE)

Provide in the patient's own words why he/she refused the above care/service:

Jurisdiction _____ Incident: _____ Date: _____
Unit #: _____ Provider Name/EID: _____ Time: _____

24. NEUROPROTECTIVE INDUCED HYPOTHERMIA (THERAPEUTIC) AFTER CARDIAC ARREST - SCENE AND INTERFACILITY TRANSFER

a) Indications:

Increased brain temperature contributes to ischemic brain damage in patients post-cardiac arrest. Studies have shown that lowering brain temperature, even by a few degrees, decreases ischemic brain damage. In studies of out-of-hospital cardiac arrest, induced hypothermia protocols have contributed to improved neurological outcomes. The initiating of hypothermia without the ability to continue the hypothermic intervention is detrimental.

b) Patient Inclusion Criteria:


- (1) 18 years of age or older
- (2) Return of spontaneous circulation post-cardiac arrest
- (3) Comatose (GCS less than 8) after return of spontaneous circulation
- (4) Secured airway with adequate ventilation (intubation preferred; ventilate slowly at the rate of 10 to 12 per minute for target end tidal CO₂ of 40–45 mmHg)
- (5) Systolic Blood Pressure (SBP) can be maintained at 90 mmHg or greater spontaneously or with fluids and/or pressors. (Target is SBP greater than 110 or Mean Arterial Pressure (MAP) equal to or greater than 80)
- (6) Destination hospital must have ability to continue hypothermic intervention

c) Patient Exclusion Criteria:

- (1) Cardiac instability
 - (a) Refractory or recurrent dysrhythmia
 - (b) Inability to maintain SBP at least 90 mmHg (MAP greater than 80) despite use of fluids and pressors
- (2) Active bleeding or history of coagulopathy or thrombocytopenia (Thrombolytic/Fibrinolytic therapy does not preclude use of hypothermia)
- (3) Pregnancy
- (4) Trauma patients
- (5) Environmental hypothermia or initial temperature of 32°C

d) Procedure:

- (1) Institute cooling as early as possible. Core temperature goal is 33°C.
- (2) Actively cool by applying ice/cold packs bilaterally to patient's neck, axilla, and femoral groins. **(NEW '15)**
PLUS
- (3) Reduce the covering on the patient while maintaining dignity.

- (4) If patient begins shivering, administer midazolam.
-  Adult: (Reduce the below IV/IO/IM by 50% for patients 69 years or older.)
- (a) 0.1 mg/kg in 2 mg increments slow IV push over one to two minutes per increment with maximum single dose 5 mg.
- (b) Additional doses to a maximum of 10 mg requires medical consultation for all providers.
- (5) Consider turning on vehicle air conditioning to assist with cooling enroute.
- (6) Document initial GCS and pupillary response.
- (7) Transport to a Cardiac Interventional Center (by air or ground) that can maintain the hypothermic intervention.
- (8) Interfacility maintenance of hypothermic interventions techniques and monitoring of core temperature by Specialty Care Transport team must be maintained from the sending hospital to the destination hospital with either commercial ambulance equipment or sending hospital resources. Vital signs will be documented every 15 minutes with core temperature. Do not allow core temperature to drop below 33°C.

25. 12-LEAD ELECTROCARDIOGRAM

a) PURPOSE

Coronary heart disease is the single largest cause of death in U.S men and women. Early identification and treatment of patients with acute myocardial infarction (AMI) has proven to reduce myocardial damage and decrease morbidity and mortality. Providers should be aware of both typical and atypical presentations.

b) INDICATIONS

- (1) Chest pain that may radiate to the arm, shoulders, jaw, or back. Generally described as a crushing pain or toothache. May be accompanied by shortness of breath, sweating, nausea, or vomiting.
- (2) Chest discomfort. Some heart attacks involve discomfort in the center of the chest that lasts for more than a few minutes or that goes away and comes back. This discomfort can feel like uncomfortable pressure, squeezing, or fullness.
- (3) Discomfort in other areas of the upper body. Symptoms can include discomfort in one or both arms or in the back, neck, jaw, or stomach.
- (4) Shortness of breath. This symptom often accompanies chest discomfort. However, it can also occur prior to the chest discomfort.
- (5) Other signs. These may include breaking out in a cold sweat, nausea, light-headedness, syncopal episode, or a sense of impending doom.
- (6) Post cardiac arrest with ROSC.

c) PROCEDURE

- (1) Position patient.
- (2) Place chest and limb leads.
- (3) Acquire 12-lead (15-lead, if trained) and document the patient's last name, first initial, age, and gender. These identifiers should be on the transmission copy (if able to transmit) and shall be on the delivered printed copy. **(NEW '15)**
- (4) Continue patient care.

26. ACUPRESSURE FOR NAUSEA

a) PURPOSE

Acupressure on the P6 point can be used to reduce the intensity of nausea for patients where ondansetron is not preferable or available. It may be helpful as adjunct therapy for patients who have received ondansetron.

b) INDICATION

- (1) Patients with active nausea and vomiting
- (2) As adjunct therapy to patients receiving ondansetron
- (3) To prevent or reduce motion sickness

c) CONTRAINDICATION

None

d) ADVERSE EFFECTS

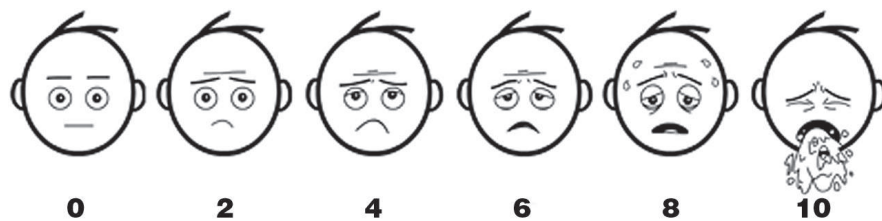
Redness, swelling, discomfort at site if commercial wrist bands are used

e) PRECAUTIONS

Patients experiencing nausea should receive a complete assessment, especially if cardiac risk factors are present.

f) PROCEDURE

- (1) Identify P6 point.
 - (i) Place three of the patient's fingers on the patient's opposite forearm at the wrist crease.
 - (ii) Mark the space between the two tendons on the forearm as the P6 point.
- (2) Apply pressure at this point for several seconds and encourage the patient to take over care, or apply a commercial device per manufacturer's instructions. Have patient or parent maintain firm pressure. Onset of relief is between 30 seconds and 5 minutes.
- (3) Reassess patient, re-score on BARF Scale at 5 minutes, and document response to therapy.



BARF Nausea Scale

9. The Transportation Group Supervisor and Medical Communications Coordinator responsibilities should be assigned as early as possible. They are the critical link to EMRC, hospitals, and the healthcare system. Their duties include:
 - a. Establish a final checkpoint through which all transport units MUST pass to ensure accountability of all patients.
 - b. EMRC will have notified hospitals and acquired their bed availability based on the information originally received and will transmit that information to the scene when requested.
 - c. Coordinate through EMRC the patient destination, and communicate the number of patients, general illnesses, ages, and triage category on each transport unit as they leave the scene to the receiving facilities.
 - d. If a central point of contact cannot be established, individual transport units MUST communicate the above information individually through EMRC to the receiving hospitals during transport. Those units must announce that they are associated with the MCI or Unusual Event

10. Coordinate with law enforcement and, if requested, assist the Coroner or Medical Examiner with identification and disposition of deceased casualties.

11. After the last patient has been transported, notify 911 dispatch center and EMRC that last patient has been transported. Demobilize scene, stand down or release resources dedicated to incident, and complete appropriate documentation. Cooperate with local officials, EMRC, Hospitals, and Emergency Management to complete a final accounting of the disposition of all the patients.

28. POTENTIALLY VOLATILE ENVIRONMENTS WITH LIFE-SUSTAINING INTERVENTIONS

a) BACKGROUND

- (1) A review of past active assailant incidents has shown that the conventional prehospital practice of not entering the scene until it is deemed safe by law enforcement (LE) has been associated with additional loss of life.
- (2) This protocol is designed to be all-hazards in nature. It is meant to provide a clinical concept of operations that empowers trained and equipped, but not necessarily tactical, EMS prehospital providers, to access casualties and expedite life-sustaining interventions closer to the point and time of injury. For active assailant and other LE-related incidents, EMS providers shall be under LE escort. EMS providers shall use appropriate personal protective equipment as defined by local jurisdiction.
 - (a) Examples of such potentially volatile environments include, but are not limited to:
 - (i) Active assailant (active shooter/IED) situations
 - (ii) Post-blast detonations
 - (iii) Intentional release of a chemical agent
 - (iv) Industrial accident/explosion
 - (v) Hazardous materials incident
 - (vi) Structural collapse/urban search and rescue situations
 - (vii) Transportation mishaps with limited scene access
 - (viii) In the immediate aftermath of a natural disaster such as a tornado

b) INTRODUCTION

- (1) This protocol provides guidelines for the type of intervention and care that should be rendered at various proximities to a threat in a potentially volatile environment.
- (2) By definition, potentially volatile environments are dynamic in nature. Scene conditions may change and emergent evacuation of responders and patients may interfere with the delivery of interventions described in this protocol.

c) INDICATIONS

- (1) This protocol does not replace or supersede the general patient care practices in *The Maryland Medical Protocols for EMS Providers*, which are still to be followed once the concern of active threat has been mitigated.
- (2) Use of this protocol is an acknowledgement by the EMS provider that the situation is:
 - (a) Unique, austere, and different than the conventional environment of care in which EMS medicine is usually rendered AND

- (b) The application of standard prehospital emergency practices could unnecessarily jeopardize the safety of the patient and/or medical provider.
- (3) An active assailant incident or Potentially Volatile Environments with Life-Sustaining Interventions (PVE/LSI) protocol is declared.

d) CONTRAINDICATIONS

- (1) Absent the presence of perceived or actual threat, standard general patient care practices should be followed.

e) ZONES OF CARE/OPERATIONS

- (1) The zones described below are intended to standardize the terminology used by responding emergency medical providers in Maryland and to establish a common understanding of the interventions to be performed within each zone.
- (2) **Hot Zone (Direct Threat):** (Integrated Tactical EMS) Operational area with a direct and immediate threat to personal safety or health
 - (a) The overarching priority in the Hot Zone is mitigation of active threat. Medical care is a secondary function to threat mitigation.
 - (b) Medical providers must be an integrated tactical medic (i.e., TEMS) to operate in this environment. Medical priorities are to prevent casualties and responders from sustaining additional injuries and include prompt evacuation to a more secure zone.
 - (i) If at all possible, casualties should self-evacuate.
 - (ii) Goals of care include keeping the response team engaged in neutralizing the threat, minimizing public harm, and controlling life-threatening extremity hemorrhage.
 - a. Control of severe hemorrhage in the direct threat environment is best accomplished with commercially available tourniquets.
 - b. Tourniquet should be placed as high up on the limb as possible without taking the time to expose the area.
 - c. For full or partial amputation, immediately place a tourniquet if possible.
 - d. Cardiopulmonary resuscitation (CPR) is not indicated in this environment.
 - (iii) In circumstances of chemical agent exposure, administration of Nerve Agent Antidote Kits (NAAK/MARK-1) might be warranted if available.

(3) **Warm Zone (Indirect Threat):** (Limited LSI) Area with a potential threat to personal safety or health

(a) **Evacuation of patients to a completely safe area is the primary objective of care in this area. The following care guidance is dependent on the availability of equipment, supplies, and the appropriate level providers. Extrication should NOT be delayed to provide advanced or involved treatment measures.**

- (i) The Warm Zone typically exists between the Hot Zones and Cold Zones, but is not geographic and depends on the evolving situation.
- (ii) Responders must remain cognizant that scene security can change instantly.
- (iii) A focused and deliberate approach to providing patient care should occur.
- (iv) The potential benefits of providing medical care in these zones must outweigh the risks of the ongoing tactical operation and/or delaying opportunity to evacuate the patient.
- (v) Care in the Warm Zone typically occurs at or near the point of injury once scene stabilizing measures have occurred. Care may also take place at a casualty collection point (CCP).
- (vi) A CCP is a location concealed and covered from immediate threat where victims can be assembled for movement from areas of risk to the triage/treatment area. Multiple CCPs may be required, which may be located in the Warm or Cold Zone. CCPs should be established and locations communicated as early as possible through operations to ALL responders.
- (vii) If possible, an abbreviated triage system should be set up to identify the priority for the extrication of patients. The use of ribbons or markers to clearly identify immediate and delayed (red and yellow, respectively) patients is highly recommended. Deceased individuals should also be labeled/tagged appropriately to prevent repeat assessments by multiple providers.
- (viii) Medical care in the Warm Zone should be limited to essential interventions only and is guided by the mnemonic **“MARCHED”**
 - a. M – Massive Hemorrhage Control
 - i. Massive hemorrhage remains the greatest threat to life in most trauma patients. Attaining hemorrhage control is the top priority.
 - ii. Tourniquets remain the preferred means of hemorrhage control for life-threatening bleeding in this environment.

1. If a tourniquet was applied in the Hot Zone, it should be reassessed.
 2. Tourniquets applied over clothing are not as effective and may need to be adjusted.
 3. Tourniquets should only be discontinued by an appropriately trained ALS provider in consultation with medical control.
 4. Other methods of hemorrhage control include deep wound packing with either sterile gauze or hemostatic impregnated gauze.
 5. Vascular injuries in the neck, groin, and axilla (i.e., junctional zones) are not amenable to traditional extremity tourniquets. In addition, effective pressure dressings are often extremely difficult to apply. Hemostatic impregnated dressings with direct pressure (minimum 5 minutes with continuous pressure is preferred) have shown useful in such situations.
- b. A – Airway management
- i. Patients in the Warm Zones with airway issues are high priority for evacuation due to their often intense resource requirements.
 - ii. Consider applying oxygen if available and indicated.
 - iii. Unconscious casualty without airway obstruction:
 1. Chin lift or jaw thrust maneuver
 2. Nasopharyngeal airway
 3. Place casualty in the recovery position
 - iv. Casualty with airway obstruction or impending airway obstruction:
 1. Chin lift or jaw thrust maneuver
 2. Nasopharyngeal airway
 3. Allow casualty to assume position that best protects the airway, including sitting up or leaning forward
 4. Place unconscious casualty in the recovery position
 - v. If previous measures unsuccessful, if time and resources permit, consider per protocol:
 1. Supraglottic Devices (e.g., King LT™, EASYTube® or CombiTube™).
 2. Oro/nasotracheal intubation
 3. Surgical cricothyroidotomy

- c. R – Respirations
 - i. The chest/upper abdomen should be assessed for any evidence of an open chest wound and an occlusive dressing should be applied accordingly.
 - ii. Tension pneumothorax remains a significant cause of preventable death in trauma patients.
 - 1. In suboptimal environments that interfere with complete physical assessment, any patient with significant blunt or penetrating chest trauma who displays dyspnea should be treated as a developing tension pneumothorax and receive needle decompression, if appropriate.
 - 2. To be effective, needle decompression needs to be performed using at least a 3.25 inch, 14g needle/catheter or needle decompression thoracostomy kit.
- d. C – Circulation
 - i. In general, healthy adult trauma patients with a radial pulse and normal mentation do not need IV therapy in the Warm Zone.
 - ii. Patients with evidence of hypotension:
 - 1. If the patient displays signs of a closed head injury, IV fluid therapy is indicated to maintain at least a radial pulse or SBP of at least 90 mmHg.
 - 2. Patients in hypovolemic shock should receive a one-time 500 mL bolus of IV fluid.
 - iii. Patients in traumatic cardiac arrest should be considered deceased and no CPR should be performed in this zone.
- e. H – Hypothermia
 - i. Hypothermia in trauma patients has been associated with increased mortality. Hypothermia is easier to prevent than treat.
 - 1. Patients should be moved to a warmed location if possible.
 - 2. Efforts should be made to minimize heat loss.
- f. E – Everything else
 - i. Consider Mark I/DuoDote for suspected organophosphate/nerve agent exposure.
 - ii. Dependent upon resource availability, burns, eye injuries, and acute pain should be managed per *The Maryland Medical Protocols for EMS Providers*.
- g. D – Documentation
 - i. Key findings and interventions should be conveyed to the next phase of care.

- (4) **Cold Zone:** (Traditional Patient Care Protocols) Area surrounding the Warm Zone. Responders can operate without concern of danger or threat to personal safety or health.
- (a) Casualties are moved from the Warm Zone to the Cold Zone by way of an evacuation corridor(s).
 - (i) Evacuation Corridor: An area transitioning between the Warm and Cold Zone that is secured from immediate threat and allows for a mitigated risk in transporting victims from the CCP to the triage/treatment area beyond the outer perimeter.
 - (b) Once in the Cold Zone, casualties will require re-triage, particularly assessing for the development of a life-threatening condition and effects of Warm Zone therapy.
 - (i) If massive hemorrhage has not been addressed or has been ineffectively managed, it should be immediately read-dressed with strategies mentioned above.
 - (c) Patients should be triaged and transported per standard practices.
 - (d) Medical care in the Cold Zone should be dictated by resource availability and, when possible, equate to the general patient care standards in *The Maryland Medical Protocols for EMS Providers*.
 - (e) CPR may have a larger role during the evacuation phase especially for patients with electrocution, hypothermia, non-traumatic arrest, or near drowning; however, it is still casualty count/resource dependent.

THIS PAGE IS INTENTIONALLY BLANK

OPTIONAL SUPPLEMENTAL PROGRAM



3B. EPINEPHRINE (1:1,000) (NEW '15)

a) Indications

- (1) Moderate to severe allergic reaction with respiratory distress or mild allergic reaction with history of life-threatening allergic reaction
- (2) Pediatric patients with severe asthma

b) Adverse Effects

- (1) Tachycardia/Palpitations
- (2) Angina
- (3) Headache
- (4) Nausea/Vomiting
- (5) Dizziness
- (6) Hypertension
- (7) Nervousness/Anxiety
- (8) Tremors

c) Precautions

Unless in severe allergic reaction or severe asthma, medical consultation must be obtained before administering to pregnant, cardiac, or adult asthma patients.

d) Contraindications

None in the presence of anaphylaxis

e) Preparations

Epinephrine

(Patient prescribed or EMS supplied)


- (1) Vial: 1 mg in 1 mL (1:1,000)
- (2) Preloaded Syringe
 - (a) Adult: 0.3 mg in 0.3 mL
 - (b) Pediatric: 0.15 mg in 0.15 mL



MEDICAL CONSULTATION IS REQUIRED FOR THE ADMINISTRATION OF EPINEPHRINE TO ADULT ASTHMA PATIENTS.

f) Dosage

- (1) **Patients 3 years of age or greater:**
Adult: 0.3 mg in 0.3 mL IM
- (2) **Patients less than 3 years of age:**
Pediatric: 0.15 mg in 0.15 mL IM

- (3)  Additional doses may be administered with medical consultation.

THIS PAGE IS INTENTIONALLY BLANK



4. EPINEPHRINE AUTO-INJECTOR

a) Indications

- (1) Moderate to severe allergic reaction with respiratory distress or mild allergic reaction with history of life-threatening allergic reaction
- (2) Pediatric patients with severe asthma

b) Adverse Effects

- (1) Tachycardia/Palpitations
- (2) Angina
- (3) Headache
- (4) Nausea/Vomiting
- (5) Dizziness
- (6) Hypertension
- (7) Nervousness/Anxiety
- (8) Tremors

c) Precautions

Unless in severe allergic reaction or severe asthma, medical consultation must be obtained before administering to pregnant, cardiac, or adult asthma patients.

d) Contraindications

None in the presence of anaphylaxis


e) Preparations

- Epinephrine Auto-injector (single or multi-dose) only
(Patient prescribed or EMS supplied)
- (1) Adult: 0.3 mg
 - (2) Pediatric: 0.15 mg



MEDICAL CONSULTATION IS REQUIRED FOR THE ADMINISTRATION OF EPINEPHRINE AUTO-INJECTOR TO ADULT ASTHMA PATIENTS.

f) Dosage

- (1) **Patients 3 years of age or greater:**
Adult Auto-injector: 0.3 mg IM
- (2) **Patients less than 3 years of age:**
Pediatric Auto-injector: 0.15 mg IM
- (3)  Additional doses may be administered with medical consultation.



4A. NALOXONE (NARCAN) PUBLIC SAFETY (NEW '15)

a) Pharmacology

Reverses all effects due to opioid (morphine-like) agents. This drug will reverse the respiratory depression and all central and peripheral nervous system effects.

b) Pharmacokinetics

- (1) Onset of action is within a few minutes with intranasal (IN) administration.
- (2) Patients responding to naloxone may require additional doses and transportation to the hospital since most opioids/narcotics last longer than naloxone.
- (3) Has no effect in the absence of opioid/narcotic.

c) Indications

To reverse respiratory depression induced by opioid/narcotic agent.

d) Contraindications

Patients under 28 days of age

e) Adverse Effects

Opioid withdrawal

f) Precautions

- (1) Naloxone may induce opiate withdrawal in patients who are physically dependent on opioids.
- (2) Certain drugs may require much higher doses of naloxone for reversal than are currently used.
- (3) Should be administered and titrated so respiratory efforts return, but not intended to restore full consciousness.
- (4) Intranasal naloxone must be administered via nasal atomizer.
- (5) Naloxone has a duration of action of 40 minutes; the effect of the opioid/narcotic may last longer than naloxone and patients should be encouraged to be transported.



PROVIDERS MUST CONTACT A BASE STATION PHYSICIAN FOR PATIENTS WISHING TO REFUSE TRANSPORT AFTER BLS ADMINISTRATION OF NALOXONE.

g) Dosage

- (1) Adult: Administer 2 mg IN. Divide administration of the dose equally between the nostrils to a maximum of 1 mL per nostril.
- (2) Pediatric:
 - (a) **Child 8 years of age to adult:**
Administer 2 mg IN. Divide administration of the dose equally between the nostrils to a maximum of 1 mL per nostril.
 - (b) **Child 28 days to less than 8 years of age:**
Administer 0.8–1 mg IN; Divide administration of the dose equally between the nostrils to a maximum of 1 mL per nostril.



g) Dosage

(1) Adult:

Single administration ONLY, 500 **mcg** (2.5 mL) by nebulized aerosol connected to 6–8 lpm of oxygen in combination with albuterol 2.5 mg.

(2) Pediatric:

Single administration ONLY. In combination with albuterol, nebulized aerosol is connected to 6–8 lpm of oxygen.

- a. **Less than 1 year of age:** contraindicated
- b. **Ages 1 year but less than 2 years:**
250 **mcg** (1.25 mL) by nebulized aerosol
- c. **Age 2 and older:**
500 **mcg** (2.5 mL) by nebulized aerosol



8. CALCIUM CHLORIDE (10% SOLUTION)

a) Pharmacology

- (1) Increase cardiac contractile state and ventricular automaticity
- (2) Is useful in reversing cardiac arrhythmias due to hyperkalemia (often seen in renal dialysis patients)

b) Pharmacokinetics

Rapid onset of action with IV administration

c) Indications

- (1) Hyperkalemia
- (2) Hypocalcemia
- (3) To treat adverse effects caused by calcium channel blocker overdose
- (4) Hypotension secondary to diltiazem administration
- (5) Respiratory depression, decreased reflexes, flaccid paralysis, and apnea following magnesium sulfate administration (**NEW '15**)

d) Contraindications

- (1) Not indicated in cardiac arrest except when hyperkalemia, hypocalcemia, or calcium channel toxicity is highly suspected
- (2) Patient currently taking Digoxin with suspected calcium channel blocker overdose

e) Adverse Effects

- (1) Bradycardia may occur with rapid injection.
- (2) Syncope, cardiac arrest, arrhythmia, bradycardia

f) Precautions

- (1) Use with caution on patients taking digitalis, as calcium may increase ventricular irritability and precipitate digitalis toxicity.
- (2) If given with sodium bicarbonate, calcium will precipitate.
- (3) Calcium salts may produce coronary and cerebral artery spasm.

g) Dosage

- (1) Adult: Administer 0.5–1 gram slow IVP over 3–5 minutes
Maximum dose 1 gram or 10 mL.
Administer 500 mg slow IVP for: hypotension following diltiazem administration.
Respiratory depression, decreased reflexes, flaccid paralysis, and apnea following magnesium sulfate administration
(NEW '15)
- (2) Pediatric: Administer 20 mg/kg (0.2 mL/kg) slow IVP/IO (50 mg/min)
Maximum dose 1 gram or 10 mL



i) Overdose or Toxicity Presentation

Generally consists of exaggeration of side effects, including severe hypotension and symptomatic bradycardia

j) Treatment of Overdose or Other Adverse Reactions

- (1) Give general supportive measures, monitor vitals, administer oxygen.
- (2) Hypotension: Consider calcium chloride 500 mg SLOW IVP with medical consultation and IV fluid bolus with Lactated Ringer's; evaluate legs. **(NEW '15)**
- (3) Bradycardia: Consider atropine (0.5 to 1 mg); if necessary, consider pacing.



13. **DIPHENHYDRAMINE HYDROCHLORIDE (BENADRYL)**


a) Pharmacology

Antihistamine

b) Pharmacokinetics

- (1) Effect begins within 15 minutes of IV dose.
- (2) Peak effect 1 to 4 hours
- (3) Metabolized by the liver
- (4) The half-life ranges from 2 to 10 hours.

c) Indications

- (1) Allergic reaction
- (2) Anaphylaxis
- (3)  Dystonic reactions


d) Contraindications

Known allergy to diphenhydramine


e) Adverse Effects

Drowsiness, loss of coordination, blurred vision, headache, hypotension, tachycardia, palpitations, thickening of bronchial secretions leading to chest tightness, and wheezing

f) Precautions - Should be used with caution in patients with:

- (1) Severe vomiting
- (2) Alcohol intoxication
- (3)  Medical consultation required for:
 - (a) Asthma
 - (b) Nursing mothers

g) Dosage

- (1) Adult: Administer 25–50 mg slow IVP or IM
- (2) Pediatric: Administer 1 mg/kg slow IV/IO or IM
- (3)  Medical consultation required for administration in mild allergic reaction.



20A. MAGNESIUM SULFATE (NEW '15)

a) Pharmacology

Physiologic calcium channel blocker and also blocks neuromuscular transmission. Hypomagnesemia can cause cardiac dysrhythmias. It is also a CNS depressant effective in the management of seizures during pregnancy. It does this by decreasing the amount of acetylcholine liberated from motor nerve terminals. Magnesium is necessary for many biochemical processes and plays a role in the transmission of electrical impulses.

b) Pharmacokinetics

With intravenous administration the onset of anticonvulsant action is immediate and lasts about 30 minutes. Magnesium is excreted solely by the kidney at a rate proportional to the plasma concentration and glomerular filtration rate.

c) Indications

- (1) Torsades de Pointes
- (2) Seizures with pregnancy
- (3) Refractory VF and VT after lidocaine administration
- (4) Moderate to severe asthma/bronchospasm exacerbation


d) Contraindications

- (1) Heart blocks
- (2) Renal impairment
- (3) Hypermagnesemia

e) Adverse Effects

- (1) Respiratory depression
- (2) Flushing
- (3) Sweating
- (4) Hypotension
- (5) Depressed reflexes

f) Precautions

- (1) May exaggerate effects of CNS depressants and neuromuscular blocking agents
- (2) Due to concern of hypotension, IV fluid bolus should be initiated if hypovolemia is suspected.
- (3)  Magnesium toxicity is a concern with higher doses and would present with respiratory depression, decreased reflexes, flaccid paralysis, and apnea. Calcium chloride 500 mg slow IV push for above indications of toxicity.

g) Dosage

(1) Adult:

Seizure activity associated with pregnancy: 4 grams IV/IO over 10 minutes (mixed in 50–100 mL of Lactated Ringer's)

Refractory VT/VF: 1–2 grams IV/IO over 2 minutes

Moderate to severe asthma/bronchospasm exacerbation:
1–2 grams IV/IO over 10–20 minutes (mixed in 50–100 mL of Lactated Ringer's) (with consult)

Torsades de Pointes: 1–2 grams IV/IO over 2 minutes

(2) Pediatric (under 18 years old):

Seizure activity associated with pregnancy: 4 grams IV/IO over 10 minutes (mixed in 50–100 mL of Lactated Ringer's)

h) Interfacility Transport

A Paramedic may administer continuous infusion established by a sending facility, not to exceed the ordered total dose, and monitoring the patient for signs and symptoms of magnesium toxicity.



21. MIDAZOLAM (VERSED)


a) Pharmacology

- (1) Sedative
- (2) Hypnotic
- (3) Anticonvulsant

b) Pharmacokinetics

- (1) A short-acting benzodiazepine with strong hypnotic, anticonvulsant activity, and amnesic properties
- (2) Onset of action is extremely rapid following IV administration; approximately 1¹/₂ minutes, and for IM approximately 15 minutes.
- (3) Duration of effect is 1–4 hours with half life of 1¹/₂ to 3 hours in healthy adult.

c) Indications

- (1) Sustained and/or recurrent seizures
- (2) Precardioversion to reduce anxiety
- (3) Awake patient requiring transcutaneous pacing (TCP)
- (4) Nasal Tracheal Intubation
- (5) Implanted Cardioverter Defibrillator (ICD) Malfunction
- (6) Nerve/organophosphate exposure
- (7)  Bucking Endotracheal Intubated patient
- (8) Chemical Restraint
- (9) Moderate to severe stimulant toxicity

d) Contraindications


- (1) Hypotension (See below for ET bucking)
- (2) Known hypersensitivity to midazolam

e) Adverse Effects

- (1) Respiratory depression or apnea
- (2) Hypotension

f) Precautions

- (1) The effects of midazolam can be accentuated and significantly potentiated by CNS depressants, such as opioids or alcohol.
- (2) Midazolam is five times as potent per milligram as diazepam and there is an increased risk of respiratory depression.

- g)  **Dosage** (Paramedic may perform without consult for patients with active seizures.)

All indications in c) above, except for Bucking Endotracheal Intubated patient and Chemical Restraint

- (1) Adult:



REDUCE THE BELOW IV/IO/IN/IM BY 50% FOR PATIENTS 69 YEARS OR OLDER.
(NEW '15)

0.1 mg/kg in 2 mg increments slow IV push over one to two minutes per increment with maximum single dose 5 mg.

If IV unavailable, 5 mg IN/IM may be administered. (NEW '15)
IN administration max 1 mL per nostril

Additional doses up to a maximum total dose 10 mg require medical consultation for all providers.

For seizures lasting greater than 10 minutes (status), consider IO administration of midazolam.

If suspected severe nerve agent exposure, providers may administer midazolam 5 mg IM without medical consultation.

- (2) Pediatric:

0.1 mg/kg in 2 mg increments. Slow IV push over one to two minutes per increment to a maximum total dose of 5 mg.

If IV unavailable, 0.2 mg/kg IN/IM (NEW '15)
IN administration max 1 mL per nostril
Maximum total dose 5 mg

Additional doses up to a maximum total dose 5 mg require medical consultation for all providers.

For life-threatening conditions, consider IO administration of midazolam.

If suspected severe nerve agent exposure, providers may administer midazolam as above without medical consultation.

Chemical Restraint

- (1) Patient 15–69 years: midazolam 5 mg IM/IV
Patient greater than 69 years: midazolam 2.5 mg IM/IV
Repeat doses may be given with medical direction
- (2) Pediatric: Not indicated



Buckling Endotracheal Intubated patient

- (1) Adult: Administer 0.05 mg/kg slow IVP over 1–2 minutes, while maintaining systolic BP greater than 90 mmHg. STOP ONCE BUCKING HAS RESOLVED AND VENTILATION IS RELAXED. Maximum single dose is 5 mg. Additional doses require medical consultation.



26. OXYGEN

a) Pharmacology

- (1) Increases oxygen content of the blood
- (2) Improves tissue oxygenation
- (3) Decreases energy expended for respirations

b) Pharmacokinetics

Changing the percentage of inspired oxygen results in an increased blood and tissue level equilibration within 5 to 20 minutes.

c) Indications

- (1) If evidence of hypoxia (**NEW '15**)
- (2) Acute chest pain
- (3) Suspected hypoxemia of any etiology
- (4) Cardiopulmonary arrest
- (5) Trauma
- (6) Dyspnea

d) Contraindications

Not clinically significant

e) Adverse Effects

High concentrations of oxygen will reduce the respiratory drive in some COPD patients; these patients should be carefully monitored.

f) Precautions

- (1) Never withhold oxygen from those who need it.
- (2) Oxygen should be given with caution to patients with COPD.
- (3) Simple or partial rebreather face masks must be supplied with a minimum 6 lpm.
- (4) Non-breather face masks must be supplied with a minimum 12 lpm.

g) Dosage


- (1) Adult: Administer 12–15 lpm via NRB mask or 2–6 lpm via nasal cannula, unless otherwise directed.
- (2) Pediatric: Administer 12–15 lpm via NRB mask or 2–6 lpm via nasal cannula, unless otherwise directed.

THIS PAGE IS INTENTIONALLY BLANK

M. ADULT RAPID SEQUENCE INTUBATION PROTOCOL PACKAGE

1. Rapid Sequence Intubation (RSI) Pilot Program

a) Indications

- (1) Inability to tolerate laryngoscopy, and:
 - (a) GCS less than or equal to 8 with respiratory rate less than or equal to 8 or greater than or equal to 35 or
 - (b) GCS less than or equal to 8 with oxygen saturation less than or equal to 90% on non-rebreather face mask
- (2)  On-line medical direction for RSI may be requested in the following situations:
 - (a) GCS less than or equal to 8 with clenched jaw, inability to adequately suction airway, and without above respiratory parameters
 - (b) Respiratory extremis with contraindications to nasotracheal intubation (respiratory rate greater than or equal to 35 with air hunger, use of accessory muscles, and oxygen saturation less than or equal to 90% on non-rebreather face mask)

b) Contraindications

- (1) Conditions that may cause hyperkalemia:
 - (a) Burns greater than 24 hours old
 - (b) Spinal cord injury greater than 24 hours old
 - (c) Known neuromuscular disease (Guillain-Barré Syndrome, myasthenia gravis, amyotrophic lateral sclerosis, muscular dystrophy)
 - (d) Chronic renal failure on hemodialysis/Presence of hemodialysis access
- (2) Patients who have not yet reached their 15th birthday (**NEW '15**)
- (3) History of malignant hyperthermia

c) Preparation

- (1) Pre-oxygenate with 90–100% oxygen.
- (2) Monitor oxygen saturation with pulse oximetry and EKG.
- (3) Ensure functioning IV and fluid therapy as per protocol.
- (4) Evaluate for difficult airway.
- (5) Perform focused RSI neurologic exam.
- (6) Prepare equipment
 - (a) Intubation kit
 - (b) Bag-Valve-Mask (BVM)
 - (c) Suction
 - (d) RSI kit
 - (i) Prepare medications
 - (ii) Alternative airway device, Cricothyroidotomy equipment
 - (e) Capnograph

PILOT PROGRAM
RAPID SEQUENCE INTUBATION PROTOCOL PACKAGE
Paramedic only

d) RSI Procedure

(1) Sedation

Adequate sedation must be provided to prevent awareness during paralysis from neuromuscular blockade.

Etomidate, if available, will be the preferred agent for patients who are aware of their surroundings and do not have hypotension or possible hypovolemia.

Dose: Administer 0.3 mg/kg IVP over 30–60 seconds. May repeat 0.15 mg/kg IVP in 2–3 minutes if inadequate sedation.

OR

Ketamine may be used if etomidate is unavailable, and may be preferred for patients who have hypotension or possible hypovolemia.

Dose: Administer 2 mg/kg IVP over 60 seconds.

OR

Midazolam should be considered for patients with isolated head injury and elevated blood pressure, especially with possible seizure activity. Midazolam should not be used for patients with hypotension, and should be avoided with possible hypovolemia.

Dose: Administer 0.05 mg/kg IVP over 1–2 minutes.

Maximum single dose is 5 mg.

Only one sedative agent should be administered prior to succinylcholine unless otherwise directed by medical consultation.

- (2) For patients with head injury or suspected increased intracranial pressure, administer lidocaine 1 mg/kg (40–100 mg) IVP over 1–2 minutes.
- (3) In-line cervical spine stabilization by second caregiver (in trauma setting)
- (4) Apply cricoid pressure (by third caregiver).
- (5) Succinylcholine: Administer 1.5 mg/kg rapid IVP. Maximum single dose is 200 mg.
- (6) Intubate trachea and verify ET placement.
- (7) If inadequate relaxation after 2–3 minutes, administer atropine 1 mg to avoid bradycardic response and repeat succinylcholine 1 mg/kg IVP. Maximum single dose is 200 mg.

e) Successful Endotracheal Tube Placement

- (1) Release cricoid pressure and secure ET.
- (2) Ventilate to end-tidal carbon dioxide of 30–32 mmHg.
- (3) If significant resistance to ventilation occurs as succinylcholine wears off (4–5 minutes), refer to Ventilatory Difficulty Secondary to Bucking Protocol.

f) Unsuccessful Endotracheal Tube Placement

- (1) Maintain cricoid pressure and resume BVM ventilation for 30 seconds.
- (2) If unable to ventilate, see “Unable to Ventilate” below.
- (3) Re-attempt oral ET intubation.
- (4) If unsuccessful, resume BVM ventilation for 30 seconds.
- (5) Insert an approved alternative airway device (refer to Alternative Airway Device protocol).

**PILOT PROGRAM
RAPID SEQUENCE INTUBATION PROTOCOL PACKAGE
Paramedic only**

4. RSI Quality Assurance Process

a) Individual Paramedic Approval for RSI Pilot Participation

- (1) Successful completion of small group training includes all five of the following:
 - (a) Classroom lecture
 - (b) Mannequin instruction
 - (c) Cadaver lab, including cricothyroidotomy
 - (d) Anesthesia computerized mannequin simulator
 - (e) Must demonstrate proficiency through skills testing and written test
- (2) Successful completion of individualized Operating Room Training
 - (a) Individual Operating Room training with Attending Anesthesiologist, and
 - (b) Must demonstrate proficiency to Attending Anesthesiologist's satisfaction

b) Ongoing Demonstration of Proficiency

A verification of all RSI skills and review of RSI principles of safety will be performed on a quarterly basis. In two of the quarters, this will be accomplished via direct observation in the operating room. In a third quarter, the medical director will perform this during a full Paramedic skills evaluation. A fourth quarter verification will be accomplished via an anesthesia mannequin simulator, an RSI skills module, or a documentation and review of a field utilization.

c) Review of Each Call

- (1) Mechanism for follow-up of each call will be in accordance with the Quality Review Procedure for Pilot Programs (formerly "Class B" Additional Procedure Algorithm) of the Maryland Medical Protocols, with the following additions:
 - (a) Immediate notification of your jurisdictional RSI supervisor for all RSI attempts
 - (b) Medical Director evaluation of all RSI attempts within 12 hours

d) Maintenance of detailed RSI database

**N. PEDIATRIC RAPID SEQUENCE INTUBATION PROTOCOL PACKAGE
(For children who have not yet reached their 15th birthday (NEW '15))**



1. Rapid Sequence Intubation (RSI) Pilot Program

a) Indications

(1) Inability to tolerate laryngoscopy and have the following:


- (a) GCS less than or equal to 8, indicated by a patient that will not: open eyes, cry, say words, or show purposeful movement in response to painful stimulus.

AND

- (b) Respiratory insufficiency, demonstrated by oxygen saturation less than or equal to 90% on non-rebreather face mask, respiratory rate less than or equal to 8, or respiratory rate greater than or equal to 45 (age less than 1 yr), greater than or equal to 40 (age 1–5 yrs), greater than or equal to 35 (age 6–9 yrs) with signs of air hunger and accessory muscle use.



PATIENTS WITH AN IDENTIFIED DIFFICULT AIRWAY WHO CAN BE BAGGED TO AN OXYGEN SATURATION GREATER THAN 90% REQUIRE ON-LINE MEDICAL DIRECTION FOR RSI, PREFERABLY FROM A PEDIATRIC BASE STATION.

(2)  On-line medical direction for RSI may be requested (preferably from a pediatric Base Station), in the following situations:

- (a) GCS less than or equal to 8 with clenched jaw, inability to adequately suction airway, and without above respiratory parameters
- (b) Respiratory extremis with contraindications to nasotracheal intubation (respiratory rate greater than or equal to 35 with air hunger, use of accessory muscles, and oxygen saturation less than or equal to 90% on non-rebreather face mask)
- (c) Identified difficult airway patient with a GCS less than or equal to 8 and signs of respiratory insufficiency who cannot tolerate laryngoscopy but is able to be bagged to an oxygen saturation greater than 90%

b) Contraindications

(1) Conditions that may cause hyperkalemia:

- (a) Burns greater than 24 hours old
- (b) Spinal cord injury greater than 24 hours old
- (c) Known neuromuscular disease (Guillain-Barré Syndrome, myasthenia gravis, amyotrophic lateral sclerosis, muscular dystrophy)
- (d) Chronic renal failure on hemodialysis/presence of hemodialysis access

(2) History of malignant hyperthermia

**PILOT PROGRAM
SURGICAL CRICOTHYROIDOTOMY
PARAMEDIC AND CRT-I**

N7. ADULT SURGICAL CRICOTHYROIDOTOMY (NEW '15)

1. Initiate General Patient Care.
2. Presentation
Patients must have reached their 15th birthday and may present with any of the following conditions:
 - a) Inability to oxygenate despite having tried BVM with oropharyngeal/nasopharyngeal airway, ET placement, and supraglottic airway (if not contraindicated)
 - b) Inability to place ET in the setting of life-threatening upper airway hemorrhage
 - c) Completely obstructing upper airway foreign body that cannot be removed via BLS maneuvers or Magill forceps with direct visualization
3. Equipment:



PROVIDERS MAY USE PRE-ASSEMBLED EQUIPMENT OR AN FDA-APPROVED KIT, AS PRESCRIBED BY THE PROGRAM MEDICAL DIRECTOR.



-
4. Procedure:
 - a) Providers must use a designated technique and procedure for establishing the airway through the cricothyroid membrane that has been approved by the program medical director as part of this pilot.
 - b) Upon completion of the skill (or at an appropriate time during the sequence of patient care) the provider will obtain medical direction and also notify the receiving physician/emergency department with the following information:
 - Patient condition
 - Reason for surgical cricothyroidotomy
 - Complications arising from procedure (if any)
 - Patient response to treatment
 5. Surgical Cricothyroidotomy Quality Assurance Process
 - a) Individual Paramedic Approval
 - (1) Persons participating in this jurisdictional optional protocol will have completed all of the following:
 - a. Classroom lecture
 - b. Successful placement of device using pig trachea
 - c. Substitute instruction and demonstration of skill proficiency may be approved by the program medical director on an individual basis.

**PILOT PROGRAM
SURGICAL CRICOTHYROIDOTOMY
PARAMEDIC AND CRT-I**

- b) Ongoing Demonstration of Proficiency
 - (1) During biannual recertification classes, each paramedic will repeat the classroom lecture and placement of the device using the pig's trachea.
 - (2) Substitute instruction and demonstration of skill proficiency may be approved by the program medical director on an individual basis.
- c) Review of Each Call
 - (1) Documentation:
 - a. The provider will thoroughly document the following on their Patient Care Report (PCR):
 - i. Indications that led to performing cricothyroidotomy
 - ii. Complications that arose from procedure
 - iii. Patient response to treatment
 - (2) Notifications:
 - a. Immediate notification of EMS Supervisor following transfer of care to the receiving facility
 - b. Notification of the EMSOP Quality Assurance Section within 24 hours of the event
 - c. Notification of the program medical director within 24 hours of the event
 - (3) Individual Event Review
 - a. Each use of this Jurisdictional PILOT Protocol will be reviewed by the EMSOP for correct application and technique.
 - (4) The EMSOP will maintain a detailed surgical cricothyroidotomy procedure database and will provide an annual report to the State EMS Medical Director.

N8. MOBILE INTEGRATED COMMUNITY HEALTH PILOT PROGRAM (NEW '15)

1. PURPOSE

The purpose of this pilot protocol is to establish guidelines for the Mobile Integrated Community Health Pilot Program (MICHPP). The MICHPP is part of a jurisdictional or regional “wellness committee” that will be called the Shore Wellness Committee for this pilot program. The Shore Wellness Committee has, at a minimum, representatives from a Jurisdictional EMS Operational Program (EMS Medical Director and EMS Operations), local health department, and local/regional hospital system(s). This program is established to identify individuals who frequently utilize 9-1-1 for non-life-threatening or medical reasons and to assist in linking them with community resources and unexplored medical/social programs that will most appropriately meet their needs. The MICHPP uniformed paramedic may perform an abuse/neglect evaluation, conduct a home safety check, perform vital sign acquisition (i.e., temperature, pulse, RR, BP, pulse oximetry) for the nurse practitioner/registered nurse (NP/RN) and document findings jointly with the NP/RN. The NP/RN will perform the individual assessment, medication reconciliation/compliance, make referrals, interface with the primary health care professional/physician, and make recommendations to the patient.

2. INDICATIONS

Individuals who will qualify for a home visit by the MICHPP team (consisting of a nurse practitioner/registered nurse and experienced paramedic) include:

- a) Individuals who have called 9-1-1 for any medically-related reason five times in any six-month interval. Individuals may be referred to the MICHPP by other allied health professionals with the individual’s consent.
- b) Patient must be 18 years of age or older.

3. PRECAUTIONS

Upon initiation of the home visit, if any individual were to exhibit any signs or symptoms that would require transport to an Emergency Department, the MICHPP team will contact the county dispatch center who will be directed to generate an emergent response for that individual.

- a) The Mobile Integrated Community Health Pilot Program paramedic will perform all assessments and care based on current *Maryland Medical Protocols for EMS Providers* until the appropriate EMS resource’s arrival; care may then be transferred to that EMS unit. The NP/RN cannot direct the paramedic to perform any skill or medical intervention that is not within his or her scope of practice nor provide “Medical Consultation” as referenced in *The Maryland Medical Protocols for EMS Providers*

**PILOT PROGRAM
MOBILE INTEGRATED COMMUNITY HEALTH PROGRAM**

4. CONTRAINDICATIONS

Individuals who will not qualify for this program include:

- a) Individuals already receiving care from a patient-centered medical home (PCMH) or who have already established individual home health care or use a visiting nurse agency
- b) Individuals who refuse participation by revoking written consent, verbal refusal of care at time of visit, or integration into programs as in 4.a above

5. PROCEDURE

- a) After an individual has consented to be included in this program, a scheduled home visit will be performed as follows:

(1) Uniformed paramedic will:

- a. Provide a recognized uniformed presence for individual reassurance and familiarity.
- b. Assess the individual's home.
 - a. Assess for signs of neglect or abuse.
 - b. Assess for safety issues (e.g., slip/fall risk, smoke detector, fire, exposed electrical).
- c. Obtain basic vital signs.
 - a. Heart rate
 - b. Blood pressure
 - c. Pulse oximetry
 - d. Respiratory quality and rate
 - e. Temperature
 - f. Weight



PARAMEDIC WILL NOT BE PERFORMING BLOOD DRAWS, MEDICATION ADMINISTRATION, OR ALS INTERVENTIONS UNLESS AN IMMEDIATE LIFE-THREATENING CONDITION HAS BEEN IDENTIFIED AND THE 9-1-1 CENTER HAS BEEN NOTIFIED AND AN EMS RESPONSE INITIATED.

(2) NP/RN will

- a. Evaluate for any immediate life-threatening condition.
- b. Assess for signs of neglect or abuse.
- c. Review vital signs.
- d. Obtain and review the individual's past medical history.
- e. Determine the individual's family and social history.
- f. Review medication.
- g. Review behavioral health.
- h. Conduct a basic physical assessment including a focused review of systems.
- i. Make appropriate health professional contacts, medication modifications, education, and referrals.

**PILOT PROGRAM
MOBILE INTEGRATED COMMUNITY HEALTH PROGRAM**

- 6. MEDICAL CONSULTATION as defined in *The Maryland Medical Protocols for EMS Providers***
- a) Obtained through Jurisdictional EMS Medical Director or designated Base Station
 - b) Paramedics cannot accept orders from primary care physicians on the phone or on-scene unless individual has an immediate life-threatening condition and the physician is going to the hospital with individual on EMS unit.
- 7. DOCUMENTATION AND DATA COLLECTION**
- a) All data (by paramedic/NP/RN) will be collected through “All Scripts” using data points similar to established Shore Wellness program.
 - b) In the event that an immediate life-threatening condition is identified and the MICHPP paramedic initiated EMS care
 - (1) The MICHPP paramedic shall complete an entire eMEDS® report documenting care provided.
 - (2) The NP/RN will complete the “All Scripts” report documenting the activation of an EMS response due to immediate life-threatening condition and NP/RN individual care provided.
- 8. QUALITY ASSURANCE/QUALITY IMPROVEMENT**
- a) All calls will be reviewed by a Shore Wellness QA Committee consisting of Nursing, EMS, Administrative, and EMS Medical Director.
 - b) Quarterly data reports will be generated to the Office of the State EMS Medical Director and to the Shore Wellness Committee.

THIS PAGE IS INTENTIONALLY BLANK

V. JURISDICTIONAL OPTIONAL PROTOCOLS



O. CYANIDE POISONING

1. Initiate General Patient Care.

2. Presentation

Depending on its form, cyanide can enter the body through inhalation, ingestion, or absorption through the skin. Cyanide should be suspected in occupational or smoke exposures (e.g., firefighting), industrial accidents, natural catastrophes, suicide and murder attempts, chemical warfare, and terrorism (whenever there are multiple casualties of an unclear etiology).

Non-specific and early signs of cyanide exposure (inhalation, ingestion, or absorption) include the following signs and symptoms: anxiety, vertigo, weakness, headache, tachypnea, nausea, dyspnea, vomiting, and tachycardia.

“High Concentrations of cyanide” will produce:

1. Markedly altered level of consciousness
2. Seizure
3. Respiratory depression or respiratory arrest or
4. Cardiac dysrhythmia (other than sinus tachycardia)

The rapidity 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.



PATIENTS WHO HAVE SUSTAINED A BURN AND/OR TRAUMATIC INJURY SHOULD BE GIVEN TREATMENT SPECIFIC TO THOSE INJURIES, INCLUDING APPLYING SPINAL PROTECTION, IF INDICATED. THE SMELL OF (BITTER) ALMONDS IS NOT A RELIABLE SIGN AND THE PROVIDER SHOULD NOT ATTEMPT TO INHALE LOCAL AIR NOR PATIENT BREATH TO DETERMINE IF THE ALMOND SMELL IS PRESENT. **(NEW '15)**

BE SURE TO ASSESS FOR EVIDENCE OF TRAUMATIC OR MEDICAL CAUSES FOR PATIENT'S ALTERED MENTAL STATUS.



3. Treatment:

- a) Remove the patient from the source of exposure. (In the smoke inhalation victim, maintain appropriate provider respiratory protection, SCBA.)
- b) Restore or maintain airway patency.
- c) Administer 100% oxygen via non-rebreather mask or bag-valve-mask.
- d) Provide aggressive advanced airway management.

CYANIDE POISONING (CONTINUED)



- e) Establish IV access with LR.
- f) Use glucometer and treat patient accordingly.
- g) There is no widely available, rapid, confirmatory cyanide blood test. Treatment decisions must be made on the basis of clinical history and signs and symptoms of cyanide intoxication. For the patient with an appropriate history and manifesting one or more of “high concentrations of cyanide” signs or symptoms:
 - (1) Collect a pre-treatment blood sample in the appropriate tube for Lactate and Cyanide levels.
 - (2) ADULT: Administer Hydroxocobalamin. Initial dose is 5 grams administered over 15 minutes slow IV. Each 2.5 gram vial of hydroxocobalamin for injection is to be reconstituted with 100 mL of LR and administered at 10–15 mL/minute. An additional 5 gram dose may be administered with medical consultation.
 - (3) PEDIATRIC: Administer Hydroxocobalamin 70 mg/kg (reconstitute concentration is 25 mg/mL). Each 2.5 gram vial of hydroxocobalamin for injection is to be reconstituted with 100 mL of LR and administered at 10–15 mL/minute. Maximum single dose is 5 grams.
 - (4) If patient (adult or pediatric) has a reported oral cyanide ingestion and does not manifest signs and symptoms meeting administration criteria, medical consultation is required for administration of hydroxocobalamin (consider simultaneous consultation with poison control and medical consultation).
 - (5) If patient history is suggestive of CO inhalation, consider transport to hyperbaric medicine treatment facility.



HYDROXOCOBALAMIN MAY CAUSE TEMPORARY RED DISCOLORATION OF THE SKIN, URINE, AND MUCOUS MEMBRANES (WHICH IS NOT TO BE CONFUSED WITH THE RARE SIGN OF CARBON MONOXIDE POISONING). THE DEVICES THAT RELY ON COLORIMETRY (E.G., PULSE OXIMETER AND CO LEVEL) WILL BE INTERFERED WITH BY THE COLOR CHANGE AND ARE NOT RELIABLE FOR PATIENT ASSESSMENT.

NOTIFY HOSPITAL OF ADMINISTRATION OF HYDROXOCOBALAMIN AND DO NOT ADMINISTER SODIUM THIOSULFATE THROUGH THE SAME IV, AS THIS MAY CAUSE CRYSTALLINE PRECIPITATION.

4. Continue General Patient Care.

**OPTIONAL SUPPLEMENTAL PROGRAM
ANTIMICROBIAL INFUSION FOR INTERFACILITY TRANSPORT
(PARAMEDIC ONLY)**

**Q6. ANTIMICROBIAL INFUSION FOR INTERFACILITY TRANSPORT
(Paramedic only) (NEW '15)**

1. PURPOSE

During interfacility transports, a paramedic may monitor a patient on a continuous IV antimicrobial medication infusion as long as the following criteria have been met.

2. INDICATIONS

The antibiotics infusion must have been started by the hospital staff prior to an interfacility transfer. IV antimicrobial infusions may NOT be initiated by the prehospital provider.

3. CONTRAINDICATIONS

- a) Patients who have unstable vital signs or are being transferred to an intensive care environment
- b) Patients with allergic reaction to infusing antibiotic agent or class
- c) Pediatric patients

4. PROCEDURE

- a) Follow the appropriate ALS algorithm and maintain the infusion as directed by the sending physician/practitioner.
- b) The paramedic will review the sending physician's antibiotics order and will review the specific antibiotic agent to ensure appropriate administration, indications, and absence of contraindications.
- c) Unless not indicated per the medication profile, the antimicrobial infusion must be maintained on an infusion pump designed for transport, and the provider must be trained in the appropriate use of that specific make and model infusion pump. The ambulance must have an inverter to power the pump while in the vehicle.
- d) The administration of the antibiotics infusion will be recorded on the patient care report to include the antibiotic agent's name, dose, rate, and volume infused during transport
- e) When in doubt, contact the sending physician/practitioner for medical direction.

5. SPECIAL CONSIDERATIONS

- a) The ALS service or jurisdiction must provide and document training of the ALS providers on the operation of infusion pump(s) being used.
- b) The ALS service or jurisdiction must provide and document training of the ALS providers on the general administration of antimicrobials. However, due to the vast array of antimicrobials, the paramedic must utilize a practice of evaluating each patient care situation with the use of current medication reference materials to ensure appropriate administration of the infusion.
- c) The ALS service or jurisdiction must also have a quality improvement (QI) program monitoring the appropriateness and quality of care provided. The QI program should be directed or coordinated by, at minimum, an ALS provider.

OPTIONAL SUPPLEMENTAL PROGRAM
ANTIMICROBIAL INFUSION FOR INTERFACILITY TRANSPORT
(PARAMEDIC ONLY)

Q6. ANTIMICROBIAL INFUSION FOR INTERFACILITY TRANSPORT

1. Pharmacology

Antimicrobials are agents that kill microorganisms or suppress their multiplication or growth.

2. Pharmacokinetics

Antimicrobial agents are classified functionally according to the manner in which they adversely affect a microorganism.

3. Indications

Treatment of known or suspected infectious disease, or as prophylaxis for an infectious process

4. Contraindications

- a) Patients who have unstable vital signs or are being transferred to an intensive care environment
- b) Patients with allergic reaction to specific antibiotic agent or class
- c) Pediatric patients

5. Adverse Effects and Precautions

Antimicrobials have various adverse effects depending on the specific agent's mechanism of action. Current medication reference materials should be consulted for specific patient situation.

6. Dosage

- a) Adult: Administer per practitioner order.
- b) Pediatric: Not indicated.

**OPTIONAL SUPPLEMENTAL PROGRAM
SPECIALTY CARE PARAMEDIC
PARAMEDIC ONLY**

S. SPECIALTY CARE PARAMEDIC

(Paramedic only)

The Scope of Practice for the Specialty Care Paramedic (SP) is defined by a floor and a ceiling of care. The entry level for this program is Maryland Licensed Paramedic. The floor of this Specialty Care Paramedic is the existing *Maryland Medical Protocols for EMS Providers*, including the Optional Supplemental protocols: CPAP, Glycoprotein IIB/IIIA Antagonist, Heparin, Scene/Chronic Ventilator, and Mark I/DuoDote. (The Pilot programs and the Optional Supplemental protocols **Wilderness** and **Transport of Acute Ventilator Interfacility Patient** are not included as part of ALS transports.) The medications and procedures listed within *The Maryland Medical Protocols for EMS Providers* may be administered by the SP based on the written interfacility transfer orders of the sending Medical Director of the Commercial Specialty Care Service (without manipulation of the *Maryland Medical Protocols for EMS Providers*) or receiving physician without having to request online base station medical consultation.

The ceiling for the SP is defined by the medications and procedures that are defined as “RN” or are not listed within the tables below. Those medications or skills that are listed as “Rn” require familiarization by the SP but are the responsibility of the transport nurse or physician constituting the patient care team.

If a medication or procedure is listed within the scope of practice for the SP, it applies to both adult and pediatric patients unless otherwise noted.

The practice environment for these medications and procedures will be strictly for the interfacility transfer of patients and not extended into the realm of the 9-1-1 response unless otherwise noted.

Classification of Drugs and Procedures

| | |
|-----------------|---|
| SP (NEW '15) | A Specialty Care Paramedic (SP) may initiate, monitor, and maintain without a transport nurse if they have successfully completed an EMS Board-approved Specialty Care program. (The commercial ambulance must still meet the requirement of an additional ALS provider and EMT driver to complete the specialty care transport.) |
| RN (NEW '15) | A transport nurse or physician is onboard – SP needs familiarity with the medication or procedure but SP may not perform or administer. |

**OPTIONAL SUPPLEMENTAL PROGRAM
SPECIALTY CARE PARAMEDIC
PARAMEDIC ONLY**

| Medication - Procedure | | |
|---|--|-------------------------------------|
| A. Medications | Specialty Care Paramedic (SP) | Team with Nurse (RN) |
| 1. Sedatives | | |
| a. Etomidate (amidate) | | RN |
| b. Lorazepam (ativan) | SP | |
| c. Midazolam (versed) | SP | |
| d. Propofol (diprivan) | | RN |
| 2. Analgesics | | |
| a. Fentanyl (sublimaze) | SP | |
| b. Hydromorphone (dilaudid) | | RN |
| c. Meperidine (demerol) | | RN |
| d. Non-narcotic analgesics (e.g., Ketorolac) | SP | |
| 3. Paralytics | | |
| a. All types | | RN |
| 4. Antihypertensives | | |
| a. All types | | RN |
| 5. Volume Expanders | | |
| a. Albumin | SP | |
| b. Blood products | | RN |
| c. Dextran | SP | |
| d. Hespan | SP | |
| e. Plasmanate | SP | |
| 6. Vasopressors | | |
| a. Dobutamine (dobutrex) | | RN |
| b. Epinephrine – drip | | RN |
| c. Norepinephrine (levaphed) | | RN |
| d. Phenylephrine | | RN |
| 7. Bronchodilators | | |
| a. Metaproterenol (alupent) | SP | |
| b. Theophylline – IV | | RN |
| c. Terbutaline (brethine) - Inhaled | SP | |
| d. L-Albuterol (inhaled) | SP | |
| 8. Anti-Anginals | | |
| a. Atenolol (tenormin) | | RN |
| b. Metoprolol (lopressor) | | RN |
| c. Nitroglycerin (tridil) – IV | SP (adults only) | |
| d. Propranolol (nderal) | | RN |

**OPTIONAL SUPPLEMENTAL PROGRAM
SPECIALTY CARE PARAMEDIC
PARAMEDIC ONLY**

| Medication - Procedure (Continued) | | |
|--|--|-------------------------------------|
| A. Medications (Continued) | Specialty Care Paramedic (SP) | Team with Nurse (RN) |
| 9. Fibrinolytics/Thrombolytics | | |
| a. All types | | RN |
| 10. Anti-Coagulants/Anti-Platelets | | |
| a. All Types | SP (adults only) | |
| 11. Anti-Emetic | | |
| a. All types anti-emetic | SP | |
| 12. Miscellaneous | | |
| a. Flumazenil AD (romazicon) | | RN |
| b. Insulin – IV | | RN |
| c. Insulin in TPN | SP | |
| d. Mannitol (osmitrol) | | RN |
| e. Mag Sulfate (added to mixed drip – e.g., with vitamins) | SP | |
| f. Potassium Chloride (only maintenance infusions; not bolusing) | SP | |
| g. Sodium Bicarbonate Drip | SP | |
| h. Steroids – IV (not initiated) | SP | |
| i. Tocolytics (including Mag Sulfate) | | RN |
| j. Uterine stimulants (e.g., oxytocin) | | RN |
| 13. Anti-Arrhythmic | | |
| a. Amiodarone | | RN |
| b. Bretylium (bretylol) | | RN |
| c. Digoxin (lanoxin) | | RN |
| d. Diltiazem Drip | SP | |
| e. Esmolol (brevibloc) | | RN |
| f. Metoprolol (lopressor) | | RN |
| g. Procainamide (pronestyl) | | RN |
| h. Quinidine Sulfate & Gluconate | | RN |
| 14. Anti-Convulsants (also see sedatives) | | |
| a. Barbiturates | | RN |
| b. Phenytoin (dilantin)/Fosphenytoin | SP | |
| c. Other non-benzodiazepine anti-convulsants | | RN |
| 15. Diuretics | SP | |

**OPTIONAL SUPPLEMENTAL PROGRAM
SPECIALTY CARE PARAMEDIC
PARAMEDIC ONLY**

| Medication - Procedure (Continued) | | |
|--|--|-------------------------------------|
| B. Invasive Procedures | Specialty Care Paramedic (SP) | Team with Nurse (RN) |
| 1. Chest Escharotomies | | RN |
| 2. Chest Tubes Insertion | | RN |
| 3. Chest Tube or Surgical Drain with or without vacuum system | SP | |
| 4. Laryngeal Mask Airway (LMA) | SP (adult only) | |
| 5. Needle Cricothyroidotomy | SP | |
| 6. Rapid Sequence Intubation | | RN |
| 7. Surgical Cricothyroidotomy | SP | |
| 8. Tracheostomy Care and Replacement (fresh) | SP | |
| 9. Urinary catheter insertion | SP | |
| | | |
| C. Non-Invasive Procedures | | |
| 1. IV Pumps | SP | |
| 2. Ostomy care | SP | |
| | | |
| D. System Monitoring | | |
| 1. Arterial Line/Cardiac Sheath | | RN |
| 2. CVP line (monitor but not performing measures) | SP | |
| 3. Intracranial Pressure Monitor/Line | | RN |
| 4. Swan-Ganz | | RN |
| | | |
| E. Specialized Equipment | | |
| 1. Automatic Internal Cardiac Defibrillator (AICD) | SP | |
| 2. Acute Ventilated Interfacility Patient – Transport Service’s Ventilator (Except as in E6) | SP | |
| 3. Internal Pacer with external control | | RN |
| 4. Intra-Aortic Balloon Pump | | RN |
| 5. Peritoneal Dialysis Systems | SP | |
| 6. Specialty Ventilator (e.g., Pediatric or when hospital ventilator must accompany patient) | | RN |
| 7. Transport Isolette/Incubator | | RN |
| 8. Ventricular Assist Devices | SP | |

**OPTIONAL SUPPLEMENTAL PROGRAM
TRANSPORT OF VENTILATED PATIENTS
Paramedic Only**

- (i) Alarms
 - (i) Peak airway pressure
 - (ii) Disconnect
 - (2) Strongly recommended options are:
 - Blend percentage oxygen
 - (3) Must perform periodic maintenance (including calibration) meeting the manufacturer's specifications
- b) ACUTE VENTILATOR USAGE**
- (1) A ventilator maintained by the ambulance service or health care facility must be specifically designed for transport use and capable of providing the required settings.
 - (2) Continuous pulse oximeter and continuous capnography monitoring equipment must be used on all acute ventilated interfacility patients.
 - (3) Tracheal suctioning kits/catheters must be available.
 - (4) A tracheostomy replacement tube the same size and one size smaller shall be transported with the patient ventilated through a tracheostomy. (The endotracheal tube equivalent may be substituted.)

4. POTENTIAL ADVERSE EFFECTS

- a) Pneumothorax
- b) Barotrauma
- c) Hypoxemia
- d) Hyperventilation
- e) Hypoventilation
- f) Extubation of endotracheal or tracheostomy tube

5. PRECAUTIONS

If any problems arise with mechanical ventilation, the patient shall be disconnected from the ventilator and manually ventilated.

6. OPTIONAL PROGRAM REQUIREMENTS

- a) A special "Ventilated Patient" report form will be completed for each mechanically ventilated patient and will include vital signs, pulse oximeter readings, and lung sounds (recorded a minimum of every 5 minutes), and documentation of any of the following;
 - (1) cardiac arrest during transport,
 - (2) dislodgment of tracheostomy tube or endotracheal tube,
 - (3) equipment failure (with FDA report),
 - (4) discontinuance of ventilator and conversion to BVM,
 - (5) deterioration of patient, or
 - (6) the upgrading of patient care to critical care.
- b) The Optional Program will require a training program which meets or exceeds the "Acute Ventilated Interfacility Patient" curriculum and be approved by the operational program medical director with skills validation. A copy of the training program shall be reviewed and be approved or disapproved by MIEMSS.

OPTIONAL SUPPLEMENTAL PROGRAM
TRANSPORT OF VENTILATED PATIENTS
Paramedic Only

V. Optional Program Transport of CHRONIC and SCENE Ventilated Patients

1. PURPOSE

To define the indications for use of a mechanical ventilator:

a) Chronic ventilated patient

The level of care required for the interfacility transport of “**chronic ventilated patients**” is within the scope of practice of a paramedic who has been credentialed, is competent, and received adequate training specific to the patient’s condition and the equipment necessary to provide care. Exception: A CRT-I or EMT may transport a chronically ventilated patient who is going for routine medical care and has in attendance a patient provided attendant who can manage the patient’s own ventilator.

b) Patient ventilated at the scene of an emergency

The level of care required for the transport of a ventilated patient from the “**scene of an emergency**” is within the scope of practice of a paramedic who has been credentialed, is competent, and received adequate training specific to the patient’s condition and the equipment to provide care.

2. INDICATIONS

a) **CHRONIC VENTILATED PATIENTS** are defined as:

(1) Have an established tracheostomy and ventilator settings that have no changes within 24 hours or changes reflecting improvement in the patient
(NEW '15) and

(2) Point of origin or destination is:

- (a) Long-term care facility,
- (b) Home,
- (c) Outpatient setting,
- (d) Hospital; **and**

(3) Reason for transport is:

- (a) Return from or transport to a scheduled appointment, **or**
- (b) For extended care, **or**
- (c) For emergency treatment (but not complication of airway or respiratory distress); **and**

(4) Ventilator settings are:

- (a) Positive End-Expiratory Pressure (PEEP) ≤ 10
- (b) Peak pressures ≤ 30 , and
- (c) No changes in the ventilator settings are required during the transport.

b) **SCENE OF AN EMERGENCY** – Out-of-Hospital

(1) Point of origin is at the scene of an out-of-hospital emergency

(2) A Paramedic may utilize mechanical ventilation once the patient is intubated.

(3) Reason for mechanical ventilation is respiratory arrest or when the patient is intubated and not bucking the ventilator.

(4) Once the patient is on a ventilator, a second provider (EMT or higher) is required to assist with patient care.

(5) Destination – closest appropriate hospital

(6) Contraindicated in children 8 years of age or less.

**OPTIONAL SUPPLEMENTAL PROGRAM
TRANSPORT OF VENTILATED PATIENTS
EMT-Paramedic Only**

3. VENTILATOR STANDARDS

a) CHRONIC VENTILATOR DEVICE STANDARDS

- (1) The ventilator that the service is to use for the acute or chronically ventilated patient should be able to match the existing ventilator settings. The following minimum device features (including circuit) must be present for this category of patient:
 - (a) Set rate of ventilations
 - (b) Adjust delivered Tidal Volume
 - (c) Adjustable Pressure Support Settings
 - (d) Adjustable Inspiratory and Expiratory ratios (I:E ratio)
 - (e) Positive End-Expiratory Pressure (PEEP)
 - (f) Peak airway pressure gauge
 - (g) Modes
 - (i) Assist Control (AC)
 - (ii) Synchronized Intermittent Mandatory Ventilation (SIMV)
 - (iii) Controlled Mechanical Ventilation (CMV)
 - (h) Alarms
 - (i) Peak airway pressure
 - (ii) Disconnect
- (2) Strongly recommended options are:
 - (a) Continuous Expiratory volume measurement
 - (b) Blend percentage oxygen
- (3) Must perform periodic maintenance (including calibration) meeting the manufacturer's specifications

b) CHRONIC VENTILATOR USAGE

- (1) Ventilator used is:
 - (a) The patient's own ventilator intended for home/transport use and have the patient, home-care provider, or staff member from the health care facility manage the ventilator, **or**
 - (b) A ventilator maintained by the ambulance service or health care facility specifically designed for transport use and capable of providing the required settings. If the patient's ventilator is the same as the company ventilator, the paramedic may manage the ventilator without the home-care provider accompanying patient. Exception: A CRT-I or EMT may transport a chronically ventilated patient who is going for routine medical care and has in attendance a patient provided attendant who can manage the patient's own ventilator.
- (2) Monitoring equipment must include pulse oximeter (provided by family or service).
- (3) Tracheal suctioning kits/catheters must be available.
- (4) A replacement tracheostomy tube the same size and one size smaller shall be transported with the patient ventilated through a tracheotomy. (The endotracheal tube equivalent may be substituted.)

**OPTIONAL SUPPLEMENTAL PROGRAM
TRANSPORT OF VENTILATED PATIENTS
EMT-Paramedic Only**

c) SCENE OF AN EMERGENCY VENTILATOR DEVICE STANDARDS

Mechanical ventilator used must:

- (1) Be intended for transport use,
- (2) Deliver 100% oxygen, and
- (3) Have minimal parameters to set rate and volume (both adjustable to meet the needs of pediatric and adult patients)

4. POTENTIAL ADVERSE EFFECTS

- a) Pneumothorax
- b) Barotrauma
- c) Hypoxemia
- d) Hyperventilation
- e) Hypoventilation
- f) Extubation of endotracheal or tracheostomy tube

5. PRECAUTIONS

- a) Any acutely ill or injured **breathing** patient at the “scene of an emergency” requiring assisted ventilation shall be manually ventilated.
- b) If any problems arise with mechanical ventilation, the patient shall be disconnected from the ventilator and manually ventilated.
- c) The Optional Program will require a training program that meets or exceeds the “Chronic and Scene Ventilated Patient” curriculum and be approved by the operational program medical director. A copy of that training program shall be reviewed and be approved or disapproved by MIEMSS.

EMS OPERATIONAL PROGRAM RESEARCH PROTOCOL
OPTIONAL SUPPLEMENTAL PROTOCOL (RESEARCH)
SUBSTANCE ABUSE SCREENING

VI. RESEARCH PROTOCOLS

Z. EMS LINKAGE TO ADDICTION TREATMENT (NEW '15)


EMS providers will respond to requests for assistance and perform interventions in accordance with General Patient Care (GPC) of *The Maryland Medical Protocols for EMS Providers*.

Following completion of the initial patient assessment and appropriate treatment interventions, a qualified EMS provider will assess patients for eligibility.

Inclusion Criteria:

- 1) Age greater than or equal to 18 years
- 2) Hemodynamically stable (HR < 120 or > 60, SBP > 90, and RR < 30 or > 10)
- 3) Awake and oriented or person with a GCS greater than or equal to 14

Patients will be asked a series of targeted questions that screen for substance abuse:

| | |
|--|---|
|  | Approval Date: December 18, 2013 Approved Consent Version No.: #1 PI Name: Amy Knowlton IRB No. 00004931 |
|--|---|

EMS-Linkage to Addiction Treatment
Pre-Screening Script for EMS Providers

Note: *This script will be used by study-trained EMS providers who administer this screening tool after all Standard of Care (SOC) has been provided to an adult EMS patient (e.g., during transport, awaiting hospital intake procedures). This tool will be limited to those EMS patients who are 18 years or older and have no health condition or treatment that would impede an ability to provide verbal consent for pre-screening (such as active psychosis or other impairment).*

EMS Provider:
Transported patient: While we are on the way to the hospital, I'd like to ask you a few questions to see if you might be eligible for a research study. This will help me determine if you might be eligible for other health services. May I proceed?
Non-Transported patient: Before we leave you, I'd like to ask you a few questions to see if you might be eligible for a research study. May I proceed?
→If Patient answers "No", stop here.
→If "Yes", continue.

EMS Provider:

In the past 3 months:

1. Has your partner or family complained about your drug or alcohol use? Y / N
2. Have you had an alcoholic drink, or used drugs, first thing in the morning to steady your nerves or get rid of a hangover? Y / N
3. Have you had black-outs when you couldn't remember things the next day as a result of your drug or alcohol use? Y / N
4. Have you experienced withdrawal symptoms (felt sick) when you stopped taking drugs or alcohol? Y / N

**EMS OPERATIONAL PROGRAM RESEARCH PROTOCOL
OPTIONAL SUPPLEMENTAL PROTOCOL (RESEARCH)
SUBSTANCE ABUSE SCREENING**

5. If yes to #2, 3, or 4:
 - a. Do these drugs include heroin? Y / N
 - b. Do these drugs include prescription opiates (e.g., Vicodin, Percocet, OxyContin)? Y / N
 - i. Where do you get these prescription opiates? _____
(from the street, family/friends, medical provider)

If the scoring suggests no substance dependence, say: “Thanks. You’re not eligible for the study. However, if you or someone you know is interested in finding out more about addictions treatment programs, here is a card with treatment information.”

If scoring suggests substance dependence, deliver messages (see below) to bolster treatment entry and give them a study card for substance screening and HIV Voluntary Counseling and Testing services at the study site. Messages to use include:

- “I’m really concerned about you and what your substance use is doing to your health.”
- “You must be really tired. Has anyone ever talked with you about drug treatment?”
- “I’ve seen many people in Baltimore who have been helped by drug treatment.”
- “I’m concerned about your health. Have you thought about drug treatment? It’s pretty easy to call for information about treatment slots.”
- “You look like you’re going through a lot right now. Do you think that drug treatment might help?”
- “Like with anything, the more you try to get treatment, the more likely it will work for you. It doesn’t hurt to keep trying.”

Then say: “*It looks like you might be eligible for this paid study, if you are interested, call in the next week. Here is a study card. It has phone numbers to get information about the study and about treatment programs.*”

EMS OPERATIONAL PROGRAM RESEARCH PROTOCOL
OPTIONAL SUPPLEMENTAL PROTOCOL (RESEARCH)
SUBSTANCE ABUSE SCREENING

EMS Linkage to Addiction Treatment: Referral Card



Approved: 18December2013
IRB No.: 00004931

EMS-Linkage to Addiction Treatment: Referral Card

(Front & back)

| | |
|---|---|
| The EMS-LAT Study: EMS-Linkage to Addiction Treatment Are you ready? Can we help you get into treatment, NOW? | |
| <p>We are:</p> <ul style="list-style-type: none">• A study for substance users interested in treatment <p>We will:</p> <ul style="list-style-type: none">• Help you get into treatment• <u>Pay the intake fee</u> if you enroll• PAY you for study visits• Provide counseling• Provide free voluntary HIV testing <p>CALL US. Ask for EMILY: 410-502-5368</p> | <p>Study location:</p> <p style="text-align: center;"><i>The Lighthouse Studies</i> 2213 McElderry Street, 2nd Floor Baltimore, MD 21205 410-502-5368 (Behind NE Market; 1 block south of Monument St.)</p> <hr/> <p>EMS code: _____ Date: _____ →→ This study offer expires after 7 days ←←</p> |
| <p>This research is being conducted by Dr. Amy Knowlton at the Johns Hopkins Bloomberg School of Public Health.</p> | |

| | |
|---|---|
| <p>IF YOU WANT TO JOIN THE STUDY, follow info on the reverse side.</p> | |
| <p>...OR... CALL THE I&R LINE TO MAKE AN APPOINTMENT for yourself NOW! CALL: Baltimore Substance Abuse Systems (bSAS) Information & Referral Line for a drug treatment slot: 410-637-1900</p> | |
| <p>Call for info: Chase Brexton Health Services 1001 Cathedral St Baltimore, MD 21201 (410) 837-2050</p> <p>AAA-1 Abuse & Addiction Helpline 211 E Lombard St Baltimore, MD 21202 (410) 692-8147</p> | <p>Call for info: Baltimore Drug Rehab & Alcohol Rehab 822 Guilford Ave #103 Baltimore, MD 21202 (410) 989-2987</p> <p>Total Health Care 1501 Division Street Baltimore, MD 21217 (443) 687-8549</p> |

THIS PAGE IS INTENTIONALLY BLANK

Z1. PREHOSPITAL POINT OF CARE TESTING FOR SHOCK PILOT PROGRAM (NEW '15)

1. Prehospital Point of Care Testing for Shock Pilot Program

a. Indications

i. **Category A** patients WITH

- 1) Availability of thenar eminence and site for venous cannulation in AT LEAST ONE extremity (i.e., no patients with bilateral upper extremity amputations)

ii. **Category B** patients WITH

- 1) Availability of thenar eminence and site for venous cannulation in AT LEAST ONE extremity (i.e., no patients with bilateral upper extremity amputations) AND
- 2) Two or more long-bone fractures AND/OR
- 3) Chest wall instability or deformity AND/OR
- 4) Open or depressed skull fractures AND/OR
- 5) Penetrating injuries to head/neck/torso/extremities AND/OR
- 6) Pelvic fracture AND/OR
- 7) Paralysis

iii. **Category C** patients WITH

- 1) Availability of thenar eminence and site for venous cannulation in AT LEAST ONE extremity (i.e., no patients with bilateral upper extremity amputations) AND
- 2) Patients in high risk auto crashes including any of the following:
 - a. Intrusion greater than 12 inches on the occupant side
 - b. Intrusion greater than 19 inches on the passenger side
 - c. Ejection from the vehicle
 - d. Death in the same passenger compartment
 - e. Rollover without restraint
 - f. Vehicle telemetry consistent with high risk of injury
 - g. Auto vs. pedestrian/bicyclist thrown/run over with impact greater than 20 MPH
 - h. Motorcycle crash with speed greater than 25 MPH

iv. **NOTE: STANDARD PATIENT CARE, AS SPECIFIED IN THE MARYLAND MEDICAL PROTOCOLS, WILL TAKE PRIORITY AT ALL TIMES. THIS PILOT PROGRAM MUST NOT INTERRUPT STANDARD PATIENT CARE AT ANY TIME.**

**EMS OPERATIONAL PROGRAM RESEARCH PROTOCOL
OPTIONAL SUPPLEMENTAL PROTOCOL (RESEARCH)
MARYLAND STATE POLICE AVIATION COMMAND**

b. Contraindications

- i. Pregnant patients
- ii. Prisoners
- iii. Patients under the age of 18
- iv. Patients dead on arrival
- v. Patients who will not be transported to the Shock Trauma Center
- vi. Patients with upper extremity amputations, crushed, degloved, mangled, or pulseless upper extremities that preclude application of the InSpec-tra™ tissue oximeter and/or placement of a venous catheter (note: venous catheters may be placed in lower extremities)

c. Procedures

- i. I-STAT device
 - 1) A 2 mL blood sample will be obtained via a new venous cannula or closed vacutainer technique.
 - 2) ONLY PROVIDERS WHO HAVE BEEN FORMALLY TRAINED AND SIGNED OFF ON THIS PROTOCOL, AND ARE CURRENT AS PER QUALITY CONTROL REQUIREMENTS (SEE SECTION BELOW), MAY UTILIZE THIS DEVICE.
 - 3) ONLY THE GLUCOSE RESULT MAY BE USED FOR PATIENT CARE (IN LIEU OF GLUCOMETER TESTING AS PER THE MARYLAND MEDICAL PROTOCOLS), ALL OTHER RESULTS ARE FOR RESEARCH PURPOSES ONLY.
 - 4) Turn the device ON.
 - a. Do NOT insert the cartridge to start the device.
 - b. Do NOT open the cartridge pouch before scanning the barcode.
 - 5) Press “2” for I-STAT.
 - a. If Quality Check Codes “69,” “140,” or “147” appear, STOP the test and this pilot protocol.
 - 6) Follow prompts.
 - 7) Scan the lot number on the cartridge pouch.
 - a. Position barcode 3–9 inches from scanner window on the device.
 - b. Press and hold “SCAN” to activate the scanner.
 - c. Align the red laser light so it covers the entire barcode.
 - d. The device will beep when it reads the barcode successfully.
 - e. If the cartridge pouch does not have a barcode, enter the lot number manually using the numbered keys or press “ENT” to bypass this prompt.
 - 8) Obtain the blood sample.
 - 9) Fill and seal the cartridges with the blood sample.
 - a. Cartridge priority: The CG4+ cartridge should be analyzed first (lactate, venous blood gas); time permitting, the EC8+ cartridge should be analyzed next (electrolytes, hemoglobin, glucose, base excess).

**EMS OPERATIONAL PROGRAM RESEARCH PROTOCOL
OPTIONAL SUPPLEMENTAL PROTOCOL (RESEARCH)
MARYLAND STATE POLICE AVIATION COMMAND**

- 10) Push the sealed cartridge (CG4+ first) into the device port until it clicks into place.
 - 11) Wait for the test to complete.
 - 12) Repeat the procedure above for the next cartridge (EC8+).
 - 13) Only the glucose result may be used for patient care.
 - 14) Upon arrival at the Shock Trauma Center, the results should be printed after the patient has been handed off to the trauma team. Only the glucose results may be shared with the hospital staff.
 - a. Place the device in the cradle of an IR Link or align the IR windows of the handheld and the printer.
 - b. Turn the printer ON.
 - c. Press “PRT” for the displayed test records on the device.
 - i. If the result is stored, select “Print Results” from the “Stored Results” menu. Select records to be printed by pressing the key(s) corresponding to the numbers beside the record(s). Press the “PRT” key to print the selected record(s).
- ii. InSpectra™ Spot Check Tissue Oximeter
- 1) ONLY PROVIDERS WHO HAVE BEEN FORMALLY TRAINED AND SIGNED OFF ON THIS PROTOCOL, AND ARE CURRENT AS PER QUALITY CONTROL REQUIREMENTS (SEE SECTION BELOW), MAY UTILIZE THIS DEVICE.
 - 2) Ensure the device is properly charged before use.
 - 3) Attach the optical cable to the Spot Check device.
 - 4) Connect the reusable StO₂ clip by connecting the prongs to the clip on the optical cable.
 - 5) Press the POWER ON button on the front of the device.
 - a. The device should power on within 30 seconds.
 - 6) Cancel the SYSTEM CHECK button (see quality control procedures below) by pressing the SYSTEM CHECK button again to return to the main screen.
 - 7) Position the clip over the patient’s thenar eminence.
 - a. The device may only be used on clean, dry skin.
 - b. If the skin is soiled, the skin should be cleaned with an alcohol or chlorhexidine prep.
 - c. Ensure the clip is placed over the fleshy part of the thenar muscles.
 - 8) Check THI signal strength on the main screen.
 - a. A THI greater than 5.0 indicates significant hemoglobin to obtain a tissue oximetry measurement.
 - 9) Record the tissue oximetry level (%) on the study collection data form. Do not leave the clip on the thenar eminence for more than 15 minutes.

**EMS OPERATIONAL PROGRAM RESEARCH PROTOCOL
OPTIONAL SUPPLEMENTAL PROTOCOL (RESEARCH)
MARYLAND STATE POLICE AVIATION COMMAND**

d. Quality Control Procedures

- i. I-STAT Device
 - 1) Daily procedures
 - a. A quality control log will be maintained and reviewed by the Medical Director for all pilot program sites.
 - b. The device must be tested every 24 hours using the external Electronic Simulator.
 - c. Insert the external Electronic Simulator after the LCK or “Simulator Locked” message disappears from the display screen.
 - d. A “PASS” must be displayed on the screen. The date and time of this result must be logged.
 - e. If “FAIL” is displayed on the screen, repeat the procedure with the same Electronic Simulator. If “PASS” is displayed during the second test, the device is ready for use. If “PASS” is not displayed, the device cannot be used and the Medical Director or Primary Investigator must be notified immediately.
 - f. Verify that all cartridges are refrigerated and within the expiration date printed on the boxes. Cartridges cannot be left unrefrigerated for longer than the time specified on the box for the cartridges. If any cartridges are expired, set the cartridges aside, do not use them, and contact the Medical Director or Primary Investigator.
 - 2) Monthly procedures
 - a. A quality control log will be maintained and reviewed by the Medical Director for all pilot program sites.
 - b. This may also be accomplished at the Shock Trauma Center.
 - c. Click on the “Simulator Viewer” button on the Electronic Simulator and record the result in the quality control log.
- ii. InSpectra™ Spot Check Device
 - 1) Daily procedures
 - a. A quality control log will be maintained and reviewed by the Medical Director for all pilot program sites.
 - b. The device should be checked daily.
 - c. Power on the device.
 - d. Press the “SYSTEM CHECK” button.
 - e. In 20 seconds or less, the device should read GREEN with a checkmark indicating that the device is ready for use.
 - f. If the device is out of range, the FAIL icon will remain on the screen and the System Check screen will be RED. Do not use the device if the SYSTEM CHECK fails. Place the device out of service and contact the Medical Director or Primary Investigator.